BS1-01  The Prostate Microbiome is Associated with Prostate Size in BPH Patients

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Presented By: Aaron Miller, PhD

Introduction: The etiology of benign prostatic hyperplasia (BPH) is not well understood, though it has been associated with age and inflammation. Recent literature has associated the urinary tract microbiome with various urologic diseases such as lower urinary tract symptom severity to specific microbiota. We aimed to examine the prostatic microbiome in BPH and associations with patient characteristics.

Methods: Men undergoing Holmium Laser Enucleation of the Prostate (HoLEP) for BPH were recruited if they were over 18 years old, had no history of prostate cancer or surgery, or prior pelvic radiation. Patients were excluded if they had a positive preoperative urine culture, bladder stones, or were catheter-dependent. Patient characteristics including age, prostate specific antigen (PSA), American Urological Association symptom score (AUASS), and history of biopsy were recorded. Intraoperatively, prostate tissue was collected from each patient, as well as catheterized urine, urethral swabs, and swabs of the specimen container for negative controls. Samples underwent DNA extraction, 16S sequencing, and analysis using R statistical software. Associations between bacterial taxonomic diversity (alpha, beta, taxonomy) and patient characteristics were quantified through Sparcc correlations.

Results: 50 patients were recruited for this study. Mean age, PSA, prostate size, and AUASS were 67.5 years, 3.15 ng/mL, 98.1 g, and 18.1, respectively. After bioinformatic decontamination of prostate samples, alpha and beta diversity analyses indicated that microbiomes from the prostate, urethra, and urine were all distinct (p = 0.001), with the urine and urethra having higher similarity to each other than to the prostate. Campylobacter, Caryophanaceae, Enterobacter, and Senegalimassilia positively correlated with prostate size or PSA (Figure 1). History of prostate biopsy and AUASS did not significantly associate with specific bacteria.

Conclusions: This study represents the most robust examination of the prostatic microbiome in BPH, and the first to correct for possible contaminants while using prostate tissue. We observed a unique prostatic microbiome distinct from that of the urine and urethra, with several known pathogens positively correlated with prostate size and PSA.

Funding: None.

BS1-02  Single-cell Transcriptional Profiles of Benign Prostatic Hyperplasia Reveal a progenitor-Like Luminal Epithelial Cell State Within the Inflammatory Microenvironment

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Presented By: Rei Unno

Introduction: Benign prostatic hyperplasia (BPH) is characterized by excessive cell growth and inflammation, and it commonly affects aging men. To develop new medical treatments for BPH, it is essential to gain a deeper understanding of the underlying pathophysiology and specific cell types involved. We aimed to examine the individual cellular states in BPH at the single-cell level and identify cell populations that play a significant role in cell growth and inflammation.

Methods: We conducted single-cell RNA sequencing of prostate tissues from 15 patients who underwent holmium laser enucleation of the prostate for BPH treatment. We then used clustering and differential expression analyses to categorize all the cell types in the obtained single-cell RNA-seq data. Subsequently, we performed pseudo-time, gene set enrichment, gene ontology, and ligand-receptor analyses.

Results: We analyzed 16, 234 cells and identified distinct subgroups within stromal, epithelial, and immune cell populations.
that were strongly linked to inflammation. Additionally, we identified a rare luminal subgroup characterized by elevated expression of macrophage migration inhibitory factor (MIF), KLF4, and HOXB13. Pseudo time analysis revealed that this luminal subgroup had closer ties to club and basal cells and might represent a potential precursor state for luminal cells. We observed a significantly higher stem cell signature score in the luminal subgroup, derived from epithelial stem cells, suggesting that this subgroup may be a key driver of prostate cell proliferation. We also explored ligand-receptor interactions between stromal, epithelial, and immune cells using CellPhoneDB. Thus, uncovering unique interactions between fibroblasts and the progenitor luminal subgroup involving MIF, a pro-inflammatory cytokine that stimulates epithelial cell growth and prostate inflammation. Moreover, this luminal subgroup interacts with neutrophils and macrophages via MIF.

**Conclusions:** Our single-cell profiling of BPH provides a roadmap for inflammation-linked cell subgroups and highlights a novel luminal progenitor subgroup that interacts with other cell groups via MIF, which may contribute to the prostate cell inflammatory phenotype and proliferation associated with BPH.

**Funding:** None.

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**BS1-03 Interstitial Cystitis Treatment Using Hydrogel-Supported TiC/CuS Nanoparticles in a Rat Model**

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Presented By: Peibin Cen

**Introduction:** Interstitial cystitis (IC) is a chronic bladder condition with unclear pathogenesis. Nanoparticle therapies may offer new treatment approaches by modulating inflammatory pathways. This study investigates the therapeutic potential of a hydrogel-supported titanium carbide/copper sulfide (TiC/CuS) nanoparticle system in a rat model of IC.

**Methods:** Adult female Sprague Dawley rats (n = 40) were randomized into sham control, blank control, nanoparticle treatment, and DMSO control groups (n = 10 each). IC was induced using cyclophosphamide (CYP) injections. Bladder instillations of saline, TiC/CuS nanoparticles in hydrogel, or DMSO were performed 7 days post-induction. Von Frey tests assessed abdominal alldynia. Tissue analyses included immunofluorescence and western blotting for inflammatory, apoptotic, and signaling markers.

**Results:** The CYP-induced IC rat model demonstrated significantly decreased pain thresholds, validating its suitability for in vivo nanomaterial therapy evaluation. Photothermal conversion by TiC/CuS nanoparticles enabled controlled temperature increases up to 45 °C in the bladder wall, potentially forming a therapeutic nanomaterial membrane. The proposed mechanisms include: 1) DNA damage repair processes induced by stable heat, 2) copper-induced cuproptosis in the bladder wall facilitated by photothermal release of Cu, and 3) reactive oxygen species generation by photothermal effects as an IC treatment target.

**Conclusions:** Instillation of the TiC/CuS nanoparticle hydrogel attenuated IC-associated functional and molecular alterations compared to controls, likely due to the anti-inflammatory effects demonstrated in prior studies.

**Funding:** This work was financed by grants from the National Natural Science Foundation of China (Nos. 81900689 and 81870483).

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**BS1-04 Multi-Omics Characterization of Circular RNA-Encoded Novel Proteins Associated with Bladder Outlet Obstruction**

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Presented By: Baoyi Zhu, MD, PhD

**Introduction:** Bladder outlet obstruction (BOO) is a common urological condition that promotes bladder remodeling, which might be an important reason for the severe difficulty in curing lower urinary tract symptoms in many elderly patients. Even many patients undergoing obstruction relief procedures, such as prostatectomy, are still reported persistent storage symptoms. CircRNAs (circular RNAs) play critical roles in various physiological events and pathogenic processes, however, little is known about the expression and functions of circRNAs in BOO development and progression. This study aimed to investigate the possible involvements of circRNAs and circRNA-encoded proteins in BOO development.

**Methods:** The rat BOO model was established by the partial bladder outlet obstruction surgery. Differential expression of circRNA and protein profiles were characterized by deep RNA sequencing and iTRAQ quantitative proteomics respectively. Novel proteins encoded by circRNAs were predicted through deep RNA sequencing and the validation of their expression alterations by quantitative RT-PCR.

**Results:** Totally 3, 051 circRNAs were differentially expressed in bladder tissues of rat BOO model with widespread genomic distributions, including 1, 414 up-regulated, and 1, 637 down-regulated circRNAs. Our following quantitative proteomics revealed significant changes of 85 proteins in rat BOO model, which were enriched in multiple biological processes and signaling pathways such as the PPAR and Wnt pathways. Among them, 21 differentially expressed proteins were predicted to be encoded by circRNAs and showed consistent circRNA and protein levels in rat BOO model. The expression levels of five protein-encoding circRNAs were further validated by quantitative RT-PCR and mass spectrometry, among which one circRNA (chr1:4449699144498906) was up-regulated and four other circRNAs were down-regulated in the bladder tissues of rat BOO model compared with the sham group, including chr1:259396273259437470, chr1:141877382141880461, chr9:8125833081275269, and chr19:3917654039195019.

**Conclusions:** The circRNA and protein profiles were substantially altered in rat BOO model, with great expression changes of circRNA-encoded novel proteins, which can offer new insights for developing promising treatments for patients with bladder outlet obstruction.
BSI-05  Aquablation of Prostate: A Prospective Analysis

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Presented By: Sakshi Rajain, MBBS

Introduction: Aquablation of prostate is a revolutionary approach in the treatment of benign prostatic hyperplasia (BPH), offering patients a highly effective and safe treatment option with the potential for long-term relief and improved quality of life. It’s a distinctive treatment that allows comprehensive visualization of the entire prostate in real-time image guidance, allows the surgeon to map the treatment contour by identifying tissue to preserve and resect, use of heat-free waterjet to precisely remove the prostate tissue and minimize thermal damage to surrounding tissue ensuring precision and optimizing outcomes. The key advantage of Aquablation therapy over standard treatments is that it is a viable option for men with larger prostates and the incidence of permanent side effects such as incontinence, ejaculatory dysfunction, and erectile dysfunction has been shown to be extremely low comparatively. This underscores the safety and efficacy of the procedure in addressing BPH symptoms while minimizing the risk of adverse effects. The goal of this study is to evaluate and assess the procedure’s safety and effectiveness, quality assurance, comparative analysis with other treatment modalities, such as laser therapy or transurethral resection of the prostate (TURP), to determine its relative benefits and effectiveness, complications, such as ejaculatory dysfunction, erectile dysfunction, or incontinence, and develop strategies to minimize or effectively manage them, as well as patient satisfaction.

Methods: A prospective methodology has been used in the study, deploying a cohort of BPH patients who underwent Aquablation of prostate. It involved 126 procedures overall and ran from August 2022 to November 2023. One of the 126 patients had pre-operative conversion to holmium laser enucleation of the prostate surgery (HoLEP), while the other patient underwent intra-operative conversion. Comprehensive data was obtained regarding the patient’s age, prostate size, blood results and pre-existing medical conditions. The median age of 68 (average 67.58), the median IPSS of 26 (average 25.1), the median quality of life (QOL) of 5 and the average prostate size of 95 cc, median lobe (12 mm in mean projection) was present in 59% of them. Presenting History of the patients, standardized symptom scores like the Sexual Health Inventory for Men (SHIM) Questionnaire, the International Prostate Symptom Score (IPSS), Quality of life (QOL), uroflowmetry measurements and imaging modalities were used in pre-operative assessment followed by Post-operative patient-reported outcomes like symptom improvement, complication rates, and patient satisfaction. Adverse events and complications were systematically recorded and analyzed. The study methodology aimed to provide comprehensive insights into the effectiveness and safety profile of Aquablation therapy in this patient population.

Results: The results of this study showed that the BPH patients undergoing the Aquablation technique. At the three-month follow-up, the Mean International Prostate Symptom Score (IPSS) dropped from 25.3 to 5.6 and the Sexual Health Inventory for Men (SHIM) improved from 13.8 to 16, both of which show a clinically significant decrease in symptoms due to BPH. Crucially, there were no reports of incontinence, ejaculatory dysfunction, or erectile dysfunction during the trial period, indicating a minimal risk of adverse events and sequelae. One HoLEP conversion occurred during the procedure due to obstructive middle lobe hence unable to negotiate by Aquabeam hand piece – 35mm projection middle lobe in 150 ml gland and one HoLEP modification occurred pre-operatively due to excessive bleeding risk and unstable blood pressure. Nineteen patients received antibiotics upon their discharge, and a urine culture from one of them revealed an infection with epididymoorchitis. Within 48 hours, eighteen patients experienced Trial Without Catheter (TWOC) failure. For the sixteen, the follow-up TWOC was successful within five days. One patient, who is now catheter-free, had persisting bladder outlet obstruction after two TWOC failures, as evidenced by urodynamic testing. One patient is still receiving intermittent self-catherization. Nevertheless, following a successful procedure, four patients with grade 4 Clavien-Dindo  returned to the operating room within two hours because of bleeding with an average age of 77 and an average American Society of Anesthesiologists (ASA) rating of 2. They had a mean prostate size of 120 ml. The mean projection of all noticeable median lobes approximately 24 mm. Two of the four had IDC prior to surgery. Conclusions: As a minimally invasive treatment option, aquablation therapy for males with benign prostatic hyperplasia (BPH) and prostates weighing more than 50 grams is safe and effective. Training colleagues in aquablation is less complicated than training them for HoLEP, which is one of the benefits of the aquablation technique that the study uncovered. It is financially categorised as a Robotic Procedure and provides better ejaculatory function maintenance and a reduced risk of incontinence. According to these results, aquablation therapy is a safe and effective therapeutic option for BPH in men with bigger prostates, offering low short-term side effects and the possibility of effective symptom relief. Aquablation has proven beneficial in reducing BPH-related symptoms and enhancing urinary function, as seen by the considerable improvements in symptom scores and urine flow rates that are seen after treatment.

Funding: Self-funded.

BSI-06  How does Concurrent Cystolitholapaxy with Bladder Outlet Procedures Affect Utilization of Resources?

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Presented By: Ankur Choksi, MD

Introduction: For patients with benign prostatic hyperplasia (BPH) and bladder stones, holmium laser enucleation of the prostate (HoLEP) may be an attractive option due to the ability to treat both issues with the same surgical equipment. We assessed the change in costs of intra-operative supplies when cystolitholapaxy is performed concurrently with transurethral resection of prostate (TURP), Greenlight Photovaporization of Prostate (Greenlight PVP) and HoLEP.

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The main contributor to the symptoms of OAB. Current patients. Spontaneous and exaggerated detrusor contractions are overactive bladder (OAB) suggestive of bladder benign pro-

Male lower urinary tract symptoms (LUTS) due to the limited options and insufficient therapeutic effects. Therefore, new therapeutic targets are warranted. Recent findings indicated a key role of transforming growth factor beta-1 (TGFβ1) in bladder smooth muscle cells (BSMCs) contraction, which might involve cofolin. However, the role of TGFβ1 in OAB is still unclear. Here, we studies effects and mechanism of TGFβ1 on bladder smooth muscle contraction.

Methods: Urine samples were collected from BPH patients with or without overactive detrusor (OD) diagnosed by urodynamic testing. Detrusor tissues were obtained from male Sprague-Dawley rats. Detrusor contractions were examined in an organ bath. Actin organization in human BSMCs was visualized by phalloidin staining. Proliferation of BSMCs was evaluated by 5-ethyl-20-deoxyuridine (EdU).

Results: A significantly higher ratio of TGFβ1/creatinine was observed in BPH patients with OD. Acetylcholine and Acetyl-β-methylenecholine (each 0.1-1000 μM) induced contraction-dependent detrusor contractions, which were significant enhanced by TGFβ1 (5ng/mL) (P < 0.05 between TGFβ1 and control groups). However, these contraction promoting effects of TGFβ1 were absent when tissues were treated with either SR7826 or LIMKi3 (each 1 μM). Phalloidin staining revealed a promoting effect of TGFβ1 (1ng/mL) on enhancement of actin organization in human BSMCs, which were slightly inhibited by either SR7826 or LIMKi3 at 1 μM (P < 0.05), and became remarkably by either SR7826 or LIMKi3 at 5 μM (P < 0.05). EdU revealed a promoting effect of TGFβ1 (1ng/mL) on proliferation of HSMCs, which were remarkably inhibited by either SR7826 (1 μM) or LIMKi3 (both 1 and 5 μM).

Conclusions: TGFβ1 induces bladder smooth muscle contraction and proliferation, which were inhibited by LIMK inhibitors. Our study highlights a novel role of TGFβ1 in OAB secondary to BPH, which might involve the LIMK-cofilin pathway. TGFβ1 might be a promising biomarker for the diagnosis of OD as an alternative option for urodynamic testing.

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BS1-09 Asthma Increases the Risk of LUTS by Targeting the Prostate and Bladder, a Novel Concept in the Pathogenesis and Treatment of LUTS?
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Introduction: Lower urinary tract symptoms (LUTS) cover a range of storage and voiding symptoms related to the lower urinary tract. In male patients, benign prostate hyperplasia (BPH) and overactive bladder (OAB) suggestive of BPH are the primary etiologies for LUTS. A recent clinical study reported a higher risk of male asthmatic patients to suffer from LUTS and even more likely to severe LUTS conditions. Both asthma and LUTS may share similar etiologies such as inflammation, neurological factors, and risk facts (obesity or age), however, a direct link between asthma and LUTS remains unclear. Here, we studied the function of the prostate and bladder in an asthma rat model.

Methods: Male Sprague-Dawley rats were intraperitoneally administered a mixture of ovalbumin and aluminum hydroxide to induce asthma. Contractions of prostate tissues were assessed by western blotting. The structure of prostate and bladder tissues was stained with Hematoxylin and Eosin (H&E), and Masson’s trichrome (MT), respectively. Contraction of bladder smooth muscle was examined in an organ bath.

Results: The prostate from asthmatic rats were observed to be enlarged with an increase in prostate epithelial thickness, the average prostate weight from asthmatic rat group increased by 0.257 ± 0.15 g compared with control group (P = 0.09). Western blot analysis revealed significantly increased expressions of desmin and troponin, but a significantly decreased expression of vimentin in the asthmatic rat group. Bladder wall structure by MT staining and blader weight were similar in both groups. Acetylcholine (0.1-1000 μM) induced concentration-dependent bladder smooth muscle contractions, which were significant enhanced in stripes from asthmatic rats. However, acetyl-β-methylcholine (0.1-1000 μM) induced concentration-dependent bladder smooth muscle contractions were similar in both groups.

Conclusions: Asthma and the risk of LUTS may be closely associated. Asthma induces LUTS by causing enlargement in the prostate, and enhancing contractions in both the prostate and bladder smooth muscle tissues. Our study points to a potential direct link between asthma and LUTS, and provides a new therapeutic target for the treatment of LUTS.

Funding: This work was financed by grants from the National Natural Science Foundation of China (Nos. 81900689 and 81870483).

BS1-10 Improving Upstream Care: Most Patients are Unaware of Lifestyle Managements and Medication Side Effects for Lower Urinary Tract Symptoms Prior to Urology Assessment in Canada
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Presented By: Connor M. Forbes, MD, FRCSC

Introduction: Treatment of Benign Prostatic Hyperplasia (BPH) and lower urinary tract symptoms (LUTS) includes lifestyle changes, medication, and surgery. Patients’ awareness of conservative options and medication side effects is not well understood. We investigated patients’ knowledge of conservative management and side effect profile of medications for treatment of BPH prior to their initial urology assessment.

Methods: Patients with prostates undergoing their initial urology assessment for BPH/LUTS were provided with an online anonymous survey at a single Canadian academic center. The survey captured patient demographics, past or current LUTS medications, knowledge of lifestyle modifications and treatment side effects for management of their symptoms.

Results: There were 17 completed and 2 partially completed surveys from 41 invitees. The mean age was 67.2 (SD = 9.1). Only 42% (8 out of 19) had knowledge of conservative management options for LUTS. Reported rates of alpha blockers (ABs), 5-alpha reductase inhibitors (5ARIs), combined therapy (ABs and 5ARIs), phosphodiesterase-5 inhibitors (PDE5is), and mirtazapine were 35.3%, 5.9%, 35.3%, 11.8%, and 5.9%, respectively. Two patients reported using herbal therapies (Saw Palmetto, Stinging Nettle, and/or African Plum Bark), and 3 patients reported no medication history for their symptoms. More than half of patients who had used alpha-antagonists or 5ARIs had no knowledge of common side effects (Figure 1).
BS1-11 Functional Outcome After UroLift in Young BPH Patients with Slightly High Bladder Neck

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Presented By: Edoardo Tocci

Introduction: Urolift is a surgical procedure based on the application of nitinol clips compressing the prostatic adenoma, in order to allow better urinary outflow while preserving erectile and ejaculatory function in patients with benign prostatic hypertrophy (BPH). To improve patient selection, cystoscopy is mandated for both exclusion of urethral strictures, severity of prostatic hypertrophy, and evaluation of a bladder neck that if high, is preferable to exclude from treatment. But if the bladder neck obstructs only 50% of the bladder oriﬁce by placing the Cystoscope at the verumontanum level, what beneﬁt could we get from treatment with UroLift? The aim of this study is to compare two populations with BPH in the presence of slightly higher bladder neck versus those who do not have it.

Methods: We included 74 men from 2013 to 2023, affected by LUTS from severe symptomatic BPH evaluated by Interna-

tional Prostate Symptom Score (IPSS), with normal erectile function and ejaculatory function. Exclusion criteria were prostate larger than 80 cm3, bladder neck sclerosis, concomitant third prostatic lobe, and/or other cervical urethral obstruction or cancer. All patients, preoperatively, performed uroflowmetry (UFM) with peak flow (Q-max) and post void residual volume (PVR), digital rectal exam, transrectal prostate ultrasound to measure prostate volume (PV), PSA, and cystoscopy. Intolerant patients to preoperative flexible cystoscopy received sub arachnoid anesthesia and transurethral bladder catheter for one day. Follow-up was scheduled at 1–3–6 months. Analysis of each variable (Qmax, RPM and IPSS) for each follow up after surgery was divided in relation with the presence of slightly bladder neck. Data processing was performed with Kruskal-Wallis H Test using STATA 16 program.

Results: Study included 25 patients (group 1) without and 49 patients (group 2) with slightly higher bladder neck. Between the two groups, no significant difference in terms of age 54 vs 53 years (p = 0.9), prostate volume 29 vs 30 ml (p = 0.9) and number of implants 4 (2, 4) vs 3 (2, 4) (p = 0.2). The first analysis was carried out for each parameter in the preoperative time, at 1, 3 and 6 months after surgery. No difference between preoperative objective and subjective preoperative Q-max 9 vs 8.2 ml/s (p = 0.5), PVR of 58 vs 60 ml (p = 1) and IPSS 22 vs 21 (p = 0.4). At 1 month there were similar results for Q-max improvements 43% vs 23% (p = 0.055), a reduction of 91% vs 34% (p = 0.080) of PVR, a reduction of 54% vs 28% (p = 0.2) of IPSS. At 3 month there were similar results for Q-max improvements 49% vs 20% (p = 0.057), a PVR reduction of 100% vs 62.5% (p = 0.11), a reduction of IPSS of 54% vs 35% (p = 0.4). At 6 months no statistically differences for each parameter: improvements of Q-max (48% vs 31.7%, p = 0.5), reduction of PVR (100% vs 58%, p = 0.2) and reduction of IPSS (50% vs 45%, p = 1). Was observed 5 acute urinary retention treated with urinary drainage for 5 days. Only 4 patients underwent to transurethral resection of prostate, 1 of Group 1 and 3 of group 2.

Conclusions: Although the administration of UroLift in young patients suffering BPH in presence of slightly higher bladder neck is not yet contraindicated and limited data exist on its outcomes and complications, in cases where it is not particularly obstructive, it is possible to treat patients with LUTS with the same subjective and objective urinary results.

Funding: We have realized this abstract thanks to our.

BS1-12 LIM Kinase Inhibitor: a Novel Pharmacological Strategy in the Treatment of Mixed Symptoms in Mixed Lower Urinary Tract Symptoms?

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Presented By: Qingfeng Yu

Introduction: In male patients with lower urinary tract symptoms (LUTS), benign prostate hyperplasia (BPH) may cause voiding symptoms, while overactive bladder (OAB) suggestive BPH may cause storage symptoms. Combination therapy aims to target both prostate and bladder, however, the overall therapeutic effects are often insufficient, and the side-effects are intolerant. Therefore, a mutual therapeutic target exists both in prostate and bladder smooth muscle contraction in vitro. However, their effects in vivo remain
unclear. Here, we examined their effects in an BPH rat model and a bladder outlet obstruction (BOO) rat model.

Methods: BPH rats induced by testosterone propionate (TP) were treated with either SR7826 or LIMKi3 for 4 weeks, and BOO rats were established by partially sutured around the prostatic urethra and treated with either SR7826 or LIMKi3 for 2 weeks. The structure of prostate and bladder tissues was stained with Hematoxylin and Eosin (H&E), and Masson’s trichrome (MT), respectively. Contractions of detrusor were examined in an organ bath. In vivo detrusor contraction was assessed by a urodynamics testing.

Results: BPH rats treated with either SR7826 or LIMKi3 (1mg/Kg) were observed to have reduced prostate weights by 0.164 ± 0.097 g (P < 0.01) and 0.114 ± 0.058 g (P < 0.05) when compared with control groups, respectively. Meanwhile, in both treatment groups, HE staining of prostate tissue revealed a significant reduction in TP-induced epithelial thickness thickening. The average bladder weight from BPH rats treated with LIMKi3 was observed to be significant reduced by 0.020 ± 0.009 g (P < 0.05) compared with control group, while in SR7826 group, the bladder weight revealed similar to the control group. MT staining in the bladder wall reveal a similar structure in both treatment groups compared with control group. In both treatment groups, acetylcholine, acetyl-β-methylcholine, and carbachol (0.1 – 1000 μM) induced concentration-dependent bladder smooth muscle contractions revealed that were similar to the control group. In BOO rat experiment, treatment with either SR7826 and LIMKi3 significantly reduced the maximum detrusor pressure by 32.2 ± 4.8 and 32.8 ± 3.4 cmH2O compared with the control group, respectively (both P < 0.05).

Conclusions: Both SR7826 and LIMKi3 reduced prostate hyperplasia in vivo in a BPH rat model, and reduced detrusor pressure in vivo in a BOO rat model. Our study points to a novel role of LIMKi in BPH in vivo, and an effect on the treatment with mix LUTS, as they showed inhibiting effect on the detrusor contraction only in the pathological condition. LIMKi inhibitor might be a promising therapeutic strategy for mix LUTS.

Funding: This work was financed by grants from the National Natural Science Foundation of China (Nos. 81900689 and 81870483).

BS1-13 Introduction of a Structured Reporting Protocol for Rezum Water Vapor Therapy and Application in a Real-world, Multiuser, High-Volume Center Cohort

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Presented By: Christian Wetterauer

Introduction: Rezum - water vapor therapy, is a promising minimally invasive option for treating prostatic enlargement. However, variations in its operative technique and documentation may impact patient outcomes and complicate data interpretation. We propose a Structured Reporting Protocol (SRP) for Rezum to standardize operative technique and documentation analysis. We applied this SRP in a real-world, high-volume, multiuser setting.

Methods: Expert urologists developed the SRP, including a diagram and checklist. We included all Rezum cases from December 2020 to September 2022, analyzing patient characteristics, operative notes, and operation videos in accordance with the SRP.

Results: Among 100 cases performed by 13 urologists, the average prostate volume (PVOL) was 59.2 ml (range: 20–220). Mean prostatic urethral length (PUL) was 2.9 cm (range: 1.5–6.5). Median lobe enlargement was treated in 87.5% of affected cases and intravesical prostatic protrusion in 54.0%. Injections ventral and dorsal to 3 and 9 o’clock in lithotomy position were observed in 10 cases. The average number of injections per case was 4.6 (range: 2–10). Median injection density (ml of PVOL/total injections) was 12.7 (range: 3.3–30). Median injection interval (PUL in cm/total injections) was 0.7 (range: 0.5–1.5). The study’s limitations include the lack of protocol validation and potential interobserver variability.

Conclusions: Our findings reveal considerable variability in both the number and locations of Rezum injections relative to PVOL and PUL, accompanied by a noticeable absence of detailed surgical reports. The proposed SRP could enhance surgical documentation and assist in evaluating treatment outcomes and failure risks.

Funding: none.

BS1-14 Prevalence of Transurethral Resection of the Prostate Complication among BPH Patients in Aseer Region, KSA

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Presented By: Abdulaziz Alami, FRCSC

Introduction: Benign prostatic hyperplasia (BPH) causes are still unclear but mostly it is a multifactorial and endocrine controlled disorder. Many theories recommend androgens including testosterone and related hormones to play a significant role in BPH. Both, stromal and epithelial elements of prostate may have a major role in tissues hyperplasia and cause BPH associated symptoms BPH is one of the most frequent diseases in old aged men and the most known cause of lower urinary tract symptoms. Transurethral resection of the prostate, or TURP for short, is a pioneering surgical technique for treating an enlarged prostate gland. Performed through a minimally invasive endoscopic approach, it stands as one of the first major surgeries of its kind.

Methods: A retrospective record-based study was conducted including all male patient who had BPH and treated by TURP in Aseer region Saudi Arabia during the period from June 2016 to June 2021 Patients medical files were reviewed and clinical data were extracted using pre-structured data extraction sheet. Clinical data including post operative complications, management methods and onset of complications were extracted for each patient. Route of admission besides surgery duration were also extracted. The study was approved from regional committee of research ministry of health Saudi Arabia.

Results: A total of 150 patients were included with complete clinical data. Patients ages ranged from 49 to 100 years with mean age of 70.9 ± 9.3 years old. Post TURP complications among study patients, Aseer region, Saudi Arabia. The most
reported complications were bleeding/haemorrhage (6%), urinary retention (5.3%), clot retention (2%), BPH recurrence (4.7%), urethral strictures (2%), and urinary tract infection (UTI) (2%). Pots TURP complications were reported among all patients who were referred from different settings compared to 66.7% of those who were admitted from ER with recorded statistical significance (P = .049).

Conclusions: In conclusion, the current study revealed that TURP associated complications were not uncommon where one out of each five patients experienced any of the complications. Haemorrhagic complaints and urine retention were the most reported complications.

Funding: No external funding was received for this research.

BS1-15 Post Operative Ureteral Strictures Treated with Paclitaxel + Dextran Coated Balloon. Preliminary Results

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1Uroplastia Uruguay, 2Hospital Alemán

Presented By: Pablo Contreras, MD

Introduction: Ureteral strictures (US) are becoming more frequent following endourologic or laparoscopic procedures. Even there are described endoscopic, laparoscopic or open procedures to treat US, in general the success rate is low and recurrences are frequent. The safety and efficacy of Drug-Coated Balloon have been described and approved for urethral strictures. The aim of our study was to assess the safety and efficacy of paclitaxel + dextran coated balloons (PDCB) for endoscopic treatment of post operative ureteral strictures.

Methods: Between January 2018 and January 2024, an off label prospective trial was carried out. Data from two centers: Uroplastia Uruguay (Montevideo, Uruguay) and Hospital Alemán (Buenos Aires, Argentina) were recorded for this report. All patients had post operative strictures, 7 post laparoscopic pyeloplasty and 14 post ureteroscopy. All patients were treated following the same protocol. The steps were the following, a retrograde pyleiography, 5 minutes balloon (non drug coated) dilation VIAR-RX Baltic Medical. The balloon used was 6 millimeters, insuflated at 10 atmospheres of pressure, after that a 5 minutes dilation with paclitaxel + dextran coated balloon was performed (ELUTAX Baltic Medical). The balloon used was a 6 millimeters, at 10 atmospheres of pressure. No ureteral stents or open end stents were used after the procedure. Success was defined as the absence of hydronephrosis in ultrasound or contrasted CT scan at 3 months of the procedure.

Results: Data from 21 consecutive patients were recorded. There were 11 women and 10 men. Mean age was of 54 years and median follow-up was 14 months. Complication rate was 19% (Clavien-Dindo 3b), back pain in 3 patients and renal function impairment in 1 patient. The treatment for this 4 patients was a double J insertion. Success rate was 90%.

Conclusions: In this preliminary report, post operative strictures treated with paclitaxel + dextran coated balloons had a high success rate and low grade complications. Longer follow-up and multicenter trials are needed.

Funding: None.

BS1-16 Patients with Preoperative Escherichia Coli Infection had higher Surgical Site Infection Rate after Anastomotic Urethroplasty Compared with other Pathogens Infection: A Propensity Score Matching Analysis

Pan Hao1

1Sichuan University HuaXi Hospital

Presented By: Pan Hao

Introduction: Although many studies on the bacterial species of urinary tract infection have been published, it is not clear which bacteria are more likely to cause postoperative infection in urinary tract surgery. The aim of this study was to assess whether preoperative Escherichia Coli (E. coli) infection was associated with higher surgical site infection (SSI) and postoperative fever (POF) rates compared to other-pathogens infection after anastomotic urethroplasty respectively.

Methods: Patients who underwent treatment of bulbar or posterior urethral strictures using an excision and primary anastomosis (EPA) approach between 2011 and 2019 were retrospectively screened. Multivariable logistic regression and the least absolute shrinkage and selection operator (LASSO) regression analysis were used to identify potential risk factors. Propensity score matching (PSM) method was performed to achieve baseline-balanced cohort to reduce potential bias. The E. coli and other-pathogens infection groups were compared for SSI and POF.

Results: 19 (3.8%) and 61 (12.1%) of 506 patients experienced SSI and POF, respectively. On multivariable analysis and LASSO regression, preoperative positive urine culture was the independent risk factor in predicting SSI (p < 0.001) and POF (p < 0.001). Among 302 preoperative positive urine cases, E. coli infection proportion ranked the first place (26.5%). After PSM, SSI rates for the E. coli group versus the other-pathogens group were 29.2% versus 2.1% (p < 0.001). Similarly, POF rates were higher in the E. coli infection group (28.4% versus 10.8%, p < 0.001) compared with the other-pathogens infection group.

Conclusions: Compared with other-pathogens infection, preoperative E. coli infection increased the risk of SSI and POF rate after EPA urethroplasty. Future studies were expected to explore if preoperative antibiotic prophylaxis and treatment should be enhanced in those patients.

Funding: This study was supported by 1.3.5 project for disciplines of excellence, West China Hospital, Sichuan University (ZY2016104, ZYJC18015 and ZYGD18011).

BS1-17 Combined Multi-Omics Analysis Reveals the PADI4-GSK3β-EMT Pathway Contributes to Hypospadias Formation

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Presented By: Yu Mao, MD

Introduction: Hypospadias is one of the most common congenital anomalies of the urogenital system. Worldwide, hypospadias occurs in 1 in 200-300 male live births. Due to the abnormal opening of the urethra, patients with hypospadias are often unable to stand up to urinate, and the curvature of the penis can lead to problems in adulthood, such as pain during sex or inability to insert the penis into the vagina. These conditions not only cause great physical harm to the patient, but also lead to a range
of physical and psychological problems. At present, research into hypospadias is mainly focused on surgical approaches, and the development of surgical treatment techniques has been a major achievement. In recent years, an increasing trend in the number of reported cases of hypospadias has been observed, but there are still many unexplored areas in the research of the aetiology and molecular mechanisms of hypospadias, resulting in a lack of systematic guidelines and preventive measures for the prevention of hypospadias in maternal and child health care. Normal human urethral development occurs between 5 and 15 weeks of gestation. The mechanism of its occurrence is currently considered by the mainstream scientific community to be the “double zip” theory. Zip closure is an androgen-dependent process, and the most critical urethral closure is influenced by three mechanisms: (1) epithelial-mesenchymal transformation (EMT), (2) apoptosis, and/or (3) cell migration. Epithelial-mesenchymal transition (EMT) is a biological process characterized by changes in cell morphology, loss of cell polarity, reduced cell-cell adhesion, and enhanced cell migration and invasion capabilities. During EMT, epithelial cells lose their characteristic polarity and intercellular connections, transitioning into mesenchymal cells with increased migratory and invasive abilities, accompanied by features such as collagen deposition and matrix degradation. In hypospadias, EMT plays a crucial role. Firstly, EMT participates in the physiological process of normal urethral formation in the human body. Following the mesenchymal transition of primitive urethral genital tubercle epithelial cells, it effectively promotes the fusion of urethral plates to form a normal urethral structure. Apoptosis is an important form of cell death, and properly regulated programmed cell apoptosis is essential for tissue and organ structure formation and cell differentiation during embryonic development. In the formation process of hypospadias, excessive apoptosis or insufficient programmed apoptosis of primitive urethral genital tubercles may lead to the failure of normal urethral structure formation. Cell migration is the process of cell movement within or outside the body. Cells undergoing intra-tissue migration often exhibit characteristics such as morphological changes, altered adhesive abilities, cytoskeletal reorganization, and increased secretion of proteases. Its role during embryonic development is equally critical, particularly influencing the formation of tissue hierarchical structures and early connective tissue network construction. Among these, the EMT process has received much attention, and as the molecular biological pathways involved in this process. However, the molecular biological pathways by which the various pathogenic factors interfere with the normal EMT process and ultimately lead to the formation of hypospadias are still unknown, and this will be one of the main concerns of this study. Many previous basic studies in the field of hypospadias have obtained exciting results, but the existing conclusions are often based on a single genome-wide association study (genome-wide association study, second-generation sequencing of peripheral blood somatic cells, DNA methylation sequencing, transcriptome, proteome sequencing, etc.) to search for molecular targets and pathways related to hypospadias, and most of the molecular targets obtained are located in androgen- and estrogen-associated pathways, and there are certain limitations. To solve this problem, based on the previous literature, the present study will be the first to employ multi-omics (genome and transcriptome) joint analysis to screen the major molecular targets to obtain more accurate results, and then further validate the results of multi-omics joint analysis by employing genetic intervention and small molecule inhibitor intervention in cellular and animal models.

Methods: 1. Omics-based Joint Analysis to Identify the Target Molecular Pathway (PADI4-GSK3β-EMT) Under the premise of obtaining clinical ethics approval and informed consent, urine epithelial tissue samples from the urethral plate of 5 patients with perineal hypospadias and 5 patients with penile distal hypospadias were collected from June 2021 to October 2022 at Sichuan Provincial People’s Hospital for RNA extraction and transcriptome sequencing. Simultaneously, venous blood samples were collected from 19 patients with hypospadias during the same period for genome sequencing. Transcriptome Data Processing: The Counts data matrix obtained from transcriptome sequencing of human hypospadias samples was curated and log-transformed using the Limma package in R language for analysis. Significant differential gene screening was performed using the linear model provided by Limma. Genome Data Processing: Following sequencing of the samples, the raw sequencing reads were aligned to the human reference genome (human_B37) to detect variant information. Detected variants were then subjected to statistical analysis and annotation for further analysis and interpretation. During the candidate pathogenic mutation screening stage, selection was based primarily on harmfulness classification and sample conditions, including screening for dominant and recessive patterns and de novo mutations. Through this process, the final candidate pathogenic mutations were obtained. Subsequently, the two sets of data were subjected to joint analysis to identify key molecules and pathways. Exome Genome Data Processing: Similar to genome data processing, high-quality sequencing reads were aligned to the human reference genome (human_B37), and variant information was detected and annotated. Candidate pathogenic mutations were selected based on harmfulness classification and sample conditions, including screening for dominant and recessive patterns and de novo mutations. Through this process, the final candidate pathogenic mutations were obtained. 2. Multi-Angle Validation of the PADI4-GSK3β-EMT Target Molecular Pathway’s Existence Based on collected human urethral plate tissue from patients, immunohistochemistry, Western blotting, and other methods were used to validate the changes in the PADI4, GSK3β, and EMT-related molecular targets identified by multi-omics joint analysis. Utilizing the GEO datasets database, the transcriptome data of foreskin fibroblasts from hypospadias patients published by Xian-Yang Qin et al. in 2012 (GEO database: GSE35034) were retrieved and reanalyzed, with a focus on the novel hypospadias pathogenic gene PADI4 discovered in this study. Based on the Finnngen R10 data, Mendelian randomization studies were conducted using the Two sample MR package to analyze the potential causality between PADI4 gene upregulation and hypospadias phenotype using hypospadias GWAS data and PADI4 expression GWAS data from EGTQI data. 3. In Vitro Model Verification of PADI4 Regulation of EMT via GSK3β in Primary Human Urethral Epithelial Cells After transfecting primary human urethral epithelial cells with lentiviral vectors carrying high-expression plasmids of PADI4, changes in GSK3β and EMT markers E-cadherin and N-cadherin were observed via immunofluorescence and Western blotting. After transfecting primary human urethral epithelial cells with lentiviral vectors carrying high-expression plasmids of PADI4, nuclear-cytoplasmic fractionation was performed, and changes in the expression levels of PADI4 and GSK3β in the cytoplasm and nucleus were observed via Western blotting. Immunoprecipitation techniques were used to determine changes in the binding of GSK3β directly to PADI4 protein in primary human urethral epithelial cells overexpressing or inhibiting PADI4. Scratch assays were used to assess the migration ability of primary human urethral epithelial cells overexpressing
PADI4 and those with PADI4 inhibition. 4. Validation of PADI4 Upregulation Inhibiting EMT Leading to Hypospadias in SD Rat Animal Model Six SD rats were evenly divided into control and experimental groups. The experimental group received oral gavage of 1000 mg/kg/day diethylhexyl phthalate (DEHP) from gestational day 12 to day 18, while the control group received oral gavage of corn oil. On gestational day 19, the male fetal rats’ urogenital nodules were dissected, and their external morphology was observed under scanning electron microscopy, and urethral closure status was assessed using HE staining. Changes in PADI4, GSK3β, and E-cadherin were clarified using immunohistochemistry and Western blotting. Sixteen 16-day-old male SD rat urogenital nodules were evenly divided into control, monoethylhexyl phthalate (MEHP), dimethyl sulfoxide (DMSO), and PADI4 inhibitor groups. After 48 hours of culture, the urethral plate closure status was observed under a dissecting microscope. Ten SD rat gestational sacs were evenly divided into experimental and control groups. The experimental group received intra-amniotic injection of 8 × 10^6 lentiviral particles carrying PADI4 overexpression plasmids in each fetus at gestational day 13, while the control group received the same amount of empty lentiviral particles. On gestational day 19, the fetuses were delivered by cesarean section, and the male fetal rat urogenital nodules were dissected for observation of urethral closure status under scanning electron microscopy and HE staining, and changes in PADI4, GSK3β, and EMT were evaluated using immunohistochemistry and Western blotting.

Results: 1. combined bi-omics analysis to find the target molecular pathway (PADI4-GSK3β-EMT) The transcriptome differential gene analysis identified a total of 1160 significant differential genes. The final genomic analysis identified a total of 1322 potential gene targets that may be associated with severe hypospadias. A combined bi-omics analysis and literature review revealed a correlation between the PADI4 gene and the GSK3β EMT process, thus PADI4 was selected as the key molecule in this study. A transcriptome sequencing dataset of urethral hypospadias tissue from other studies was obtained and secondary bioinformatics analysis showed that PADI4 expression was also increased in foreskin fibroblasts from human patients with urethral hypospadias. Mendelian randomisation analysis combining the newly published hypospadias GWAS data in the FinnGen R10 database with gene expression GWAS data from the EQTL database showed that PADI4 may contribute to the development of hypospadias. Immunohistochemistry and WB results showed that the expression of PADI4, GSK3β and E-cadherin was increased in the urethral plate epithelium of patients with perineal hypospadias compared to the distal penile type, whereas the expression of N-cadherin was decreased. 2. GSK3β was the target of PADI4 in human primary urethral epithelial cells, and PADI4 could regulate EMT through GSK3β. Using immunofluorescence to observe the localisation of PADI4 protein in human urethral epithelial cells, it was found that not only was PADI4 protein uniformly overexpressed, but the increased PADI4 protein also appeared to be significantly translocated into the nucleus. GSK3β, which is co-expressed with PADI4 protein, also showed a synergistic increase and translocation into the nucleus. The above findings in immunofluorescence were supported by WB results of protein nuclear separation, i.e. after overexpression of PADI4, not only was PADI4 protein translocated into the nucleus, but GSK3β was also synergistically increased and translocated into the nucleus. Co-immunoprecipitation (Co-IP) showed that there was a significant increase in the amount of protein detected compared to IgG, both in the detection of GSK3β under anti-PADI4 conditions and PADI4 under anti-GSK3β conditions, and at the same time, in PADI4 overexpressing cells, WB results showed that GSK3β and E-cadherin expression increased and N-cadherin expression decreased after increasing PADI4 expression in human primary urethral epithelial cells. Cell migration (closure) was significantly inhibited in PADI4-overexpressing cells in the scratch assay, while this phenomenon was restored by the use of a PADI4-specific inhibitor. 3. Overexpression of PADI4 in rats was shown to lead to hypospadias formation by inhibiting EMT. Immunohistochemistry and WB results under DEHP model conditions showed significant upregulation of PADI4, GSK3β and E-cadherin protein expression, while N-cadherin expression was reduced. In vitro MEHP culture of male fetal rat external genital nodes showed that the phenotype of urogenital nodes in littermates with MEHP-induced hypospadias was significantly alleviated by the use of GSK484, a selective inhibitor of PADI4. Lentiviral transfection after intra-amniotic lentiviral injection resulted in one case of hypospadias in four cases, and PADI4-overexpressing lentiviral transfection resulted in hypospadias in all five cases, which was statistically significant, and the hypospadias phenotype was significantly more severe in the PADI4-overexpressing group.

Conclusions: 1. The PADI4-GSK3β-EMT pathway is expressed in the external genital nodes of both human urethral hypospadias patients and DEHP-induced rat urethral hypospadias model, and may be a key pathway contributing to the development of urethral hypospadias. 2. In human urethral epithelial cells, GSK3β is a downstream target molecule of PADI4, and PADI4 can regulate the concentration of GSK3β in the nucleus of the cell, which in turn alters the ability of cellular EMT and thus influences the migratory ability of the cell. 3. High expression of PADI4 leads to a decrease in the epithelial EMT of the rat urethral plate thus leading to urethral hypospadias.

Funding: Sichuan University West China Hospital Discipline Excellence Development 1-3-5 Project (ZYGD18011) ‘Molecular Mechanisms of Key Diseases in the Urinary System Development and Progression Analyzed by High-Throughput Multi-Omics Platforms’.

BS1-18 Urethrography And Catheter Removal After Male Urethroplasty: Is Antibiotic Coverage Necessary?

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Presented By: Ragaae Atamna, MD

Introduction: After reconstructive surgery of the male urethra, urethrography include peri-catheter, retrograde and voiding is commonly performed before catheter removal, to assure healing of the suture lines. Currently, there is limited data regarding the need for urine culture and antibiotic treatment before the urethrography. Preventive empirical antibiotic treatment prior to urethrography is commonly given although its value remains controversial. Herein we address this question.

Methods: The study was conducted on database review of 243 male patients who underwent urethroplasty between 03.2005 and 06.2023. Patients who developed an infectious process while carrying a catheter were excluded. The patients were divided into two groups. Group 1 (until 06.2016) received a single oral dose of 500 mg. of Ciprofloxacin prior to the urethrography, group 2 (since 07.2016) did not receive antibiotic. Demographic data, length and location of stricture, surgical methods were examined, and infectious episodes within 30 days after urethrography and catheter removal were compared
Results: A total of 233 male patients who underwent urethroplasty were reviewed (118 and 115 patients were in group 1 and 2 group respectively). The median age in group 1 was 57.7 years (range 18–100 years) and stricture median length was 3.02 cm (range 0.5–15 cm). The median age in group 2 was 60.6 years (range 18–94 years) and stricture median length was 2.8 cm (range 0.5–14 cm). Four patients (0.03%) in group 1 and 8 patients (0.06%) in group 2 developed a complication within 30 days after catheter removal. In the 1st group, 2 patients had UTI and 2 other developed a fistula, in the 2nd group 5 patients had UTI, 2 other had testicular infection and a single patient developed fistula.

Conclusions: The percentage of infections in both groups is minimal, therefore preventive antibiotic treatment has no effect on reducing the incidence of infections and is not warranted prior to urethrography and catheter removal.

Funding: None.

BS1-19 The 7-year Itch: A Case Report on Extra-mammary Paget’s Disease of the Scrotum Treated with Wide Scrotal Excision, and V-Y Advancement Flap for Scrotal Reconstruction

Alfonso Victor Luna1, Michael Eufemio Macalalag1, Karl Marvin Tan1, Eli Paulino Madrona1, Meliton Alpas III1, Rodney Del Rio1, Frances Monette Bragais1

1Veterans Memorial Medical Center

Presented By: Alfonso Victor Luna, MD, MBA

Introduction: Extramammary Paget’s disease (EMPD) is a rare malignancy of skin affecting the apocrine gland-bearing skin areas such as the scrotum and penis. It presents with vague dermatological symptoms initially and has a long latency period before evidence of cancer appears. Patient GS, 72 year-old Filipino male, came in with a 7 year history of an enlarging erythematous lesion at the left scrotum, associated with pruritus. Multiple consultations with a dermatologist, and therapy with multiple oral and topical antihistamines, antibacterials, antifungals and steroids did not resolve the lesion. Persistence prompted urology consult.

Histopathology revealed Extramammary Paget’s Disease of the Scrotum. Patient underwent chest and whole abdominal CT scan to assess for metastasis, noted negative results. Cystoscopy was done, with unremarkable findings. Patient underwent wide local excision of the scrotal lesion with rush frozen section, to ensure negative margins. On serial excision biopsy, microscopic examination by pathology noted positive paget cells, even on areas of the scrotum not grossly affected by the lesion. Patient was referred to plastic surgery for scrotal reconstruction. Patient underwent V-Y advancement flap.

Conclusions: There are no definitive guidelines outlining the management of EMPD. Key to the management is early detection, prompted by a comprehensive history and physical examination. Once the diagnosis has been made, multiple therapeutic options can be offered to the patient, depending on the extent and severity of the disease, which includes surgery for excision.

Funding: None.

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Funding: None.

BS2-01 Big Data: Multicenter Prospective Cohort Study of the Efficacy and Safety Prostate Histoscanning True Targeting Guided Prostate Biopsy

Yuriy Kim5, Alexander Vasilyev1, Pavel Arutyunyan2, Alexander Govorov3, Dmitriy Pushkar4

1A. O. Vasilyev, 2P. A. Arutyunyan, 3A. V. Govorov, 4D. Yu. Pushkar, 5Yu. A. Kim

Presented By: Yuriy Kim, PhD

Introduction: The effectiveness of a standard 12-core prostate biopsy largely depends on the experience of the doctor. The most promising, non - invasive methods of additional imaging in prostate biopsy is histoscanning. Using the last software “True Targeting” allows you to perform a targeted biopsy in real time. The purpose of the study is to evaluate the effectiveness of performing prostate biopsy under the control of histoscanning in the one-day stay unit.

Methods: From May 2020 to December 2023. In the one-day stay unit on the basis of 10 multidisciplinary clinics 3650 patients with suspected prostate cancer underwent transrectal histoscanning prostate biopsy with “True Targeting” software.

Results: The average prostate-specific antigen value was 13, 23 ng/ml (varied from 0.5 to 1900 ng/ml). The average age of the patients was 66 years, the average prostate volume was 54, 89 cm3. Primary biopsy was performed in 2997 patients (82%), repeated - in 658 patients (18%). The presence of prostate cancer in close relatives was noted in 146 patients (4%). Among them, prostate cancer was detected in 126 patients, which is 86%. Suspicious sites were mainly located in the anterior sections of the prostate, which are usually missed when
performing a standard transrectal biopsy. The overall incidence of prostate cancer was 64%, and with a standard biopsy this figure was 19%, while with a histoscan-targeted biopsy prostate cancer was diagnosed in 8% of cases. The average time of a transrectal histoscanning prostate biopsy is 16 minutes.

**Conclusions:** Overall, these findings suggest that transrectal histoscanning prostate biopsy is an efficient and effective method for detecting prostate cancer, especially in patients with a family history of the disease. The higher detection rate of prostate cancer in patients with suspicious sites in the anterior sections of the prostate highlights the importance of targeted biopsies in improving diagnostic accuracy. Transrectal histoscanning prostate biopsy appears to be a valuable tool for the early detection of prostate cancer, especially in high-risk patients. The ability to target suspicious sites in the anterior sections of the prostate can significantly increase the detection rate of prostate cancer and improve overall diagnostic accuracy. Further research and studies are needed to confirm these findings and determine the long-term benefits of histoscanning in the diagnosis and management of prostate cancer.

**Funding:** No financial relationships.

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**BS2-02 The Association Between Baseline Renal Function and the Aggressiveness of Renal Cell Carcinoma**

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Presented By: Nicolas Soputro, MD

**Introduction:** To investigate the relationship between the baseline preoperative renal function and the aggressiveness of renal cell carcinoma (RCC).

**Methods:** A retrospective review was performed on the IRB-approved database to identify all consecutive patients who underwent surgical management for suspicious or biopsy-proven malignant renal mass between 2014 and 2023. All surgical histopathology reports were reviewed to select for Clear Cell (ccRCC) and Papillary (pRCC) RCC cases. Statistical analyses were performed to evaluate the correlation between baseline preoperative renal function and the aggressiveness of the disease, as indicated by the Fuhrman nuclear grades, evidence of tumor invasion, and other features.

**Results:** Of the 5096 patients with RCC, ccRCC and pRCC were identified in 3723 and 634 patients, respectively. Higher baseline CKD stages were significantly correlated with higher nuclear grades in the ccRCC cohort (r = 0.086, 95%CI 0.053 to 0.120, p < 0.001), with the effect being more pronounced in patients who were younger (age <60 years) and obese (r = 0.141, 95% CI 0.068 to 0.213, p < 0.001). In addition, higher nuclear grades were also significantly associated with the presence of abnormal findings in the non-neoplastic kidney around the tumor (r = −0.052, 95%CI −0.091 to −0.012, p < 0.05), especially pertaining to vascular disease (r = 0.083, 95%CI 0.043 to 0.122, p < 0.001). In the pRCC cohort, while such correlations between CKD stages and nuclear grades were not evident, higher baseline CKD stages were significantly associated with multifocal tumors (r = 0.220, 95% CI 0.145 to 0.293, p < 0.001).

**Conclusions:** This study demonstrated the presence of an important interplay between preoperative renal function and the aggressiveness of RCC, as indicated by the statistically significant positive correlation between the baseline CKD stages and higher nuclear grades as well as the presence of other aggressive histopathological features of ccRCC. The results presented in this study can be useful in better appreciating the heterogeneity of the different RCC subtypes and help provide the foundation for future studies aiming to further investigate the likely multifactorial and bidirectional relationships between CKD and RCC.

**Funding:** None.

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**BS2-03 Accuracy of MRI-Ultrasound Fusion Biopsy: Concordance with Radical Prostatectomy Histology- a Multi-centre study**

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1Dartford and Gravesham NHS Trust, 2The Royal Marsden Hospital, 3Royal Marsden Hospital, 4University Hospitals of Derby and Burton NHS, 5Institution Royal Derby hospital, Derby UK

Presented By: Gaurav Sharma, Clinical Fellow Urology

**Introduction:** The use of MRI with ultrasound guided prostate biopsies enhances the detection rate of clinically significant prostate cancer. This study analyses the accuracy of pathological grade of prostate cancer diagnosed by software-guided MRI-ultrasound fusion biopsy, by comparing it to the final histological grade from prostatectomy specimen.

**Methods:** A review of 966 patients who underwent software MRI-Ultrasound fusion trans-perineal prostate biopsies using an elastic fusion system between 2021 and 2023 across 2 centres, was performed. One is a district general hospital and the other, a tertiary centre specialising in cancer care. The patients, who subsequently proceeded to radical prostatectomy (160 of the 966) after multi-disciplinary team meeting, were included in the study. We compared the overall ISUP (International Society of Urological pathologists) grading for the combined systemic and targeted biopsy specimens obtained by software-guided fusion technique with that of radical prostatectomy specimens.

**Results:** The average prostate size was 42cc and the median PSA was 6.5 ng/ml. The ISUP grade in biopsy specimen
Introduction: Bladder cancer is one of the most common urological malignancies. In about 75%, the disease is denoted as non-muscle invasive bladder cancer (NMIBC). The current international guidelines recommend a single instillation of intravesical Mitomycin C in the immediate postoperative period following TURBT to prevent recurrence. But recent NCCN guidelines, recommends gemcitabine as preferred agent for immediate intravesical therapy. Till date no Head-to-head randomized trial is available comparing intravesical gemcitabine versus MMC Following Complete Resection of NMIBC: Evaluation of Efficacy and Tolerance

Nitish Aggarwal¹, B Nayak¹
¹AIIMS New Delhi

Presented By: Nitish Aggarwal, MCh

Introduction: Bladder cancer is one of the most common urological malignancies. In about 75%, the disease is denoted as non-muscle invasive bladder cancer (NMIBC). The current international guidelines recommend a single instillation of intravesical Mitomycin C in the immediate postoperative period following TURBT to prevent recurrence. But recent NCCN guidelines, recommends gemcitabine as preferred agent for immediate intravesical therapy. Till date no Head-to-head randomized trial is available comparing intravesical gemcitabine with intravesical MMC which is the current standard of practice.

Methods: 2 arm randomized controlled trial - Arm A: Mitomycin C (Control) Arm B: Gemcitabine (Experimental). Patients were followed for Efficacy (Recurrence and Progression) and Tolerance (Adverse Events).

Results: During the 2 years of accrual (one year of enrolment and one year of follow up), a total of 100 patients met eligibility criteria and were randomized with 44 patients in gemcitabine arm and 48 patients in mitomycin arm being included in final analysis. At end of one year, 6 patients in the gemcitabine group (13.63%) and 9 patients in the Mitomycin group (18.75%) experienced a recurrence (P = 0.96). Similar results were found on subgroup analysis by stratifying patients into low, intermediate and high risk. Out of these 15 recurrences, only one patient in mitomycin C arm showed progression in T stage (LG Ta to LG T1). No progression was seen in respect to grade of tumour.

Conclusions: Both gemcitabine and mitomycin appears to be equally efficacious in reducing number of recurrences, though gemcitabine appears to cause less of dysuria and delayed healing at operative site on Check Cystoscopy.

Funding: This study was done at NHS England Trust hospital. No external funding was obtained.

BS2-05 Clinical Presentation, Management and Follow-up of Urachal Carcinoma: a Large, Tertiary Centre Experience over a 10-Year Period

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Presented By: Bingxuan Wang, MB, BCChir

Introduction: Urachal carcinoma is a rare and aggressive bladder cancer originating from the urachus, a vestigial structure of the allantois of no residue function after birth. Despite its typical involution, urachal remnants may persist and undergo malignant transformation. This cancer is often diagnosed at advanced stages owing to its anatomical location and is therefore associated with poor prognoses.

Methods: A retrospective review of records from a tertiary centre identified 12 patients with urachal carcinoma diagnosed between 2014 and 2023. Patient demographics and clinical information were analysed, including clinical presentation, investigation findings, stage, treatment modalities and clinical outcome.

Results: Patients, predominantly male, presented at a mean age of 55.1 years with haematuria as the most common initial symptom. All tumours were adenocarcinoma of enteric or mucinous subtypes. All patients who underwent surgery had partial cystectomies. Follow-up revealed three deaths due to urachal carcinoma. Metastases commonly involved the peritoneum, lymph nodes and lungs. Tumour stage was determined using both the Sheldon and TNM systems. Prognoses varied for different tumour stages with the greater mortality rates observed in higher tumour stages. Chemotherapy and radiotherapy were used post-surgery.

Conclusions: The management of urachal carcinoma represents a clinical challenge due to the rarity of both the disease itself and the published literature. The disease is usually aggressive and
while surgery and/or chemotherapy form the cornerstone of treatment, consensus management protocols are yet to be formulated. **Funding:** None.

**BS2-06** Neoadjuvant Treatment of Advanced CCRCC (cT2-4aN0-1M0) with Axitinib Combined with Toripalimab: A Multicenter Retrospective Study in China

Yongbao Wei¹

¹Fujian Provincial Hospital

Presented By: Yongbao Wei

**Introduction:** Clear cell renal cell carcinoma (CCRCC) is the most common malignant tumor of the kidney, and treatment options for patients remain limited. Axitinib and toripalimab have shown significant efficacy in the first line or late line treatment of CCRCC. However, the clinical effectiveness of their combined use as neoadjuvant therapy requires further investigation. This study aimed to evaluate the effectiveness and adverse reactions of axitinib combined with toripalimab treatment in Chinese CCRCC patients.

**Methods:** We conducted a multicenter, single-arm, retrospective study in China, including patients diagnosed with advanced CCRCC between 2018 and 2023. These patients received axitinib at a dosage of 5 mg, two times per day, combined with toripalimab at a dosage of 3 mg/kg, every two weeks. The neoadjuvant treatment regimen was administered for a total duration of at least three months. We collected clinical data, including tumor radical resectability rate, the rates of complete response (CR), partial response (PR) and stable disease (SD) (according to RECIST 1.1). The treatment-related adverse reactions were also analyzed.

**Results:** 24 cases were finally included. The median duration of the neoadjuvant therapy was 4 months (range from 3 to 7 months) and a median follow-up time was 14 months (range from 4 to 55 months). The tumor radical resectability rate was 88% (21/24). The rate of PR was 70.8% (17/24), the rest 29.2% were SD, without cases of CR or progressive disease. In addition, we observed 75.0% (18/24) treatment-related adverse, including hyperlipidemia, abdominal pain, diarrhea, fatigue, hypertension, diarrhea, and rash. All of them were Clavien-Dindo grade 1-2. These adverse reactions were effectively managed and did not lead to treatment discontinuation.

**Conclusions:** The results of our retrospective single-arm study suggest that the neoadjuvant treatment with axitinib combined with toripalimab may offer potential therapeutic benefits for CCRCC patients. However, further research and follow-up are required to validate these findings and gain a more comprehensive understanding of the occurrence and management of adverse reactions.

**Funding:** None.

**BS2-07** Outpatient based Management of NMIBC Bladder Cancer using TULA Under Local-Anaesthetic; 5 Year Risk Matched Outcomes

Hira Syed², James Aljoe¹, Mattew Deacon¹, Philip James¹, Sachin Agrawal¹

¹Ashford and St Peters NHS Foundation Trust, ²Ashford and St Peters NHS Foundation Trust United Kingdom

Presented By: Hira Syed

**Introduction:** Bladder Cancer is the 10th most common cancer with high disease recurrence rates of up to 60% and is associated with morbidity, multiple procedures and a high economic burden; often in an elderly and frail population. Whilst GA TURBT remains the gold standard, local anaesthetic outpatient based transurethral laser ablation of non-muscle invasive bladder cancer using digital flexible cystoscopes with a portable laser (1470nm/ 980nm) laser offers a safer alternate in low-risk patients and some intermediate/high- risk groups, especially in the elderly and frail when radical management is not an option.

**Methods:** A single centre non-randomised data set has been reviewed from 2017-2023 with EORTC NMIBC risk-matching for recurrence and progression (EAU Guideline 2022). Risks were stratified to calculate 5yr outcomes of recurrence and progression from the total cohort. Patients were risk stratified based on initial TULA procedure with no direct dataset available. Charlson and Canadian frailty index data were also used to help define frailty.

**Results:** A TULA dataset of 599 patients who underwent 1030 procedures over 7yrs was interrogated. 115 patients managed by TULA had 5 year follow up data available. Mean age was 76 years with Charlson comorbidity scores mean 3.2 and Canadian frailty mean 3.1. The risk match results of progression and recurrence for 5 yr for patients are below. 7 patient (6.8%) showed progression of disease. Of these 6 showed a grade progression however 1 showed stage progression of Ta-T1 disease.

**Conclusions:** TULA offers a safe alternate to GA TURBT for NMIBC in select groups, showing good results when risk matched to EORTC and EAU datasets over 5 years.

**Funding:** Nil.

**BS2-08** Novel Biomarkers based on Plasma cfDNA Methylation Profiles for Predicting Prostate Cancer Occurrence and Metastasis

Kaoqing Peng¹, Di Gu¹, Xuezhi Long¹, Mingzhao Li¹, Yubo Wang¹, Yueting Huang¹, Qi Zhang², Weisi Chen³

¹Department of Urology, The First Affiliated Hospital of Guangzhou Medical University, Guangzhou Provincial Key Laboratory of Urology, ²NanShan College, Guangzhou Medical University, ³Guangzhou Medical University
**BS2-09 Holmium Laser Versus Transurethral Resection of the Bladder Tumor for Non-Muscle Invasive Bladder Cancer: a 2-Year Follow-up Clinical Trial**

Mohammad Mohsen Mazloumfard², Sheida Malekian¹, Mohammad Reza Razzaghi²

¹Department of Internal Medicine, Modarres Hospital, Shahid Beheshti University of Medical Sciences, ²LASER Application in Medical Sciences Research Center (LAMSRC), Shahid Beheshti University of Medical Sciences

Presented By: Mohammad Mohsen Mazloumfard, MD

**Introduction:** The epigenetic modification of cell-free DNA (cfDNA) methylation has been found to carry distinct cancer-specific patterns across various cancer types, detectable within patient plasma. Nonetheless, comprehensive investigations into cfDNA methylation concerning prostate cancer (PCa) remain relatively scarce.

**Methods:** We developed PCa-Detect, an ensemble model that combines deep learning and machine learning frameworks. This model leverages both tumor-informed and tumor-naive cfDNA methylation signatures from PCa patients, thereby enabling the utilization of cfDNA methylation for the prompt identification of early-stage PCa as well as the discernment of metastatic status. For early-stage PCa diagnosis, we trained the model with 172 plasma samples and 43 tissue samples, and then evaluated the performance of the models on 172 plasma training samples iteratively.

**Results:** The AUROC (area under receiver operating characteristic curve) of the PCA diagnosis model was 0.893, with the sensitivity of 85.71% and specificity of 83.33%. AUROC was 0.812 when sample PSA ranges from 4 to 20. The diagnosis model demonstrated AUROC of 0.885, sensitivity of 80.85%, and specificity of 81.63% in the validation cohort of 47 non-metastasis and 49 non-cancer samples, as the AUROC was 0.859 for samples’ PSA ranging from 4 and 20. The PCA metastasis model was trained with 232 plasma samples and 332 tissue samples, demonstrating AUROC of 0.932, sensitivity of 92.42% and specificity of 87.14% on 70 non-metastasis and 66 metastasis modelling samples by iterative evaluation. To cutoff the expense of PCA metastasis test, we further designed two-gene methylation-specific qPCR test, and showed a sensitivity of 87.04% and specificity of 93.75% in the validation cohort of 108 metastasis and 64 non-metastasis samples.

**Conclusions:** In conclusion, our PCA diagnosis and metastasis test, integrating both tumor-inform and tumor-naive sources, exhibits exceptional performance in both the early diagnosis and the detection of metastasis in prostate cancer, shedding light for the future assessment and application of cfDNA methylation in understanding the occurrence and metastasis of PCa.

**Funding:** None.

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**BS2-10 Pelvic Floor Kinesiology During the Perioperative Period of Robotic Radical Prostatectomy. Does it Improve Continence?**

Mariela Montanile², German Imfeld¹, Wilmer Soliz², Horacio Sanguinetti², Melina Cordoba¹, Norberto Bernardo³

¹Centro Argentino de Urología, ²Clínica San Camilo/Centro Argentino de Urología, ³Clínica San Camilo and Centro Argentino de Urología

Presented By: Mariela Montanile, Fellow in endourology

**Introduction:** Radical prostatectomy is the primary curative treatment option for patients with localized prostate cancer. However, the alteration of continence mechanisms may lead to complications. Pelvic floor muscle training is useful in reducing the incidence of incontinence. The aim of this study was to analyze the impact of perioperative pelvic floor muscle training through a kinesiology protocol on the rate of continence and postoperative characteristics and complications of the HoLRBT and TURBT groups were compared (table 1). The data of operation time, obturator nerve reflex rate, bladder perforation, bladder irrigation, catheterization time, hospital stay, and 1, 3, 6, 12, 18, 24 months recurrence free survivals were considered in two groups.

**Results:** There was no significant difference in operative duration among the two groups. Compared with the TURBT group, HoLRBT group had fewer intraoperative and postoperative complications, including obturator nerve reflex, transient hematuria, and postoperative bladder irritation (table 2). Patients in the HoLRBT group had less catheterization and hospitalization time in comparison to those in the TURBT group. There were no significant differences in the overall recurrence rate among the TURBT and HoLRBT groups.

**Conclusions:** The treatment of choice in patients with non-muscle invasive papillary urothelial carcinoma is TURBT. According to our study HoLRBT, as an alternative approach for TURBT, offers a safe and feasible procedure in the management of patients with papillary urothelial and the rate of intraoperative events such as obturator nerve reflex and bladder perforation and bleeding has been less observed than TURBT.

**Funding:** The authors do not have any proprietary interests in this study.
quality of life in patients with prostate cancer treated with robotic radical prostatectomy (RRP).

**Methods:** A total of 37 patients with prostate cancer who underwent RRP between March 2021 and March 2022 were included in this retrospective study. Twenty patients who underwent a perioperative kinesiology protocol (group K) were compared to 17 control patients who did not receive kinesiology training (group C). The kinesiology protocol consisted of 5 preoperative sessions (including active kinesiology and non-invasive electromagnetic therapy) and 10 postoperative sessions starting on the eighth day after removal of the urinary catheter. To ensure reliable comparisons between groups, clinical records were reviewed for demographic data, as well as for continence, defined as not using a safety pad. To assess quality of life, the ICIQ-SF questionnaire was used and patients were contacted via telephone.

**Results:** The results of this study showed that the continence rate was significantly higher in group K compared to group C (75.0% versus 41.2%, p = 0.041), and that the frequency of “no impact on quality of life” was also significantly higher in group K compared to group C (75.0% versus 35.3%, p = 0.019). After adjusting for age, the association between the groups and the frequency of “no impact on quality of life” remained significant (p = 0.03). These findings suggest that group K had a higher rate of continence and better quality of life than group C.

**Conclusions:** Implementing a perioperative kinesiological protocol has demonstrated improved postoperative continence and quality of life for patients with prostate cancer treated by radical retropubic prostatectomy. These findings suggest that the use of such a protocol can have potential benefits for this population, and could be considered as part of their treatment plan.

**Funding:** None.

### BS2-11 Low-dose Abiraterone in Combination with Apalutamide Offers Potential Survival Benefits as a Late-Stage Treatment for mCRPC Patients without BRCA1/2 Mutations

Yongbao Wei

1Fujian Provincial Hospital

Presented By: Yongbao Wei

**Introduction:** The PROfound and PROpel studies marked a new era in targeted therapy but faced challenges as a first-line treatment for non-selective mCRPC. This study reports a series of cases where low-dose abiraterone in combination with Olaparib was employed as a late-line treatment for mCRPC patients lacking BRCA1/2 mutations, introducing a novel treatment option for this patient subset.

**Methods:** We conducted a retrospective analysis of patients aged 18 and above with advanced prostate acinar adenocarcinoma who were diagnosed and treated by the Alliance for the Diagnosis and Treatment of Prostate Cancer in Fujian province, involving 45 medical centers, from January 2015 to August 2023. Eligible patients for this study met the criteria of receiving a minimum of 3 months of treatment with abiraterone (250 mg daily) plus prednisone (5 mg twice daily) and Olaparib (300 mg twice daily), and underwent at least one genetic test that excluded BRCA1 or BRCA2 mutations.

**Results:** A total of 23 patients were enrolled, with a median age at initial diagnosis of 69 years (range 64 to 79 years) and cancer stages ranging from T2 to 4N1M0-1b, Gleason scores between 8 and 10, and a median initial prostate-specific antigen (PSA) level of 191.46 ng/ml (range 4.5 to 429.23 ng/ml). Each patient had undergone at least two or more lines of medication therapy, with a median of four lines (range 2 to 7 lines) before starting Olaparib plus abiraterone. The median time from initial diagnosis to mCRPC was 17 months (range 9 to 23 months). Prior to this combination therapy, they were staged as T2-4N1M1b-1c, with seven having M1b and one having M1c (multiple lung metastases). Median PSA levels were 38.45 ng/mL (8.20 to 2502.36 ng/ml) before the combination therapy and 7.43 ng/mL (0.01 to 543.02 ng/ml) at the final follow-up. The median follow-up was 49.5 months (range 22 to 104 months), and the median progression-free survival (PFS) was 12.5 months (range 7 to 19 months) based on PSA levels and symptom-free progression. None of these patients experienced Grade 3 or higher adverse events; the most common side effects were related to the gastrointestinal tract, anemia, and fatigue, with no unreported adverse events observed.

**Conclusions:** This study presents the first evidence that low-dose abiraterone in combination with Olaparib could be a viable late-line treatment option for selected mCPRC patients without BRCA1/2 mutations, demonstrating a manageable safety profile. Further prospective case-control studies with larger sample sizes are warranted to validate the benefits of this novel combination therapy.

**Funding:** None.

### BS2-12 Comparative Analysis of Prostate Biopsy Techniques at a District General Hospital: MRI-Ultrasound Software Fusion Versus Cognitive Fusion

Monish Patil

1Dartford and Gravesham NHS Trust, 2University Hospitals of Derby and Burton NHS

Presented By: Monish Patil

**Introduction:** Fusion of MRI with ultrasound has enabled urologists to evolve from random systematic prostate biopsies to more precise and targeted ones. There are three methods of achieving this fusion: Cognitive fusion, MRI-Ultrasound software fusion and in-bore fusion. In this study, we compare the results of software fusion and cognitive fusion techniques.

**Methods:** MRI-ultrasound software fusion for prostate biopsies has been recently adopted at our District General hospital. We retrospectively compared the data of initial 150 patients who underwent biopsies using this technique with that of last the 150 patients who had cognitive fusion biopsies. All biopsies were performed by trans-perineal approach. The same operators performed biopsies in both arms of the study. We used an elastic fusion system for software fusion.

**Results:** The average PSA and median prostatic volume in software fusion arm were 11.6 ng/ml and 52cc compared to 10.5ng/ml and 52cc in the cognitive fusion arm, respectively. The average number of cores taken during software fusion biopsy were 11.6 ng/ml and 44cc compared to 10.5ng/ml and 52cc in the cognitive fusion arm, respectively. The same operators performed biopsies in both arms of the study. We used an elastic fusion system for software fusion.

**Funding:** None.
diagnosed with prostate cancer by software fusion. Similarly, 68.7% (n = 103) patients were diagnosed by cognitive biopsy. However, the percentage of clinically significant cancer detection was significantly higher in software fusion group (82.2%) as compared to cognitive group (71.8%).

Conclusions: MRI fusion biopsies have significantly improved cancer detection rates for clinically significant cancers even in early stages of learning curve. • Lesser number of cores are required which signifies more accuracy and is beneficial for the patients. • The diagnostic efficacy is expected to further improve as the operators gain more experience.

Funding: This study was conducted at NHS England Trust hospital. No external funding was obtained.

BS2-13 A Retrospective Cohort Study Comparing Energy Sealing Devices and Intestinal Staplers Versus Traditional Hand-Sewn Anastomosis and Clinical Outcomes in Radical Cystectomy

Donnel Guenter Rubio¹, Rudolfo De Guzman¹

¹National Kidney and Transplant Institute Philippines

Presented By: Donnel Guenter Rubio, MD

Introduction: Bladder cancer is one of the most common malignancies of the urinary tract, accounting to 3% of global malignancies, with more than 90% diagnosed with ages 55 years and above. The strongest risk factor identified worldwide is still smoking accounting to 50-65% of cases. Radical cystectomy is the cornerstone in the management of muscle-invasive bladder cancer, traditionally incorporates hand-sewn anastomosis in the surgical process. However, recent advances in surgical technology have introduced energy sealing devices and gastrointestinal staplers as potential tools for this operation, which may provide increased efficiency and improved outcomes. The objective of this study is to evaluate the clinical safety and efficacy of using energy sealing devices and gastrointestinal staplers in patients undergoing radical cystectomy compared to traditional methods.

Methods: This is a retrospective study that evaluates the clinical safety and efficacy of using energy sealing devices and gastrointestinal staplers in patients who underwent Radical Cystectomy. Records of patients who underwent Radical Cystectomy at the National Kidney and Transplant Institute from 2012-2022 were reviewed. Patient demographics include age, gender, ASA classification, preoperative hematocrit and hemoglobin levels, initial histopathologic diagnosis, clinical stage and if neoadjuvant chemotherapy was given or not. Intraoperative characteristics include operative time, urinary diversion used, estimated blood loss, blood transfused, pathologic and lymph node status. Outcomes including complications were reported using the modified Clavien Dindo scoring for Radical Cystectomy.

Results: A total of 173 patients underwent energy sealing devices and intestinal staplers and 18 underwent traditional hand-sewn anastomosis from 2012 to 2022. The mean age of patients who underwent traditional hand-sewn anastomosis is significantly higher (p = 0.020) than those who underwent energy sealing devices and intestinal staplers, though sex do not differ (p = 0.796) between the two treatments. All patients had ASA of 0–2. There were no significant differences in the hemoglobin (p = 0.884) and hematocrit (p = 0.661) before the operation, as well as the histopath tests (p > 0.05). The mean OR time of energy sealing devices and intestinal staplers is significantly less (p < 0.001) compared to traditional hand-sewn anastomosis. On the average, the OR time of energy sealing devices and intestinal staplers is less by 76.6 minutes [95% CI: 66.1 to 87.0], compared to traditional hand-sewn anastomosis. The diversion do not differ (p = 0.149) between the two groups. Additionally, the estimated blood loss is significantly less (p < 0.001) to patients under energy sealing devices and intestinal staplers, at an average, by 247.7 mL [95% CI: 160.8 to 335.1]. There is also significantly less (p = 0.014) number of energy sealing devices and intestinal staplers patients needed blood transfusion compared to traditional hand-sewn anastomosis. The pathologic stage (p = 0.833) and lymph nodes (p = 0.129) found during the operation do not differ between the two groups. The Clavien-Dindo stage classification of the two groups did not differ (p = 1.000). The number of days until diet resumes is significantly shorter for energy sealing patients (p < 0.001), at an average, by 1.9 days [95% CI: 1.6 to 2.2] compared to traditional hand-sewn anastomosis patients. Moreover, the length of hospital stay is shorter, at an average, by 0.9 days [95% CI: 0.3 to 1.5; p = 0.004] for energy sealing patients. The number of patients who underwent reoperation (p = 1.000) did not differ among the two groups.

Table 1 Intraoperative Comparison

<table>
<thead>
<tr>
<th>Table 1 Intraoperative Comparison</th>
<th>Energy Sealing</th>
<th>Traditional</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR time (mins)</td>
<td>283.7 ± 22.0</td>
<td>360.2 ± 13.9</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Divider</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not identified</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td></td>
</tr>
<tr>
<td>Pelvic conduit</td>
<td>173 (100%)</td>
<td>16 (88.9%)</td>
<td>0.149</td>
</tr>
<tr>
<td>Nodoblast</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td></td>
</tr>
<tr>
<td>Continent Cutaneous</td>
<td>0 (0%)</td>
<td>1 (5.6%)</td>
<td></td>
</tr>
<tr>
<td>EBL (mL)</td>
<td>1452.9 ± 176.4</td>
<td>1700 ± 197.7</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>121 (69.9%)</td>
<td>18 (100%)</td>
<td>0.014</td>
</tr>
<tr>
<td>No</td>
<td>52 (30.1%)</td>
<td>0 (0%)</td>
<td></td>
</tr>
<tr>
<td>Pathologic stage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T0, Ta, Tis, T1</td>
<td>9 (5.2%)</td>
<td>1 (5.6%)</td>
<td>0.833</td>
</tr>
<tr>
<td>T2</td>
<td>156 (99.2%)</td>
<td>17 (94.4%)</td>
<td></td>
</tr>
<tr>
<td>T3</td>
<td>7 (4%)</td>
<td>0 (0%)</td>
<td></td>
</tr>
<tr>
<td>T4</td>
<td>1 (0.8%)</td>
<td>0 (0%)</td>
<td></td>
</tr>
<tr>
<td>Lymph node</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>51 (29.5%)</td>
<td>9 (50%)</td>
<td>0.129</td>
</tr>
<tr>
<td>No</td>
<td>122 (70.5%)</td>
<td>9 (50%)</td>
<td></td>
</tr>
</tbody>
</table>

Values expressed as mean ± SD or frequency (%).
Conclusions: The use of energy sealing device and intestinal staplers in open radical cystectomy can provide a more efficient surgical procedure in terms of operative time, blood loss, bowel function and length of hospital stay with minimal morbidity.

Funding: None.

BS2-14 The Profile of Prognosis-Related Enhancer RNA (eRNA) in Clear Cell Renal Cell Carcinoma Unveiled an Immunerelated eRNA AL590764.1 and its Predicted Target IL2RG

Tuo Deng1

1The first affiliated hospital of Guangzhou Medical University

Presented By: Tuo Deng, MD

Introduction: An increasing number of long non-coding RNAs (lncRNAs) have been related to clear cell renal cell carcinoma (ccRCC). Enhancer RNAs (eRNAs) are a subclass of lncRNAs that originate from enhancer regions and facilitate enhancer function.

Methods: In this work, the enhancer-derived RNAs and their target genes predicted by the PreSTIGE algorithm were deemed as the potential eRNA-target matchups.

Results: Using the expression and clinical data of the ccRCC cohort from The Cancer Genome Atlas (TCGA), we identified 121 eRNAs that had significant associations with the overall survival (OS, log-rank p < 0.05) and the target gene (correlation coefficient r > 0.40, p < 0.001). Of the top 10 candidates of eRNA-target matchups, AL590764.1 and its target IL2RG, an immune-related gene located on the X chromosome, were selected as the research object. Results indicated that AL590764.1 level was significantly higher in ccRCC tissues and male patients, increasing roughly along with the escalation of the American Joint Committee on Cancer (AJCC) stage, pathological TNM stages, and tumor grade. Additionally, the 1,495 genes correlated significantly with AL590764.1 (r > 0.40, p < 0.001) were significantly enriched in various immune processes and pathways as indicated by the functional annotation analysis. Also, the pan-cancer analysis was performed regarding the association of AL590764.1 with OS and IL2RG.

Conclusions: The current study suggests that AL590764.1 is a crucial immune-related RNA in ccRCC with a negative impact on prognosis.

Funding: None.

BS2-15 Prostate Cancer Detection Rate in Biopsies Using Transperineal Fusion Versus Transrectal Cognitive: a Real-World Study

Mariela Montanine1, Wilmer Soliz1, German Imfeld2, Horacio Sanguinetti3, Maximiliano Lopez Silva4, Paula Grinstein5, Norberto Bernardo6

1Clinica San Camilo/ Centro Argentino de Urologia, 2Centro Argentino de Urologia, 3Clinica San Camilo/ Centro Argentino de Urologia, 4Clinica San Camilo/Centro Argentino de Urologia

Presented By: Mariela Montanile, Fellow in Endourology

Introduction: The use of magnetic resonance imaging (MRI) has emerged as an advanced technique that offers improved accuracy in localizing suspicious areas of the prostate, enabling more effective guidance during cognitive transrectal biopsy. Fusion of the MRI image with transrectal ultrasound for the purpose of guiding transperineal biopsy has evolved as a promising alternative that can increase the detection rate of prostate cancer. The aim of this study was to describe the overall detection rate of prostate cancer, clinically significant prostate cancer (ISUP ≥ 2), and procedure-related complications.

Methods: A retrospective analysis was performed on 137 patients who underwent a prostate biopsy between 2019 and 2023 due to suspected cancer with positive MRI findings (PIRADS ≥ 3). The patients were classified into two groups based on the type of biopsy performed: those who underwent transrectal biopsy using cognitive guidance (cognitive group) and those who underwent transperineal biopsy using fusion guidance (fusion group). In each group, age, digital rectal examination, PIRADS, and prior biopsy status were analyzed. Complications were classified according to the Clavien-Dindo classification.

Results: A total of 42 patients in the cognitive group and 95 patients in the fusion group were included in the study. No significant differences were found between groups when comparing PSA and PIRADS. The overall detection rate of prostate cancer was 64.3% (27) with cognitive transrectal biopsy and 68.4% (65) with fusion transperineal biopsy (p = 0.635). The rate of clinically significant cancer detection was 21.4% (9) for the cognitive group and 36.8% (35) for the fusion group (p = 0.075). Adjusted analysis by age, digital rectal examination and prior biopsy status revealed that the fusion group had a greater likelihood of detecting significant cancer (p = 0.018). Regarding complications, two Clavien II and one Clavien I complications were reported in the cognitive group, while no complications were reported in the fusion group.

Conclusions: After adjusting for potential misleading variables in a statistically significant manner, the fusion group was found to have a higher rate of clinically significant prostate cancer detection.

Funding: None.

BS2-16 PARP Inhibitor for the Treatment of Prostatic Cancer: A Systematic Review and Network Meta-Analysis

Yueting Huang1, Di Gu1, Hui He2, Lufan Liang3, Yuxiang Zhang4, Qi Zhang4, Kaoqing Peng1, Yubo Wang1, Jianhao Wu1, Xuezhi Long1

1Department of Urology, The First Affiliated Hospital of Guangzhou Medical University, 2Guangdong Provincial Key Laboratory of Urology, 3Guangdong Engineering Research Center of Urinary Minimally invasive surgery Robot and Intelligent Equipment, 4Guangzhou Institute of Urology, Nanshan School, Guangzhou Medical University, Guangzhou, China, 1lif17688021612@outlook.com

Presented By: Yueting Huang, Ms.

Introduction: Prostate cancer is the most common cancer in men and the second leading cause of cancer-related deaths in males. Previous studies have proved that the PARP inhibitors (PARPi) could improve the treatment response of patients with mCRPC and its safety has also been assessed through a network meta-analysis (NMA). However, the efficacy and safety across PARPi in mCRPC patients have not been analysed. To provide an up-to-date and comprehensive assessment of their efficacy...
and toxicity, this study conducted two indirect comparisons to evaluate these profiles of four PARPi (olaparib, niraparib, rucaparib, and talazoparib) in patients with mCRPC.

Methods: A systematic review and network meta-analysis was conducted following the PRISMA guidelines. A comprehensive literature search was performed across PubMed, Web of Science, The Cochrane Library, and Embase databases to identify pertinent studies from the inception of the databases up to November 8, 2023. Targeted outcomes include radiographic progression-free survival (rPFS), overall survival (OS), adverse events (AEs), and grade $\geq$3 AEs.

Results: Six high-quality articles were selected for systematic review and NMA, involving 3205 individuals. Two NMAs were conducted due to the different designs of the six clinical trials that were included. Through an indirect comparison with a random effect model among olaparib, niraparib, and talazoparib, olaparib significantly improved the rPFS with an HR of 0.67 (95% CI, 0.46-0.96) while no significant difference was observed between olaparib and rucaparib. In terms of OS, there was no significant difference among olaparib, niraparib, and talazoparib. As for AEs, the PARPi interventions using olaparib, niraparib and talazoparib increased the rates of grade $\geq$3 AEs with an OR of 1.8 (95% CI, 1.4 - 2.3), 3.0(95%CI, 2.2-4.1) and 3.7 (95% CI, 2.7-5.0), respectively. In rank probability analysis, olaparib demonstrated a significantly higher rank probability compared to niraparib and talazoparib. From this perspective, olaparib would be the recommended treatment for patients with mCRPC but clinicians should also consider the efficacy and tolerability of AE in making treatment decisions.


Table 1. Rank probabilities of each intervention for different outcomes in network A

<table>
<thead>
<tr>
<th>Drug</th>
<th>Rank 1</th>
<th>Rank 2</th>
<th>Rank 3</th>
<th>Rank 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiographic progression-free survival</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Olaparib</td>
<td>0.355</td>
<td>0.510</td>
<td>0.121</td>
<td>0.014</td>
</tr>
<tr>
<td>Niraparib</td>
<td>0.058</td>
<td>0.175</td>
<td>0.627</td>
<td>0.140</td>
</tr>
<tr>
<td>Talazoparib</td>
<td>0.586</td>
<td>0.300</td>
<td>0.088</td>
<td>0.025</td>
</tr>
<tr>
<td>OS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Olaparib</td>
<td>0.529</td>
<td>0.326</td>
<td>0.104</td>
<td>0.041</td>
</tr>
<tr>
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BS2-17 Utility of Artificial Intelligence (AI) in Urine Cytology: A Scoping Review of Current Evidence and Applications for the General Urologist

Jingqiu Li1, Ee Jean Lim1, Benjamin Lim1, Tsung Wen Chong1, Si Ying Tan1, Khi Yung Fong2

1Singapore General Hospital, 2Yong Loo Lin School of Medicine, National University of Singapore

Presented By: Jingqiu Li, MD

Introduction: Urine cytology, while valuable in facilitating the detection and surveillance of bladder cancer, has notable limitations. Its sensitivity varies, particularly in low-grade tumors and small lesions, leading to false negatives. The application of artificial intelligence (AI) in urine cytology holds significant promise for improving diagnostic accuracy and efficiency. Machine learning models trained on large datasets can recognize subtle cytological features indicative of malignancy, enhancing sensitivity and specificity. Our current scoping review aims to evaluate the utility of the current application of AI in urine cytology for the urologist.

Methods: An electronic literature research on the application of AI in the setting of urine cytology was conducted on PubMed, EMBASE, and Scopus from inception to 12th November 2023. Case reports, abstracts, and reviews were excluded from this analysis. Our search strategy retrieved 1195 articles; after excluding 142 duplicates, the remaining 1053 papers were screened by title and abstract. 27 studies entered full-article review, and a total of 11 articles were included in the final analysis.

Results: 9 of the 11 studies primarily applied AI for image analysis to automate the identification and characterization of abnormal cells. The main utility was in identifying subtle morphological features indicative of various diagnostic categories outlined in the TPS, such as atypical urothelial cells of undetermined significance (AUC-US), low-grade urothelial carcinoma (LGUC), high-grade urothelial carcinoma (HGUC), and others. 5 of these studies developed and validated deep learning algorithms for risk stratification in concordance according to the Paris System for Reporting Urinary Cytology (TPS). These studies reported area under ROC curve (AUC) ranging from 0.82 to 0.99, with sensitivities ranging from 67 to 97%. Levy et al. demonstrated, in 1259 urine specimens, that machine learning extracted imaging predictors in urine cytology aided in augmenting prediction for bladder cancer recurrence via levels of specimen atypia. Awan et al. also demonstrated variations in risk stratification depending on atypia count, particularly in cases with inflammatory cells, with the potential to reduce the burden on cytotechnologists and pathologists.

Conclusions: Although in its infancy, application of AI in urine cytology holds significant promise for improving diagnostic accuracy and efficacy.

Funding: N/A

BS2-18 Pain as a Safeguard Against Cerebrovascular Disease in Cancer Patients: A Study Based on Population Data

Yongbao Wei

1Fujian Provincial Hospital

Presented By: Yongbao Wei
Introduction: The purpose of this study is to investigate the relationship between pain and the mortality rate of cerebrovascular disease (CVD) in cancer patients.

Methods: A case-control investigation utilized data from the Surveillance, Epidemiology, and End Results (SEER) database spanning the years 1975 to 2019. Multiple demographics, pain rating and other clinical characteristics were extracted to assess predictors for the death from CVD in cancer patients. Different machine learning algorithms were applied to construct pain-related prediction model.

Results: Analysis involved 16,850 case patients and 710,729 controls. Among cancer patients, approximately 2.3% succumbed to subsequent cerebrovascular disease (CVD). Cancer pain (Pain rating II) was associated with a decreased risk of CVD. Univariate and multivariate COX analyses indicated that older age at cancer diagnosis, male gender, single marital status, Black or Other race, and lack of systemic therapy correlated with a higher risk of CVD-related death. Propensity score matching revealed a significantly lower proportion of Pain rating II in the case group. Logistic regression demonstrated superior predictive ability for 5-year and 10-year CVD risk in cancer patients. Notably, survival time, age, and pain rating emerged as the top three crucial variables.

Conclusions: This study firstly investigated pain and various risk factors for cerebrovascular disease (CVD) in cancer patients, highlighting pain as a novel protective factor for CVD. The development of a risk model based on pain could aid in identifying individuals at high risk for CVD and may inspire innovative strategies for preventing CVD in cancer patients.

Funding: none.

BS2-19 Atypical Presentation of HUGE Multi Cystic Nephroma Present with Gastric Outlet Obstruction

Abdulrahman Aldayhani1, Jaber Zarbah1, Moath Qarmush1, Abdullah Alghamdi1, Hossam El-Tholoth El-Tholoth1

1Prince Sultan Military Medical City

Presented By: Abdulrahman Aldayhani, MD

Introduction: Cystic neoplasms are a relatively rare benign renal neoplasm, and usually is unilateral. The etiology is unknown. Most common in children between 3 months and 2 years, rarely found in adults. Presenting symptoms usually are flank pain, hematuria, and recurrent UTI. Diagnosing MN in adults can be challenging due to its resemblance to other cystic renal lesions. Imaging studies such as ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI) are valuable in characterizing the extent and features of MN. However, definitive diagnosis often requires histopathological evaluation. As to our knowledge we present the first case of huge cystic nephroma present with gastric outlet obstruction.

Methods: Case report

Results: Case: This is a 71 years old male with heart failure on cardiac resynchronization device and chronic kidney disease, presented to our emergency department sign and symptoms of bowel obstruction with nausea, vomiting and unable to tolerate. CT abdomen with contrast done in the emergency to rule out bowel obstruction showed incidental finding of large hypodense right renal mass 25 cm with no enhancement causing severe mass effect causing gastric outlet obstruction. Differential diagnosis were lymphoma, renal cell carcinoma, undifferentiated Retroperitoneal sarcoma. PET CT was done, and there was no FDG uptake. MRI shows right renal multicystic mass 21 x 14 x 15 cm (TR, AP, CC) replacing the right kidney. Patient underwent open radical nephrectomy. Histopathology revealed adult cystic nephroma.

Conclusions: Cystic nephroma presenting complaint vary from asymptomatic, flank pain, hematuria, and recurrent UTI to gastric outlet obstruction, as in our case, to our knowledge we present the first case in the literature of huge cystic nephroma presented with gastric outlet obstruction.

Funding: Case report.

BS2-20 Causal Relationship Between Serum Calcium and Bladder Cancer Risk: A Two-Sample Mendelian Randomization Analysis

Chao Cai1, Qinwei Liu1

1The First Affiliated Hospital of Guangzhou Medical University

Presented By: Chao Cai, MD, PhD

Introduction: Calcium is associated with bladder cancer outcomes. However, the effects reported in different studies are inconsistent. Observational studies are susceptible to residual confounding, reverse causality, and bias, which may compromise causal inference. In this study, we employed two-sample Mendelian randomization (MR) analyses to establish the causal relationship between serum calcium and bladder cancer risk.

Methods: We obtained single nucleotide polymorphisms (SNPs) associated with serum calcium from the genome-wide association study conducted by UK Biobank (UKB). Summary data for bladder cancer were obtained from FinnGen. We performed four MR analyses, including inverse variance weighted (IVW), weighted median, MR-Egger regression, and weighted mode, to assess the potential causal relationship between serum calcium and high risk of bladder cancer. Sensitivity analyses, heterogeneity, and pleiotropy tests were conducted to ensure the reliability of our study results.

Results: Evidence of a causal relationship between serum calcium and bladder cancer was found in the inverse variance weighted (OR = 1.352, 95% CI = 1.121–1.630, P = 0.001), weighted mode (OR = 1.663, 95% CI = 1.142–2.420, P = 0.008), and weighted median (OR = 1.596, 95% CI = 1.717–2.176, P = 0.003) analyses. However, in MR-Egger, the effect of serum calcium on bladder cancer was not statistically significant (OR = 1.380, 95% CI = 0.971–1.961, P = 0.0741).

Conclusions: This two-sample MR study supports a causal relationship between serum calcium and increased risk of bladder cancer.

Funding: No.

BS2-21 Prognostic Value of CASZ1 Protein Expression in Clear Cell Renal Cell Carcinoma

Fei Li1, Xin Wei1, Jiayu Liang1

1West China hospital, Sichuan University

Presented By: Fei Li

Introduction: Clear cell renal cell carcinoma (ccRCC) represents the predominant and remarkably diverse form of renal cell carcinoma. The involvement of the Castor zinc finger 1
(CASZ1) gene in adverse prognostic outcomes has been observed across different cancer types. Nevertheless, the specific altered activities and associated multi-omics characteristics of CASZ1 in ccRCC remain unelucidated.

**Methods:** In order to explore the expression of CASZ1, evaluate its prognostic significance, and aid in the therapeutic decision-making process for patients with ccRCC, the The Cancer Genome Atlas (TCGA), Gene expression omnibus (GEO), and The Human Protein Atlas (HPA) databases were utilized to gather data on clinicopathological data, prognostic information, genomic, methylomic and immunomic data. Additionally, the Genomics of drug sensitivity in cancer (GDSC) database provided information on drug sensitivity.

**Results:** CASZ1 expression was found to be significantly reduced in ccRCC and was associated with unfavorable pathological characteristics and a bleak prognosis. Diminished CASZ1 mRNA levels were notably correlated with heightened cytosine-phosphate-guanine (CpG) methylation, indicating a poorer prognosis for patients with increased methylation. Examination of RNA-seq data from TCGA indicated that the CASZ1-high expression subgroup displayed heightened immune cell infiltration and increased expression of immune checkpoint markers, potentially suggesting a more favorable response to immunotherapy. Furthermore, data from the GDSC database indicated that the CASZ1-low expression subgroup might exhibit greater sensitivity to anti-angiogenetic treatments, such as Sunitinib and Axitinib.

**Conclusions:** These results indicate that CASZ1 may function as a biomarker for distinguishing various tumor microenvironment phenotypes, predicting prognosis, and assisting in treatment decisions for individuals with ccRCC.

**Funding:** None.

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**BASIC SCIENCE POSTER SESSION 3: STONES 1**

**BS3-01 Hyperoxaluria Reduction with Oxalobacter formigenes is Dictated by the Baseline Presence of Oxalate-degrading Bacteria**

Aaron Miller¹, Sromona Mukherjee¹, Mangesh Suryavanshi¹, Sonia Fargue², John Knight³

¹Cleveland Clinic Foundation, ²University of Alabama

Presented By: Aaron Miller, PhD

**Introduction:** Forty years ago, the oxalate-degrading specialist, Oxalobacter formigenes, was discovered in sheep rumen and human stool. This discovery marked a significant advance that held the potential for a bacteriotherapy that could help alleviate the burden of oxalate-associated diseases. Numerous studies with O. formigenes have led to mixed results and considerable controversy. The objectives of the current research were to definitively understand the factors that lead to the success or failure of O. formigenes colonization for the reduction of urinary oxalate.

**Methods:** Two exhaustive studies were conducted to understand the impact of O. formigenes colonization on urinary oxalate. In animals, extensive catalogues of bacteria stimulated by exposure to oxalate were generated and multiple iterations of microbial communities, with or without O. formigenes, were transplanted into mice to determine the impact of urinary oxalate. In a clinical intervention study, healthy volunteers not colonized by O. formigenes, were given a preparation of O. formigenes and the change in urinary oxalate after consuming a high oxalate diet was recorded. The total and oxalate-degrading fraction of the gut microbiota of volunteers was profiled prior to colonization to understand factors associated with response to colonization.

**Results:** In both humans and mice, the diversity of oxalate-degrading species in the gut was far greater than previously realized. In mice, multiple bacteria, previously associated with a positive response to oxalate exposure reduced urinary oxalate to similar levels as O. formigenes. Subsequent analysis found that most of these bacteria also degraded oxalate. Congruent with these data, healthy human volunteers who did not see a significant reduction in urinary oxalate after O. formigenes colonization already had significantly higher baseline levels of oxalate-degrading genes (Figure), compared to volunteers that did see a significant reduction in urinary oxalate with colonization.

**Conclusions:** In both studies, the presence of diverse oxalate-degrading species in the gut was the primary determinant of urinary oxalate and response to O. formigenes colonization. Collectively, these data help define the specific patients that would benefit from O. formigenes bacteriotherapy to reduce urinary oxalate.

**Funding:** 1R01DK121689.

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**BS3-02 Comparative Analysis of TFL, Ho:YAG, and pTm:YAG Lasers in Dusting Lithotripsy: In Vitro Study**

Catalina Solano¹

¹Uroclin

Presented By: Catalina Solano, MD
Introduction: Holmium: yttrium aluminum garnet laser (Ho:YAG) is still considered the gold standard in laser lithotripsy. There is a large body of literature comparing the capabilities of Ho:YAG and thulium fiber lasers (TFLs). The novel, pulsed thulium:yttrium aluminum garnet laser (p-Tm:YAG) evaluation model has only been compared with Ho:YAG in terms of its dusting performance to date. In this study, our aim was to compare the efficiency of the TFL, the Ho:YAG laser, and pTm:YAG by evaluating the stone mass loss after lithotripsy using different lasers on BegoStones and human stones in an in vitro model.

Methods: We utilized a Ho:YAG laser (30 W; MH01, Rocamed), a TFL Drive (60W; Coloplast), and a pTm:YAG (100 W; THULIO Dornier) for our experiments. The laser parameters for TFL were set as follows: (10 W= 0.5 J x 20 Hz; short pulse). For Ho:YAG, we used (10 W= 0.5 J x 20 Hz), employing both short and long pulses. pTm:YAG was set at (12.5 W= 0.6 J x 20 Hz, long pulse and 0.5 J x 25Hz dusting). We performed contact lithotripsy on phantoms (BegoStones) and human stones with different compositions, including uric acid (UA) and calcium oxalate monohydrate (COM) in water environments. Laser ablation was carried out with a total energy of 3000 J. Mass loss was determined by calculating the difference between the initial phantom mass and the final ablated phantom mass for both phantoms and human stones.

Results: The mean total mass loss for BegoStones phantoms and human stones was 22 ± 0.15 and 63 ± 0.07 respectively. The median mass loss for TFL laser configurations was 22 mg for uric acid (UA) stones and 36 mg for calcium oxalate monohydrate (COM) stones. For Ho:YAG, the median mass loss was 10 mg for UA stones and 24 mg for COM stones, while for p-Tm:YAG, it was 25 mg for UA stones and 24 mg for COM stones. Statistical analysis revealed a significant difference in ablated weight between TFL and p-Tm:YAG laser devices (p-value = 0.03) for UA stones (88 mg vs. 50 mg), whereas no significant difference was observed between Ho:YAG and TFL, or Ho:YAG and pTm:YAG lasers.

Conclusions: In our in vitro study, employing dusting settings, TFL lithotripsy demonstrated higher efficiency in terms of achieving greater mass loss compared to Ho:YAG and pTm:YAG lithotripsy.

Funding: Non.
BASIC SCIENCE POSTER SESSION 3

BS3-04 Efficiency and Thermal Injury Risk During Treatment of an Impacted Ureteral Stone with the Thulium Fiber Laser: An In-Vitro Investigation

Robert Medairos, MD

Introduction: Thulium fiber laser (TFL) is an effective tool for nephrolithiasis treatment; however, concerns arise regarding the heat generated by the laser due to its strong absorption in water. These concerns are particularly amplified in more confined spaces, such as when treating impacted stones in the ureter. We aimed to optimize TFL settings for treating impacted ureteral stones, prioritizing efficiency while minimizing thermal injury risk in a benchtop model.

Methods: We constructed a hydrogel (Gelatin #1, Humic Medical, SC, USA)-based anatomical ureter model (Fig. a) and placed it in a water bath maintained at body temperature (~ 37.2 ± 0.5 °C). A 10 x 10 mm (1.016 ± 0.035 gm) cylindrical soft BegoStone (BEGOTM USA) was placed in it to fill the ureteral lumen. Ureteroscopy with laser lithotripsy was performed using TFL (IPG Photonics) with a 150 μm TFL fiber for fixed duration of 3 minutes at room temperature irrigation. Different irrigation rates (IR) (0 mL/min, 20 mL/min, 40 mL/min) and laser power settings (6.4 W to 20 W) were tested, each in triplicate. Temperature was monitored using K-type thermocouples inserted through the ureteral wall adjacent to the stone. Thermal dose, measured as cumulative equivalent minutes at 43°C (CEM43), was calculated to assess the potential risk of thermal injury. A CEM43 safety threshold was set at 120 minutes. Stone treatment efficiency was calculated as (initial mass – residual mass)/time.

Results: Stone treatment efficiency increased with higher laser power (Fig. b). Average treatment efficiency was 1.00 mg/s (standard deviation [SD] 0.33) at 6.4 W, 1.50 mg/s (SD 0.25) at 10 W (p = 0.02), and 1.94 mg/s (SD 0.38) at 20 W (p = 0.02). Thermal dose increased with 20 W power and decreased with faster IR = 40 mL/min (Fig. c). At 6.4 W and 10 W, the CEM43 exceeded the safety threshold only at IR = 0 mL/min. When using irrigation at 20 or 40 mL/min, the intraluminal temperature remained below body temperature, and CEM43 was minimal. At 20 W, CEM43 exceeded threshold at all IRs.

Conclusions: Our in-vitro study highlights the risk for thermal injury with 20 W TFL treatment at IR up to 40 mL/min. However, 10 W or lower maintains safe temperatures, even with slower irrigation. Future research will explore these optimal settings for treating human stones.

Funding: This project is supported by the National Institutes of Health (NIH) through grants 1P20DK135107-02 and 2R01DK052985-26.

BS3-05 Experimental Study on Ex Vivo Model Examining the Impact of Different Irrigation Rates on Intrarenal Temperature During Holmium Laser Lithotripsy

Sergey Sukhikh, PhD

Introduction: Contemporary endoscopic surgery for urolithiasis employs various laser systems to ensure the high efficiency of surgical treatment. However, intraoperative temperature increases can result in decreased renal function and the formation of strictures, ultimately diminishing patients' quality of life. The aim of the study is to assess the attainment of critically high temperatures in the renal system when utilizing holmium laser systems.

Methods: This prospective study was conducted ex vivo on a kidney model (made using 3D modeling) with and without a stone in different laser modes and irrigation rates. Intrarenal temperature, temperature rise dynamics, mean temperature, peak temperature, laser operation time and total energy released were measured. Temperatures of 43°C and 56°C were taken as measurement reference points. Laser powers of 40W and 25W, without irrigation, and at 15 and 40 ml/min alternately were investigated.

Results: The temperature within the renal pelvis rises significantly with increasing laser power, directly correlating with the irrigation rate. Continuous use of the holmium laser within the renal system, in the absence of stones and irrigation, resulted in a temperature of 43°C at 25 W power after an average of 68 sec, with 56°C not being reached. At 40 W power, temperatures of 43°C were reached after 25 sec and 56°C after 104 sec.
respectively. With an irrigation rate of 15 mL/min, temperatures of 43°C were not reached at 25 W power. Under the same conditions, at 40 W power, the liquid heated to 43°C in 50 sec, with 56°C not being reached. At an irrigation rate of 40 mL/s, none of the critical temperature were reached. Regarding laser lithotripsy of kidney stones, the following results were observed: without irrigation, 25 W required 72 sec (with 56°C not reached), and 40 W required 32 and 102 sec (to reach 43°C and 56°C, respectively). With an irrigation rate of 15 mL/s, no critical temperatures were reached at 25 W, while at 40 W, it took 35 sec (with 56°C not reached). With an irrigation rate of 40 mL/s, critical temperature thresholds were not reached for both 25 W and 40 W settings.

**Conclusions:** Analysis of the results showed that lithotripsy at irrigation rate 15 mL/min and power of 25W appears to be a safe procedure but is limited by the continuous laser operation time.

**Funding:** Not.

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### BS3-06 Urinary Stone Disease Development in Apoe-/- Mice Associated with Tubular Basal Membrane Deposits

Jose Agudelo1, Mukherjee Sromona1, Mangesh Suryavanshi1, Junchul Shin1, Aaron Miller1

1Cleveland Clinic

**Presented By:** Jose Agudelo, MD

**Introduction:** Idiopathic calcium oxalate (CaOx) urinary stone disease (USD) is associated with the development of interstitial plaques. Some mouse models with ablation of selected genes can develop the formation of interstitial crystals after long term manipulation. We conducted an oxalate diet trial in the pro-atherogenic Apoe-/- mice to evaluate USD phenotype in this mouse model.

**Methods:** We conducted an experiment with 56 Apoe-/- mice housed in a barrier facility, 4 animals per cage, under 3 concentrations of oxalate, 2%, 3% and 0% control group for 8-weeks. At the end of the trial, animals were necropsied and phenotyped for USD and atherosclerosis. One kidney was paraffin embedded and stained for CaOx quantification, and one kidney from each group was used for transmission electron microscopy (TEM) to evaluate renal tubular ultrastructure. One kidney from each group was also collected for micro-CT characterization. Atherosclerotic plaques were measured through sequential sectioning of brachiocephalic artery (BCA). Serum was also collected for analysis of lipids, renal function, and oxalate content.

**Results:** Micro-CT conducted on kidneys post necropsy shows the presence of calcifications in the collecting system, as well as pelvis dilation in animals under 3% oxalate diet. Kidneys from animals under 3% oxalate diet stained with Alizarin R show clear findings of obstructive uropathy and crystal nephropathies, like tubular dilation, intratubular crystals, and interstitial orange-red complex compatible with calcium phosphate inclusions. Renal calcification surface area was significantly larger in animals under 3% oxalate diet (p > 0.01). In the same group, TEM images show proximal tubules with intratubular crystals and thin tubules with subepithelial spherulitic deposits in the basal membrane. BCA samples in animals under 3% oxalate diet shows the presence of intima vacuolization as the first stages of atherosclerotic plaque development compared to animals under basal diet.

**Conclusions:** Our findings of intratubular and interstitial calcifications, as well as subepithelial tubular deposits support the hypothesis that the Apoe-/- can be a feasible model for the study of idiopathic CaOx stone development, with the advantage of phenotype development in a shorter period of time compared to established mouse models.

**Funding:** ISAC - Innovative Science Accelerator Program.

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### BS3-07 The Human Bladder Hosts a Distinct Microbiome that Plays a Role in Dissolving Kidney Crystals

Fengping Liu1

1Jiangnan University

**Presented By:** Fengping Liu, PhD

**Introduction:** Recent evidence highlights the human gut microbiome’s influence on kidney stone disease (KSD), challenging the sterile urinary tract concept. This study aimed to compare the bladder and gut microbiome in KSD patients with asymptomatic “healthy” (HC) and assess bladder microbiome transplantation (BMT) for reducing kidney crystal formation in rats.

**Methods:** In this study, 212 participants (106 KSD patients and 106 HCs) from three Chinese hospitals underwent strict protocols for collecting bladder urine and fecal samples to minimize contamination. Research involved 16S rRNA gene sequencing of both sample types, with bladder urine undergoing expanded quantitative urine culture (EQUC). Rat models of KSD received human bladder microbiome transplants. Post-transplant, kidney crystal formation, microbiome composition via 16S rRNA sequencing and EQUC, and changes in short-chain fatty acids (SCFAs) and urinary cytokines were assessed.

**Results:** Comparative analysis indicated significant compositional differences in the bladder microbiome between KSD patients and HCs, revealing a distinct, partially cultivable microbial community. The dysbiosis observed was notably more pronounced in the bladder than in the stool. BMT from healthy donors led to a notable decrease in kidney crystal formation in rat models. Following transplantation, bacterial richness and diversity increased in the bladder microbiome, accompanied by significant changes in SCFAs and urinary metabolites.
Conclusions: Significant differences in the bladder microbiome of KSD patients highlight its role in disease development. BMT’s efficacy in reducing kidney crystal formation and restoring a healthy microbiome in rats demonstrates therapeutic potential, underscoring the bladder microbiome’s importance in renal health and supporting microbiome-based KSD treatments.

Funding: Our study showed distinct microbiome compositions in KSD patients versus controls, with BMT in rats reducing kidney crystals and altering microbes and metabolic profiles, underscoring its potential for human KSD management.

BS3-08 Do the Residual Fragments After Endoscopic Kidney Stone Surgery Affect the Patients-Reported Quality of Life?

Bum Soo Kim1, Bum Soo Kim1, Sang Hee Lee1, Jae Sung Lim1, Oh Jun Yun1, Jae-Wook Chung1, Yun-Sok Ha1, Seock Hwan Choi1, Jun Nyung Lee1, Hyun Tae Kim1, Tae-Hwan Kim1, Eun Sang Yoo1, Tae Gyun Kwon1

1Department of Urology, School of Medicine, Kyungpook National University

Presented By: Bum Soo Kim, MD, PhD

Introduction: Although the goal of stone surgeries is complete removal of stone, not a few patients have post-operative residual fragments (RF). Because of the risk of regrowing and becoming clinically significant stone, RFs are considered to have negative effects in the aspects of both patients and surgeons. However, the effect of RFs for patients’ quality of life (QoL) was not well-known. Therefore, we analyzed the effect of RFs for patients-reported QoL using Korean Wisconsin stone QoL (K-WISQoL) questionnaire, which is validated in Korean.

Methods: We retrospectively reviewed medical records of 129 consecutive patients who underwent endoscopic kidney stone surgery and completed the pre- and post-operative K-WISQoL from January 2021 to March 2023. Post-operative K-WISQoL was evaluated at 1 month after surgery. All patients were divided into RF and stone-free (SF) groups according to presence of RFs. The patients’ baseline characteristics, surgical outcomes, and total K-WISQoL score were compared between the two groups and multivariate analysis for the deterioration of QoL was performed to find the independent predictive factors.

Results: Of 129 patients, 90 patients were included in SF group and the other 39 patients were included in RF group. Mean stone size was significantly larger in RF group compared to SF group (24.82 ± 15.44 vs 15.57 ± 8.53, P = 0.001) and percutaneous nephrolithotomy (PCNL) was more frequently performed in RF group (64.1% vs 30.0%, P < 0.001). Consequently, mean hospital stay (6.18 ± 2.64 vs 4.83 ± 2.62, P = 0.008) and operation time (88.46 ± 23.06 vs 77.52 ± 22.91, P = 0.014) were significantly longer in RF group. While preoperative K-WISQoL scores (120.15 ± 14.25 vs 115.60 ± 18.40, P = 0.171) were similar in both groups, post-operative K-WISQoL scores (121.13 ± 17.38 vs 109.50 ± 23.63, P = 0.002) were higher in RF group. Multivariate regression analysis showed that only the surgical method (retrograde intrarenal surgery, RIRS) was an independent predictive factor for patients’ quality of life (OR 5.441, CI: 2.334–12.686).

Conclusions: This study demonstrated that the surgical method, not residual fragments can affect patient-reported QoL. Therefore, RIRS can be considered to negatively affect the patients QoL in short-term follow-up. To confirm the long-term effect of RF, further study with longer-term follow-up data is needed.

Funding: None.

BS3-09 Se@CQ Suppresses High Oxalate-Induced Calcium Oxalate Crystal Deposition by Inhibiting NLRP3 Inflammasome Activation

Hantian Guan1

1The First Affiliated Hospital of Guangzhou Medical University

Presented By: Hantian Guan

Introduction: Urolithiasis is widely prevalent worldwide, with an estimated incidence of about 6.4% in adults in China, and it carries a high recurrence rate. Currently, the specific mechanisms underlying the formation of calcium oxalate stones remain unclear, and there are no effective preventive or therapeutic drugs available. Calcium oxalate stones are the predominant type among urinary stones, and calcium oxalate crystals can stimulate renal tubular cells to express the NLRP3 inflammasome. The NLRP3 inflammasome, a protein complex composed of NLRP3, ASC, and Caspase-1, promotes the maturation of IL-1β and IL-18 by recognizing pathogen-associated molecular patterns (PAMPs) or host-derived damage-associated molecular patterns (DAMPs), thereby leading to renal inflammatory damage. Previous studies have found that chloroquine, commonly used to treat malaria, can effectively inhibit high uric acid-induced NLRP3 inflammasome activation and suppress inflammation and autophagy induced by high oxalate, thereby improving renal inflammation and damage. Additionally, selenium, well-known for its antioxidant capabilities, can inhibit ischemia-reperfusion-induced renal injury by suppressing NLRP3 inflammasome activation. However, prolonged administration of chloroquine and selenium at high doses can be toxic. Can Se@CQ be used to harness its synergistic effects, reduce the individual doses, and ultimately achieve similar or enhanced inhibition of NLRP3 inflammasome activation?

Methods: Nanomaterials, referred to as Se@CQ, were prepared using sodium selenite, ascorbic acid, chitosan, and chloroquine as raw materials. Material characterization was conducted through various methods such as TEM, EDX mapping, XPS, FT-IR, and UV-vis absorption spectra. The influence of Se@CQ on cell growth and molecular expression in the HK-2 cell line under high-oxalate was assessed by CCK8, immunofluorescence, and co-culturing. Western blot analysis was employed to examine the impact of Se@CQ in high oxalate conditions on the expression of NLRP3 inflammasome-related molecules. Additionally, the results of cell experiments were validated using C57BL mice and SD rats.

Results: Through TEM, Se@CQ was observed to be spherical with a diameter of approximately 100 nm. EDX mapping showed that the blue chlorine elements exhibited a distinct spherical distribution, coinciding with the purple selenium elements, indicating successful loading of chloroquine in the Se@CQ system. Furthermore, XPS and FT-IR results also confirmed the successful loading of chloroquine. When stimulating renal tubular epithelial cells with NaOX and using different concentrations of Se@CQ for protection, within a certain range of drug concentrations, there was a positive correlation between drug concentration and cell viability, suggesting that Se@CQ had a protective effect on NaOX-induced renal tubular epithelial cell damage. In a high oxalate environment, Se@CQ effectively...
inhibited NLRP3 inflammasome activation induced by high oxalate, further suppressing the expression of IL-1β, and this inhibitory effect was drug concentration-dependent.

**Conclusions:** Exploring methods and approaches for the synthesis and application of Se@CQ may provide new therapeutic options and insights for reducing the high recurrence rate in Urolithiasis and improving the prognosis of urolithiasis patients. Furthermore, it can also verify whether Se@CQ can regulate urinary stone formation by inhibiting the activation of the NLRP3 inflammasome and investigate the mechanisms of inhibiting NLRP3 inflammasome activation. This aims to reduce the high recurrence rate of Urolithiasis and improve patient prognosis.

**Funding:** This work was supported by the National Natural Science Foundation of China (82102083, 82100805), Guangdong Basic and Applied Basic Research Foundation (2022A1515011664), Science and Technology Plan Project of Guangzhou (202201020438, 202201020535, 2023A03J0343) and Guangzhou Medical University Scientific Research Capacity Improvement Program (2024SRP077).

**BS3-10 Nanozyme MOF-818 Suppresses Kidney Calcium Oxalate Crystal Depositions via Reversing Hyperoxaluria-Induced Oxidative Stress and Inflammatory Damage**

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Presented By: Yuan Tian

**Introduction:** Calcium oxalate stone is the most common type of urinary stone. Oxidative damage and persistent inflammatory infiltration in the local environment are important causes of stone formation. Prolonged exposure of renal tubular epithelial cells to high concentration oxalate and urine crystals can induce excessive reactive oxygen species (ROS) production, which in turn will cause oxidative stress damage to cells. Persistent crystallization and high ROS environment will promote the polarization of macrophages to a pro-inflammatory type, which will lead to further deterioration of the microenvironment and eventually lead to the formation of kidney stones. It is of great practical significance and clinical value to find drugs that can inhibit cell oxidative damage and calcium oxalate crystallization. At present, the field of nanozymes is developing rapidly. A variety of nanozymes show excellent biological properties such as anti-oxidation and anti-inflammation. The aim of this study is to explore the underlying molecular mechanisms by which the nanozyme MOF-818 inhibits the oxidative stress and inflammatory injury, and ultimately inhibits the formation of calcium oxalate kidney stones.

**Methods:** 1. Experiments related to the synthesis and characterization of nanozyme MOF-818. According to the synthesis method of MOF-818 in the published papers, TEM, SEM, Mapping, XPS, XRD, BET and other methods were used to explore and verify the synthesis and characteristics of MOF-818. 2. To investigate the anti-oxidative and anti-inflammatory effects of MOF-818 on renal tubular epithelial cell damage induced by high concentration oxalate at the cellular level. Renal tubular epithelial cells (HK-2) injury model was constructed by oxalate. CCK-8 was used to detect cell viability, reactive oxygen species (ROS) level, mitochondrial membrane potential detection, flow cytometry and other biological experiments were used to explore the protective effect of MOF-818 on injured cells. The effect of MOF-818 on the recruitment and migration of macrophages (THP-1) was also investigated.

**BS3-11 Profiling the Single-Cell Transcriptomic Response of Mouse Kidneys During Renal Calcium Oxalate Crystal Formation**

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Presented By: Xi Jin

**Introduction:** Calcium oxalate (CaOx) stones are a common type of kidney stones whose incidence is increasing worldwide. The underlying cellular events that promote renal calcium oxalate stone formation are still unclear. This study aimed to better understand normal mouse kidney function and the development of kidney CaOx stone disease.
BS3-12 Kidney Stones Harbor Unique Microbiome Compared to Indwelling Stents  

Aaron Miller, Juan Julla, Catherine Sanchez, Mangesh Suryavanshi, David Shapiro, Izabella Katusic  

1Urologo University de Chile, 2Clinica Las Condes, 3Cleveland Clinic Foundation, 4Urnsuline College  

Presented By: Aaron Miller, PhD  

Methods: We analyzed the cellular response of a mouse CaOx model at five time points using single-cell RNA sequencing (scRNA-seq) and investigated the dynamics of different cells during calcium oxalate (CaOx) kidney stone formation.  

Results: RNA velocity analysis revealed an alternative differentiation pathway for injured and S1 proximal tubule (PT) cells, together with the expression of stone matrix genes and proinflammatory factors, and revealed that those cells communicate with monocytes, neutrophils, natural killer cells (NKs), and T cells through the SPP1-CD44 and SPP1-a4b1 complex pairs during renal CaOx crystal formation. LCN2 and CLU may be injury markers for the loop of Henle, distal tubules, and collecting ducts during CaOx formation. Furthermore, Fn1 resident macrophages express chemokines that recruit infiltrating macrophages through the CCL2 pathway, promoting an inflammatory response in the kidneys.  

Conclusions: This study aimed to better understand normal mouse kidney function and the development of CaOx stone disease, and reveals potential cell type and target genes for treating kidney CaOx stone disease.  

Funding: This study was supported by the Foundation of Science & Technology Department of Sichuan Province (2022YFS0304, 2023YFS0029), the National Natural Science Foundation of China (82270799, 81970602, 82173251).  

BS3-13 To Bego or not to Bego: Updating Kidney Stone Phantoms  

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Introduction: BegoStone is a widely accepted phantom for kidney stone bench experimentation. BegoStone with water has limitations however: too hard, homogenous, and lacks organic components that real stones possess. This study assessed the effect of BegoStone formulations on tensile fracture strength and density in Hounsfield units (HU).  

Methods: Ratios of BegoStone with water, saline, albumin (protein), agar (sugar), and/or calcium oxalate varied. Mixtures were set in cylindrical molds and then compressed slowly on an Instron Machine (500N sensor) to obtain Tensile Fracture Strength (TFS). Mean and standard deviation were calculated (Table 1). Twelve formulas had HU and architecture assessed with micro-CT (VivaCT-40).  

Results: Over 400 cores were fractured from 21 formulations. Some required more than the maximum 500N, so these were water-soaked and retested, showing significant reduction in TFS. Formulas fell within the physiologic range of TFS at 0.6-4.8 MPa. Increasing water or saline fraction inhibited setting, agar powder yielded softer stones, and oxalate effect varied. Micro-CT demonstrated HU of 535-1538.
Conclusions: BegoStone and water alone inaccurately replicates kidney stones in composition and testing. We demonstrated that varying the liquid and other components (protein, sugars, oxalate) yielded phantoms that approximated TFS and HU of real stones, but with truer composition versus current standards.

Funding: Grant from UR-SMD SMD Faculty Council.

BS3-14 MISSING

BS3-15 The natural history of asymptomatic small remnant stones (<1 cm) according to the stone composition after endoscopic stone surgery

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Presented By: Bum Soo Kim, MD, PhD

Introduction: Although the final goal of stone surgeries is complete removal of stones, remnant stones can be observed in some cases. Asymptomatic small fragments have been usually considered as insignificant stones, but recent studies enhanced the risk of remnant stones. Herein, we analyzed the natural history of asymptomatic small remnant stones according to the stone composition.

Methods: We retrospectively reviewed medical charts of 771 patients who underwent endoscopic surgeries for renal stones from March 2017 to February 2021. Of the patients, patients with asymptomatic small remnant stones (<1 cm) with more than 1 year follow-up were enrolled in this study. The stone analysis was performed in all patients and all patients were categorized into 5 groups by stone composition: infectious Stone (IS), uric acid (UA), calcium oxalate monohydrate (COM), mixed type, and etc, such as brushite. Stones consisted of calcium phosphate or cystine were not included in this study. Of the patients, COM (22.4%) and UA (23.5%) were the most commonly performed in IS group (50%) compared to the IS (20%) and COM (13.8%) (p = 0.090). Regrowth rate was similar in IS (20.0%), UA (11.8%) and COM (20.7%) (p = 0.596), while intervention was the most commonly performed in IS group (50%) compared to the UA (23.5%) and COM (22.4%) (p = 0.169).

Conclusions: This study demonstrated that infection and UA stones have a tendency to become more symptomatic and UA stones tend to be more frequently passed. Based on the results of this study, we recommend individualized follow-up strategies according to the stone composition if the patients have asymptomatic small remnant stones.

Funding: None.

BS3-16 Optimizing Thulium Fiber Laser Settings for Enhanced Ablation Efficiency and Temperature Control in BegoStone and Calcium Phosphate Stone Treatment

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Presented By: Robert Medairos, MD

Introduction: The thulium fiber laser (TFL) is widely used for laser lithotripsy, yet optimal settings for ablating different stone types remain unclear. Calcium phosphate (CaP) stones can be particularly challenging to treat using the TFL and may require distinct laser settings than other stone types. We aimed to assess the settings that maximize ablation efficiency in CaP stones and in BegoStones.

Methods: Spot treatments were conducted on flat stone surfaces using a TFL system (IPG Photonics) with a 200 μm fiber in a room temperature water bath. Both CaP stones and BegoStones were tested. Laser settings varied with all at 10 W power, pulse energies (Ep) ranging from 0.2 J to 1.0 J, and treatment times of 1 sec and 2 sec assessed. The laser fiber tip maintained a 0.5 mm distance from the stone surface, and 5 tests were performed for each combination of stone type, Ep, and treatment time. Crater parameters were measured via optical coherence tomography, and temperature changes were monitored using thermocouples adjacent to the stone. Linear regression compared outcomes between the stone types, adjusting for treatment time and laser settings.

Results: A total of 80 experiments were performed. Ablation efficiency peaked at Ep of 0.6 J for BegoStones and continued rising through Ep of 1.0 J for CaP stones (Fig. a). Average BegoStone efficiency ranged from 0.10 mm3/s (at 0.2 J) to 0.23 mm3/s (at 0.6 J) (122% increase, p < 0.001). Average CaP efficiency ranged from 0.01 mm3/s (at 0.2 J) to 0.16 mm3/s (at 1.0 J) (1, 049% increase, p < 0.001). Linear regression showed lower ablation efficiency with CaP stones compared to BegoStones (coef < -0.09, p < 0.001). This was primarily attributed to shallower crater depth (coef < -0.27, p < 0.001), with similar profile areas (coef < -0.002, p = 0.964). Temperature rise was greatest at Ep of 0.6 J for both BegoStones and CaP stones (Fig. b). Larger temperature increases were seen with CaP stone treatments compared to BegoStones (coef 1.28, p = 0.002).
Conclusions: In a benchtop stone treatment model at 10 W, ablation efficiency with the TFL was optimized at Ep of 0.6 J for BegoStones and at Ep of 1.0 J for CaP stones. However, TFL was less efficient and led to larger temperature rise with CaP stones. These findings suggest that the optimal TFL settings may vary in different stone types.

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BS3-17 Culture-Negative Kidney Stones Harbor Diverse Bacteria and Endotoxins – A Pilot Study

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Presented By: David T. Tzou, MD

Introduction: Intra-calculi bacteria and bacteria-associated molecules (i.e. endotoxins) are thought to represent an etiology for post-operative sepsis following percutaneous nephrolithotomy (PCNL). To date, kidney stoneendotoxin studies have focused on lipopolysaccharide (LPS) from Gram-negative bacteria, while the Gram-positive 'endotoxin' of lipoteichoic acid (LTA) has not been reported. In 2023, updated European Association of Urology Guidelines recommend obtaining stone cultures (SC) at the time of PCNL. As SC protocols have been shown to be inconsistent and not universally available, this pilot study assessed whether non-culture-based methodologies could identify bacteria and both LPS & LTA within infection (struvite & apatite) and non-infection kidney stones.

Methods: Since Oct 2020, kidney stone fragments during PCNL have been prospectively collected by a single surgeon as part of ReSKU (Registry for Stones of the Kidney and Ureter) at the University of Arizona. Per the American Society of Microbiology 2022 4thEd Clinical Microbiology Procedures Handbook, stone cultures were performed using a 'tissue' protocol. A subset of 5 randomly selected stones was (1) prepared for scanning electron microscopy (SEM), and (2) crushed into slurries and processed for ELISA-based detection of the bacteria-associated pro-inflammatory endotoxins LPSand LTA. Images/endotoxin quantitation were compared to corresponding SC results.

Results: Of the 5 random stones, 3 and 2 had predominant non-infection & infection compositions, respectively. While 4 out of 5 stones (80%) had no growth on SC, SEM revealed abundant bacterial colonization within all 5 stones, with Gram-positive, Gram-negative, spirochaete-like morphologies, as well as biofilm-like meshwork (Figure 1) identified. Consistent with this, all 5 stone slurries yielded bacteria- associated pro-inflammatory molecules, LPS and LTA.

Conclusions: SEM and endotoxin assays can detect bacteria & bacterial products not seen on stone culture and therefore inform our understanding of the microbial milieu within kidney stones. Further evaluation of the clinical applicability of non-SC approaches for kidney stone microbiota is warranted.

Funding: FUTURE-Careers at University of Arizona College of Medicine.

BS3-18 Effect of Flexible Aspiration Sheath Clearpetra on Intrarenal Pressure and Temperature During Flexible Ureteroscopy: Ex Vivo Porcine Kidney Model

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Presented By: Florencia Maldonado, Urology Resident

Introduction: Endoscopic ureterolithotomy (EU) requires continuous irrigation and the use of heat- generating lasers for effectiveness. Complications related to increased intrarenal pressure (IP) and intrarenal temperature (IT) have been observed. In response, aspirating access sheaths (AAS) have been developed to reduce IP and associated complications. The aim of this study was to demonstrate the effect of flexible AAS on IT and IP in ex vivo porcine kidneys (EVPK).

Methods: Two EVPK models were utilized. In both models, continuous irrigation was used at a one-meter height, and flexible ureteroscopy (fURS) was performed using the Clearpetra...
11/13 Fr flexible AAS and a disposable ureteroscope from Boston Scientific. In Model 1 (M1), a digital Danoplus manometer was installed in the upper calyx, and fURS was conducted in the renal pelvis (RP) and lower calyx (LC) in three stages: without aspiration (WA), with medium power aspiration (MPA), and with maximum capacity aspiration (MCA). In Model 2 (M2), a GM1312 ThermalComp thermometer was installed in the RP, and EU was performed in three stages: WA, with MPA, and with MCA. A Holmium laser with a 200-micron fiber was used for pulverization (9W/30 Hz and 0.3J) and fragmentation (15W/15 Hz and 1J), with an activation time of 20 seconds.

**Results:**
In M1, in the RP, the average IP achieved with irrigation WA was 6.27 cmH2O. With MPA, the average IP was 2.27 cmH2O, representing a reduction of 63.8% (P value 0.02). When MCA was used, the IP was 2.37 cmH2O, achieving a reduction in IP of 62.21% (P value 0.03). In the LC, the average IP WA was 5.91 cmH2O. The average IP with MPA was 2.17 cmH2O, representing a reduction of 63.63% (P value 0.04). With MCA, the IP was 1.77 cmH2O, achieving a reduction of 70.06% (P value 0.01). In M2, during pulverization, the maximum IT WA was 28.47°C on average; after activating aspiration, the maximum IT was 28.52°C (P value 0.87) and 27.55°C (P value 0.18) at medium and high capacity, respectively. During fragmentation, the maximum IT reached on average was 33.65°C; with aspiration, the IT achieved was 33.57°C (P value 0.96) and 32.35°C (P value 0.14) at medium and high capacity, respectively.

**Conclusions:** This study demonstrated a significant reduction in IP with no significant changes in IT upon using flexible Clearpestra AAS aspiration.

**Funding:** None.

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**BS3-19 Composition Variability can Occur When Analyzing Urinary Stone Due to Sampling**

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**Introduction:** Composition of urinary stone is crucial information for stone management. Reference spectra and standard nomenclature have been reported as contributors to the inconsistency of composition analysis results. Sampling is another potential factor for inconsistent results. This study assessed the impact of sampling error on the variability of urinary stone composition and provided potential solutions.

**Methods:** We collected 1, 134 stone fragments from 149 instances in which patients underwent stone removal at Urology department, Hanoi Medical University Hospital from January to August 2022. Each fragment, in the form of fine powder, was analyzed by Fourier transform infrared spectroscopy (FTIR). When the amount of powder was abundant, it was divided into separate specimens. FTIR analysis was performed for every specimen (see Figure 1 for the experimental scheme). The composition of a given fragment was the average of its specimens. The variability in composition was assessed on the fragment level (i.e., between fragments of an instance) as well as the specimen level (i.e., between specimens of a fragment). We defined instances and fragments as “significantly variable” if the maximum difference in any composition of the associated fragments and specimens was equal to or greater than 20%, respectively.

**Results:** “Significantly variable” instances were accounted for 59.7% (89/149). The variability on the fragment level was correlated with either impurity (i.e., the number of elements) or size (i.e., the number of fragments in an instance). While on the specimen level, we observed 12.0% (136/1, 134) were “significantly variable.”

**Conclusions:** Composition variability in urinary stone could be significant and correlated with the impurity and the size of samples. Mapping denotation while sampling (similar to performing biopsy), analyzing as well as reporting composition of fragments individually may reduce the inconsistency in results.

**Funding:** None.
**BS3-20 Multi-Modal Molecular Characterization and Validation of Lipid Chaperone IL6 Upregulation in Renal Randall Plaque Formation**

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Presented By: Muhammad Sarfaraz Iqbal, Postdoctoral Researcher

**Introduction:** The IL6 gene, which is involved in inflammation and lipid metabolism, has gained interest in the development of kidney stones. The production of Renal Randall plaque plays a crucial role in the development of kidney stone disease, although the exact molecular pathways that initiate and continue this process are not fully known. This study utilized a multi-modal strategy involving molecular characterization and validation methodologies to investigate the involvement of the lipid chaperone IL6 in the development of renal Randall plaque formation. This study aimed to comprehensively examine the expression patterns of the IL6 gene and its involvement in the progression of Randall’s plaque formation.

**Methods:** Tissue biopsy samples were carefully collected from three people diagnosed with Randall plaque (RP) and three individuals with normal renal papillae, who underwent ureteroscopy for research purposes. The expression profiles of the long non-coding RNA (lncRNA) IL6 were examined using single-cell RNA sequencing (scRNA-seq). The scRNA-seq data was analyzed using Bioconductor programmes in R Studio, and the expression patterns were confirmed using quantitative PCR. Afterward, bioinformatics research was performed to identify specific biological pathways linked to the abnormal regulation of IncRNA IL6 in the formation of Randall plaque.

**Results:** Our analysis consistently found elevated IL6 expression in tissues affected by Randall plaque, indicating an association between IL6 and the development of kidney stone formation. This highlights the possibility of using particular therapies for kidney-related illnesses. The molecular mechanisms indicate that IL6 is involved in the development of Randall plaques and its subsequent influence on the functioning of the kidneys, providing a foundation for further investigation and potential treatment approaches. The regulating function of IL6 in Randall plaque, specifically in kidney stone-related illnesses indicates its potential as both a diagnostic biomarker and a target for treatment in kidney stone diseases. Dendritic cells (CD1C+DC), T regulatory cells (CD4_Treg), and B cells showed significantly increased expression of IL6. The p-values for dendritic cells, T regulatory cells, and B cells were 1.50e-04, 3.20e-03, and 6.82e-47, respectively. The average log2 fold change for dendritic cells, T regulatory cells, and B cells were 0.28, 0.17, and 0.26, respectively. Quantitative PCR (qPCR) analysis provided additional confirmation of increased IL6 expression in several cell types, with fold increases compared to the reference sample.

**Conclusions:** IL6 expression profiling through scRNA-seq and qPCR reveals its potential significance in Randall plaque pathogenesis. These findings provide valuable insights into the molecular mechanisms underlying RP and suggest IL6 as a promising target for diagnosis and treatment of kidney stone-related disorders.

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**BS3-21 Initiation of Kidney Stones on Apatite Deposits in the Calyceal Fornix: New Perspective on an Old Hypothesis**

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Presented By: Daniel Wong, MD

**Introduction:** It is not uncommon to find renal calculi wedged in the fornix of a calyx, molded by the space in which they reside. The pathogenesis of forniceal stones may be separate from typical Randall’s plaque or plug stones. Their location is reminiscent of a stone forming hypothesis posed by Leo Anderson and Reginald Carr around 1954. They found calcium deposits preferentially accumulated in the subepithelial fornix where they would erode to become a urinary nidus. It was believed obstructed lymphatics running along interlobular vessels were the trigger for microlith accumulation behind the fornix. We accumulated a series of patients with stones found adherent to the fornix. We report this series and examine these stones using micro CT to reveal information about their composition and potential origin.

**Methods:** Idiopathic stone formers undergoing stone removal procedures were consented for study from August 2005 through March 2019. Patients were included if they were found to have an attached fornicial stone at the time of stone extraction procedure. Stone material was collected intact when possible. Micro CT was performed on stone material and endoscopic mapping was completed per standard protocol.

**Results:** Thirteen patients had obvious fornicial stones collected intact. Over half were female. A majority had a positive culture prior to surgery or history of urinary tract infection. Only two patients did not have a history of shockwave lithotripsy or ureteroscopy prior to the index stone removal event. Previous stone procedures were performed a mean of 5.6 ± 4.8 years prior to the index forniceal stone extraction. All fornicial stones were composed of apatite with overgrowth of calcium oxalate and only in one case brushite. In some cases, the apatite took the form of a knob which extended from the embedded side of the flattened stone. (Figure 1).
Conclusions: Forniceal stones are primarily calcium oxalate with an apatite component which may have an origin distinct from Randall’s plaque or plugs. All patients had prior ipsilateral shockwave lithotripsy, endoscopic stone surgery or history of positive urine culture. This is perhaps indicative of prior injury which may predispose to this type of stone formation.

Funding: Plaques and Plugs: Pathogenesis and Relationship to Nephrolithiasis P01DK056788.

BS3-22 Renal Tubular Epithelial Cells-Secreted Lactoferrin Promotes Renal Fibroblasts’ Ectopic Calcification and Randall’s Plaque Formation

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Introduction: Kidney stone is one of the most common urologic diseases, with high morbidity and postoperative recurrence rate. Many studies have shown that Randall’s plaque (RP) plays a crucial role in stone formation and recurrence. Though multiple types of renal cells and tissue ectopic calcification are involved in its formation, the exact underlying mechanism remains unclear. Our previous study found that lactoferrin (LTF) had the greatest difference in expression in renal tubular epithelial cells in RP tissues from both normal people and patients with calcium oxalate stones via using single-cell sequencing. But the role of LTF in ectopic calcification and RP formation remains unknown. This study aims to confirm the effect and underlying mechanism of LTF on ectopic calcification in renal fibroblasts and RP formation, thus to providing new experimental basis and intervention target for the clinical prevention of calcium oxalate stones.

Methods: LTF expression in clinical samples, animal kidney tissues and cells was assessed. Cell co-culture, recombinant LTF and ERK1/2 inhibitor were used to explore the effect and underlying mechanism of LTF on the ectopic calcification of NRK-49F cells. In addition, ethylene glycol-induced rat nephrocalcinosis model was used to assess the effects of LTF on kidney crystal deposition and collagen synthesis, as well as the expression of calcification-associated proteins.

Results: LTF expression was upregulated in RP tissues, the kidneys of nephrocalcinosis rats, and calcium oxalate-treated HK-2 cells. NRK-49F cells exhibited a stronger ectopic calcification ability than HK-2 cells. Co-culture with HK-2 cells or recombinant LTF significantly promoted the ectopic calcification of NRK-49F cells. In addition, recombinant LTF could increase the expressions of LRPI and p-ERK1/2 in NRK-49F cells, whereas the ERK1/2 inhibitor U0126 obviously attenuated pro-calcific medium-induced ectopic calcification of NRK-49F cells. Furthermore, LTF significantly promoted the crystal depositions and collagen synthesis in rat kidneys, as well as the ectopic calcification of renal interstitial cells.

Conclusions: Renal tubular epithelial cells activate the renal fibroblast LRPI/ERK1/2 pathway by secreting LTF. This promotes ectopic calcification and calcium salt deposition in renal fibroblasts, inducing RP and calcium oxalate stone formation.

Funding: Natural Science Foundation of Guangdong Province.

BS3-23 Metastasis-Associated Lung Adenocarcinoma Transcript 1 (MALAT1) Gene Expression Profiling in Randall’s Plaque Pathogenesis: Perspectives from Single-Cell RNA Sequencing

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Introduction: Randall’s plaque (RP), situated under the epithelium at the renal papilla, serves as the primary site for idiopathic calcium oxalate kidney stone formation, yet its microenvironment remains poorly understood. Long noncoding RNA MALAT1 has emerged as a potential diagnostic and therapeutic target for diabetic nephropathy and other kidney diseases. This study aimed to comprehensively examine the expression patterns of the MALAT1 gene and its involvement in the progression of Randall’s plaque formation.

Methods: Tissue biopsy samples were carefully obtained from three patients diagnosed with RP and three persons with normal renal papillae who were undergoing ureteroscopy for research purposes. Single-cell RNA sequencing (scRNA-seq) was employed to examine lncRNA MALAT1 expression profiles. The scRNA-seq data were analyzed using Bioconductor packages in R Studio, and the expression patterns were confirmed using quantitative PCR. Bioinformatics analysis was subsequently performed to identify putative molecular pathways involved in lncRNA MALAT1 deregulation in Randall’s plaque development.

Results: We identified differentially expressed genes (DEGs) in RP tissues that were significantly influenced by MALAT1. Analysis of the scRNA-seq expression data revealed a consistent upregulation of MALAT1 gene expression. MALAT1 expression was significantly higher in B cells (p = 5.38e-61, avg_log2FC = 0.34), dendritic cells (CD1C+DC) (p = 5.70e-04, avg_log2FC = 0.14), and T regulatory cells (CD4_Treg). Furthermore, qPCR analyses validated the persistent upregulation of MALAT1 expression. Our scRNA and qPCR analyses consistently demonstrated higher levels of MALAT1 expression, indicating an effective association between MALAT1 and the development of Randall plaques in the kidney.

Conclusions: In conclusion, the validated MALAT1 gene expression profile, confirmed by scRNA-seq and qPCR, reveals the potential role of MALAT1 in the development and prognosis of Randall’s plaque pathogenesis.

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BS4-01  Antifouling Surfaces Against E. coli
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Presented By: Hilal Göktas, Professor of biomedical Engineering

Introduction: Hospital-acquired infections (HAI) are widely known infections related to widespread use of medical devices. Catheter-associated urinary tract infections (CAUTI) are one of the most challenging complications among HAIs in short- and long-term catheterization. Antifouling strategies have been developed in order to eliminate these complications. The goal of antifouling strategies is to prevent the tendency of bacteria to adhere to the surface of the relevant medical device. The aim of the study is to prevent bacterial colonization in catheters by producing a non-adherent surface for Escherichia coli bacteria.

Methods: In order to repel E. coli (ATCC 25922) bacteria from the surface, copolymer thin films were synthesized using polyethylene glycol (PEG) with proven antifouling properties, citric acid (CA) with antimicrobial properties, and glycidyl methacrylate (GMA) used as a binding agent. Functional PEG-GMA-CA thin films at nm level were deposited on the catheter surface by plasma enhanced chemical vapour deposition (PECVD) technique. FTIR, XPS, SEM and contact angle techniques were used to characterize the thin films.

Results: With the characterization methods, it has been observed that the structures of the materials are preserved, and thin film synthesis were carried out without causing changes in the chemical and molecular natures of the materials. The results obtained from microbiology studies show that biofilm formation was prevented by 99.4% even at the end of 30 days compared to uncoated catheters.

Conclusions: This study is the first to investigate the antifouling properties of PEG-GMA-CA thin films produced by PECVD technique. In addition to preventing bacterial colonization for 30 days, the thin film coated catheters are planned to be used in vivo studies due to their inhibition of protein adsorption.

Funding: The study was granted by THE SCIENTIFIC AND TECHNOLOGICAL RESEARCH COUNCIL OF TÜRKİYE.

BS4-02  The Emerging Relevance of Sub-Infectious Levels of Uropathogens in Urologic Dysfunction
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¹Cleveland Clinic Foundation

Presented By: Aaron Miller, PhD

Introduction: Many urologic disorders are of idiopathic origins. Importantly, research over the last decade has revealed that the urinary tract harbors a viable community of bacteria, even in the absence of infection. This revelation overturns long-held beliefs of sterility and opens up new potential avenues for urologic dysfunction, along with potential therapeutic options. The objectives of the current research were to examine the role of the urinary tract microbiome for multiple urologic diseases that include urinary stone disease (USD), benign prostatic hyperplasia (BPH), and urethral stricture disease.

Methods: A high throughput sequencing methodology targeting the microbial 16S rRNA gene was employed to sequence DNA extracted from relevant urologic samples (kidney stones, urine, prostate tissue, or semen) and generate microbial profiles.

Results: Consistently, urologic disorders were associated with elevated, but sub-infectious levels of known uropathogens. Specifically, urologic dysfunction was most associated with E. coli (USD), Enterobacter spp. (BPH), and Klebsiella (urethral structure disease). Importantly, most disease-associated taxa all belonged to the same microbial family, Enterobacteraceae.

Conclusions: Currently, urinary tract infections are thought of as a binary classification – either the presence or absence of bacteria. However, results from our studies indicate that bacteria are always present and that uropathogens can impact urinary tract physiology even at sub-infectious levels. Data on antibiotic use and the abundance of uropathogens suggest that alternative methods are needed to control potential infectious complications.

Funding: Cleveland Clinic Foundation.

BS4-03  Polymyxin B Irrigation Fluid vs Uropathogenic E coli in a Benchtop Ureteroscopy Model
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Presented By: Stephen Hassig, MD, MBA

Introduction: Serious infections after ureteroscopy are increasing with significant morbidity, mortality and financial costs.
Aside from pre-operative antibiotics and intrarenal pressure reduction, little is done to address stone-associated pathogen burden within the kidney, with current standard of care utilizing saline irrigation. Polymyxin B (PMB) is a gram-negative bacterial peptide that, uniquely, neutralizes sepsis-inducing lipopolysaccharide (LPS). Though dose-limited via IV due to toxicities, PMB has never been used in ureteroscopic irrigation fluid. We hypothesize that PMB will reduce viable bacteria in a bench renal irrigation model at doses below typical IV doses.

**Methods:** ATCC CFT073 uropathogenic E. coli were incubated to 0.35 OD600, or about 2.4 x 10^8 cells per mL. 2 mL were added to a stoppered 5 mL test tube. The stopper was penetrated with a 16g needle for inflow of irrigation (approximating the 3.6 fr irrigation channel in many ureteroscopes) and a 14g angiocath for outflow of the closed system (approximating the area available for outflow between a 9.5 fr scope and an 11/13 fr ureteral sheath). Bags of 250 cc 0.9% saline containing 0 units (control), 5000 units, 10000 units, and 20000 units of PMB were irrigated through the tube over 15 minutes (rate: 1L/hr). 15 microliter effluent samples were obtained and plated at time 0, 30 seconds, 1 min, 3 min, 7 min, 10 min, and 15 min. At completion, test tubes were emptied, 1 mL of broth was added, and tubes were incubated for 1 hour and then plated.

**Results:** Colonies too numerous to count grew throughout all time points for the saline control. The 5000 unit trial had lawn growth at time 0, 88 colonies at 30 seconds, 25 at 1 min, 15 at 3 min and then no growth for the remainder. The 10000 unit trial had lawn growth at time 0 followed by no growth throughout. Lastly, the 20000 unit trial had 1 colony at time 0 followed by no growth throughout. For tube culturing, the saline control tube demonstrated lawn growth followed by 71 colonies from the 5000 unit tube and no colonies from the 10000 and 20000 unit tubes. Irrigation fluid was visually clear across all doses.

**Conclusions:** Polymyxin B irrigation clears significant E coli burden at doses far below the IV dose (15000- 25000 units/kg/day) in a benchtop renal irrigation model. Next steps include assessing LPS reduction in this model and ultimately tolerability and efficacy in an animal model.

**Funding:** N/A.

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**BS4-04 Ex Vivo Analysis of Thulium Fiber Laser with Suction and Non-Suction Ureteral Access Sheath (UAS) in Retrograde Intrarenal Surgery (RIRS): Which Is Better?**

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Presented By: Rajiv Kalbit, MD

**Introduction:** Retrograde intrarenal surgery (RIRS) is a minimally invasive surgical technique used for the treatment of nephrolithiasis. One of its drawbacks is that patients with a large stone burden are time- consuming and microscopic fragments obstruct the outflow. To improve both dust aspiration and fragment removal, the use of suction ureteral access sheaths (SUAS), direct-in-scope suction techniques, steerable post-lithotripsy aspiration catheters, and table tilting maneuvers were developed. This study explores the impact of suction and no-suction techniques in combination with the Thulium Fiber Laser (TFL) during RIRS using an ex vivo porcine kidney model. This study aimed to assess factors, such as operative time, lithotripsy efficiency, and stone-free rates, to determine the efficacy of this approach.

**Methods:** This study employed a prospective ex vivo design using porcine kidneys implanted with phantom stones. These stones were subjected to RIRS using both suction and no-suction methods with different ureteral access sheath sizes (10/12 Fr and 12/14 Fr) and a TFL. Operative time, laser time, energy delivery, ablation speed, and residual stone fragments were measured and compared between the suction and non-suction groups.

**Results:** The suction group had several advantages over the no-suction group. The mean total minutes for those without suction is 11.89, significantly longer than mean 8.13 for those with suction. In addition, the mean laser time was significantly longer among those without suction (7.083 min) as compared to only 6.27 minutes for those with suction. The suction group demonstrated significantly shorter operative times, reduced laser time, lower energy delivery, higher lithotripsy efficiency, and fewer residual stone fragments. These outcomes were consistent across both 10/12 Fr and 12/14 Fr ureteral access sheaths.

**Conclusions:** In conclusion, this ex vivo study supports the efficacy of using a Thulium Fiber Laser with suction in RIRS for kidney stone management. Further validation through clinical trials and application in human patients is warranted.

**Funding:** None.

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**BS4-05 Spectrum of Bacterial Pathogens from Urinary Infections Associated with Struvite and Metabolic Stones**

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Presented By: Kamran Bhatti, MS, FACS

**Introduction:** Urinary tract infections can change the composition of urine, causing an increased risk of the formation of several types of urinary stones. Bacterial strains with urease activity, otherwise known as urea-splitting bacteria, can break down urea, causing an increase in the urinary concentrations of ammonium and bicarbonate in the presence of water. The increase in urinary bicarbonate causes the alkalinization of the urine and, together with the increase in urinary ammonium, increases the urinary saturation for struvite or magnesium
ammonium phosphate (MgNH4PO4·6H2O) and carbonate apatite [Ca10(PO4)6CO3] [1]. The purposes of this study were to evaluate the rate of infection stones in a large series of renal stone formers observed in different countries of the world and to evaluate the urine cultures of patients with infection stones.

Methods: In 2020, U-merge, an association gathering urologists from all over the world, launched a study to collect the results of urinary stone analyses among different populations in the countries of its members. The charts of adult patients (>18 years) with renal or ureteral stones observed in each participating center were reviewed. The data of the patients who had undergone a chemical analysis of the stones available were collected. Any method of stone analysis was accepted, but the methodology had to be known and registered. The age, gender, stone composition, and nationality of each patient were recorded in an Excel database. A minimum number of 30 patients per center was required.

Results: Results: In total, 1204 renal stone formers (RSFs) from 10 countries were included (776 males, 428 females). Fifty-six patients (4.6%) had struvite stones. The highest frequency of struvite stones was observed in India (23%) and Pakistan (18%). Lower rates were reported in Canada (2%), China (3%), Argentina (3%), Iraq (3%), Italy (3.5%) and Poland (3%), and intermediate rates in Egypt (5.5%) and Bulgaria (5.4%). Urine cultures were retrieved from 508 patients. Patients with struvite stones had a positive culture in 64.3% of the samples and patients with other stones, in 26.7%. In struvite stones, the most common isolates were Escherichia coli (27.7%) and Proteus spp. (27.7%), followed by Klebsiella spp. (16.7%); in other types of stone, it was Escherichia coli (47.6%), followed by Gram-positive bacteria (14.0%)

Conclusions: The struvite stone composition was associated with a urinary infection, although infection was not demonstrable with a conventional midstream urine culture in about 30%.

Funding: No.

BS4-06 Hydroxycitric Acid Inhibits Ectopic Calcification of Renal Interstitial Fibroblasts by Suppressing Cell Apoptosis

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Presented By: Wei-Feng Liu

Introduction: Ectopic calcification of the renal interstitium is a key contributor to the formation of Randall’s plaque and increases the risk of kidney stone formation. However, there are currently no effective targeted drugs available. The potential of hydroxycitric acid (HCA), a derivative of citric acid with excellent antioxidant and crystallization inhibiting properties, to inhibit calcification in fibroblasts is yet to be determined.

Methods: This study established a model of renal interstitial fibroblast calcification through in vitro calcification culture, based on the presence of renal interstitial calcification in clinical samples and the rat crystallization deposition model. The study further explores the effects of HCA on cell injury and cellular calcification. The related molecular mechanisms were explored through transcriptomic analysis.

Results: The results showed that calcification culture of renal interstitial fibroblasts induced calcium salt deposition, resulting in up-regulation of the expression of calcification-associated proteins (ALP, RUNX2 and OCN) and down-regulation of the expression of antioxidant damage protein (Nrf-2). With the intervention of HCA, it effectively inhibited the production of reactive oxygen species induced by calcification culture, reduced apoptosis and regulated the expression of apoptotic genes (BAX, Bcl-2). HCA reduced calcium salt deposition and nodules on the cell surface and inhibited the expression of calcification-related proteins. Meanwhile, in the rat deposition model, HCA significantly inhibited the formation of crystals and effectively suppressed the expression of calcification-associated proteins. Transcriptomic analysis indicated that HCA could regulate the alteration of cellular transcriptome induced by calcification culture.

Conclusions: HCA can effectively inhibit the calcification of renal interstitial fibroblasts, reducing the risk of stone formation by inhibiting calcification culture-induced apoptosis and calcium salt deposition. Therefore, HCA is a promising alternative drug for inhibiting renal stone formation.

Funding: This work was granted by the Science and Technology Plan Project of Guangzhou.

BS4-07 Clinical Features and Mutational Spectrum of Chinese Patients with Primary Hyperoxaluria Type 2

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Presented By: Wenying Wang, MD

Introduction: Primary hyperoxaluria type 2 (PH2) is a rare hereditary disease that causes nephrolithiasis, nephrocalcinosis and kidney failure. This study aimed to investigate the clinical features and mutational spectrum of Chinese patients with PH2.

Methods: A retrospective cohort study was performed on PH2 patients admitted to our center over seven years. We also systematically reviewed all the articles on Chinese PH2 published from January 2000 to May 2023 and conducted a meta-analysis.

Results: This study enrolled a total of 25 PH2 patients (10 from our center and 15 from published studies). The median age of onset in patients in our center was 8.50 (1.00, 24.00) years, and 50% were male. Among the 25 Chinese patients, the median age of onset was 8.00 (0.40, 26.00) years, and 64% of them were male. Seven patients progressed to end-stage kidney disease, with a median age of 27.50 (12, 31) years. The cumulative renal survival rates were 100%, 91.67%, 45.83% and 30.56% at 10, 20, 30 and 40 years of age, respectively. A total of 18 different variants were identified, and c. 864_865del was the dominant variant, accounting for 57.69% of the total alleles. Patients heterozygous for c. 864_865del were more susceptible to nephrocalcinosis than those homozygous for c. 864_865del and those harboring other mutations (83.33% versus 33.3% and 0%, respectively) (p = 0.025).

Conclusions: The clinical features and mutational spectrum of Chinese PH2 patients were described. This study helps to expand awareness of the phenotype and genotype of Chinese PH2 patients and contributes to improving diagnostic and treatment strategies for PH2 patients.

Funding: none.
BS4-08 Comparative analysis of TFL, Ho:YAG, and pTm:YAG Lasers in Dusting Lithotripsy: In vitro study

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Presented By: Catalina Solano, MD

Introduction: Holmium: yttrium aluminum garnet laser (Ho:YAG) is still considered the gold standard in laser lithotripsy. There is a large body of literature comparing the capabilities of Ho:YAG and thulium fiber lasers (TFLs). The novel, pulsed thulium:yttrium aluminum garnet laser (p-Tm:YAG) evaluation model has only been compared with Ho:YAG in terms of its dusting performance to date. In this study, our aim was to compare the efficiency of the TFL, the Ho:YAG laser, and pTm: YAG by evaluating the stone mass loss after lithotripsy using different lasers on BegoStones and human stones in an in vitro model.

Methods: We utilized a Ho:YAG laser (30 W; MH01, Rocamed), a TFL Drive (60W; Coloplast), and a p-Tm:YAG (100 W; THULIO Dornier) for our experiments. The laser parameters for TFL were set as follows: (10 W= 0.5 J x 20 Hz; short pulse). For Ho:YAG, we used (10 W= 0.5 J x 20 Hz), employing both short and long pulses. pTm:YAG was set at (12.5 W= 0.6 J x 20 Hz, long pulse and 0.5 J x 25Hz dusting). We performed contact lithotripsy on phantoms (BegoStones) and human stones with different compositions, including uric acid (UA) and calcium oxalate monohydrate (COM) in water environments. Laser ablation was carried out with a total energy of 3000 J. Mass loss was determined by calculating the difference between the initial phantom mass and the final ablated phantom mass for both phantoms and human stones.

Results: The mean total mass loss for BegoStones phantoms and human stones was 22 ± 0.15 and 63 ± 0.07 respectively. The median mass loss for TFL laser configurations was 22 mg for uric acid (UA) stones and 36 mg for calcium oxalate monohydrate (COM) stones. For Ho:YAG, the median mass loss was 10 mg for UA stones and 24 mg for COM stones, while for p-Tm:YAG, it was 25 mg for UA stones and 24 mg for COM stones. Statistical analysis revealed a significant difference in ablated weight between TFL and Tm:YAG laser devices (p-value = 0.03) for UA stones (88 mg vs. 50 mg), whereas no significant difference was observed between Ho:YAG and TFL, or Ho:YAG and pTm:YAG lasers.

Conclusions: In our in vitro study, employing dusting settings, sTFL lithotripsy demonstrated higher efficiency in terms of achieving greater mass loss compared to Ho:YAG and pTm: YAG lithotripsy.

Funding: non.

BS4-09 Leveraging a Machine Learning Model to Predict Kidney Stone Composition: Implications for Treatment and Pathophysiology

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Presented By: Gerrit Stuivenberg, BMSc, PhD(c)

Introduction: Preventative strategies and surgical treatment for urolithiasis depend on stone composition. However, stone composition is often unknown until the stone is passed or surgically managed. Given that stone composition likely reflects the physiological parameters during its formation, clinical data from stone formers were used to predict calcium vs non-calcium stone composition.

Methods: Stone composition, 24-hour urine collection, serum biochemistry, and biometric data were collected prospectively from calcium (n = 625) and non-calcium (n = 152) stone formers at a tertiary care centre metabolic stone clinic. A training dataset (80% of the data) was used to train a binary gradient boosted tree (Figure 1A). Class imbalance was addressed by up sampling the minority class and hyperparameters were tuned using Bayesian optimization. A testing dataset (20% of the data) was used to evaluate the model.

Results: The model performance was acceptable with an area under the receiver operator characteristics (AUC-ROC) curve of 0.76 (Figure 1B). Sensitivity and specificity were 0.86 and 0.73, respectively (Figure 1C). 24-hour urine calcium, blood urate, and blood phosphate were the most important predictors for the classification (Figure 1D).

Conclusions: This study demonstrates that clinical data can be used to predict stone composition, which may help urologists determine stone type and guide their management plan before
stone treatment. Moreover, the model provides a better understanding of key clinical features of stone disease, shedding light on the underlying pathophysiology. By extending machine learning algorithms, it will be possible to determine specific compositions of stones and ultimately improve treatments for stone formers.

**Funding:** N/A.

**BS4-10 Investigation of Uric Acid Stones in the GeoBioMed Paradigm**

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Presented By: Alim Dymov, MD, PhD

**Introduction:** According to the GeoBioMed paradigm proposed in the late 2010s, urinary stones are formed by the same processes as minerals in rock formations and can therefore be investigated using geological, geochemical and mineralogical methods. Calcium oxalate stones have now been studied according to the paradigm, but uric acid and urate stones have not yet been investigated. The aim of this work was to reveal the patterns of morphological structure of uric acid stones.

**Methods:** The samples of urinary stones were scanned using a Bruker SkyScan 1276 X-ray micro-CT scanner (Bruker, Belgium) and analyzed using Bruker CTan and CTVox software and 3D Slicer. Urinary stone surfaces were photographed with an Olympus SZ-51 microscope (Olympus, Japan). Polarization microscopy was carried out using an Olympus BX-53 microscope (Olympus, Japan), raster electron microscopy was performed using a FEG-SEM KYKY-EM8000 (KYKY, China). The chemical composition was determined using a Rigaku Smartlab SE X-ray diffractometer (Rigaku, Japan).

**Results:** Ten stone samples were studied. As a result the three main processes underlying the formation of uric acid and urate stones were identified - crystallization, agglomeration and sedimentation, which lead to the formation of rhythmically alternating layers of “dense” and “friable” uricite. Elemental analysis demonstrated homogeneity of these layers in three main elements: N, O and C. This indicates that these are different deposits of the same material. “Friable” layers also contain pores, which are well visualized by micro-CT examination. In some samples, it was found that layers with pores of small diameter are being gradually replaced by layers with large diameter pores. The pronounced zoning also leads to the fact that layers with high porosity may concentrically cover the whole stone or a significant part of it. Many stones have calcium-oxalate monohydrate inclusions in the form of layers or nuclei around which the layered mass of the uric acid stone is growing.

**Conclusions:** Uric acid and urate stones have a complex heterogeneous structure, indicating the presence of processes of crystallization, agglomeration and sedimentation. Thus, despite the different origin from calcium oxalate stones, the formation of uric acid stones is also subject to universal laws of biomineralization. The different density of the uricite layers indicates a change in the concentration of super-saturated urine solution. Nuclei and layers of calcium-oxalate and uricite indicate repeated changes in the composition and pH of urine due to hyperoxaluria and hyperuricuric.

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**BS4-11 Feasibility of Two Non-Destructive Urinary Stones Analysis Techniques: Micro-X-Ray Fluorescence and Electron Microprobe Analysis**

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Presented By: Jennifer Bjazevic, MD, MSc

**Introduction:** Urinary stone composition should be investigated when feasible, as it helps to target prevention strategies to decrease stone recurrence rates. Contemporary techniques for urinary stone analysis are usually limited to mass spectrometry, spectroscopy, and powder X-ray diffraction. Although efficient, these techniques require stone pulverization prior to the analysis hindering further investigation of the internal and structural heterogeneity exhibited by some stones. Therefore, we aimed to utilize non-destructive methods of spectrochemical analysis to determine the spatial distribution of elements within stone at the micron scale and gain a greater understanding of the underlying mechanisms of stone formation.

**Methods:** Five human kidney stones were embedded in resin, cross-sectioned, and polished prior to geochemical analyses via two techniques: micro-X-ray fluorescence (mXRF), and electron microprobe analysis (EPMA). Both techniques used highly restricted excitation beams to determine the elemental composition of micron-scale “spots”. Overlapping spots were scanned until the full sample surface had been covered, allowing for the generation of high-resolution maps of elemental/mineralogical distribution within the stones. mXRF was conducted with the Bunker M4 Tornado and the JEOL JXA-8530F microprobe instrument for EPMA. All analyses were carried out at the Earth and Planetary Material Analysis Laboratory.

**Results:** Five stones were analyzed with the following compositions: 1. calcium phosphate; 2. calcium oxalate with a cystine band; 3. uric acid with calcium oxalate bands; 4. calcium oxalate with calcium phosphate at surface; and 5. uric acid with calcium oxalate and calcium phosphate bands. Moreover, spatially-resolved elemental identification was achieved, allowing for compositional mapping of the major type of stones, and locations of trace elements (e.g. Na, Zn, Cu).

**Conclusions:** This study demonstrated the feasibility of utilizing non-destructive techniques for urinary stone composition analysis using mXRF and EPMA, and allowed us to identify unique trace elements present within all five stones. Further studies matching stone composition and patients’ clinical data are warranted to better understand the underlying mechanisms of stone crystallization and how trace elements may impact this process.
Funding: The Lavergne Resident & Fellow Research Grant, Division of Urology, Schulich School of Medicine & Dentistry, Western University.

BS4-12 Molecular Interplay of MMP7 Upregulation in Randall Plaque Formation Through Single-Cell RNA Sequence Analysis

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Presented By: Muhammad Sarfaraz Iqbal, Postdoctoral Researcher

Introduction: Randall’s plaque (RP) formation in the kidneys is a critical precursor to the development of nephrolithiasis, although the molecular mechanisms behind this process are not fully understood. Matrix metalloproteinase 7 (MMP7) is a key component in tissue remodeling and is involved in a number of pathological conditions, such as the formation of kidney stones. The purpose of this work was to thoroughly investigate the expression patterns of the MMP7 gene and its role in the development of Randall’s plaque formation.

Methods: Biopsy samples were rigorously collected from three patients diagnosed with Randall’s plaque (RP) and three individuals with normal renal papillae who were undergoing ureteroscopy for research purposes. The expression profiles of long non-coding RNA MMP7 were analyzed using single-cell RNA sequencing (scRNA-seq). The scRNA-seq data were processed via Bioconductor programs in R Studio, and the expression patterns were validated through quantitative PCR. Subsequent bioinformatics analysis was conducted to identify potential molecular pathways associated with the abnormal regulation of long non-coding RNA MMP7 in the development of Randall’s plaque.

Results: Our findings consistently revealed increased expression of MMP7 in organs affected by Randall plaque, indicating an association between MMP7 and the formation of kidney stones. This indicates the potential for specific therapies for kidney-related diseases. The molecular interaction demonstrates the role of MMP7 in the creation of Randall plaques and its impact on renal health, laying the foundation for further investigation and potential therapeutic interventions. The role of MMP7 in controlling Randall plaque, particularly in kidney stone-related disorders, indicates its potential as a diagnostic biomarker and therapeutic target for kidney stone illnesses. T regulatory cells (CD4_Treg) (p = 5.38e-61, avg_log2FC = 0.34), dendritic cells (CD1C+DC), and B cells (p = 5.70e-04, avg_log2FC = 0.14), exhibit an increase in the expression of MMP7. A quantitative PCR (qPCR) analysis revealed that many cell types exhibit elevated expression levels of MMP7, with fold changes relative to the reference sample.

Conclusions: MMP7 expression profiling through scRNA-seq and qPCR reveals its potential significance in Randall plaque pathogenesis. These findings provide valuable insights into the molecular mechanisms underlying RP and suggest MMP7 as a promising target for diagnosis and treatment of kidney stone-related disorders.

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BS4-13 Causal Relationship Between Serum Metabolites and the Risk of Kidney Stones: A Mendelian Randomization Analysis

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Presented By: Jingwen Wei

Introduction: Kidney stones are currently considered as a multifactorial disorder involving metabolic disturbances. Serum metabolites have been linked to an increased risk of kidney stones in prior studies. However, the results are inconsistent, and the causality remains to be established. We aimed to investigate the potential causal relationship between serum metabolites and kidney stones using two-sample Mendelian randomization (MR).

Methods: We applied MR to evaluate the association between 1400 serum metabolites and the risk of kidney stones. Causal relationships were assessed through the Inverse-Variance Weighted (IVW), MR-Egger, and weighted median methods. Sensitivity analyses were conducted using Cochran’s Q Test, MR-PRESSO. MR- Egger was employed to check for pleiotropic effect. In addition, we conducted metabolic pathway enrichment analysis on known metabolites that have a causal relationship with the risk of kidney stones.

Results: We identified 69 metabolites causally associated with kidney stones, including 48 known metabolites, 13 unknown metabolites and 8 metabolite ratios. 19 known metabolites reached statistical significance in at least two MR models. Among them, most were attributed to amino acid metabolism and lipid metabolism, with 11 as risk factors (glutarate (c5-DC), mannos, 5-carboxylxylycylcsteine, 3-hydroxy-2-methylpyridine sulfate, 4-oxo-retinoic acid, 3-hydroxyphenacyl-glutamine, quinate, N-acetyl carnosine, 1-(1-eryl-oleryl)-GPE (p = 18:1), dihydroorotate, 5-oxoaprole) and 8 protective factors (branched chain 14:0 dicarboxylic acid, adenosine 5'-monophosphate (AMP), phenylalanine, N, N-dimethylalaniline, 2- methoxyresorcinol sulfate, sphingomyelin (d18:1/20:0, d16:1/22:0), 1-methyl-4-imidazolylmethylpyridine sulfate, 4-oxo-retinoic acid, 3-hydroxyphenacyl-glutamine, quinate, N-acetyl carnosine, 1-(1-eryl-oleryl)-GPE (p = 18:1), dihydroorotate, 5-oxoaprole) and 8 protective factors (branched chain 14:0 dicarboxylic acid, adenosine 5'-monophosphate (AMP), phenylalanine, N, N-dimethylalaniline, 2- methoxyresorcinol sulfate, sphingomyelin (d18:1/20:0, d16:1/22:0), 1-methyl-4-imidazolylmethylpyridine sulfate, 4-oxo-retinoic acid, 3-hydroxyphenacyl-glutamine, quinate, N-acetyl carnosine, 1-(1-eryl-oleryl)-GPE (p = 18:1), dihydroorotate, 5-oxoaprole).

Conclusions: Our results showed 19 circulating metabolites may have a potential causal relationship with the risk of kidney stones. Targeting specific metabolites may provide insights for the diagnosis, disease assessment, and treatment of kidney stones.

Funding: None.

BS4-14 Assessing the Impact of B2M Expression on Randall’s Plaque Pathogenesis: Insights from Single-Cell RNA Sequencing

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Presented By: Muhammad Sarfaraz Iqbal, PhD

Introduction: Randall’s plaque (RP) and three individu-
Introduction: Randall’s plaque (RP) plays a significant role in the development of kidney stone disease, especially in the formation of idiopathic calcium oxalate stones. A thorough understanding of the molecular mechanisms that regulate RP formation is required for the development of efficient therapeutic approaches. β2-microglobulin (B2M), a kind of RNA that does not code for proteins, has been identified as a potential diagnostic and therapeutic target for various kidney disorders, such as diabetic nephropathy. This study aimed to comprehensively examine the expression patterns of the B2M gene and its involvement in the progression of Randall’s plaque formation.

Methods: Tissue biopsy samples were carefully collected from three patients diagnosed with Randall’s plaque (RP) and three individuals with normal renal papillae who were undergoing uroscopy for research purposes. The expression profiles of long non-coding RNA B2M were examined using single-cell RNA sequencing (scRNA-seq). The scRNA-seq data were analysed via Bioconductor software in R Studio, and the expression patterns were validated through quantitative PCR. Subsequent bioinformatics research was conducted to uncover potential molecular pathways associated with the dysregulation of lncRNA B2M in the formation of Randall’s plaque.

Results: The findings consistently revealed higher levels of B2M expression in organs affected by Randall plaque, indicating an association between B2M and the development of kidney stones. This suggests the possibility of targeted treatments for illnesses related to the kidneys. The molecular interaction highlights the function of B2M in the formation of Randall plaques and their influence on renal health, accomplishing a foundation for future research and potential therapies. B2M plays a significant function in regulating Randall plaque, specifically in kidney stone-related conditions, indicating its potential as both a diagnostic biomarker and a target for treatment in kidney stone diseases. B cells (p = 4.72e-60, avg_log2FC = 0.38), macrophages (p = 6.28e-05, avg_log2FC = 0.17), epithelial cells (p = 3.41e-03, avg_log2FC = 0.10), and T regulatory cells (CD4_Treg) demonstrate an upregulation in the expression of B2M. The results of a quantitative PCR (qPCR) test revealed that higher expressions of B2M were found in many types of cells, with fold changes compared to the control sample.

Conclusions: Single-cell RNA sequencing (scRNA-seq) and quantitative polymerase chain reaction (qPCR) were used to analyse the expression of B2M. The results indicate that B2M may play an important role in the development of Randall plaque. The results of this study offer significant insight on the specific biological processes involved in RP and indicate B2M as a highly promising potential for the identification and treatment of kidney stone-related diseases.

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BS4-15 Chemokine (C-X-C motif) Receptor 4 (CXCR4) Upregulation Profiling in Randall Plaque Formation: A Gateway for Kidney Stone-Associated Pathologies and Therapeutics Advancement

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1

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Presented By: Muhammad Sarfaraz Iqbal, Postdoctoral Researcher

Introduction: The Randall Plaque, situated beneath the epithelium of the renal papilla, is an essential site for the formation of idiopathic calcium oxalate kidney stones. The long noncoding RNA CXCR4 is being recognized as a potential diagnostic and therapeutic target for several kidney diseases, such as diabetic nephropathy. Hence, it is essential to define its function inside Randall Plaque (RP). The present study aims to thoroughly examine the patterns of CXCR4 gene expression and its impact on the progression of Randall Plaque development.

Methods: Tissue biopsy samples were carefully obtained from three patients diagnosed with Randall’s plaque (RP) and three persons with normal renal papillae who were undergoing uroscopy for research purposes. Single-cell RNA sequencing (scRNA-seq) was employed to examine lncRNA CXCR4 expression profiles. The scRNA-seq data were analysed using Bioconductor programmes in R Studio, and the expression patterns were confirmed using quantitative PCR. Bio-informatics analysis was subsequently performed to identify putative molecular pathways involved in lncRNA CXCR4 deregulation in Randall’s plaque development.

Results: The results consistently show an elevated level in CXCR4 expression in organs affected by Randall plaque, indicating a significant association between CXCR4 and the production of kidney stones. This emphasizes the possibility of using particular therapies for illnesses related to the kidneys. The molecular interactions reveal the essential role of CXCR4 in the formation of Randall plaque and its subsequent influence on kidney health, laying the foundation for further investigation and potential treatment approaches. The role of CXCR4 in regulating Randall plaque, specifically in kidney stone-related illnesses, highlights its potential as both a diagnostic biomarker and a therapeutic target for kidney stone diseases. B cells (p = 5.38e-61, avg_log2FC = 0.36), dendritic cells (CD1C+DC) (p = 5.70e-04, avg_log2FC = 0.16), and T regulatory cells (CD4_Treg) demonstrate increased expression levels of CXCR4. Quantitative PCR (qPCR) study demonstrated a substantial increase in the expression of CXCR4 in several cell types, as indicated by the fold changes relative to the reference sample.

Conclusions: CXCR4 expression profiling through scRNA-seq and qPCR reveals its potential significance in Randall plaque pathogenesis. These findings provide valuable insights into the molecular mechanisms underlying RP and suggest CXCR4 as a promising target for diagnosis and treatment of kidney stone-related disorders.

Funding: This work was supported by grants from the National Natural Science Foundation of China (Nos. 82270798 and 82070721), the Guangzhou Municipal Science and Technology Bureau (Nos. 202002030316 and 202102010150), and the National Key Research and Development Program (No. 2020YFC2002700).

BS4-16 Durably Infected Kidney Stone Model with Viable Internal and External E coli

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BS4-14 Occupational Hazard in Urolithiasis Patients in Qatar: A Single-Center Cross-Sectional Study

Kamran Bhatti

1HMC, QATAR

Presented By: Kamran Bhatti

Introduction: Urolithiasis is the presence of stones inside the urinary tract. It is one of the most prevalent urological diseases, preceded only by urinary tract infections and prostate diseases (1). Urolithiasis is a multifaceted condition and doesn’t have a specific etiology. Risk factors for the development of kidney stones (KSs) are divided into intrinsic and extrinsic factors. Intrinsic factors are age, gender, ethnicity, and genetics. Extrinsic factors are climatic and environmental conditions, dietary habits, and occupation (2-4). The prevalence of KSs increases with age in both men and women. Men are more susceptible to developing KSs than females, while in children, both sexes have the same probability of KS formation (2, 5). The prevalence of this condition differs across various geographical areas, with an estimated prevalence ranging from 1% to 5% in Asia, 5% to 9% in Europe, and significantly higher at 13% in North America. Additionally, it is important to highlight that the likelihood of recurrence for this condition is on the rise, exceeding 50% within a 5- to 10-year timeframe (6). Occupations that involve dehydration, prolonged exposure to the sun and high temperatures, perspiration, prolonged sitting, and infrequent urination increase the likelihood of KS formation (7-11). The economic burden of KSs is substantial. The USA spent 1.83 billion dollars and 2.1 billion dollars in the years 1995 and 2000, respectively. The estimated cost of stone-related problems could reach 4.1 billion dollars by the year 2030 (12). Qatar is a Middle Eastern country that is characterized by its dry and subtropical desert climate. It is situated within the Afro-Asian-Stone Belt region, and the workforce composition is marked by the presence of diverse nationalities (13, 14). This study aims to investigate the role of occupation in urolithiasis in the Qatar population. Additionally, it seeks to examine the correlation of occupation and several intrinsic factors with KS characteristics.
Methods: Study design This was a retrospective cross-sectional study of 4204 patients who visited Al-Khor Hospital over the past eight years. Specific information such as age, gender, BMI, occupation, race, smoking status, comorbidities, medical history, having KS or not, stone characteristics (in patients with KS), and any previous history of renal surgery (in cases with KS) were collected. The review of the data presented no risks to the subjects involved, as it entailed a comprehensive review of historical medical records without the implementation of any new or invasive measures. Study population and setting The study sample comprised medical records of 4204 patients, sourced from pre-existing data within the registry of Al-Khor Hospital, encompassing individuals who have either presented with renal or ureteric stones or visited the hospital for general check-ups over the preceding 8 years. The study population encompassed a diverse spectrum of occupational categories, including clerks, executives, technicians, workers, and housewives. Within this classification, technicians were engineers and skilled laborers who were engaged in tasks related to machinery and technology. Similarly, the sedentary nature of clerical and executive positions, characterized by prolonged indoor working hours in environments. Workers represented a broader category encompassing individuals involved in manual labor or strenuous physical activities, spanning various industries including construction, agriculture, and manufacturing. Clerks denoted employees fulfilling various roles within an office setting, while executives were supervisors primarily engaged in meetings and responsible for decision-making processes. The frequencies of these occupations were calculated in both groups of patients with or without KSs and compared against each other. Inclusion and exclusion criteria The study included adult patients who were admitted to Al-Khor Hospital with renal or ureteral colic or visited it for routine check-ups between January 1, 2014, and December 31, 2022. Individuals within the pediatric age group were excluded from this study. Results: Among the total number of individuals included, 2000 presented with KS, with the majority being of Asian descent (49%), followed by individuals of Middle Eastern descent (35.1%). In both KS and non-KS cases, a higher proportion of subjects were male (84.1% and 80.6%, respectively), with male-to-female ratios of 5.3:1 and 4:1:1, respectively. The mean age of KS cases was 36.9 ± 9.1, concentrated in their thirties to forties, while non-KS cases were commonly distributed over thirty years with a mean age of 41.6 ± 13.4. The BMI of KS cases was 28.9 ± 3.6, compared to 29 ± 3.71 in non-KS cases. Conclusions: Our study found an increasing trend of risk of kidney stone with increased daily sitting time among participants. More prospective cohort studies are warranted to further examine the association. Funding: none.

BSA-20 Disrupted Calcium Homeostasis is Observed in Calcium Stone Formers
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Presented By: Gerrit Stuivenberg, BMSc, PhD(c)
Introduction: Calcium-based kidney stones account for nearly 80% of renal calculi. While the underlying pathophysiology is not well understood, dysregulated calcium homeostasis in the body is suspected to contribute to disease onset. In this study, we investigated the relationship between calcium homeostasis and urolithiasis in a cross-sectional, single-center adult population. Methods: Thirty participants with no stone history and 31 participants who currently or previously (within 12 months) have had at least one a calcium-containing kidney stone were recruited for the study. Participant data, including serum, plasma, spot urine, and medical history were collected from the participants during the single study visit. Results: Data from this study revealed that calcium stone formers exhibited abnormal calcium handling, which was demonstrated by increased blood and urine calcium levels compared to controls. Stone formers also displayed increased titer s of 1,
BS4-21 High Risk Stone Formers: The Benefit of Obtaining 24-hour Urine Testing Before Prescribing Preventive Pharmacological Therapy to Patients

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1Gcs, 2Vedanta, 3Zydus

Presented By: Haresh Thummar, MD

Introduction: Kidney stone disease is a kind of recurrence disease with metabolic/systemic factors involved. Recent studies show no benefit to a selective preventive pharmacological therapy (PPT) for patients with urinary stone disease (i.e., obtaining 24-hour urine study before prescribing). However, these studies estimated the average treatment effect of selective PPT. Because selective PPT may produce nonrandom differences in outcomes across patients based on individual recurrence risk, we compared the frequency of stone-related events among patients with and without 24-hour urine testing before PPT use in high-risk patients.

Methods: We studied in our database from 2011 to 2021, we identified working-age adults with urinary stone disease who had a prescription fill for a thiazide diuretic, alkali therapy, or allopurinol. We stratified them into subgroups based on the presence of a concomitant condition or other factors that raise stone recurrence risk (children, urinary tract infection, gout, bone disease, intestinal malabsorption, hyperparathyroidism, staghorn calculus, renal anomalies, sarcoidosis, bowel diseases, bariatric surgery and prior stone recurrence). We fit multivariable regression models to compare the frequency of a stone-related event (emergency department visit, hospitalization, and surgery) among patients with and without 24-hour urine testing before PPT prescription in these subgroups.

Results: Among 1180 patients with urinary stone disease who had a concomitant condition or other factor raising their recurrence risk, 42% were prescribed PPT after 24-hour urine testing (median follow-up, 423 days), while 58% received PPT empirically (median follow-up, 489 days). Patients with prior stone recurrence had a significantly lower risk of a subsequent stone-related event if they received selective PPT (hazard ratio, 0.79; 95% confidence interval, 0.69 to 0.93). The adjusted predicted probability of a stone-related event among patients in this group was five percentage points lower at two years of follow-up for those on selective versus empiric PPT. No significant associations were noted for selective PPT in the other high-risk subgroups.

Conclusions: Based on our study, Patients with a history of recurrent urinary stone disease benefit from PPT based on 24-hour urine metabolic study. These data highlight the importance of studying for heterogeneity in treatment effect when comparing for prevention of recurrent stones.

Funding: None.

BS4-22 Hydroxycitric Acid Prevents Hyperoxaluria-induced Nephrolithiasis and Oxidative Stress via Activation of the Nrf2/keap1 Signaling Pathway

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BS4-22 

Presented By: Bowie Yang, MD, PhD

Introduction: Nephrolithiasis is a common and frequently-occurring disease in the urinary system with high recurrence. The present study aimed to explore the protective effect and underlying mechanism of hydroxycitric acid (HCA) in hyperoxaluria-induced nephrolithiasis in vitro and in vivo. Crystal deposition and pathophysiological injury in rat models of glyoxylate-induced nephrolithiasis were examined using H&E staining.

Methods: Cell models of nephrolithiasis were established by oxalate-treated renal tubular epithelial cells. The levels of oxidative stress indexes were determined by ELISA kits. Cell proliferation in vivo and in vitro was evaluated using a cell counting kit-8 (CCK-8) assay and Ki-67 cell proliferation detection kit. Cell apoptosis was measured by flow cytometry and TUNEL staining. The protein levels were examined by western blotting.

Results: Our results showed that HCA administration significantly reduced crystal deposition and kidney injury induced by glyoxylate. HCA also alleviated oxidative stress via upregulating the antioxidant enzyme activities of superoxide dismutase (SOD) and catalase (CAT) and reducing the malondialdehyde (MDA) content. Moreover, HCA treatment promoted cell proliferation and inhibited apoptosis of renal tubular epithelial cells exposed to hyperoxaluria. Of note, Nrf2 activator dimethyl fumarate (DMF) exerted the same beneficial effects as HCA in nephrolithiasis. Mechanistically, HCA prevented crystal deposition and oxidative stress induced by hyperoxaluria through targeting the Nrf2/Keap1 antioxidant defense pathway, while knockdown of Nrf2 significantly abrogated these effects.
BS5-01 Oncobiome of Urinary Bladder carcinoma in Indian Males-A Pilot study

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Presented By: Manoj kumar Das, Associate Professor

Introduction: Dysbiosis of the urinary microbiome can lead to bladder cancer by producing a chronically inflammatory urothelial microenvironment. Microbes residing inside tumor cells, influencing cancer progression, are known as tumor-associated microbes. Tissue adjacent to tumors is likely to get altered compared to healthy tissue due to immune cell infiltration, fibrosis, and tumor-associated inflammation. Using shotgun metatranscriptomics, we conducted a pilot study to characterize the bladder microbiota in paired tumor and non-tumor mucosa samples of patients with bladder cancer.

Methods: We employed shotgun metatranscriptomics to profile microbes associated with the tumor. Following rigorous inclusion and exclusion criteria, we collected two bits of tissue from consenting patients scheduled for transurethral resection of bladder tumor (TURBT)—one from the tumor site and the other from the normal bladder site. Total RNA was extracted and sequenced, enabling us to identify genes with altered expression profiles between the tumor site and the normal site in the carcinoma bladder. The taxonomy of the microbes was determined using Kracken and Bracken tools.

Results: We observed high microbial richness in the normal tissue compared to the cancer site in patients revealing the microbial richness is an indicator of health. The top 20 microbes belonged to the phyla Actinomycetota, Pseudomonadata, Bacillelota, and Uroviricota. Comparative analysis of the top 20 species between normal and cancer sites showed microbes such as Citrobacter acnes, Escherichia coli, Pseudomonas sp. CIP-10, Staphylococcus aureus, Staphylococcus cohnii, Yersinia enterocolitica were found to be more in cancerous sites than normal sites. In contrast, normal sites are prevalent by Klebsiella grymontii, Klebsiella michiganensis, Mycobacterium canetti, Pseudomonas aeruginosa, and Streptomyces lividans. We did not observe a statistically significant difference between these two sites regarding their alpha and beta diversity at the species level. Bifidobacterium adolescentis was observed as an indicator species in normal sites, revealing its importance in tumor suppression. However, patient-wise taxonomy did not show any significant differences.

Conclusions: Identifying the bacterial species involved could be beneficial to understanding and preventing the onset, advancement, and progression of bladder cancer. The urinary microbiome may be a biomarker to help predict the response to BCG therapies. Further, longitudinal studies are needed to assess the role of the bladder microbiota in carcinogenesis.

Funding: None.

BS5-02 Single-cell Sequencing of ccRCC Reveals Alterations in the Peripheral Blood Immune Microenvironment of Patients Following Immunotherapy and Targeted Therapy

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Presented By: Wei Li, MD, PhD

Introduction: Clear cell renal cell carcinomas (ccRCCs) are highly immune infiltrated, but the effect of immune heterogeneity on clinical outcome in ccRCC has not been fully characterized. Current research focuses primarily on kidney cancer tissue, but the immune microenvironment in the blood of patients receiving immunotherapy and targeted therapy remains unclear.

Methods: We performed single-cell sequencing on the peripheral blood of 76, 102 cells from 9ccRCC samples, including 3 pre-treatment and 6 post-treatment samples that received target therapy. The 6post-treatment samples were categorized into two groups based on pathologic response: major pathologic response (MPR; n = 3) and non-MPR (NMSPR; n = 3). Then, a series of in vivo and invitro experiments were conducted to verify the effects of specific immune cells on malignant proliferation and immune evasion of renal cancer.

Results: Our analysis uncovered distinct peripheral immune system between treatment-naïve and treatment samples. Remarkably, we observed monocytes and macrophages were highly enriched in post-treatment samples, along with a reduction in cytotoxicity T cells. Further, the transcriptional signatures of FCRL4 + FCRL5 + memory B cells and CD16 + CX3CR1 + monocytes were enriched in MPR patients and were predictors of immunotherapy response. Tissue-resident macrophages were expanded after therapy, and tumor-associated macrophages (TAMs) were remodeled into a neutral instead of an anti-tumor phenotype. Besides, we observed an upregulation of IL1B+macrophages, as well as increased scores in myeloid-derived suppressor cell (MDSC) signatures in NMSPR patients, which have been linked to inflammatory reprogramming and poor survival in The Cancer Genome Atlas (TCGA) data. Subsequent investigation revealed a potential direct role of IL1B+macrophages in promoting tumor

Conclusions: Identifying the bacterial species involved could be beneficial to understanding and preventing the onset, advancement, and progression of bladder cancer. The urinary
immune evasion by inducing exhaustion of cytotoxic T cells. Moreover, in vivo and in vitro assays were used to validate the potential impact of targeting IL1B+macrophages on immune evasion and tumor progression.

**Conclusions:** PD-1 blockade combined with targeted therapy led to distinct ccRCC tumor microenvironment transcriptomes that correlated with therapy response. We performed single-cell sequencing of peripheral blood from ccRCC before and after immunotherapy and targeted therapy and identified IL1B+macrophages cells and exhausted T cells, which may be related to tumor proliferation and immune evasion.

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**BS5-03 Expression of ALDH1 Isotypes and Its Potential as a Prognostic and Diagnostic Marker in Patients with Muscle Invasive Bladder Cancer**

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**Presented By:** Ravimohan Mavuduru, MD

**Introduction:** Bladder cancer, being heterogenous in nature constitute a large proportion of cancer stem cell subpopulation which is believed to contribute to their aggressiveness, future recurrence and chemotherapy resistance. Aldehyde dehydrogenase subfamily member ALDH1 is an important regulator of cancer stem cell biogenesis through retinoic acid pathway. In this ambispective study, we analysed the expression of ALDH1A1, 1A2 and 1A3 isotypes in muscle invasive bladder cancer patients at both protein and gene level.

**Methods:** Immunohistochemical (IHC) expression of ALDH1/2 and ALDH1A3 proteins were evaluated in a retrospective cohort of 99 histologically confirmed MIBC patients and 11 distant normal bladder urothelium. IHC expression was assessed quantitatively using histopathology score (H score). H score of ≥ 4 was graded as high expression. Gene expression of ALDH1A1, 1A2 and 1A3 along with immunoblot procedure was also performed in a prospectively collected 30 MIBC patients to further validate the IHC findings.

**Results:** Expression of both ALDH1/2 and ALDH1A3 were found to be significantly higher in MIBC than the normal bladder urothelium. Tumor having higher T stage showed significant association with ALDH1A3 expression (p = 0.0275). Patients with high H score of ALDH1A3 protein survived for significantly less (p = 0.008) duration of time (20 months) than patients with low score (34 months). Gene expression profile of ALDH1 isotypes revealed that high mRNA expression of ALDH1A3 was significantly associated with less overall survival which was further validated separately using public dataset

**Conclusions:** Our results indicate that ALDH1 isotypes has the potential to be used as an effective diagnostic and prognostic marker in patients with MIBC.

**Funding:** none.

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**BS5-04 Comparative Analysis of MRI-Ultrasound Software Fusion Biopsy: Insights from District General vs. Tertiary Hospital Settings**

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**Presented By:** Monish Patil

**Introduction:** MRI-ultrasound software fusion biopsy consists of computerized MRI/TRUS (trans-rectal ultrasound) image registration, with an overlay of MRI-detected lesions and corresponding TRUS images to obtain precise prostate biopsies. It is emerging as a promising technique for prostate cancer diagnostics, offering improved accuracy in lesion targeting. However, concerns regarding its learning curve and applicability across different healthcare settings persist. This study aims to compare the performance and learning curve of software fusion biopsy between a District General Hospital newly adopting the technique and an experienced Tertiary Hospital specializing in prostate cancer treatment.

**Methods:** Elastic software fusion technique was utilised. Biopsies were done by the operators who previously performed cognitive fusion biopsies. This study compares our initial experience of the first 150 biopsies (group 1) with 819 biopsies (group 2) performed at an experienced tertiary hospital.

**Results:** 71.3% (n = 107) patients from group 1 were diagnosed with prostate cancer compared to 70.7% (n = 577) patients from the group 2. Out of this, 82.2% (n = 88) patients from group 1 had clinically significant prostate cancer detected, compared to 83.7% (n = 483) patients from the group 2. The pick-up rates of prostate cancer in PI-RADS 3, 4 and 5 lesions on MRI were 38.6% (n = 17), 74.1% (n = 43) and 97.9% (n = 47) in group 1, respectively, compared to 48% (n = 109), 78.3% (n = 303) and 90.5% (n = 153), respectively, in group 2.

**Conclusions:** This study provides evidence that software fusion prostate biopsy can be effectively implemented in a District General Hospital setting with no significant learning curve observed compared to an experienced Tertiary Hospital. These findings underscore the feasibility of software fusion biopsy...
across different healthcare settings, emphasizing its potential to enhance prostate cancer diagnostics.

**Funding:** This study has been done in NHS England Trust. No external funding has been obtained.

**BS5-05 Study of the NETO2 Mediated Cellular Senescence in the Growth of Prostate Cancer**

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Presented By: Zhigang Zhao, MD, PhD

**Introduction:** In the latest statistical data, prostate cancer is expected to rank the second in the world in terms of incidence rate and the fifth in terms of mortality, especially in the United States. The number of new cases of prostate cancer has exceeded that of lung cancer, ranking the first and the fifth in terms of mortality. In China, the incidence rate and mortality of prostate cancer have also gradually increased in recent years, which has posed a huge challenge to the medical system. The pathogenesis of prostate cancer is complex, but it is often accompanied by abnormal expression of certain genes. Cellular senescence is considered to be a stable and permanent state of cell cycle arrest, characterized mainly by inhibition of cell proliferation. NETO2 was first discovered to be expressed in brain tissue, and in the latest research, it has been found that it can promote the development of other cancers, including gastric cancer. In previous studies, our research team found that NETO2 has a close relationship with cellular senescence in prostate cancer, which may change the biological state of tumor cells through mediating cellular senescence. However, the relationship and role between NETO2 and cellular senescence are not very clear, which has aroused our interest in further research on it. In addition, drugs used to treat prostate cancer can also cause therapy induced senescence of tumor cells, and the relationship between this therapy induced senescence and NETO2 is also worth further study. This topic aims to explore the relationship between NETO2 and cellular senescence in prostate cancer, and further study the role of this connection in the growth of prostate cancer.

**Methods:** Using Enzalutamide to stimulate prostate cancer cells with gradient concentrations and different treatment times β-Galactosidase staining was used to detect the level of therapeutically induced senescence induced by it, in order to specifically describe the senescence pattern induced by Enzalutamide. In addition, prostate cancer cells were also treated with Enzalutamide at different concentrations and times as described above. Western blot experiments were used to detect the changes in NETO2 expression levels under their concentration gradients and different treatment times, and to verify the relationship between the senescence level induced by Enzalutamide and the changes in NETO2 level; Use 3D culture to further explore the relationship between therapy induced senescence induced by Enzalutamide and prostate cancer cell growth. Using lentivirus transfection to construct a stable NETO2 transfected prostate cancer cell line to observe whether actively changing NETO2 expression levels can cause changes in cellular senescence levels. At the same time, the growth status of various prostate cancer stable transfected strains under different senescence levels, as well as the growth trend and senescence level changes after treatment with Enzalutamide were observed. Finally, a NETO2 expression level of NETO2 was negatively correlated with the drug concentration of Enzalutamide and the treatment time. Combining the positive correlation between Enzalutamide and cellular senescence, we preliminarily infer that the expression level of NETO2 may present a negative correlation with the level of cellular senescence. The 3D cell culture results showed that cellular senescence induced by Enzalutamide inhibited tumor growth, and the higher the degree of senescence, the more obvious the inhibition of tumor growth. The successful construction of stable transfection lines of NETO2 from various prostate cancer cell lines has led us to discover that actively changing the expression level of NETO2 can change the senescence level of prostate cancer cell lines LNCap, C4-2, and 22RV1 cell lines. The protein expression level of NETO2 was measured by Western blot experiments. At the same time, the growth status of various prostate cancer cell lines LNCap, C4-2, and 22RV1 cell lines was observed. Finally, a nomogram containing NETO2, clinical parameter T-stage, and Gleason score was constructed from the prostate cancer dataset in the tcga database to predict DFS for patients for 1, 3, 5 years.

**Conclusions:** 1. Enzalutamide promotes prostate cancer cellular senescence in a time and concentration dependent manner and downregulates the expression of NETO2, and this therapy induced senescence caused by Enzalutamide acts as growth inhibition in prostate cancer cells. 2. Overexpression/silencing of NETO2 results in changes in cellular senescence levels, indicating a negative correlation between NETO2 expression and cellular aging levels, and this change does not occur through the androgen receptor pathway. 3. NETO2 mediated cellular senescence affects the growth of prostate cancer cells. Overexpression of NETO2 promotes prostate cancer cell growth by reducing cellular senescence levels, while silencing NETO2 inhibits...
prostate cancer cell growth by increasing cellular senescence levels. The AR (+) prostate cancer cell line can further inhibit its growth trend by increasing the level of cellular senescence after being treated with Enzalutamide. 4. NETO2, clinical parameter T-staging, and Gleason score jointly predict DFS in prostate cancer patients.

Funding: None.

BS5-06 Nkx2.8 Promotes Immunity of Bladder Urothelial Carcinoma Cells via Transcriptional Repression of PD-L1

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Presented By: Chunping Yu, MD

Introduction: immune checkpoint blockade (ICB) has remarkable clinical efficacy in bladder urothelial carcinoma. However, some patients cannot achieve the expected effect after receiving ICB. The expression of programmed death ligand-1 (PD-L1) in tumor tissue plays a vital role in the efficacy of ICB. To demonstrate the regulatory mechanism of PD-L1 expression has great beneficial to enhance ICB response and improve outcomes in bladder urothelial carcinoma.

Methods: In this study, we used bladder urothelial carcinoma cells with up-regulating or down-regulating of Nkx2.8 and orthotopic animal models to demonstrate the effect of Nkx2.8 on the expression of PD-L1. Chromatin immunoprecipitation (ChIP) assay and promotor activity test were used to illustrate the mechanisms of how Nkx2.8 regulating CD274. We also analyzed the relationship between Nkx2.8 and PD-L1 in clinical bladder urothelial carcinoma tissue samples to reveal the clinical significance of Nkx2.8 and PD-L1.

Results: Our study found that patients with negative Nkx2.8 could get more efficacy from ICB compared to Nkx2.8 positive patients. Nkx2.8 could repress the expression of CD274 transcriptionally. Overexpression of Nkx2.8 could increase the cytotoxic effect of T cells on bladder carcinoma cells. Nkx2.8 could enhance ICB response in orthotopic animal models.

Conclusions: These results indicated that Nkx2.8 could promote tumor immunity in bladder urothelial carcinoma by transcriptional repression of PD-L1.

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BS5-07 Polypeptide rNkx2.8-C Promotes Chemosensitivity of Bladder Urothelial Carcinoma Cells via Inhibiting P-gp Transport Activity

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Presented By: Chunping Yu, MD

Introduction: Drug resistance therapeutic efficacy is one of the main reason for the failure of bladder urothelial carcinoma treatment. Multidrug resistance-associated protein P-glycoprotein (P-gp) has a profound impact on drug resistance of tumor. P-gp inhibitors were developed with the intention of reversing the drug-resistant of tumors. But there are no P-gp inhibitors for clinical use due to the toxicity and side effects at present. It is of great significance to find safe and effective P-gp inhibitors. Polypeptide drugs have high safety and good application prospects. We aimed to found potential polypeptide P-gp inhibitor.

Methods: Co-immunoprecipitation and protein spectrometry were used to screen and identify the P-gp binding protein. The region of Nkx2.8 binding to P-gp were recombined (rNkx2.8-C). MDR assay and coca-2 efflux assay were used to detect the efflux activity of P-gp after treated by rNkx2.8-C. Cell counting kit-8 (CCK8) assay, colony formation assay and apoptosis assays were used to demonstrate the chemotherapeutics efficacy influenced by rNkx2.8-C. We also used orthotopic animal models to demonstrate the role of rNkx2.8-C in chemosensitivity of bladder urothelial carcinoma cells.

Results: We screened and identified the P-gp binding protein Nkx2.8 and recombined the region of Nkx2.8, rNkx2.8-C, which binding to P-gp. We proved that rNkx2.8-C could inhibit P-gp efflux activity and promote the drug efficacy in bladder urothelial carcinoma.

Conclusions: In conclusion, our study revealed that rNkx2.8-C act as a novel inhibitor of P-gp and probably meet the safety demand due to the advantage of polypeptide. This founding provides scientific basis for finding new safe and effective P-gp inhibitors and promote the chemotherapeutics efficacy of bladder urothelial carcinoma.

Funding: The National Natural Science Foundation of China (No. 82273031).

BS5-08 Does Local Availability Influence Choice of Radical Treatment for Prostate Cancer?

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Presented By: Feroz Khan, CT1 Urology

Introduction: Radical prostatectomy (RP) and radical radiotherapy (RR) are both viable options for the treatment of localised prostate cancer. However, over the years, medicine has evolved towards a patient-centred approach. Decision-making by the patients is not motivated by clinical outcomes alone but other factors like geographical location and ease of access to treating clinician are contributory factors as well.

Methods: A single centre retrospective study was undertaken over an eleven-year period from January 2012 to December 2023. All patient with localized prostate cancer (defined as <T3bN0M0 using the TNM staging system) were involved. There were three periods identified. Pre-centralization (2012-2014 where both laparoscopic PR and RR were available locally)-Post-centralization (2014-2022 where RR was available at the local hospital and robotic RP in a tertiary centre)-De-centralization (2022-2023 where both Robotic RP and RR were available locally) A comparison was made between these three time periods and how the decision making was impacted with the change in available options at the local centre.
**Results:** There were no significant differences in tumour characteristics (PSA, grade, stage) or Charlson comorbidity index between the three time periods. In the pre-centralisation period, the mean number of cases per month of RR and RP were 8.58 and 5.32 respectively. The mean number of cases per month in the post centralisation period for RR and RP were 16.09 and 7.18 respectively. This showed an 86.06% of RP cases and increase of 96.38% in RR post centralisation. The mean number of cases per month in the decentralisation era for RR and RP were 16.09 and 7.18 respectively. This showed an 869.55% increase in RP cases per month after decentralisation and fall in 14.48% of RR cases. Chi square test of independence was 6.26 and p = 0.012.

**Conclusions:** The choice of radical treatment in localised prostate cancer is based on multiple factors. This study infers that local availability can influence choice of radical treatment, potentially affecting the most vulnerable patients. It is imperative that efforts are made to maintain accessibility to all viable options for prostate cancer patients, so that patient choice is not compromised.

**Funding:** It was not a funded project.

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**BS5-09 Analysis of Disulphidotopos-Associated Long Non-Coding RNAs in Bladder Cancer: Revealing their Prognostic and Therapeutic Significances**

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Presented By: Zhixiong Zhang, Mr.

**Introduction:** Bladder cancer (BLCA) is a prevalent malignant neoplasm with high incidence rate and mortality in urology. Disulphidotoposis is a newly identified cellular process and implicated in tumour progression. Long non-coding RNAs (lncRNAs) play pivotal roles in both the initiation and progression of BLCA. However, disulphidotoposis-associated lncRNAs have been poorly understood.

**Methods:** The Cancer Genome Atlas (TCGA) database was utilized to extract significant clinical and RNA sequencing data of BLCA patients. Cox and Lasso regression with several variables was used to create a risk model. ROC, Kaplan-Meier, and nomogram analyses were carefully reviewed for validation. Validated study evaluated intricate interactions between functional enrichment, immune cell infiltration, cancer mutation load, and treatment sensitivity. Unsupervised consensus clustering identified subgroup patterns that reflected immune system alterations, medication susceptibility, and prognosis.

**Results:** 9lncRNAs significantly correlated with prognosis were collectively identified, subsequently forming the basis for constructing a risk model consisting of 7lncRNAs. The model exhibited superior specificity in predicting patient outcomes, effectively distinguishing between high-risk and low-risk individuals. Functional enrichment analysis uncovered their potential involvement in immune-related biological pathways. Patients in the high-risk group exhibited higher tumor mutation burdens, more active immune functions and a higher sensitivity to chemotherapeutic drugs. Variations among BLCA subgroups were identified by consensus cluster analysis, including clinical characteristics, prognosis, lncRNA expression, immune cell infiltration, and immune checkpoint profiles.

**Conclusions:** The risk model conducted using dr-lncRNAs accurately predicted progression, immunological responses, and individualised pharmacological treatments in patients with BLCA.

**Funding:** This work was funded by grants from the National Natural Science Foundation of China (No. 81872437, No. 81402430), the Characteristic Innovation project of Guangdong Province Education Department (2019KTSCX140), and the Scientific research projects in colleges and universities of Guangzhou Education Bureau (NO. 201831811).

**BS5-10 β-Arrestin2 Promotes the Invasion and Metastasis of Prostate Cancer by Mediating CPSF5 to Regulate Posttranscriptional Modifications of RHOA**

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Presented By: Zhixiong Zhang, Mr.

**Introduction:** Alternative polyadenylation (APA) is a crucial gene expression regulatory mechanism that generates distinct 3’ end RNA isoforms. Its involvement in various diseases, including prostate cancer (PCa) progression, has been established, but the precise mechanistic underpinnings remain poorly understood. This study delves into the functional implications of β-arrestin2-mediated APA in PCa, building upon previous works. Objective: To elucidate the role and molecular mechanisms of β-arrestin2 in promoting PCa invasion and metastasis through APA.

**Methods:** The APA sites in PCa cells and β-arrestin2-overexpressing PCa cells were analyzed using the deep sequencing technique IVT-SAPAS. Bioinformatics analysis, RT-qPCR, Western blotting, and immunohistochemistry were integrated to assess the impact of β-arrestin2 expression on RHOA and CPSF5 expression and their correlation. Functional assays, including MTS, colony formation, wound healing, and Transwell migration, were conducted to validate the oncogenic roles of 3’-UTR-shortened RHOA (RHOA-SU) and CPSF5 in PCa. Furthermore, in vitro and in vivo experiments were performed to investigate the roles of different RHOA transcripts in PCa development.

**Results:** Transcriptome-wide APA spectrum analysis revealed that elevated β-arrestin2 expression promotes preferential usage of proximal poly(A) sites in the RHOA 3’UTR. Intriguingly, RHOA mRNA and protein levels exhibited opposing trends in PCa, corroborating data from public databases. Notably, compared to the control and RHOA mRNA isoforms with full-length 3’-UTR (RHOA-LU), RHOA-SU significantly enhanced PCa cell proliferation, migration, invasion, as well as tumor growth and metastasis in vivo. Moreover, CPSF5 was identified as a core cleavage factor regulating RHOA 3’-UTR, and its overexpression reversed β-arrestin2-mediated RHOA 3’-UTR shortening while inhibiting cell proliferation and migration in vitro and in vivo.
Conclusions: This study unveiled that β-arrestin2 promotes RHOA protein expression through CPSF5-mediated APA of RHOA, contributing to PCa invasiveness and metastasis. These findings provide direct evidence for the significance of RHOA APA in PCa progression and may offer novel therapeutic strategies for prostate cancer treatment.

Funding: This work was funded by grants from the National Natural Science Foundation of China (No. 81872437, No. 81402430), the Characteristic Innovation project of Guangdong Province Education Department (2019KTS0C140), and the Scientific research projects in colleges and universities of Guangzhou Education Bureau (NO. 201831811).

BS5-11 The Linkage of Matrix Metalloproteinase-7 Genotypes among RCC, UCa, and Prostate Ca. Risks in Taiwanese People

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Introduction: 1. In RCC study: Mounting evidence has suggested that polymorphisms in the promoters of matrix metalloproteinase (MMP) genes are associated with the risk of many types of cancer, but no study has ever explored these polymorphisms as biomarkers for renal cell cancer (RCC). Recently, it was suggested that serum MMP-7 levels have both diagnostic and prognostic potential for RCC. In this study, we focused on the contribution of two functional polymorphisms in the promoter region of MMP-7 (A-181G and C-153T) to RCC. 2. In UCa study: The breakage of matrix metalloproteinases (MMPs) has been reported to be one of the mechanisms required for tumor invasion, and the expression of MMP-7 in serum is correlated with poor prognosis of urinary bladder cancer patients. However, the role of the MMP-7 genotypes has been seldom examined among bladder cancer patients. Therefore, this study aimed at examining the promoter polymorphic MMP-7 genotypes A-181G and C-153T among Taiwanese bladder cancer patients and evaluate the contribution of the genotypic variants of MMP-7 to bladder cancer risk in Taiwanese people. 3. In PCA study: Prostate cancer is one of the most commonly diagnosed malignancies among males worldwide. It has been shown that MMP-7 gene is closely correlated with prostate carcinogenesis. However, the role of the MMP-7 genotypes has been seldom examined among prostate cancer patients. Therefore, the purpose of the study was to evaluate the contribution of MMP-7 promoter genotypes A-181G (rs11568818) and C-153T (rs11568819) to prostate cancer risk in Taiwanese people.

Methods: 1. In RCC study: These two polymorphisms were genotyped in 92 patients with RCC and 580 controls by PRC genotyping in 92 patients with RCC and 580 controls by PRC. In RCC study: These two polymorphisms were genotyped in 92 patients with RCC and 580 controls by PRC. In UCa study: Three hundred and seventy-five bladder cancer patients and the same number of gender- and age-matched healthy controls were genotyped for A-181G and C-153T in the promoter of MMP-7 via polymerase chain reaction-restriction fragment length polymorphism methodology. 3. In PCA study: Two hundred and eighteen prostate cancer patients and 436 sex- and age-matched healthy controls were genotyped for MMP-7 rs11568818 and rs11568819 by polymerase chain reaction-restriction fragment length polymorphism and direct sequencing methodologies.

Results: 1. In RCC study: The results showed that there is no significant association of the RCC risk with the MMP-7 A-181G genotype, even after adjustment for the possible confounding factors. The MMP-7 C-153T polymorphism was not identified among the subjects investigated. 2. In UCa study: The frequencies of AA, AG and GG at A-181G of the promoter of MMP-7 were 89.1, 8.8 and 2.1% in the bladder cancer patient group and 87.5, 10.9 and 1.6% in the matched healthy control group, respectively (p for trend=0.5475). There was no polymorphic genotype for MMP-7 C-153T among the Taiwanese population. The comparisons in allelic frequency distribution also support the findings that the G allele may not be the determinant allele for bladder cancer in Taiwan. In addition, the results showed that there is no significant association of the bladder risk with the MMP-7 A-181G genotype, even after adjustment for the possible confounding factors. Furthermore, there is no interaction of the genotypes of MMP-7 with age, gender, smoking and alcohol consumption on bladder cancer risk. 3. In PCA study: The percentages of wild type AA, and variant AG and GG genotypes on MMP-7 rs11568818 were 85.3, 13.5, and 1.2% among the prostate cancer cases and 87.6, 10.1, and 2.3% among the healthy controls, respectively (p for trend=0.2557). Interestingly, no MMP-7 rs11568819 genotypes were identified among Taiwanese. The allelic frequency distribution also showed that the variant G allele of MMP-7 rs11568818 seemed not to be a determinant of prostate cancer risk (p = 0.7977). There was no joint effect between the genotypes of MMP-7 rs11568818 and age and smoking status on prostate cancer risk.

Conclusions: 1. In RCC study: Our findings suggest that the two MMP-7 polymorphisms A-181G and C-153T do not play a major role in determining personal susceptibility to RCC in Taiwanese people. 2. In UCa study: The results of this study suggest that the two MMP-7 polymorphisms, A-181G and C-153T, do not play a major role in determining personal susceptibility to bladder cancer in Taiwanese people. 3. In PCA study: rs11568818 and rs11568819 at MMP-7 promoter region, played no role in determining personal susceptibility to prostate cancer in Taiwanese people.

Funding: Research project funding from the Hospital Clinical Fund.

BS5-12 Genetic Insights into Single Cell RNA-Sequencing Targets for Prostate Cancer: A Mendelian Randomization Study Integrating sc-eQTL, eQTL, and DNA Methylation

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Introduction: Prostate cancer has become a research hotspot due to its high incidence rate and complex genetic basis. Genome-wide association studies (GWAS) are the primary method for uncovering the genetic basis of the disease, but there are challenges in annotating the function and interpreting the mechanisms of most GWAS loci. Single-cell transcriptomics (scRNA-seq) has emerged as an important tool for studying prostate cancer, overcoming the issue of cellular heterogeneity.
**BSS-13 Single-Cell Analysis Reveals the Immune Microenvironment Affecting the Treatment Effects of PD-1 Blockade Therapy in Bladder Cancer**

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**Presented By:** Chao Cai, MD, PHD

**Introduction:** The emergence of PD-1/PD-L1 immune checkpoint inhibitors has changed the standard treatment strategy for bladder cancer, which previously relied mainly on platinum-based chemotherapy. However, as the sole treatment option for advanced-stage patients, this therapy is ineffective for most of them, and the specific mechanisms remain unclear.

**Methods:** Our preliminary research conducted single-cell sequencing before and after PD-1 immunotherapy in bladder cancer patients.

**Results:** Our study found that PD-1 treatment reshaped the immune microenvironment of bladder cancer and changed the interaction between tumor and immune cells, especially CD8⁺T cells and neutrophils. Additionally, our research found that the tumor-associated neutrophil subtype IFIT-1 may hypothetically mediate the potential mechanism of resistance to PD-1 inhibitors in bladder cancer by regulating the NLR pathway. The project aims to further utilize in vitro and in vivo functional experiments and mechanistic studies, combined with analysis of patient specimens and clinical data, to confirm the role of the neutrophil subtype IFIT-1 in inducing resistance to PD-1 inhibitors.

**Conclusions:** By exploring the changes in the immune microenvironment of bladder cancer during treatment, we hope to delay and reverse the decline in the efficacy of PD-1 inhibitors or enhance tumor sensitivity to immunotherapy, thereby enabling PD-1 inhibitors to be effective in more patients, improving patient quality of life and survival time.

**Funding:** No.
**BS5-15** Disulfiram-Copper Potentiates Anticancer Efficacy of Standard Chemotherapy Drugs in Bladder Cancer Animal Model through ROS-Autophagy-Ferroptosis Signaling Cascade

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\(^1\)PGIMER

**Introduction:** Cost effective management of urinary bladder cancer (UBC) is of unmet need. Our study aims to demonstrate the efficacy of drug repurposing strategy by using disulfiram (DSF) and copper gluconate (Cu) as an add on treatment combination to traditional GC based chemotherapy against N-butyl-N-(4-hydroxybutyl) nitrosamine (BBN) induced UBC mice (C57J) model.

**Methods:** Male C57BL/6J mice were given 0.05% BBN in drinking water ad libitum and tumor formation was verified by histological and physical evaluation. Animals were subsequently divided into eight groups and received treatment with different drug combinations. Control animals received only vehicle (DMSO). At the end of the treatment schedule, bladder tumor was excised and further used to check the expression (mRNA and protein) of ALDH1 isoenzymes using qRT-PCR, western blot and IHC methods. Autophagy induction was assessed by quantifying the expression of LC3B and SQSTM1/p62 proteins through IHC. Biochemical analysis of superoxide dismutase (SOD), reduced glutathione (GSH), and lipid peroxidation levels in the freshly isolated tumors was performed to check the alterations in the antioxidant system caused by combination treatment.

**Results:** We observed significant induction of invasive form of bladder cancer in the mice after nineteen weeks of BBN exposure. The animals began exhibiting early indications of inflammatory alterations as early as the sixth week following BBN treatment. Furthermore, the wet bladder weight and overall tumor burden were significantly decreased (p < 0.0001) by DSF-Cu co-treatment in addition to the GC-based chemotherapy. Real time PCR analysis revealed that treatment with disulfiram and copper gluconate significantly decreased (p < 0.0001) the mRNA expression of ALDH1 isoenzymes. Comparing the triple drug combination group (GC+DSF-Cu) to the untreated mice, a significant rise in LC3B puncta (p < 0.0001) and a decrease in P62/SQSTM1 (p = 0.0002) were noted, indicating induction of autophagy flux in the add-on group. When GC+DSF-Cu treated, mice were compared to the untreated tumor group, there was a substantial decrease in ALDH1/2 protein expression (p = 0.0029 in IHC and p < 0.0001 in western blot). Lipid peroxidation was significantly higher (p < 0.0001) in the triple drug combination group compared to the untreated mice, and there was a simultaneous decrease in reduced glutathione (GSH) and enzyme superoxide dismutase (SOD) levels (p < 0.0001), which strongly suggests the generation of reactive oxygen species and induction of ferroptotic cell death in the add-on therapy group. Additionally, in both IHC and western blot assays, ALDH1A3 expression was found to be significantly increased (p = 0.0033, <0.0001 respectively) in GC+DSF-Cu treated mice relative to the untreated group, suggesting a potential connection between the ferroptosis pathway and ALDH1A3 overexpression.

**Conclusions:** We have successfully showed that disulfiram with copper treatment inhibits bladder tumor growth through ferroptosis mediated ROS induction which further activates the process of autophagy. Our results prove that DSF-Cu can be an effective add on therapy along with the standard chemotherapy drugs for the treatment of UBC.

**Funding:** None.

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**BS5-16** Leveraging Diverse Cell-Death Related Signature Predicts the Prognosis and Immunotherapy Response in Renal Clear Cell Carcinoma

Hao Zhang\(^1\)

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**Introduction:** Modulation of programmed cell death in tumor cells alters the tumor microenvironment and the influx of tumor-infiltrating lymphocytes, and the combination of its inducers and immune checkpoint inhibitors plays a synergistic role in enhancing antitumor effects.

**Methods:** We downloaded the data of clear cell renal cell carcinoma samples from The Cancer Genome Atlas and used a machine learning approach to build a new programmed cell death index (PCDI) through 13 programmed cell death related genes. Based on PCDI, clinical features, tumor immune microenvironment, chemotherapy response and immunotherapy response were systematically analyzed.

**Results:** PCDI consists of eight programmed cell death-related genes (TBX3, BID, TCIRG1, IDUA, KDR, PYCARD, IFNG and LRRK2). PCDI is a reliable predictor of survival in clear cell renal cell carcinoma patients and has been validated in multiple external datasets. We found that the high PCDI group showed higher levels of immune cell infiltration and better response to immunotherapy compared to the low PCDI group, and PCDI can also be used for prognostic prediction in a variety of cancers other than clear cell renal cell carcinoma. In vitro experiments demonstrated that knockdown of IDUA inhibited the proliferation and migration of clear cell renal cell carcinoma.

**Conclusions:** The PCDI identified in this study provides valuable insights into the clinical management of clear cell renal cell carcinoma by accurately evaluating the prognosis of patients with clear cell renal carcinoma and identifying the patient population that would benefit from immunotherapy.

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**BS5-17** Hypoxia-Induced Phase Separation of YY1 and HIF-1z in Macrophages Suppresses Prostate Cancer Tumor Immune Response

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**Introduction:** The strong crosstalk between tumor cells and their microenvironment, especially the hypoxic tumor stroma, modulates the adaptive immune response and affects patient survival. The nuclear protein YY1 (YY1) is a potent transcriptional activator and is frequently overexpressed in various cancers. YY1 plays a key role in facilitating cancer cell proliferation and metastasis, and the hypoxic microenvironment induces YY1 transcription.

**Results:** In this study, we found that YY1 was constitutively expressed in the tumor stroma of prostate cancer tissue samples and that its expression increased in response to hypoxia. YY1 expression was significantly higher in hypoxic conditions compared to normoxic conditions. Moreover, YY1 expression was positively correlated with the presence of tumor-infiltrating lymphocytes (TILs) and tumor cell proliferation.

**Conclusions:** Our findings suggest that YY1 expression in prostate cancer stroma is associated with hypoxia and promotes tumor cell proliferation. These results imply that targeting YY1 expression may be a promising strategy for improving the efficacy of prostate cancer therapy.

**Funding:** This research was supported by the National Natural Science Foundation of China (Grant No. 82071990).
Introduction: Macrophages play a crucial role in the tumor microenvironment of prostate cancer (PCa), with their infiltration into the hypoxic tumor zone being closely associated with unfavorable prognosis. Yet, the precise mechanism by which hypoxia orchestrates macrophage behavior in the TME remains elusive.

Methods: We conducted a comprehensive analysis of macrophage distribution and functional characteristics in PCa under varying oxygen conditions using multiple fluorescent immunohistochemistry assays on clinical samples and mouse models. Further exploration of mechanisms and clinical applications was undertaken through RNA sequencing, mass spectrometry, co-immunoprecipitation, and phase separation assays. Transgenic mice and tumor xenograft models were employed to evaluate the in vivo efficacy of YY1-targeted therapy in PCa.

Results: Here, we further discovered that YY1-positive macrophages aggregated in hypoxic tumor tissues. Mechanistically, hypoxia promotes phase separation of YY1 in the nucleus by upregulating tyrosine phosphorylation of YY1 in macrophages. Furthermore, YY1 can bind to NUSAP1 to promote the SUMOylation of HIF-1α, which promotes the phase separation and stabilization of HIF-1α, thereby enhancing the downstream PD-L1 expression. Additionally, our investigations demonstrate that the small molecule inhibitor tenapanor, which targets the YY1-NUSAP1-HIF-1α linkage, or direct degradation of YY1, can effectively hinder tumor progression.

Conclusions: Our findings suggest that YY1 regulates prostate tumor immunity by exerting a pivotal role in the hypoxia/HIF-1α pathway in macrophages. Targeting macrophage YY1 in vivo demonstrates promising potential for clinical application.

Funding: We observed that YY1+ macrophages infiltrate into the hypoxic regions of PCa. Hypoxia triggers YY1 phosphorylation in macrophages, inducing its phase separation. Concurrently, YY1 interacts with NUSAP1 to promote SUMOylation of HIF-1α, inhibiting its ubiquitination and thus stabilizing HIF-1α expression, which in turn upregulates downstream PD-L1 expression. In vivo experiments validated that therapy targeting YY1 or the combination among YY1/NUSAP1/HIF-1α inhibited subcutaneous tumor growth in mice. Our study enriched the understanding of the mechanism of YY1 and HIF-1α in TAMs and provided a solid theoretical basis for the advancement of tumor immunotherapy.

BS5-18 KIF2C Expression Combined with Regulatory T Cell Infiltration Density to Predict the Progression of Castration-Resistant Prostate Cancer

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Presented By: Zhigang Zhao, MD, PhD

Introduction: Prostate cancer is one of the most common cancers in the world. It is also a disease with high mortality in men and a serious threat to men’s health. Although early prostate cancer can be effectively controlled by endocrine therapy, a large proportion of patients still transform into castration-resistant prostate cancer (CRPC) after 2-3 years of endocrine therapy, followed by biological recurrence or metastasis. Studies have shown that once prostate cancer progresses to CRPC, many patients will die of prostate cancer within 3 years. Considering the obvious poor prognosis of CRPC in patients with prostate cancer. This study intends to find out the factors closely related to the progression of prostate cancer and can effectively predict the progression of CRPC through bioinformatics methods, and construct an effective prediction model to effectively predict the progression of CRPC in the early stage.

Methods: In this study, the prostate cancer data of the latest TCGA public database were used to screen the differential genes closely related to the progression of prostate cancer through the Gleason high-risk group and the Medium and low-risk group, and to find the genes closely related to the progression of CRPC. Using the STRING for functional protein association network analysis, we searched for hub genes closely related to the clinical TNM stage and the progression-free survival of prostate cancer and then explored the relationship between hub genes and the tumor microenvironment through GSEA functional enrichment and immune difference. At the same time, the same results were verified by immunohistochemistry using clinical patient specimens (N = 262) collected by our center. Finally, LASSO Cox regression was used to construct a predictive model for predicting CRPC progression in clinical patients (N = 190) with complete follow-up information collected by our center.

Results: Differential genes closely related to the progression of prostate cancer were screened between the Gleason high-risk group and the Medium and low-risk group, which were also closely related to the progression of CRPC. After using STRING for functional protein association network analysis, it was found that the hub gene KIF2C was closely related to the clinical TNM stage and the progression-free survival of prostate cancer. Then KIF2C was identified as the core gene of this study. Through the difference of immune cell infiltration and immune function enrichment, it was found that KIF2C was closely related to regulatory T cells (Tregs). The same conclusion was also verified by immunohistochemistry of clinical case sections collected by our center. In addition, in the clinical patient specimens collected by our center, a CRPC prediction model (CRPCHS) that can effectively predict the progression of CRPC inpatients with prostate cancer was constructed using clinical TNM stage, KIF2C and Tregs. Through systematic evaluation, the CRPCHS prediction model has good predictive value in predicting the progression of CRPC.

Conclusions: In patients with prostate cancer, the CRPCHS prediction model can predict the probability of CRPC progression in patients in advance, which is expected to provide strong evidence for clinical prostate cancer patients to choose specific treatment options and strive for more survival time for more patients.

Funding: None.

BS5-19 Synchronous Dual Primary Malignancy of the Prostate: A Rare Entity with Management Dilemma

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Presented By: Siddharth Jain, MCh Urology

Introduction: Synchronous dual primary malignancy of the prostate is rare. Compared to prostate adenocarcinoma, primary squamous cell cancer is rare and aggressive, with a median survival of 14–16 months. Previous literature reported squamous cell cancer in prostate adenocarcinoma after hormonal or radiation therapy. Literature debates the aetiology, PSA sensitivity,
PSMA PET vs FDG PET, role of germline testing, and efficacy of different treatment modalities in dual synchronous primary prostate cancer. Here, we report a case of synchronous squamous cell and adenocarcinoma of the prostate, in the absence of any previous androgen deprivation therapy or radiotherapy.

Methods: A gentleman in his 60s presented with complaints of lower urinary tract symptoms for six months. His evaluation revealed prostatomegaly and an elevated PSA (10.8 mg/dl). Multiparametric prostate MRI showed right posterolateral peripheral zone lesion with right seminal vesicle involvement. Prostate biopsy showed synchronous dual primary prostate malignancy with adenocarcinoma (4+4) and squamous cell cancer (50% of core area). Although AMACR-positive, the acinar component was negative for CK5/6, GATA3, and P40 but highly immunopositive in the squamous component. PSMA PET CT revealed heterogeneously enhancing soft tissue mass in right posterolateral peripheral zones with no significant PSMA avid metastasis.

Results: The patient received three monthly injections of Leuprolide 22.5 mg and radical radiotherapy of 60 Gy/20 # over 4 weeks. The patient was followed up three-monthly for PSA level and on follow-up, the nadir PSA is 0.1 ng/ml. The patient is doing well in follow-up of twelve months.

Conclusions: Dual synchronous prostate squamous cell and adenocarcinoma can occur without hormonal or radiotherapy. Better understanding of this rare entity will help pathologists, oncologists, radiologists, and urologists to treat such aggressive tumours more effectively.

Funding: None.

BS5-21 Identification and Validation of a m5c-related lncRNA Signature Predict Prognosis and Immune Response of Clear Cell Renal Cell Carcinoma
Tuo Deng

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Presented By: Tuo Deng, MD

Introduction: The abnormal expression of LncRNAs and modification of m5C may lead to the occurrence and development of cancers. However, the interactions between LncRNAs and m5C in ccRCC remain unclear. In this study, we aimed to use bioinformatics methods to construct a risk prediction model of m5C-related LncRNAs to predict the prognosis of ccRCC patients.

Methods: A total of 31 m5C-related genes (MRGs) were collected from the summary of the previous reports. LncRNAs were obtained in RNA-Seq data through gene annotation of TCGA. M5C-related LncRNAs signature was constructed, and nomograms were also constructed using the sample’s age, gender, grade, stage and risk score.

Results: Co-expression and Cox regression analyses identified 9 prognostic LncRNAs, which were closely associated with tumor immune characteristics and immune escape. The model also predicted the sensitivity of drugs, including Entinostat, SB216763, and Sipatinib. In vitro experiments showed that GNG12-AS1 inhibited ccRCC cell proliferation and migration by reducing the activity of the ERK/GSK-3β/catenin pathway.

Conclusions: Overall, these findings suggest that the 9 m5C-related LncRNAs can accurately predict ccRCC patient prognosis, providing potential applications for clinical and immunotherapy approaches. GNG12-AS1 emerges as a promising prognostic biomarker for predicting survival outcomes in ccRCC, potentially influencing cell migration through the activation of the ERK/GSK-3β/catenin signaling pathway.

Funding: None.
MP01-01 Initial Experience with Single-Port Nephroureterectomy Shows Shorter Length of Stay Compared to Multi-port: A Report from the Single-Port Advanced Research Consortium


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Presented By: Hunter Hasley, BS

Introduction: Upper tract urothelial carcinoma is an uncommon malignancy operatively managed with nephroureterectomy. Perioperative outcomes for robotic approaches have been comparable to laparoscopic and superior to open. This study aims to examine perioperative outcomes in robotic single-port (SP) and multi-port (MP) nephroureterectomy.

Methods: We utilized a multi-center, prospective IRB database to select patients who underwent robotic single-port (SP) and multi-port (MP) nephroureterectomy between 2017 and 2023. Patient characteristics and perioperative outcomes were compared between groups with Welch two-sample t-test, Fisher’s exact test, and Wilcoxon rank sum test.

Results: Table 1 displays the patient characteristics between the SP and MP cohorts and establishes that there were no significant differences across the groups. Table 2 summarizes the various surgical outcomes between patients who underwent robotic SP or MP nephroureterectomy. Of the 96 identified patients, 85 patients were operated on with a SP approach and 11 underwent a MP approach (88.5% vs 11.5%). Table 2 demonstrates there were no significant differences between the 2 cohorts except for a shorter average length of stay in the SP group compared to the MP group (1.41 days vs. 1.99 days respectively, p = 0.044).

Conclusions: Patients who underwent SP nephroureterectomy had no significant difference in perioperative outcomes compared to patients who underwent MP nephroureterectomy. One potential advantage of SP is the decreased average length of stay relative to MP. In our early experience with SP nephroureterectomy, it appears to be safe, feasible and reproducible. Further long term studies are underway as the smaller sample size of the SP robotic approach limits application of the data and warrants additional study.

Funding: None.


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Presented By: Nicolas Soputro, MD

Introduction: To develop a patient-specific algorithm to better guide clinical decision-making when considering between Single Port (SP) versus Multi Port (MP) robotic partial nephrectomy (RPN).

Methods: A retrospective review was performed on the IRB-approved, prospectively maintained multi-institutional database of the Single Port Advanced Research Consortium (SPARC) to identify all consecutive patients who underwent SP and MP-RPN between 2019 and 2023. Baseline clinidemographic variables
were used to identify the significant predictors of SP-RPN. The significant variables were subsequently used to construct a nomogram to predict the likelihood of SP versus MP-RPN.

Results: Of the 1021 patients included in our analysis, 189 (18.5%) and 832 (81.5%) underwent SP and MP-RPN, respectively. Statistically significant predictors of SP-RPN included a lower comorbidity profile, a significant abdominal surgical history as characterized by a higher Hostile Abdomen Index (HAI), as well as lower complexity tumors. The nomogram generated using the aforementioned variables demonstrated a reasonable performance with an Area Under the Curve (AUC) of 0.79. An optimal cutoff point was determined, with likelihood ratios above 0.12 indicating a preference for SP-RPN. Of note, all SP-RPN cases that scored above the 0.12 cutoff exhibited improved perioperative outcomes, including shorter ischemia time and less intraoperative blood loss.

Conclusions: Herein, we have devised a novel patient selection algorithm aimed at enhancing clinical decision-making within the expanding repertoire of RPN approaches. The findings highlighted in this study offer valuable guidance to facilitate appropriate patient selection and thereby ensuring favorable perioperative outcomes associated with RPN procedures.

Funding: None.

MP01-03 Initial Experience with Robot-Assisted Nephroureterectomy using the Hugo RAS System: A Comparison of Perioperative Outcomes with Da Vinci and Hinotori Surgical Systems

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Presented By: Shuichi Morizane, MD

Introduction: In recent years, several novel surgical assist robots have become available. In this study, we compare the perioperative outcomes of robot-assisted nephroureterectomy (RANU) with Hugo, hinotori, and da Vinci surgical systems.

Methods: From July 2019 to November 2023, 40 patients who underwent RANU were included retrospectively in the study. Of these, three cases performed simultaneously with radical cystectomy were excluded. Four (10.5%) in RANU were performed via the retroperitoneal approach, all of them were da Vinci group. We compared the perioperative outcomes among the three groups. The chi-square test and the Kruskal-Wallis test were used for statistical examination.

Results: RANUs were performed for 26, 7, and 5 patients with da Vinci, hinotori, Hugo, respectively. Basically, we performed RANU via the transperitoneal approach using the original port placements for Hugo and hinotori (Figure 1 A, B), which can be performed without any difference compared to da Vinci system. The median operation time and console time were 331 minutes, 283 minutes, and 219 minutes, 163.0 minutes, 187 minutes for da Vinci, hinotori, Hugo, respectively (p = 0.079, p = 0.052). The median blood loss and were 50ml, 15ml, 20ml for da Vinci, hinotori, Hugo, respectively (p = 0.481). Lymph node dissection was performed in 23 (92.0%), 2 (28.6%), and 1 (20.0%) patient, and the median number of lymph nodes removed was 11, 21.5 and 38 in da Vinci, hinotori, and Hugo group, respectively (p < 0.001, p = 0.102). The durations of Foley catheter indwelling and the length of hospital stay after surgery were 8days, 7days, 8days, and 12days, 10days, 13days in da Vinci, hinotori, Hugo group, respectively (p = 0.109, p = 0.242). In this study, there were no perioperative complications with Clavien dindo ≥3 in all patients.

Conclusions: RANU can be safely performed using Hugo and hinotori surgical systems with a single docking, and it was shown to be comparable to Da Vinci surgical system.

Funding: None.

MP01-04 Prognostic Significance of pT3a Subtypes in cT1-2 Renal Tumours Undergoing Partial and Radical Nephrectomy

Helen Cui2, Stefanos Gorgoraptis1, Ganeshan Ramsamy1, Aaron Leiblich1, Gabriela Nieto-Blanco2, Jeffrey Sun2, Angela Estevez2, Sarah Duncan2, Phillip Kim2, Adam Nolte2, Andrew Wagner2, Peter Chang2, Lisa Browning1, Mark Sullivan1

1Oxford University Hospitals, 2Beth Israel Deaconess Medical Center

Presented By: Helen Cui, BMBS, FRCS, PhD

Introduction: A pathological stage of pT3a renal cell cancer (RCC) encompasses a diverse range of possible pathological findings including perinephric fat invasion, renal sinus fat invasion, involvement of segmental branches of the renal vein or the main renal vein. Understanding prognostic factors for disease recurrence in this high risk-group is important for patient selection for adjuvant therapy and for oncological follow-up.

Methods: We performed a retrospective analysis of all pT3a renal tumours, that were initially cT1-2 on imaging, removed by
either radical nephrectomy or partial nephrectomy between 2010-2020 at two academic centres, in the UK and US, maintained on a prospectve database. Relevant institution board review approvals were obtained. Oncological outcomes were collected and pathological factors were analysed using cox proportional hazards model for cancer-specific survival (CSS).

**Results:** There were 395 eligible cases, 256 were treated with radical nephrectomy (RN), 139 with partial nephrecty (PN). Mean tumour size was 6.4cm (SD = 3cm) and mean follow-up was 4.5 years. 5-year cancer specific survival (CSS) was 91% vs 96%, and 5-year overall survival (OS) was 84% vs 92% in RN vs PN cases respectively. CSS was not significantly different between RN and PN groups, whereas OS was significantly lower in the RN group (p = 0.032). For clear cell RCC cases (n = 329), the presence of perinephric fat invasion, involvement of the sinus fat, segmental vein, or main renal vein as single risk factors did not significantly change CSS. However, worse CSS was associated with the combination of perinephric fat and sinus invasion as pT3a subtypes, as well as tumor necrosis and higher grade for worse CSS. Although some studies suggest worse prognosis with involvement of the sinus structures compared with perinephric fat infiltration, we found no difference in CSS between these two subtype classifications. We also found that treatment with PN vs RN did not differ significantly in CSS for this group of patients with cT1-2 upstaged to pT3a at histology. These data may aid individualised treatment decision-making for which patients to recommend adjuvant immunotherapy and for intensity of oncological surveillance after nephrectomy.

**Funding:** None.

### MP01-05 Advancing Minimally Invasive Adrenalectomy: Is there a Benefit of the Robotic-Assisted Single Port Approach?

Andrew A. Wagner, Angela Estevez, Helen W. Cui, Phillip Kim, Adam Nolte, Gabriela Nieto-Blanco, Jeffrey Sun, Sarah Duncan, Peter Chang

**1**Beth Israel Deaconess Medical Center

**Presented By:** Andrew A. Wagner, MD

**Introduction:** Case series have demonstrated equivalent outcomes between multiport robotic-assisted vs. laparoscopic adrenalectomy. The da Vinci single-port (SP) surgical system might be able to improve access to smaller working spaces and thus may be a viable option for adrenal surgery. We compared our early clinical outcomes and safety associated with the combination of perinephric fat and sinus invasion as pT3a subtypes, and there were no renal cancer deaths in this subgroup.

**Conclusions:** This analysis of upstaged pT3a RCC after nephrectomy has revealed the prognostic importance of the combination of perinephric fat and sinus invasion as pT3a subtypes, as well as tumor necrosis and higher grade for worse CSS. Although some studies suggest worse prognosis with involvement of the sinus structures compared with perinephric fat infiltration, we found no difference in CSS between these two subtype classifications. We also found that treatment with PN vs RN did not differ significantly in CSS for this group of patients with cT1-2 upstaged to pT3a at histology. These data may aid individualised treatment decision-making for which patients to recommend adjuvant immunotherapy and for intensity of oncological surveillance after nephrectomy.

**Funding:** None.

### Table 1: Clinical outcomes of SP robotic-assisted vs laparoscopic adrenalectomy

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Single-Port Robotic-assisted (n=10)</th>
<th>Standard Laparoscopic (n=52)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operative time (min)</td>
<td>126 (109, 148)</td>
<td>89 (73, 106)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Blood loss (ml)</td>
<td>20 (10, 30)</td>
<td>20 (10, 50)</td>
<td>0.6</td>
</tr>
<tr>
<td>Hospital stay (min)</td>
<td>1:00 (1:00, 2:00)</td>
<td>1:00 (1:00, 2:00)</td>
<td>&gt;0.9</td>
</tr>
<tr>
<td>Intraoperative complications</td>
<td>0 (0%)</td>
<td>1 (3.0%)</td>
<td>&gt;0.9</td>
</tr>
<tr>
<td>Intraoperative transfusions</td>
<td>0 (0%)</td>
<td>1 (3.0%)</td>
<td>&gt;0.9</td>
</tr>
<tr>
<td>Morphine equivalents, mg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POD1</td>
<td>0 (0.0)</td>
<td>12 (3.23)</td>
<td>0.008</td>
</tr>
<tr>
<td>Complications within 30d</td>
<td>1 (3.0%)</td>
<td>1 (3.0%)</td>
<td>&gt;0.9</td>
</tr>
<tr>
<td>Conversion</td>
<td>0 (0%)</td>
<td>1 (3.0%)</td>
<td>&gt;0.9</td>
</tr>
<tr>
<td>Pain score at discharge (morning)</td>
<td>3.00 (2.00, 5.00)</td>
<td>3.00 (2.00, 5.00)</td>
<td>&gt;0.9</td>
</tr>
</tbody>
</table>

**Results:** Of a total of 141 adrenalectomies performed during our study period, 50 patients were included in the analysis: 17 SP cases were matched to 33 laparoscopic cases (Table 1). SP cases had a longer median operative time (129 vs 89 minutes, p = 0.001). There were no significant differences in estimated blood loss, length of stay (median = 1 day), intraoperative complications, and postoperative complications within 30 days of surgery. Patient-reported pain scores at discharge did not show any significant differences between the two groups. However, the SP group had a significantly lower median use of in-hospital morphine equivalents (0 mg (IQR 0, 8) vs 12 mg (IQR 3-23), p = 0.008) compared to the laparoscopic group.

**Conclusions:** SP adrenalectomy is feasible and safe; however in our early experience, it required significantly longer operative time compared to laparoscopic adrenalectomy. Patients after SP adrenalectomy required less opioids in the postoperative setting. Additional prospective comparative studies are necessary to determine the exact role of the SP approach for adrenalectomy.

**Funding:** None.

### MP01-06 Treatment Modalities and Risks of Complication for Patients with Localized Renal Cell Carcinoma Aged 75 and Older

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**1**Department of Urology, Feinberg School of Medicine, Northwestern University, **2**Department of Radiology, Feinberg School of Medicine, Northwestern University

**Presented By:** Chalairat Suk-ouichai, MD, MPH

**Introduction:** Surgical extirpation, including partial (PN) and radical (RN) nephrectomy, is the standard treatment for localized renal cell carcinoma (RCC). However, the potential risks of these procedures are a major concern for elderly patients. We aimed to assess perioperative outcomes and survival for patients aged ≥75 years with localized RCC who underwent PN, RN, or thermal ablation (TA).

**Methods:** Localized RCC patients undergoing PN, RN, or TA (2000-2023) were retrospectively reviewed. Postoperative complications were classified using the Clavien-Dindo classification. Logistic regression assessed factors associated with major complications. Kaplan-Meier estimated RCC and non-RCC-specific survival.

**Results:** A total of 1017 patients aged ≥75 years with renal masses were identified with 563 harboring RCC and 278 included receiving intervention for localized disease (107 RN,
101 PN, 70 TA). Median age was 78 years. PN patients were younger than other cohorts (77 vs 79, p = 0.006). Patients with cancer comorbidities underwent TA than PN and RN (93% vs 88% and 76%, respectively). Median tumor size was 4.0, 3.0, and 2.6 cm in RN, PN, and TA cohorts, respectively. RN patients had more complex masses compared to other cohorts (9 vs 7, p < 0.001). Postoperative complications were significantly greater among PN patients (p = 0.03). RN was performed at a stable rate while PN decreased in favor of TA. There was no significant difference in RCC- and non-RCC-specific survival among treatment modalities.

Conclusions: Localized RCC has been diagnosed more frequently in elderly patients due to increased life expectancy. Although RCC is no a leading cause of death, it is important to make informed decisions about treatment options to reduce morbidity and mortality in these patients.

Funding: None.

MP01-07 Outcomes Following Radical Nephroureterectomy for Patients with Preoperative or Iatrogenic Dialysis Dependence

Kelly Lehner1, Matthew Lee1, Prabin Thapa1, Reza Roshandel1, Vidit Sharma1, Theodora Potretzke1, Robert Tarrell1, Sounak Gupta1, Abihava Khanna1, Igor Frank1, David Yang1, Loren Herrera Hernandez1, Aaron Potretzke1

1Mayo Clinic

Presented By: Kelly Lehner, MD

Introduction: Radical nephroureterectomy (RNUx) is the gold standard for treating most high-risk upper tract urothelial carcinoma (UTUC). However, the oncologic control of RNUx often conflicts with the desire for nephron preservation. Data is limited regarding patients who require long-term dialysis following RNUx. Some retrospective series from Taiwan suggest that UTUC patients with end-stage renal disease (ESRD) have improved survival outcomes after RNUx, with oncologic outcomes comparable to the general population. In this study, we identified patients undergoing RNUx who were dialysis-dependent prior to surgery or were rendered anephric by surgery. We compared their outcomes to RNUx patients who did not require dialysis to inform decision making between RNUx and kidney sparing management in this population.

Methods: We queried our RNUx database to identify 28 patients who underwent RNUx with dialysis-dependent or solitary kidney display worse overall survival, but comparable recurrence free and cancer specific survival to a matched control cohort. This suggests that while RNUx can provide satisfactory cancer control in this population, they are at high-risk for postoperative mortality, likely due to their non-oncologic comorbidities.

Funding: None.

MP01-08 Robotic assisted IVC Thrombectomy for Renal Cell Cancer- A Single Surgeon Experience over 10 Years

Naveen Pokala1, Hunter Kraus1, Glendon Markollari1, Aiden Jacobsen1

1University of Missouri

Presented By: Naveen Pokala, MD

Introduction: Inferior vena cava (IVC) tumor thrombus secondary to renal cell carcinoma (RCC) is a complex surgical problem. Open surgical approach is the current gold standard in the management of IVC tumor thrombus. Advances in robotic-assisted surgery have made it possible to perform robotic IVC thrombectomy in select patients. We present our single surgeon experience over 10 years with robotic-assisted IVC tumor thrombectomy.

Methods: After IRB approval, we retrospectively identified 20 patients with RCC with IVC tumor thrombus who underwent robotic-assisted IVC thrombectomy with IVC control between 2015-2024. Collected data included patient demographics, pathology and peri-operative outcomes.

Results: Demographics and peri-operative outcomes are detailed in table 1. Overall, there were 20 patients who underwent 21 surgeries. One patient had a recurrence in the IVC three years after his initial operation. Another patient had a recurrence in the renal vein with IVC thrombus after a nephrectomy. One patient had a concomitant, obstructing colon mass and underwent a combined IVC thrombectomy and partial colectomy. Three cases were converted to the open technique. There were five peri-operative complications including two peri-operative deaths. Two of the conversions and both peri-operative deaths were left-sided masses. The other open conversion was an isolated IVC recurrence that could not be found laparoscopically.

Conclusions: This single-surgeon experience demonstrates that robotic-assisted IVC thrombectomy in RCC is feasible and safe. Left-sided masses with IVC thrombus may have higher rates of morbidity and mortality. Further studies would be needed to compare outcomes for laterality controlling for size of mass and extent of IVC thrombus.

Funding: None.

MP01-09 Predictive Factors of Renal Function After Robot-Assisted Partial Nephrectomy in Clinical T1b Tumors

Ryohei Yamamoto1, Kazuyuki Numakura1, Yuya Sekine2, Hiromi Sato2, Mizuki Kobayashi1, Mitsuru Saito2, Shintaro Narita2, Tomonori Habuchi2

1Jikei University School of Medicine

Presented By: Ryohei Yamamoto, MD

Introduction: Among the surgical treatment options for renal cell carcinoma (RCC), robotic-assisted partial nephrectomy (RPN) is gaining acceptance as a treatment option for patients with localized RCC who wish to maintain renal function. Factors influencing renal function after RPN are not well defined and more study is needed to determine which patients are excellent candidates for this procedure.

Methods: A retrospective review of 148 patients who underwent RPN at Jikei University between 2011-2021 was performed. A minimum follow-up period of 1 year was required. Patients were divided in one of two groups according to total postoperative change in estimated glomerular filtration rate (eGFR): ≥10 and <10. Baseline characteristics, clinicopathological features, and perioperative outcomes were compared between the two groups. Patients were also stratified by tumor stage T (T1a, T1b, etc.) and side (right, left).

Results: The study and control groups showed no difference in major clinical variables. There was no significant difference in time to bladder recurrence or cancer specific mortality. However, the ESRD/anephric cohort displayed a much higher risk of overall mortality (HR 2.13, p-value 0.03).

Conclusions: Factors affecting renal function after RPN were similar across most groups, but the ESRD/anephric cohort displayed a much higher risk of overall mortality. Factors that contribute to this risk include age, comorbidities, and extent of IVC recurrence.
Introduction: Robot-assisted partial nephrectomy (RAPN) allows for a safe dissection and precise tumor resection. Although RAPN also applies for even clinical T1b renal cell carcinoma (RCC), little is known about renal function after RAPN for cT1b renal tumors.

Methods: Fifty patients who underwent RAPN for cT1b renal tumor from November 2017 to September 2022 in Akita University Hospital were entered in this retrospective study. The estimated glomerular filtration rate (eGFR) was assessed at baseline and postoperative days (PODs) 180. A significant decline of renal function was defined as ≥15% reduction from baseline eGFR. Uni- and multivariable logistic regression analyses (including age, sex, R.E.N.A.L nephrometry score, and perioperative factors such as operative time and estimated blood loss) were performed to elucidate the risk factors of renal function.

Results: The median age was 62 years (IQR: 55–70). The median tumor diameter and R.E.N.A.L nephrometry score were 44 mm (IQR: 43–50) and 8 (IQR: 7–9), respectively. 82% of patients achieved Trifecta. The median eGFR at baseline and POD 180 were 70 mL/min/1.73m² (IQR: 60–78) and 61 mL/min/1.73m² (IQR: 53–71), respectively. The significant renal functional declin

Conclusions: RAPN was a safe and feasible approach for cT1b RCC. R.E.N.A.L nephrometry score, especially the L component, is a significant predictive factor of renal function decline after RAPN for cT1b renal tumors.

Funding: None.
Introduction:
Bilateral synchronous adrenalectomy has the potential for significant surgical and functional morbidity. We reviewed our 15-year experience with bilateral synchronous adrenalectomy to assess safety, surgical outcomes, morbidity and impact on health-related quality of life.

Methods: In an IRB approved study, we reviewed our prospective database of patients who underwent bilateral synchronous adrenalectomy for functional tumours between April 2008 and August 2022. Demographic profile, metabolic and radiological parameters, operative details and complications were recorded. Follow-up was obtained either in-person or telephonically and analysed for resolution of symptoms, quality of life using the WHO-QoL BREF questionnaire and complications of chronic steroid intake.

Results: During the study period, 337 adrenalectomies were performed which were bilateral in 51 patients, 48 undergoing both surgeries synchronously. 33 of these 48 patients had bilateral pheochromocytomas and 15 had Cushing’s syndrome. Among patients with Cushing’s syndrome, three had life-threatening symptoms requiring urgent bilateral surgery. 40 patients had transperitoneal laparoscopic surgery and 8 underwent open surgery. There were two intraoperative and 7 post-operative complications. 43 patients were available for follow-up. All had resolution of symptoms, BMI changes, and only two patients continued to receive one anti-hypertensive medication. Episodes of steroid deficiency occurred in 7 patients while steroid excess occurred in 3 patients. Quality of life was satisfactory in all patients in all domains.

Conclusions: Bilateral synchronous adrenalectomy is safe and feasible in patients with functional adrenal tumours. It leads to symptom resolution with amelioration of hypertension and BMI changes with satisfactory overall quality of life.

Funding: None.

MP01-12 Surgical and Functional Outcomes of Bilateral Synchronous Adrenalectomy for Functional Tumors: A Cohort Study

Keshav Agarwal1, Rajeev Kumar1, Rashmi Ramachandran1, Nikhil Tandon2

1All India Institute of Medical Sciences, New Delhi, India, 2All India Institute of Medical Sciences, New Delhi

Presented By: Keshav Agarwal, Senior Resident (Academic)

Introduction: Bilateral synchronous adrenalectomy has the potential for significant surgical and functional morbidity. We reviewed our 15-year experience with bilateral synchronous adrenalectomy to assess safety, surgical outcomes, morbidity and impact on health-related quality of life.

Methods: In an IRB approved study, we reviewed our prospective database of patients who underwent bilateral synchronous adrenalectomy for functional tumours between April 2008 and August 2022. Demographic profile, metabolic and radiological parameters, operative details and complications were recorded. Follow-up was obtained either in-person or telephonically and analysed for resolution of symptoms, quality of life using the WHO-QoL BREF questionnaire and complications of chronic steroid intake.

Results: During the study period, 337 adrenalectomies were performed which were bilateral in 51 patients, 48 undergoing both surgeries synchronously. 33 of these 48 patients had bilateral pheochromocytomas and 15 had Cushing’s syndrome. Among patients with Cushing’s syndrome, three had life-threatening symptoms requiring urgent bilateral surgery. 40 patients had transperitoneal laparoscopic surgery and 8 underwent open surgery. There were two intraoperative and 7 post-operative complications. 43 patients were available for follow-up. All had resolution of symptoms, BMI changes, and only two patients continued to receive one anti-hypertensive medication. Episodes of steroid deficiency occurred in 7 patients while steroid excess occurred in 3 patients. Quality of life was satisfactory in all patients in all domains.

Conclusions: Bilateral synchronous adrenalectomy is safe and feasible in patients with functional adrenal tumours. It leads to symptom resolution with amelioration of hypertension and BMI changes with satisfactory overall quality of life.

Funding: None.

MP0013 DAVINCI SP-Treatment of Nutcracker Syndrome: A Case Report of a Novel Approach

Mohammed Abuzenada1, Sung-Hoo Hong1, Seokhwan Bang1

1Seoul Saint Merry Hospital

Presented By: Mohammed Abuzenada

Introduction: It is a rare syndrome where the left renal vein (LRV) gets trapped between the abdominal aorta and superior mesenteric artery (SMA) and causes left flank pain, hematuria, left-side varicocele, and ovarian vein syndrome[1]. Surgery is usually the standard treatment for NCS, with an open vessel transposition of the renal vein or an autotransplantation being the most commonly used method[2]. The practice of minimally invasive surgery has increased due to the associated morbidity and the potential for serious complications[3]. This study aims to introduce a novel technique for extra-vascular stenting using a single port robotic-assisted procedure

Methods: A 33-year-old woman presented to the outpatient clinic with recurrent attacks of left flank pain and pelvic pain accompanying persistent microscopic hematuria for several years. There is no evidence of a urinary tract infection or history of kidney stones. Patient underwent for further investigations. Hemoglobin level, white cell count (WBC), platelets and renal function were within normal range. urine culture was negative for bacterial growth. urine analysis showed RBC 4-9, no WBC or nitrate. ColorDopplerUSofLRVshowsbrightcolorsignalataortomesentericportionofLRVduetoaliasingartifactscausedbyhigh flowvelocity, possibly suggesting Nutcracker (see Figure1). CT abdomen and pelvic with I. V contrast showed Compression of left renal vein is noted between aorta and SMA(see Figure2). The patient underwent a single port robotic-assisted extravascular stent insertion in the left renal vein (LRV) under general
anesthesia. A 4 cm incision was made near the umbilicus, and a floating docking technique was used. The retroperitoneal space was accessed through a transperitoneal approach, and the LRV was exposed up to its junction with the inferior vena cava, superior mesenteric artery, and adrenal gland (see Figure 3). The LRV diameter was measured intraoperatively (see Figure 4), and an externally reinforced PTFE graft (GORE-TEX) was placed over the LRV (see Figure 5). The stent was secured with interrupted sutures to prevent migration (see Figure 6). The console time was 74 minutes, and blood loss was minimal. The patient recovered well and was discharged home after three days. The patient reported no symptoms at the follow-up visit. A CT scan after six months showed no stent migration and resolution of the previous LRV dilation.

Results: Nutcracker syndrome occurs when the left renal vein becomes compressed between the aorta and the superior mesenteric artery, resulting in left flank pain, hematuria, left-sided varicocele, or ovarian vein syndrome [4]. Surgical treatment for NCS typically involves open vessel transposition of the renal vein or superior mesenteric artery. However, this procedure is associated with high complication rates, including bleeding, thrombosis, and paralysis [5]. Thrombosis of the superior mesenteric arteries can be a serious consequence of this surgery [6]. An alternative treatment option is endovascular stenting of the renal vein, which is safe, easy, and minimally invasive, with a good outcome. Still, it requires long-term antiplatelet medication to prevent one of its complications such as blood clots. A laparoscopic extravascular stenting is another option that is similar in outcome to endovascular stenting [7]. Robotic assisted extravascular stenting had similar outcome compared to Laparoscopic approach, with a reduce risk of lymphatic complications [8].

Conclusions: Robotic-assisted extravascular stenting of the left renal vein appears to be safe, effective, and cosmetically appealing, and it avoids major complications caused by the transposition of major vessels. The effectiveness of this technique will, however, require long-term follow-up.


MP01-14 Assessment of the Degree of Minimal Invasiveness and Safety in Completely Retroperitoneal Robot-Assisted Nephroureterectomy

Takeshi Miyazaki¹, Nobuhiro Haga¹, Taiki Emoto¹, Kosuke Tominaga¹, Naotaka Gunge¹, Yu Okabe¹, Hiroshi Matsuzaki¹, Nobuyuki Nakamura¹

¹Department of Urology, Faculty of Medicine, Fukuoka University

Presented By: Takeshi Miyazaki, MD

Introduction: To date, nephroureterectomy has been performed using two main approaches. One approach is laparoscopic nephroureterectomy via a trans-retroperitoneal approach (RLNU). This approach has two problems. One problem was that it was necessary to change position from the lateral to the supine position in order to perform surgery on the lower ureter and the ureter-bladder junction. Another problem was that an additional lower abdominal incision was required to perform the surgical procedure. Another approach was robotic-assisted transperitoneal nephroureterectomy. Recently, this procedure has been performed all over the world. However, there were two problems with this procedure. One problem was potential surgical difficulties due to intra-abdominal adhesions from previous intra-abdominal surgery. The other was the exposure of urine to the abdominal cavity. To overcome these problems, a completely robotic retroperitoneal nephroureterectomy (cRRANU) was considered appropriate. We have developed new cRRANU to overcome these difficulties. The aim of this study is to compare the perioperative surgical outcomes and minimal invasiveness of our new cRRANU with the results of the parameters of conventional RLNU.

Methods: The study investigated 30 consecutive patients who underwent nephroureterectomy at our institution from April 2021 to March 2023. All cases were performed via the retroperitoneal approach, with 13 cases undergoing cRRANU and 17 cases undergoing RLNU. The study compared perioperative parameters and wound conditions between the two procedures. The perioperative parameters evaluated included surgical duration, estimated blood loss (EBL), the number of dissected lymph nodes, and perioperative complications. The wound was evaluated based on the number of frequency of painkiller usage, visual analogue scale (VAS).

Results: Total operative time was not significantly different between the two groups (RLNU: LNU = 367 ± 51 min :413 ± 76 min, p = 0.3). The time of ureterectomy was significantly shorter in the cRRANU group. (cRRANU: LNU = 111 ± 34 min: 179 ± 52 min, p = 0.0003). EBL, the number of dissected lymph nodes, and perioperative complications were not significantly different between the two groups. The number of frequency of pain killer usage after operation was not significantly different between the two groups (cRRANU: LNU = 2.3 ± 2.0: 2.9 ± 2.2, p = 0.43). VAS was significantly less in the cRRANU group (cRRANU: LNU = 8.4 ± 12: 33 ± 22, p = 0.0013).

Conclusions: Our developed cRRANU procedure is less invasive than RLNU, as it reduces operative time for ureterectomy and provides early relief from postoperative pain.

Funding: No funding was received for this study.

MP01-15 Robotic Radical Nephrectomy with IVC Thrombectomy using Balloon Technique: Initial Experiences and Comparative Study

Seokhwan Bang¹, Sung-Hoo Hong¹

¹The Catholic University of Korea
Table 2: Surgical outcomes of conventional versus Balloon technique

<table>
<thead>
<tr>
<th></th>
<th>Conventional</th>
<th>Balloon</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years, range)</td>
<td>64.8 (15.55)</td>
<td>57.36 (13.15)</td>
<td>0.218</td>
</tr>
<tr>
<td>Console time (mins, range)</td>
<td>104.24 (49.16)</td>
<td>127.89 (34.28)</td>
<td>0.118</td>
</tr>
<tr>
<td>Clamping time (mins, range)</td>
<td>1154.63 (510.72)</td>
<td>751.57 (172.57)</td>
<td>0.082</td>
</tr>
<tr>
<td>EBL (ml, range)</td>
<td>400 (249.44)</td>
<td>290 (87.56)</td>
<td>0.215</td>
</tr>
<tr>
<td>Length of stay (days, range)</td>
<td>6.6 (2.01)</td>
<td>7.82 (3.73)</td>
<td>0.361</td>
</tr>
<tr>
<td>Tumor size (cm, range)</td>
<td>10.21 (3.13)</td>
<td>9.34 (3.05)</td>
<td>0.239</td>
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</table>

Presented By: Seokhwan Bang, MD, PhD

Introduction: Renal cell carcinoma (RCC) characteristically grows into the IVC, and its standard treatment is known as radial nephrectomy and IVC thrombectomy. However, IVC thrombectomy is a technically very difficult operation, and there are problems such as having to entrust the consultation to a vascular surgeon. In addition, vascular surgeons, unlike urologists, are not familiar with robots, so they have to perform open surgery. In particular, it is more difficult to remove IVC thrombus of grade III or higher level. To solve this problem, we introduced a new technique using balloons.

Methods: We performed a total of 20 cases of robotic radical nephrectomy and IVC thrombectomy from June 2018 to December 2022. From 2021, we started using a balloon technique and performed 10 surgeries each. For the balloon technique, an A 9F Fogarty balloon catheter was used, which was used to close the upper part of the tumor and perform surgery. The location was confirmed using transesophageal echocardiography. All surgeries were performed using da Vinci Xi (Sunnyvale, California, USA).

Results: There was no difference in the tumor size (10.2cm vs 8.9cm, p-value = 0.392) and thrombus level of the patients. (p-value = 0.276) and There were no statistical differences in console time (164.3mins vs 127.9mins, p-value = 0.128), operation time, and clamping time (18mins 54secs vs 13mins 24secs, p-value = 0.082). (Table 1).

Conclusions: Through this study, we were able to confirm the feasibility of robotic radical nephrectomy with IVC thrombectomy using a balloon catheter. It is expected that this technique will enable safer and more effective treatment of T3b RCC patients.

Funding: None.

MP01-17 Kidney Donor Perspectives After Minimally Invasive Donor Nephrectomy: A Single Center Experience

Daniel Wang1, Christopher Connors1, Micah Levy1, Juan Arroyave Villada1, Esther Kim1, Daniel Cohen1, Aaron Walt2, Kenny Chin1, Francisa Larenas1, Modassar Awan1, Michael Palese1
1Icahn School of Medicine at Mount Sinai, 2SUNY Downstate Medical School

Presented By: Daniel Wang

Introduction: Understanding kidney donor experiences helps physicians improve follow-up care and address concerns before donation. This study evaluated pre-donation decision-making and post-donation experiences following minimally invasive donor nephrectomy (MIDN).

Methods: We surveyed patients who underwent MIDN (laparoscopic and robotic assisted) at our institution from 2013 to 2024. Patients rated factors influencing pre-donation decision on a scale of 0 (no importance) to 5 (extreme importance). Ratings were analyzed by donor age (20-49 vs. >50 years), sex (male vs. female), and relationship to recipient (known vs. unknown). Patients then reported on post-donation experiences, and responses were analyzed by surgical approach (laparoscopic vs. robotic).

Results: 70 patients responded to our survey (41.9% response rate). Patients prioritized renal function (average: 3.6/5) and life satisfaction (3.3/5) when deciding to donate. Younger donors expressed significantly more concern for post-operative complications (2.6 vs. 1.7, p = 0.023) and recovery time (2.8 vs 1.9, p = 0.028) than older donors. No significant differences were observed based on donor sex or relationship to recipient. After donation, nearly all patients reported increased happiness and minimal quality-of-life impact (Table 1). Notably, 45.7%
to evaluate the safety and efficacy of OCRPN in patients with renal tumors > 4 centimeters (cm).

Methods: From 2007 to 2021, we examined patients who underwent RPCN for cT1b-T2N0M0 renal tumors. Preoperative characteristics including age, gender, body mass index (BMI), race, nephrometry score, estimated glomerular filtration rate (eGFR), and average tumor size were analyzed. Intraoperative data including estimated blood loss (EBL) and total procedure time were collected. Postoperative complications within 30 days of surgery were assessed using the Clavien-Dindo classification. Rate of blood transfusion, margin status, and postoperative eGFR were also compared. Mann-Whitney U and Chi-square analyses were conducted.

Results: Of 225 patients, renal clamping (RC) was employed in 147 patients, while 78 patients underwent OCRPN. Preoperative eGFR was significantly lower in the OC group, otherwise, there were no statistically significant differences in preoperative variables. Mean nephrometry scores of the RC and OC groups reflected intermediate complex tumors at 8.9 and 8.7, respectively. Mean tumor sizes of RC and OC groups were 5.1 and 5.5 cm, respectively. Average EBL and operative times were similar. The rate of postoperative complications, positive margins, and blood transfusion were similar between the two groups. The risk of a Clavien-Dindo complication of 3a or greater was 4.4% lower in the OC group. Blood transfusion rate was 5.6% lower in the OC group. Patients in the OC group experienced a <2% higher risk of positive margins. Postoperative eGFR was more favorable for OCRPN following surgery.

Conclusions: A non-inferior approach for patients with cT1b-T2N0M0 and moderately complex localized renal masses is OCRPN. This approach may lower complication rates while achieving a similar rate of negative margins.

Funding: None.

MP01-19 The Impact of BMI on Short-Term Quality of Life Recovery After Minimally Invasive Renal Surgery

Andrew A. Wagner, Angela Estevez, Helen W. Cui, Gabriela Nieto-Blanco, Sumedh Kaul, Phillip Kim, Adam Nolte, Jeffrey Sun, Sarah Duncan, Peter Chang

Presented By: Andrew A. Wagner, MD

Introduction: The rising prevalence of obesity has prompted extensive research efforts to understand the effect of increasing BMI on perioperative outcomes. However, little is known about its impact on quality-of-life after surgery, which is of importance in preoperative counselling. Therefore, we evaluated the association of BMI and patient-reported Health-Related Quality of Life (HRQOL) throughout the 3-month postoperative period after kidney surgery.

Methods: We included patients who underwent minimally invasive radical or partial nephrectomy at our institution from 2008-2023. Patients were enrolled in a prospective study evaluating HRQOL using the Convalescent and Recovery Evaluation (CARE) instrument and the Short Form-12 (SF-12) questionnaire. The questionnaires were completed preoperatively and at 2, 4, and 12 weeks postoperatively. A multivariable linear mixed-effects model was used to evaluate the association of baseline characteristics with HRQOL recovery. In our cohort, a minimal clinically important difference was defined as a change of 5.6 points for PCS, 4.7 for MCS, and 7.3 points for CARE.

Results: Four hundred and sixty-eight patients were included in the analysis. After adjusting for covariates in the model, at baseline, patients reported population average physical component scores (PCS = 51) and below average mental component scores (MCS = 37) of the SF-12. The PCS and CARE scores...
significantly decreased in the first 4 weeks after surgery but improved at 12 weeks compared to baseline, whereas the MCS showed continual improvement after surgery. Increasing BMI was associated with a statistically significant decrease in the PCS and overall CARE score ($b = -0.16$ (95%CI: $-0.27$, $-0.05$) and ($b = -0.22$ (95%CI: $-0.38$, $-0.05$) respectively. Other significant variables evaluated are shown in Table 1.

**Conclusions:** There is a statistically significant negative effect of BMI on HRQOL throughout the 3-month recovery period. However, the effect size of BMI did not reach clinical significance. This information may prove helpful in preoperative counseling prior to kidney surgery.

**Funding:** None.

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**MP01-20 Development and Validation of Novel Model to Predict Trifecta Failure for Robot-Assisted Partial Nephrectomy: A Multicenter Retrospective Study**

Yuto Hattori6, Kosuke Kobayashi1, Hiromichi Nakagawa2, Yusuke Hama3, Kimihiko Masui2, Shigeki Arizono4, Noboru Shibasaka5, Takashi Kobayashi2, Koji Inoue3, Kazuhiro Okumura1, Mutsumi Kawakita5, Toshinari Yamasaki 5

1Department of Urology, Tenri Hospital, 2Department of Urology, Kurashiki Central Hospital, 3Department of Diagnostic Radiology, Kobe City Medical Centre General Hospital, 4Department of Urology, Kobe City Medical Center General Hospital, 5Department of Urology, Kobe City Medical Center General Hospital

Presented By: Yuto Hattori

**Introduction:** The RENAL score is frequently used to assess tumor complexity for partial nephrectomy (PN). However, in the robot era, the influence of each variable on the difficulty seems to have differed significantly, and it is necessary to reidentify the related variables. Furthermore, as robot-assisted surgery enables PN even for high-complexity tumors, the limitation of the original model is becoming more glaring. To overcome this problem, it is necessary to evaluate using a new measure, such as the shape of the protrusion into the renal sinus, which we previously reported (BJU International 2023; 26:584). In this report, we aimed to re-assess the variables that affect the trifecta achievement and develop a novel model to predict the difficulty of robot-assisted partial nephrectomy (RAPN).

**Methods:** In this retrospective four-center study, 843 patients with renal cell carcinoma (cT1N0M0) were included: 401 in the model development and 442 in the external validation. Multivariable logistic regression analysis for each variable of the RENAL score was used to identify risk factors that predicted trifecta failure. Trifecta is defined as warm ischemia time within 25 minutes, negative surgical margins, and no major postoperative complications. The new model was generated based on the logistic regression model and the predictive accuracy was measured by the area under the receiver operating characteristics curves (AUC).

**Results:** The trifecta achievement rate of development cohort and validation cohort were 72.1% and 75.1%, respectively. On multivariate analysis for development cohort, the tumor diameter and sinus protrusion were significantly associated with trifecta failure. The resulting “DS score” consisted of two variables: three classifications of diameter (< 3 cm: 0pt; 3-5 cm: 1pt, > 5 cm: 2pt), and four classifications of sinus protrusion (not contact: 0pt, involving but no protrusion: 1pt, single protrusion: 2pt, complex-hump protrusion: 3pt). In the validation cohort, the AUC of the DS score was 0.73 (95% CI 0.67-0.78), which is higher than that of the RENAL score (0.67, 95% CI 0.62-0.73, $p = 0.055$).

**Conclusions:** We developed a simple novel model comprised of only two variables. External validation showed that our model was able to predict RAPN difficulty better than existing models.

**Funding:** This study was funded by the Hyogo Prefecture Health Promotion Association and the Hyogo Clinical Urologists Association.
MP02-01 Metachronous Upper Tract Urothelial Carcinoma Following Non-Muscle Invasive Bladder Cancer: A Retrospective, Multi-Institutional Study


1University of Toronto, 2University Health Network, 3Trillium Health Partners, 4Sinai Health System, University of Toronto, 5University of Toronto, Toronto Health Network, 6University of Toronto, Trillium Health Partners, University Health Network, 7University of Toronto, Sinai Health System, University Health Network, 8University of Toronto, Mount Sinai Hospital, Sinai Health System, Princess Margaret Cancer Centre, University Health Network

Presented By: Alexandre Zlotta

Introduction: Metachronous upper tract urothelial carcinoma (UTUC) after non-muscle invasive bladder cancer (NMIBC) is uncommon and its contemporary epidemiology not well characterized. Current evidence is limited, often from small, single-institutional studies, to inform frequency of upper tract imaging. This study sought to determine risk factors of UTUC after NMIBC in a large, multi-institutional cohort of contemporary-treated patients.

Methods: A retrospective cohort study was conducted of NMIBC patients treated at four Canadian academic or community hospitals between 2005-2022. Patients with prior or synchronous UTUC at NMIBC diagnosis were excluded. UTUC was confirmed on pathology or unequivocal upper tract imaging. Cumulative incidence curves were estimated for time to UTUC, with death as a competing risk. Fine-Gray regression was performed to identify adverse prognostic factors for UTUC.

Results: Among 3033 patients, 1281 (42%) were low-risk, 554 (18%) intermediate-risk, 1026 (34%) high-risk, and 172 (6%) very high-risk. During a median follow-up of 4.9 years (IQR 2.7-8.4), 69 (18%) intermediate-risk, 1026 (34%) high-risk, and 172 (6%) very high-risk patients developed UTUC after NMIBC. On multivariable analysis, only high-grade disease (SHR 2.19, 95% CI 1.17-4.13, p = 0.02) and multiple tumours (SHR 2.52, 95% CI 1.48-4.29, p < 0.001) were associated with UTUC. The ten-year cumulative incidence of UTUC after NMIBC was 1.4% for low-risk, 2.2% for intermediate-risk, and 5.0% for high- and very-high-risk patients.

Conclusions: UTUC risk after NMIBC remains minimal for low- and intermediate-risk patients even at ten years, although it can reach 5% among high-risk patients. Multifocal and high-grade tumours are associated with an increased risk of UTUC. These findings from a large multi-institutional study comprising over 3000 patients suggest that the contemporary risk may be lower than what historical data have shown, possibly due to differences in smoking exposure and consideration of competing risks. These insights may inform decisions regarding the optimal frequency and duration of upper tract imaging for NMIBC patients.

Funding: None to declare.

MP02-02 Development and External Validation of an Artificial Intelligence-Based Tool for PROGression Risk Assessment in Nonmuscle Invasive Bladder Cancer (PROGRxN-BCa)

Alexandre Zlotta, Jethro Kwong, Zizo Al-Daqqaq, Yashan Chelliahpillai, Soomin Lee, Kellie Kim, Maximiliano Ringa, Andre Feifer, Wassim Kassouf, Peter Black, Rodney Breau, Michele Lodde, Adrian Fairey, Jean-Baptiste Lattouf, Claudio Jeldres, Ricardo Rendon, Nimira Alimohamed, Peter Chung, Neil Fleschner, Antonio Finelli, Alexandre Zlotta, Girish Kulkarni

1University of Toronto, Sinai Health System, University Health Network, 2University of Toronto, 3Trillium Health Partners, 4McGill University Health Centre, 5University of British Columbia, 6The Ottawa Hospital, 7CHU de Quebec-Universite Laval, 8University of Alberta, 9Centre Hospitalier de l’Universite de Montre’al, 10Universite de Sherbrooke, 11Dalhousie University, 12University of Calgary, 13University Health Network, 14University of Toronto, Sinai Health System, University of Toronto, 15University of Toronto, Mount Sinai Hospital, Sinai Health System, Princess Margaret Cancer Centre, University Health Network

Presented By: Alexandre Zlotta, MD, PhD, FRCSC

Introduction: Current tools to predict risk of progression in non-muscle invasive bladder cancer (NMIBC) perform poorly and do not completely reflect current practice. We aimed to develop and validate PROGRxN-BCa (PROGression Risk assessment in NMIBC) – an artificial intelligence tool to better predict tumour progression.

Methods: PROGRxN-BCa, based on a gradient-boosted survival forest, was trained on NMIBC patients treated from Jan-2005 to Dec-2015 at one of three academic or community-based hospital networks in Toronto, Canada: University Health Network, Sinai Health System, and Trillium Health Partners (n = 1,002). Internal validation was then performed on patients treated from Jan-2016 to Jun-2022 at the same institutions (n = 1,321). External validation was performed on patients treated from May-2012 to Jun-2023 across 13 academic institutions affiliated with the Canadian Bladder Cancer Information System (n = 3,708). Primary outcome was time to progression, defined as first recurrence of ≥T2 (at TURBT or cystectomy), nodal, or metastatic disease. PROGRxN-BCa was compared to the European Association of Urology (EAU) risk calculator, the most widely used clinical prediction model for NMIBC progression.

Results: During a median follow-up of 36 months (IQR 17-65), 1,006 out of 7,031 (14%) patients developed progression. PROGRxN-BCa outperformed the EAU risk calculator, achieving a c-index between 0.75 to 0.81 (Table). This performance benefit was consistent across clinically relevant subgroups, including age, sex, and tumour history. PROGRxN-BCa was well-calibrated for risks between 0-40%. At 5 and 10 years, PROGRxN-BCa demonstrated a higher net benefit (i.e. avoid unnecessary treatment escalation) compared to the EAU risk calculator for clinically relevant decision thresholds between
Table. C-index (95% CI) of the prediction models.

<table>
<thead>
<tr>
<th>Cohort</th>
<th>PROGRxN-BCa</th>
<th>EAU risk calculator</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training (n=1,555)</td>
<td>0.81 (0.79-0.83)</td>
<td>0.76 (0.74-0.78)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Internal validation (n=1,321)</td>
<td>0.81 (0.77-0.84)</td>
<td>0.76 (0.72-0.79)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>External validation (n=3,708)</td>
<td>0.75 (0.73-0.77)</td>
<td>0.69 (0.67-0.71)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

15-35%. When applied to intermediate risk patients (n = 1, 555), PROGRxN-BCa identified 19% of patients with an average 5-year progression risk of 32% - revealing a subset of patients who may benefit from treatment intensification. Similarly, the model identified 32% of patients with an actual average 5-year progression risk of 2.5%. This approach outperformed stratification based on intermediate risk factors.

Conclusions: PROGRxN-BCa outperformed the current gold standard in NMIBC prognostication in both academic and community settings. A particular strength is its ability to further stratify the heterogeneous intermediate risk group. The Artificial Intelligence based PROGRxN-BCa has the potential to further improve NMIBC risk stratification, inform clinical decision-making, and determine eligibility for clinical trials.

Funding: None to declare.

MP02-03 Long-Term Outcomes and Cost Savings of Office Fulguration of Papillary Ta Low-Grade Bladder Cancer: A Large Single Center Series

Alexandre Zlotta1, Christian Vitug1, Katherine Lajkosz2, Andres Llano1, Julian Chavarriaga1, Shayan Din1, Eunice Villegas1, Cynthia Kuk1, Amy Chan1, Bruce Gao2, Otto Hemminki2, Dhiral Koh2, Jimmy Misurka2, Theodoros van der Kwaast1, Christopher Wallis1, Michael Jewett2, Mark Soloway1, Neil Flensner2, Girish Kulkarni2, Alexandre Zlotta1

1Sinai Health System, 2University Health Network, 3Memorial Healthcare System, 4University of Toronto, Sinai Health System, University Health Network, 5University of Toronto, Mount Sinai Hospital, Sinai Health Systems, Princess Margaret Cancer Centre, University Health Network

Presented By: Alexandre Zlotta

Introduction: Sixty percent of non-muscle-invasive bladder tumors initially present as Ta low grade (Ta LG). These have a high recurrence rate but low risk of progression and are associated with very high costs for health systems worldwide. With such low risk of progression and mortality there is a push to minimize rising healthcare costs and inconvenience for patients. Transurethral resection of bladder tumor (TURBT) is standard for the diagnosis, staging, and treatment of bladder cancer (BC). Office-based fulguration under local anesthesia for small, recurrent, apparent Ta LG tumors is an alternative to TURBT. It is convenient for both patients and physicians, avoiding the costs and risks of a hospital-based procedure requiring general or spinal anesthesia. The objective of this study is to assess whether office-based fulguration (OF) under local anesthesia for small, recurrent, pathological Ta low-grade (LG) non-muscle-invasive bladder cancer (NMIBC) is an effective alternative to transurethral resection of bladder tumour (TURBT), avoiding the costs and risks of procedure, and of anesthesia.

Methods: Of 521 patients with primary TaLG NMIBC, this retrospective study included 270 patients who underwent OF during follow-up for recurrent, small, papillary LG-appearing tumours at a university centre (University Health Network, University of Toronto, Canada). We assessed the cumulative incidence of cancer-specific mortality (CSM) and disease progression (to MIBC or metastases), as well as possible direct cost savings.

Results: 270 patients with recurrent Ta LG NMIBC treated with office fulguration were included. Mean age was 64.9 (SD 13.3) years, 70.8% were men and 60.3% had single tumors. The mean number of fulgurations per patient was 3.1 (SD 3.2) with a range from 1 to 22. Median follow up was 10.1 years (IQR 5.8 – 16.2). Patients also underwent a mean of 3.6 (SD 3.0) TURBTs during follow-up. 44.4% of patients never received invrasvesical therapy during follow-up. The 10-year incidence of CSM and progression were 0% and 3.1% (95% confidence interval 0.8–5.4%), respectively. Direct cost savings in Ontario were estimated at $699,14 (Canadian dollars) per patient over the study follow-up.

Conclusions: This study demonstrates that select patients with recurrent apparent Ta LG BC can be safely managed with office-based fulguration under local anesthesia, without compromising long-term oncological outcomes. This approach reduces surgical and anesthetic associated morbidity and may generate cost-savings. Office-based fulguration for recurrent small tumors after Ta LG NMIBC should be more widely used and could have a positive impact onrising health costs.

Funding: Authors have no funding sources to report.

MP02-04 Comparison of Quality of Life and Fear of Cancer Recurrence of Localized Prostate Cancer Underwent Between Laparoscopic or Robotic-Assisted Laparoscopic Radical Prostatectomy

Tanan Bejrananda1, Lipikar Inchan1, Sarayuth Boonchai2

1Prince of Songkla University, 2Sarayuth Boonchai

Presented By: Tanan Bejrananda, MD, PhD

Introduction: Prostate cancer is the fourth most common cancer among Thai men, with a notable increase in incidence rates observed in recent years. Early detection through screening methods like blood tests and rectal examinations is key to timely treatment and improved outcomes. Surgical intervention, including laparoscopic and robotic-assisted approaches, remains a cornerstone in managing localized prostate cancer, offering high chances of cure. However, fear of cancer recurrence (FCR) and its impact on quality of life pose significant challenges for patients post-surgery. This study aims to evaluate the quality of life and fear of cancer recurrence among postoperative prostate cancer patients in Thailand, comparing outcomes between laparoscopic and robotic surgeries.

Methods: A cross-sectional study involving 102 patients utilized the EORTC QLQ-C30, EORTC QLQ-PR25, and Short Fear of Progression Questionnaire (FOP 12) to assess patient-reported outcomes. Data collection occurred before surgery and at 6- and 12-month follow-ups post-surgery.

Results: Analysis revealed significant differences in global health status, physical functioning, emotional functioning, and social functioning between the two surgical groups at 6 and 12 months post-surgery. While emotional functioning showed improvement over baseline scores at both follow-up points,
sexual activity and sexual function remained significantly impaired post-surgery. Urinary symptoms worsened compared to preoperative levels, indicating persistent challenges in prostate cancer-specific symptoms.

**Conclusions:** This study highlights the impact of surgical intervention on the quality of life and fear of cancer recurrence among prostate cancer patients in Thailand. Understanding these outcomes can aid in personalized patient care and decision-making regarding surgical methods, ultimately improving overall patient well-being.

**Funding:** No.

**MP02-05** Association Between Time from Transurethral Resection of Bladder Tumor (TURBT) to Radical Cystectomy and Oncologic Outcomes for Muscle-Invasive Urothelial Carcinoma of the Bladder

Phillip Kim2, Sumedh Kaul1, Aaron Fleishman1, Agustin Perez2, Simon Kim3, Joaquim Bellmunt5, Nima Aghdam2, Aria Olumi2, Peter Chang2, Andrew Wagner3, Boris Gershman6

1Department of Surgery/Beth Israel Deaconess Medical Center, 2Department of Urologic Surgery/Beth Israel Deaconess Medical Center, 3Division of Urology, University of Colorado Anschutz Medical Center, 4Department of Medical Oncology, Dana-Farber Cancer Institute, 5Department of Radiation Oncology, Beth Israel Deaconess Medical Center

Presented By: Phillip Kim, MD

**Introduction:** Prompt timing of radical cystectomy (RC) following diagnosis of muscle invasive bladder cancer (MIBC) is important, with a delay beyond 12-weeks traditionally considered to impart worse oncologic outcomes. However, no randomized clinical trials have examined this question, and these recommendations are based on historical data. We therefore emulated a hypothetical target clinical trial using a contemporary, nationwide oncology dataset to evaluate the association of time from diagnosis to RC with oncologic outcomes.

**Methods:** We conducted observational analyses designed to emulate a hypothetical target clinical trial of early versus late RC following diagnosis. We de

**Results:** A total of 3,747 patients were included for this study, including 2,992 who underwent early RC and 755 who underwent late RC. Baseline characteristics were well balanced after sIPW reweighting. Median follow-up was 28.1 months, and during follow-up 1,884 all-cause deaths occurred. In adjusted analyses, late RC was not associated with an increased risk of pathologic upstaging compared to early RC (48% vs 52%, p = 0.07). Similarly, there was no statistically significant difference in adjusted OS, with 5-year OS of 43% vs 46% p = 0.13 for late and early RC, respectively (Figure 1). Similar findings were observed across categories of CT stage, age, Charlson index, and gender. In exploratory analyses modeling time to RC flexibly, a longer time to RC was associated with a modest, approximately linear decrease in the adjusted risk of pathologic upstaging, and no statistically significant difference in OS.

**Conclusions:** In observational analyses designed to emulate a hypothetical target trial of early versus late RC, timing of RC was not associated with a statistically significant increase in pathologic upstaging or a difference in OS when performed from 4 to 18 weeks after diagnosis. These results suggest the need to examine the traditional recommendations for timing of RC following diagnosis.

**Funding:** This study was supported by the Leonard and Lee Ann Samia Bladder Cancer Research Fund and the Bladder Cancer Research Program Fund.

**MP02-06** A Nomogram for Predicting Overall Survival in Patients with Second Primary Malignancies Following Prostate Cancer: A Real-World, Retrospective Cohort Study Using SEER Database Data

Qi Zhang2, Di Gu1, Lufan Liang2, Ziyu Liu1, Kaoqing Peng3, Yueting Huang1, Ziyang Yang5

1Department of Urology, The First Affiliated Hospital of Guangzhou Medical University, 2Nanshan College, Guangzhou Medical University, 3Department of Urology, The First Affiliated Hospital of Guangzhou Medical University, 4The Third Clinical College, Guangzhou Medical University

Presented By: Qi Zhang, Mr

**Introduction:** Prostate cancer (PCa) patients are at risk of developing second primary malignancies (SPMs), which can significantly shorten their survival. Understanding the risk of SPMs and associated factors is crucial to optimising patient follow-up. This study explores the characteristics of SPMs and develops a nomogram to predict the overall survival of patients with SPMs after PCa.

**Methods:** This study focuses on PCa patients later diagnosed with SPMs using data from the SEER database from 2010 to 2019. Variables were carefully selected, and data were analyzed using least absolute shrinkage and selection operator (LASSO) regression and multivariate Cox proportional hazards modeling. Subsequently, a nomogram was generated to predict the 1-, 3-, and 5-year survival rates for SPM patients.
Results: Among the variables, age, marital status, SPM site, M stage, American Joint Committee on Cancer (AJCC) stage, PCa surgery, SPM chemotherapy, and PSA levels were identified as important factors using LASSO and backward stepwise regression. Consequently, a nomogram was developed based on multivariate Cox regression to visually represent these factors, enhancing their interpretability with a web-based calculator. The area under the curve (AUC) values for 1-year, 3-year, and 5-year survival predictions were 0.85, 0.85, and 0.83 in the training set, respectively, and 0.87, 0.85, and 0.84 in the validation set, demonstrating the accuracy of the nomogram constructed for survival predictions. Time-dependent AUC curves and C-index values validated the discriminatory capability of the model. Moreover, net reclassification improvement (NRI), integrated discrimination improvement (IDI) metrics, and Decision Curve Analysis (DCA) indicated that the nomogram proved significantly better predictive accuracy than the conventional AJCC staging method, highlighting significant improvements in survival forecasts.

Conclusions: Beyond the traditional AJCC staging system, this nomogram provides SPM patients with personalized and accurate prognostic predictions, enabling clinicians to tailor treatments and improve SPM risk management, thus advancing personalized medicine.


MP02-07 Impact of Multifocal Carcinoma-in-situ on the Risk of Tumour Progression in Non-Muscle Invasive Bladder Cancer

Alexandre Zlotta1, Keiran Pace1, Jethro Kwong2, Zizo Al-Daqqa1, Yashan Chelliahpillai1, Soomin Lee1, Kellie Kim1, Maximiliano Ringa3, Amna Ali3, Marian Wettstein4, Amy Chan5, Nathan Perlis4, Jason Lee4, Robert Hamilton4, Neil Fleshner4, Antonio Finelli4, Andrew Feifer5, Girish Kulkarni4, Alexandre Zlotta2

1University of Toronto, 2University of Toronto, Sinai Health System, University Health Network, 3Trillium Health Partners, 4University of Toronto, University Health Network, 5Sinai Health System, University Health Network, 6University of Toronto, University Health Network, Trillium Health Partners, 7University of Toronto, Mount Sinai Hospital, Sinai Health Systems, Princess Margaret Cancer Centre, University Health Network

Presented By: Alexandre Zlotta, MD, PhD, FRCSC

Introduction: Concomitant carcinoma-in-situ (CIS) is an established prognosticator of progression in non-muscle invasive bladder cancer (NMIBC). However, existing risk calculators do not distinguish between unifocal and multifocal CIS. We aimed to assess whether CIS distribution would further impact risk of progression.

Methods: In this multi-institutional retrospective cohort study in Canada, clinicopathological data were collected for Ta/T1 NMIBC patients treated between 2005 and 2022. Patients received intravesical bacillus Calmette-Guérin when indicated. Unifocal CIS was defined as presence of CIS in only one tumour specimen (ie. papillary disease with CIS at the tumour base, or papillary disease with isolated CIS in only one specimen). Multifocal CIS was defined as presence of CIS in more than one specimen. Progression was defined as the development of muscle-invasive or metastatic disease. Multivariable Cox regression was performed to identify adverse prognostic factors for progression.

Results: A total of 2, 923 patients were included, of which 391 (13%) progressed during a median follow-up of 4.8 years (IQR 2.6-8.0). Median age was 71 years (IQR 62-79) and 697 (24%) patients were female. 942 (32%) patients had T1 disease, 1, 487 (51%) had high grade, and 328 (11%) had concomitant CIS, of which 234 (8%) and 94 (3%) had unifocal and multifocal CIS, respectively. On multivariable analyses, age, T1 stage, high grade, multifocal CIS (but not unifocal), and multiple tumours were associated with increased risk of progression (Table). In a subset analysis of patients with concomitant CIS (n = 328), multifocal CIS remained an adverse prognostic factor (HR 2.0, 95% CI 1.3-3.1, p = 0.003) after controlling for age, stage, grade, number of tumours, and tumour diameter. Limitations include the retrospective nature of the study and variability in TURBT technique between centres.

Conclusions: This large multi-institutional study comprising close to 3000 patients furthers our understanding of CIS epidemiology and risk stratification. It supports that not all CIS subsets carry the same risk of progression. Multifocal CIS is an important prognostic factor for progression in Ta/T1 NMIBC. Distinguishing between unifocal vs multifocal CIS in this context should be encouraged. Although our results should be further validated in independent cohorts, these findings stress the importance of sending separate tumour specimens to pathology at the time of transurethral resection of bladder tumour for bladder cancer mapping and of distinguishing between unifocal vs multifocal CIS.

Funding: No funding to declare.

Table 1: Cox regression to predict tumour progression (non-muscle invasive or metastatic disease) among patients with Ta/T1 non-muscle invasive bladder cancer (n=2,923)

<table>
<thead>
<tr>
<th>Variable</th>
<th>HR (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (per 10 years)</td>
<td>1.3 (1.1-1.5)</td>
<td>1.2 (1.1-1.3)</td>
</tr>
<tr>
<td>T1 Stage</td>
<td>5.6 (4.5-7.0)</td>
<td>2.7 (1.3-4.3)</td>
</tr>
<tr>
<td>High Grade</td>
<td>7.5 (5.6-10)</td>
<td>3.6 (2.0-5.4)</td>
</tr>
<tr>
<td>Concomitant CIS</td>
<td>2.4 (1.5-3.1)</td>
<td>Excluded, collinear with degree of CIS</td>
</tr>
<tr>
<td>Degree of CIS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>Ref</td>
<td>Ref</td>
</tr>
<tr>
<td>Unifocal</td>
<td>2.6 (1.5-2.7)</td>
<td>0.6 (0.4-1.1)</td>
</tr>
<tr>
<td>Multifocal</td>
<td>3.6 (2.5-5.2)</td>
<td>1.6 (1.1-2.3)</td>
</tr>
<tr>
<td>Multiple tumours</td>
<td>1.9 (1.5-2.3)</td>
<td>1.4 (1.1-1.7)</td>
</tr>
<tr>
<td>Tumour diameter ≥ 3 cm</td>
<td>1.6 (1.3-2.0)</td>
<td>1.1 (0.9-1.4)</td>
</tr>
</tbody>
</table>

*All HR: statistically significant at p < 0.0001*
MP02-08 Patients with Metastatic Kidney Cancer are Less Likely to Receive Palliative Care at Minority Serving Hospitals

Christopher Connors¹, Christopher Connors¹, Micah Levy¹, Juan Sebastian Arroyave¹, Daniel Wang¹, Olamide Omidele¹, Modassar Awan¹, Michael Palese¹

¹Icahn School of Medicine at Mount Sinai

Presented By: Christopher Connors, BA

Introduction: Prior studies show that Black and Hispanic patients are less likely to receive palliative care (PC) for metastatic cancer, including renal cell carcinoma (RCC). However, it is unclear whether this disparity is due to differences in care at the small subset of hospitals that treat most minority patients, often called minority serving hospitals (MSH), or due to different treatment of minority patients in general. We investigate the impact of treatment at a MSH on the receipt of PC for metastatic RCC (mRCC).

Methods: The National Cancer Database (NCDB) was queried for patients with mRCC from 2004 to 2020. Similar to prior studies, a MSH was defined as a facility in the top decile of proportion of Black and Hispanic patients in the mRCC cohort. PC was defined as the receipt of palliative surgery, radiation, or chemotherapy at the patient’s associated facility. Demographics and clinical information were compared between patients at MSHs and non-MSHs. Univariate and multivariate analysis was performed to identify predictors of PC.

Results: 26,890 mRCC patients were identified (MSH = 2591; non-MSH = 24,299). Compared to a non-MSH, patients at a MSH were more likely to be younger (<60 years old: 46.8% vs 39.9%), treated at an academic center (49.2 vs 40.5%), and uninsured (11.5 vs 3.4%), all p < 0.001. Rates of PC were lower at MSH compared to non-MSHs (13.2 vs 21.8%, p < 0.001). On univariate analysis, receiving care at a MSH was a negative predictor of PC (OR = 0.546, p < 0.001). On multivariate analysis, treatment at a MSH continued to negatively predict receipt of PC (OR = 0.632, p < 0.001). Furthermore, a higher tumor grade predicted PC (OR = 1.094) while treatment at an academic center (OR = 0.767), Hispanic ethnicity (OR = 0.546, p < 0.001). On univariate analysis, receiving care at a MSH was a negative predictor of PC (OR = 0.546, p < 0.001). On multivariate analysis, treatment at a MSH continued to negatively predict receipt of PC (OR = 0.632, p < 0.001). Furthermore, a higher tumor grade predicted PC (OR = 1.094) while treatment at an academic center (OR = 0.767), Hispanic ethnicity (OR = 0.693), and increased T stage (0.923) were negative predictors, all p < 0.05.

Conclusions: Treatment at a MSH was associated with significantly lower odds of receiving PC for mRCC following an adjusted analysis. Of note, Hispanic ethnicity and treatment at an academic center also negatively predicted receipt of PC. Further studies should consider the degree to which this discrepancy arises from MSHs offering PC less often or patients at MSHs declining PC at a higher rate.

Funding: None.

MP02-09 Dilemma in Diagnosis and management of Retrovesical Cystic Mass: A Rare Case Report of Adenocarcinoma of Seminal Vesicle

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Presented By: Archit Muralidhar, Senior Resident, MCh Urology

Introduction: Zinner syndrome is a rare developmental anomaly of the wolffian duct and characterised by ipsilateral renal agenesis, ejaculatory duct obstruction with seminal vesicle cyst. Adenocarcinoma of the seminal vesicle is rare. Literature debates on the management and follow up protocol of this rare malignancy. Here, we report the diagnosis and management of a rare case of seminal vesicle adenocarcinoma in Zinner syndrome in a teenage boy.

Methods: A teenage boy presented with complaints of intermittent gross painless hematuria for 1 year. On clinical examination, there was a vague, ill-defined, non-tender, supra pubic fullness. On rectal examination, a tense, slightly mobile, bulging mass was palpable reaching upto lateral pelvic wall. CECT abdomen showed left dysplastic kidney at L2 – L3 level and a large well circumscribed retrovesical midline cystic mass of 9 x 8.7 x 11.3 cm. MRI abdomen showed a left small ectopic kidney with a large well defined cystic lesion of 9.2 x 8.5 x 11.5 cm in retrovesical space with heterogenous enhancement and areas of necrosis abutting rectum and bladder. DMSA scan showed uptake only in the right kidney. USG guided biopsy was inconclusive.

Results: Cystoscopy showed an opening in the midline with constant haemorrhagic efflux and a large mass tenting the bladder neck. Patient underwent excision of cyst with bilateral extended pelvic lymphadenectomy. Intraoperative finding was a large tense cystic mass with pseudo capsule which was adherent to bladder and right vas was entering into it. Histopathology showed poorly differentiated adenocarcinoma with IHC analysis was positive for cytokeratin 7, carcinoembryonic antigen and CA 125 but negative for PSA, Cytokeratin 20, suggestive of primary seminal vesical adenocarcinoma.

Conclusions: Adenocarcinoma of the seminal vesicle in Zinner syndrome is a rare entity. Hematuria may be an early presentation of malignant transformation of seminal vesicle cyst. Multimodal therapy with regular follow up is needed for the management of this aggressive malignancy.

Funding: None.

MP02-10 Assessing Gender Disparities in Bladder Cancer: A Study of Life Expectancy and Public Health Expenditure in Taiwan

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Presented By: Yi Hong Li, Yi Sheng Lin, Ya Chu Yang, Ying Ming Chiu, Chao Yu Hsu

Introduction: Bladder cancer is one of the most common neoplasms worldwide which affects men and women of all age groups. The incidence of bladder cancer has increased in both men and women, but prevalence is higher in men than women, and this has been consistently observed across many countries. The burden of bladder cancer is greater in low-income and middle-income countries, and the gender gap in incidence and mortality has been well documented. Understanding the burden of bladder cancer in Taiwan is critical for developing effective prevention and control strategies.

Methods: We calculated the number of new cases of bladder cancer and the number of deaths from bladder cancer in Taiwan from 2004 to 2018. We used the GBD (Global Burden of Disease) database to estimate the life expectancy in Taiwan from 2010 to 2018. We calculated the public health expenditure on bladder cancer in Taiwan from 2010 to 2018.

Results: The incidence of bladder cancer in Taiwan was higher in men than in women, with a male-to-female ratio of 3.5:1 in 2018. The lifetime risk of developing bladder cancer was 2.7% for men and 1.0% for women. The life expectancy in Taiwan was 79.3 years for men and 85.9 years for women in 2018. The public health expenditure on bladder cancer in Taiwan was 0.5% of the total public health expenditure in 2018.

Conclusions: Bladder cancer is a significant public health issue in Taiwan, with a higher incidence and mortality in men than in women. However, the gender gap in incidence and mortality is narrowing. Further research is needed to understand the underlying reasons for these trends and to develop effective prevention and control strategies.

Funding: None.
**Introduction:** This study was to elucidate the disparities in life expectancy (LE), loss-of-life expectancy (loss-of-LE), and lifetime medical expenditure between genders among bladder cancer patients.

**Methods:** This retrospective study examined bladder cancer patients diagnosed from 2008 to 2018, utilizing multiple Taiwan databases. Excluding patients under 30 and over 90, it used the Kaplan-Meier and semiparametric methods to estimate survival and lifetime costs. Subgroup analysis focused on cancer stages, age, and factors like hemodialysis to assess their effects on patient outcomes and costs.

**Results:** The study encompassed 30,390 new bladder cancer diagnoses. The loss-of-LE disparity between males and females was evident in Non-muscle-invasive bladder cancer (NMIBC) (3.17 (0.55) vs. 7.14 (0.76) years) and Muscle-invasive bladder cancer (MIBC) (8.86 (0.43) vs. 10.64 (0.63) years). Carcinoma in situ (CIS) revealed its profound impact, with the associated loss-of-LE mirroring those of advanced stages (combined gender CIS: 8.58 years; stage 2 males: 9.48 years; stage 2 females: 9.53 years). The cost per life year showcased a marked difference, especially in NMIBC ($4,631 for males vs. $7,636 for females) and in MIBC ($6,033 for males vs. $7,753 for females). Hemodialysis accounted for a significant portion of these costs, with a hemodialysis rate of 4.6% for males vs. 18.5% for females.

**Conclusions:** Females manifested a higher prevalence of high-grade histopathology, and extended durations of hemodialysis, culminating in inferior outcomes in both NMIBC and MIBC and augmented costs. The influence of hemodialysis and the CIS stage necessitates emphasis, underscoring the need for vigilant monitoring and immediate, assertive treatments.

**Funding:** Nil.

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**MP02-11 Growth and Diversity of the Endourology Fellowship: Historical Trends and Current Perspectives**

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Presented By: Trisha Nguyen, MD

**Introduction:** The Endourological Society, founded in 1983, offered the first fellowship programs in endourology and minimally invasive surgery. As the field of Endourology has expanded to encompass the breadth of endoscopic, laparoscopic, robotic, image-guided, and minimally invasive procedures, so too has the landscape of Endourology fellowship programs. Herein, we aim to review the evolution of Endourology fellowship programs.

**Methods:** We reviewed the Endourological Society’s database of available fellowship programs from 1990 to 2024. A survey was also distributed to current Endourology fellows and current applicants to ascertain demographics such as geographic region, gender, program type, and reasoning for pursuing certain fellowships tracks.

**Results:** The Endourology fellowship initially offered only a 2-year combined endourology/minimally invasive surgery track. By 2010, programs expanded to include a 1-year combined track and 1- or 2-year laparoscopic/robotic tracks. In 2024, the first robotic surgery and minimally invasive urology oncology programs were introduced (Figure 1). Of the 186 current applicants and fellows, 98 completed the questionnaire (52.6% response rate). The respondents were largely male (82.7%) and currently in or pursuing a 1-year track (58.1%). 52% chose to pursue fellowship to increase exposure to advanced surgical technologies and innovation. All fellowship types were represented in this sample. Over 70% of respondents were influenced by length of training, and nearly 70% indicated desire to pursue a career in academics. See Table 1 for more details.

**Conclusions:** The evolution of the Endourology fellowship reflects both the changes in the field of Urology itself and the perspectives of the practicing urologist. This is evident in the growth and diversity of fellowships coupled with the desire of current applicants/fellows to increase exposure to burgeoning innovation. As the Endourological Society continues to spearhead the development and application of innovation in Urology, the fellowship must grow to meet the needs of graduating urologists.

**Funding:** None.

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**MP02-12 Natural Language Processing in Kidney Transplantation: A Primer for Urologists**

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1Lee Kong Chien School of Medicine, 2Singapore General Hospital, 3Yong Loo Lin NUS School of Medicine

Presented By: Rene Gatsinga, MD, MPH, MRCS

**Introduction:** Natural language processing (NLP) is a subfield of artificial intelligence that enables computers to process human language. As most human interactions today involve the internet and electronic devices, NLP tools are quickly becoming indispensable to modern life. The use of NLP tools in medical practice and research is growing fast. We performed a scoping review evaluating the current applications of NLP in kidney transplantation medicine.

**Methods:** We conducted an electronic literature search on NLP in the setting of kidney transplantation on PubMed, EMBASE, and Scopus from inception to July 22, 2023. Case reports, abstracts, and reviews were excluded from this analysis.

**Results:** A total of eight studies were included in the final analysis. NLP tools allow researchers to exploit the vast amount of data that exists in unstructured formats, such as electronic health records (EHR) and online digital traces. Most commonly, studies utilized NLP as an adjunct tool to facilitate early diagnosis of...
renal disease and as an effective predictor of graft loss and complications among kidney transplant recipients. Some researchers were able to predict organs at risk of delayed implant or discard by analyzing donors’ EHR; this has the potential to improve organ utilization significantly. By studying online comments from social media and news websites, one group was able to gauge public perception of transplant policies and identify potential actions to improve access to transplant care.

**Conclusions:** NLP tools have only recently been introduced into medical research, but they already making a significant impact in kidney transplantation medicine. The literature demonstrates the potential to improve early diagnosis of renal failure, predict renal transplantation outcomes, improve organ utilization, and support advocacy and policy-making. With more widespread use of EHR globally and the continued development of NLP technology, these tools a poised to revolutionize the practice of renal transplantation.

**Funding:** NA.

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**MP02-14 Colonel Kryder E. Van Buskirk: A Urologist Called to the Front Line**

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1Tripler Army Medical Center

Presented By: Jonathan Yu, MD

**Introduction:** Colonel (Dr.) Kryder E. Van Buskirk (1914-1992) was the initial commanding officer of the 8076th Mobile Army Surgical Hospital during the Korean War. To our knowledge, he is the first and only urologic trained surgeon to command a Mobile Army Surgical Hospital (MASH) unit during the Korean War. Colonel (Dr.) Kryder E. Van Buskirk (1914-1992) was the initial commanding officer of the 8076th Mobile Army Surgical Hospital during the Korean War. To our knowledge, he is the first and only urologic trained surgeon to command a Mobile Army Surgical Hospital (MASH) unit during the Korean War.

**Methods:** A literature review of textbook chapters, manuscripts, and online articles was performed for biographical review of Dr. Kryder Van Buskirk’s life and his involvement as a surgeon and military officer during the Korean War.

**Results:** Dr. Van Buskirk was chief of urology at Valley Forge General Army Hospital in Phoenixville, PA when he was called to command MASH 8076 in 1950. The North Koreans had just advanced across the 38th parallel on June 25, 1950. MASH units were created to bridge the gap in evacuation chain between aid stations and evacuation hospitals. Mobility was paramount for MASH Units as the 8076th would mobilize once every 3 weeks. Between 2 Aug and 5 Oct 1950, the 8076th provided forward hospital support to nearly all front line units, admitting as high as 608 patients and handling 244 surgical procedures within a 24 hour period. The 8076th Mash was awarded the Meritorious Unit Commendation for “displaying outstanding initiative and aggressive action in performing its many missions.” Dr. Van Buskirk led the 8076th Mash from July 1950-May 1951. He was remembered by a staff surgeon within the unit as a “fun-loving, drinking, story-swapping surgeon who cut the trail for many behind him.”

**Conclusions:** Dr. Van Buskirk retired from the US Army Medical Corps in 1972 after 37 years of service. His assignments included chief of urology at Walter Reed Army Medical Center and urology consultant to the surgeon general. His leadership in getting MASH 8076 operational in a short period of time supported hundreds of soldiers and was exemplary of the capabilities of forward medical unit.

**Funding:** None.

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**MODERATED POSTER SESSION 3: BPH 1**

**MP03-01 Medication Use Rates Through 5 Years are Similar After PUL, TURP and GreenLight: a US Healthcare Claims Study**

Dean Elterman4, Claus Roehrborn1, Ronald P. Kaufman, Jr. 2, Steven Kaplan3

1Tripler Army Medical Center, 2Albany Medical College, 3Icahn School of Medicine at Mount Sinai, 4University Health Network, University of Toronto

Presented By: Dean Elterman

**Introduction:** Though patients electing BPH surgery may wish to cease BPH medical therapy, some may continue or begin medication post-surgery to treat residual symptoms. This large-scale healthcare claims analysis produces rates of continued and de novo BPH medical therapy following TURP, GreenLight PVP and UroLift PUL procedures through 5 years.

**Results:** Rates of perioperative medical therapy were similar between all treatments. 1yr medication: The rate of continued medication use following PUL, TURP and PVP was 2.5%, 4.0% and 4.2%, respectively. De novo use was low after all therapies – (PUL 0.5%; TURP 0.9% (vs PUL: \( p < 0.0001\)); PVP 1.0% (vs PUL: \( p < 0.0001\)). The total 1yr medical therapy rate was lowest for PUL (3.9%; TURP 6.1%; PVP 6.5%). 5yr medication: Rates of continued and de novo use were: PUL - 8.4% cont.;
Introduction: The ROBUST III study is a randomized controlled trial comparing the Optilume® Drug Coated Balloon (DCB) against direct visual internal urethrotomy (DVIU) or dilation. The Optilume® Drug Coated Balloon (DCB) is a dilation balloon with a paclitaxel coating that combines mechanical dilation for immediate symptomatic relief with local drug delivery to maintain urethral patency. Outcomes after 3-year follow-up are presented here.

Methods: 127 subjects were randomized in a 2:1 fashion at 23 sites. Seventy-nine were treated with the DCB and 48 were treated with DVIU or dilation. Follow-up past 1 year was limited to those treated with the DCB. Eligibility criteria included adult males with anterior strictures with ≥2 prior treatments and stricture length ≤3cm. Long-term endpoints included freedom from repeat treatment, International Prostate Symptom Score (IPSS), and peak urinary flow rate (Qmax).

Results: Subjects randomized to receive the DCB had an average of 3.2 prior treatments and average stricture length of 1.6cm (46% ≥2cm), with 8/79 (10.1%) having penile strictures and 9/79 (11.4%) having prior pelvic radiation. IPSS significantly improved from 21.9 at baseline to 11.6 at 3 years. Qmax significantly improved from a baseline of 7.7 mL/sec to 10.6 mL/sec at 3 years. Freedom from repeat intervention for DCB subjects was estimated to be 73%. No late-onset treatment related adverse events were observed.

Conclusions: The Optilume® DCB continues to achieve significant improvements in symptoms, flow, and reintervention rates through 3 years post treatment.

Funding: Laborie.

MP03-03 Flow Rate Improvements Maintained through 2 Years After Treatment with Optilume BPH

Dean Elterman2, Steven Kaplan1, Dean Elterman2, PINNACLE Investigators3

1Mount Sinai Health System, 2University Health Network, University of Toronto, 3Mount Sinai Health System and others

Presented By: Dean Elterman

Introduction: Optilume BPH is a novel minimally invasive surgical therapy (MIST) that combines mechanical dilation with the delivery of paclitaxel for the treatment of lower urinary tract symptoms (LUTS) secondary to BPH. Mechanical dilation with Optilume BPH achieves an anterior commissurotomy, while delivery of paclitaxel is intended to maintain luminal patency during healing. The PINNACLE study was a randomized, sham controlled study evaluating Optilume BPH against a sham procedure, with long-term follow-up limited to the active (Optilume BPH) treatment group.

Methods: 148 subjects were randomized in a 2:1 fashion (100 Optilume BPH, 48 sham) at 18 centers in the US and Canada. Subjects and evaluating personnel were blinded to the treatment received through 12-months, subjects randomized to receive treatment with Optilume BPH continued follow-up through 2 years. Symptom improvement was measured utilizing the International Prostate Symptom Score (IPSS), functional improvement measured by peak urinary flow rate (Qmax). Erectile and ejaculatory function were evaluated utilizing validated questionnaires.

Results: Seventy-eight subjects have completed the 2-year follow-up in the per-protocol set. A total of 2 subjects (3/100, 3%) have pursued additional surgical management (PAE, TURP, Laser) through the 2-year timeframe. Improvement in IPSS was maintained through 2 years (23.4 vs 11.0, Δ -12.1). Qmax improved from 8.9 mL/sec at baseline to 19.0 through 2-year follow-up. Paired analysis showed minimal changes in IPSS and Qmax from 12 month to 2 year follow-up. There were no changes in perceived sexual or ejaculatory function.
Conclusions: Treatment with Optilume BPH results in impressive and durable functional improvements in flow rate and symptomology. Minimal surgical retreatment has occurred in the cohort of patients randomized to receive Optilume BPH as part of the pivotal randomized, sham controlled trial.

Funding: Laborie.

MP03-04 A Randomized Controlled Trial of MIST vs Meds: Preliminary Analysis of the IMPACT Trial

Dean Elterman4, Gregg Eure1, Brian Mazzarella2, Claus Roehrborn3

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Presented By: Dean Elterman

Introduction: Initial treatment for benign prostatic hyperplasia (BPH) often includes medical therapy, an approach marked by high rates of non-adherence. Minimally invasive surgical therapies (e.g., UroLift PUL) offer durable symptom relief, a favorable safety profile, superior early patient experience compared to TURP, and may preserve bladder health compared to watchful waiting. The IMPACT RCT compares UroLift PUL to medical therapy, focusing on efficacy and patient experience through 3 months.

Methods: IMPACT is a prospective, multicenter, two-arm, 1:1 RCT comparing efficacy, safety, and post-procedural experience in BPH patients treated with UroLift or medication (tamsulosin 0.4 mg). The primary endpoint compared the change in BPH symptoms between groups at 3 months after therapy initiation. Additional endpoints included change in QoL, satisfaction, BPH treatment goal achievement, adverse effects (AEs), and sexual function. Key data gathered to date are presented in this preliminary analysis.

Results: 88 UroLift and 112 medication subjects were available for preliminary analysis. Baseline demographics were similar between treatment groups. IPSS and QoL improvements were greater for UroLift subjects vs. medication at 1 and 3 mo post-treatment. UroLift subjects experienced greater ejaculatory function, bother, and erectile function improvements vs. medication subjects. Several quality of life measures were superior for UroLift subjects vs. medication: a more positive perception of treatment (PPSM) at 1 and 3 mo; higher levels of goal achievement (SAGA) at both timepoints and more subjects achieving their highly-rated goals at 1 and 3 mo vs. medication; greater improvements in physical and social activities, relationships and emotional experiences (King’s Health, Figure 1); and more improved sleep disturbance (Jenkins) at 1 and 3 mo. As expected, more UroLift subjects encountered ≥1 AE (56% UroLift vs 18% medication); the majority of UroLift AEs were mild-to-moderate and resolved within 2wks, whereas longer durations were seen for medication AEs.

Conclusions: IMPACT is the first head-to-head RCT comparing a MIST to medication in BPH treatment. Preliminary data suggests that UroLift PUL may offer greater symptom and quality of life improvement with better patient satisfaction, yet further investigation is required.

Funding: NeoTract/Teleflex, Inc.

MP03-05 Efficacy of Transcutaneous Tibial Nerve Stimulation for Unrelieved Overactive Bladder Patients after Transurethral Laser Enucleation of The Prostate: A Pilot Study

Yi Wang1, Qing Yuan1, Heng En Wang1, Xiao Wei Hao2, Ying Lu2, Fan Gao2, Shuai Huang5, Guo Rong Yang2, Kai Kai Lv2

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Presented By: Yi Wang, MD

Introduction: Benign Prostatic Hyperplasia (BPH) can lead to bladder outlet obstruction (BOO), resulting in a range of lower urinary tract symptoms, including both storage and voiding symptoms, which significantly impact the patient’s quality of life. Surveys indicate that approximately 70% of BPH patients have Overactive Bladder (OAB), and 50% of patients continue to experience OAB even after BOO has been relieved. Tibial nerve stimulation therapy is a treatment option for OAB. Transcutaneous tibial nerve stimulation (TTNS) does not directly puncture the skin but is expected to exert the same therapeutic effect as percutaneous tibial nerve stimulation. This study investigated the efficacy and safety of TTNS in patients with BPH complicated with OAB whose symptoms were not relieved after transurethral laser enucleation of the prostate (TULEP).

Methods: Eighteen patients with BPH complicated with OAB-who still have no relief from OABone month after TULEP were recruited. All patients were treated with TTNS twice a day for 4 weeks using a TTNS device and the stimulations were at 20 Hz frequency, 200 μs pulse width. The daily micturition frequency, nocturia episodes per day, urgency score, incontinence episodes per day, and questionnaires on Overactive Bladder Symptom Score (OABSS) were observed at baseline and week 4.

Results: All patients were evaluated at the end of the study and no significant side effects were found during the treatment. The daily micturition frequency and the number of nocturia episodes per day were reduced from 10.40(5–22) to 5.62(2–14), and
6.62(4.22) to 3.18(2.9), respectively. The OABSS were reduced from 7.12(3–14) to 5.00(1–14). Urgency score and the number of incontinence episodes per day were changed from 2.13(0–5) to 1.50(0-5), and 1.93(0-10) to 1.08(0-5), respectively.

**Conclusions:** The preliminary results demonstrated that TTNS is effective and safe for treating patients with BPH complicated with OAB who still have no relief from OAB after TULEP. Because this was a pilot study, the results need to be substantiated by the accumulation of cases and a randomized controlled trial with a sham group in further.

**Funding:** National Key R&D Program of China (No. 2023 YFC3605300).

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**MP03-06 Predicting Patient Centered Outcomes of a Prostate Artery Embolization Cohort**

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¹University of Virginia, ²University of Virginia, Department of Interventional Radiology, ³University of Virginia, Department of Urology

Presented By: Fionna Sun, MD

**Introduction:** Prostate Artery Embolization (PAE) is a treatment for benign prostatic hyperplasia (BPH) touted for low morbidity and minimal risk to continence and sexual function. However, optimal patient selection criteria are still unclear. Our study aims to use clinically relevant patient-centered composite outcomes to establish the peri-operative factors that predict success.

**Methods:** All PAEs over 7 years (2016-2023) at a single site were retrospectively reviewed. The primary outcome was “clinical success,” defined as a patient with no additional BPH procedures within 3 years plus one of the following endpoints: catheter independence within 3 years, discontinuation of prostate medications within 3 years, or > 8-point IPSS reduction at 1 year.

**Results:** 41/70 (59%) procedures were deemed successful, and 20/70 (29%) patients pursued a second BPH procedure at an average 14 months post-op. 27% percent of patients received a suboptimal embolization (unilateral or incomplete), often due to atherosclerosis. Figure 1 shows logistic regression results, identifying catheter dependence, unilateral embolization, and prominent median lobe presence as risk factors for a clinically unsuccessful procedure. Mean pre-PAE prostate size was not different between groups and was not predictive of procedure success.

**Conclusions:** Our PAE cohort were suboptimal surgical candidates due to their baseline comorbidities, which likely contributed to our less efficacious outcomes. 30% of our patients were catheter-dependent, 40% had PVRs >200, and 24% had CCI ≥5, indicating severe comorbidities. Despite that, we found interesting results showing that patients with catheter dependence or prominent median lobes on evaluation had low success rates, which can be part of patient counseling when discussing goals and expectations.

**Funding:** None.

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**MP03-07 Thulium Fiber Laser versus Holmium MOSES Laser Enucleation of the Prostate for the Treatment of Benign Prostatic Hyperplasia: A Randomized Prospective Clinical Trial**

Saud Alhelal¹, Hazem Elmansy¹, Moustafa Fathy¹, Amr Hodhod¹, Abdalla Bazazo¹, Husain Alaradi¹, Saud Alhelal¹, Loay Abbas¹, Ahmed S. Zakaria¹, Ahmed Kotb¹

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Presented By: Saud Alhelal, MD

**Introduction:** We aimed to compare intraoperative and postoperative outcomes of patients who underwent holmium laser enucleation of the prostate with MOSES TM technology (M-HoLEP) versus thulium fiber laser enucleation of the prostate (ThuFLEP) for the treatment of benign prostatic hyperplasia (BPH).

**Methods:** In this ongoing randomized controlled trial (RCT), we included 87 patients who underwent endoscopic enucleation of the prostate (EEP) using either MOSES TM technology or TFL from June 2022 to September 2023. Patients’ preoperative and prostate parameters were assessed. Intraoperative parameters and perioperative outcomes, including admission, perioperative complications, readmission rates, and outcome measures such as IPSS, QoL, flow rate, PVR, PSA, and TRUS-size reduction, were collected and analyzed up to a 6-month follow-up period.

**Results:** Forty-three procedures were performed in the M-HoLEP group, while 44 cases were performed in the ThuFLEP group. No statistically significant differences in preoperative characteristics were observed between the two groups. Patients in the M-HoLEP group had a shorter median enucleation time (50 vs. 60 min, p < 0.001) and hemostasis time (8 vs. 9 min, p = 0.04) as well as a significantly higher enucleation efficiency when compared to those in the ThuFLEP cohort.

**Conclusions:** Our PAE cohort were suboptimal surgical candidates due to their baseline comorbidities, which likely contributed to our less efficacious outcomes. 30% of our patients were catheter-dependent, 40% had PVRs >200, and 24% had CCI ≥5, indicating severe comorbidities. Despite that, we found interesting results showing that patients with catheter dependence or prominent median lobes on evaluation had low success rates, which can be part of patient counseling when discussing goals and expectations.

**Funding:** None.
Additionally, there were significant differences favoring M-HoLEP in terms of hematuria scale, CBI time, catheterization time, and hospital stay. Approximately 32% of ThuFLEP patients were admitted with immediate postoperative hematuria compared to 4.7% in the M-HoLEP group, \( p < 0.001 \). Postoperative outcomes, including IPSS, QoL, Qmax, PVR, PSA and TRUS-sizng reduction, were comparable between the two cohorts up to 6 months postoperative. None of the M-HoLEP patients were readmitted compared to 9.1% of ThuFLEP participants.

Conclusions: Both MOSES TM technology and TFL provided satisfactory functional outcomes in EEP. However, MOSES TM technology demonstrated superior results in terms of the enucleation and hemostasis times, in addition to reducing catheterization time, hospital stay and the rate of postoperative hospital admission.

Funding: Research grant from Boston Scientific.

**MP03-08 Secondary Surgeries Following Holmium Laser Enucleation of the Prostate (HoLEP)**

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Presented By: Chloe Michel, MD

**Introduction:** Data on complications following Holmium Laser Enucleation of the Prostate (HoLEP) are single center experiences. Although post-operative urethral stricture rates is well described, secondary surgeries for urinary incontinence (UI) is poorly characterized. We aimed to quantify the incidence of complications following HoLEP using a large national dataset.

**Methods:** We retrospectively reviewed a limited dataset from the TriNetX Research Network Database, which carries clinical data of 89 academic medical centers and health care organizations (HCO), with most data collection starting in 2011. A search query between one year prior to and two years after HoLEP identified patients of interest from 46 HCOs. The following ICD and CPT codes were queried: HoLEP (CPT 52649); urinary incontinence (ICD N39.4, 39.41, 39.49, 39.46, 39.45, 39.42, 39.48, R32, R39.81, N39.3); antispasmodic prescription (GU201, GU209); artificial urethral sphincter (AUS) (CPT 53445); male sling (CPT 53440); cystourethroscopy with injection for chemodenervation (CPT 52287); meatoectomy/meatoplasty (CPT 1008396, 53450); urethroscopy (PT 1008396, 52276, 1008334, 52281, 1008395); transurethral resection of bladder neck contracture (TURBNC) (CPT 52640); urethroplasty (CPT 1008424, 53410, 53415).

**Results:** Of the 12,097 patients that underwent HoLEP, 2414 (19%) were diagnosed with UI and 2133 (17%) were prescribed a urinary antispasmodic in the year preceding surgery. The incidence of a visit for anti-spasmodic prescription or post-operative UI was 21.3% and 10.6%, 7.4% and 7.21%, 6% and 5.6%, and 5.7% and 4.4% at 0–3 months, 3–6 months, 6–12 months, and 1–2 years, respectively. 15 underwent insertion of an AUS (0.12%), 10 (0.08%) underwent sling placement, and 62 (0.51%) had cystoscopy with chemical derenervation injections. The number of patients undergoing meatoplasty/meatotomy, urethroplasty, TURBNC, or urethroplasty was 10 (0.08%)/10 (0.08%)/10 (0.08%)/10 (0.08%); 48 (0.4%)/83 (0.69%)/54 (0.45%); 10 (0.08%)/12 (0.9%)/16 (0.13%); 10 (0.08%)/10 (0.08%)/10 (0.08%) at 0–3, 3–6, and 6–12 months post-operatively, respectively.

**Conclusions:** Data from a large national database shows a low rate (4%) of persistent UI beyond one year following HoLEP and an expected low rate of incontinence procedures in this population. Given the efficacy of bladder antispasmodics, the use of bladder chemical denervation procedures was also unsurprisingly low. Our data reflects that 2% of patients require surgical treatment of post-operative urethral stricture disease, which is consistent with prior studies.

**Funding:** No sources of funding.

**MP03-09 Facility and Payor Drivers of BPH Surgical Availability**

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Presented By: Victoria Edmonds, MD

**Introduction:** The selection of an outlet procedure for benign prostatic hyperplasia (BPH) relies not only on clinical evaluation but also the availability, cost, and coverage of any given procedure. We sought to evaluate the distribution of benign prostatic hyperplasia (BPH) procedures performed in ambulatory surgery centers across the United States based on hospital and payor characteristics.

**Methods:** We identified all ambulatory BPH procedures performed between the years 2018 to 2020 using the Healthcare Cost & Utilization Project (HCUP) Nationwide Ambulatory Surgery Sample (NASS). BPH procedures were broken down by CPT code. Total charges, primary payer, and hospital characteristics were analyzed for each procedure type.

**Results:** From 2018 to 2020, 192,568 BPH procedures were performed. The most common procedure was TURP (88.8%) followed by HoLEP (9.9%). Mean total charges varied significantly between procedures and was highest for PUL ($343,318.37) compared with HoLEP ($30,867.67) and TURP ($25,563.11) \( p < 0.001 \). Regarding hospital characteristics, the majority of all procedures were performed in centers associated with large, urban, teaching hospitals. However, these trends were significantly more pronounced for PAE and HoLEP relative to TURP, PVP, PUL, and WVTT- with PUL and WVTT having the highest relative use in smaller, rural, and non-academic centers (Figure 1). Similarly, significant variation in payor profiles were found based on BPH surgery type with both TURP and HoLEP (71% and 67%, respectively) being most frequently reimbursed via public payor (i.e. Medicare or Medicaid) and PUL most frequently reimbursed via private payor (77%) \( p < 0.01 \).

**Figure 1:** Distribution of ambulatory BPH procedure broken down by hospital teaching status, hospital bed number (6-99, 100-299, 300+), and rural or urban location.
Conclusions: Hospital characteristics and payor profiles are associated with pronounced differences in BPH surgical availability. In addition to clinical parameters, such differences are important to ensuring appropriate patient and provider access to treatment options.

Funding: No funding was received for this work.

MP03-10 Duration of Medication Therapy and Outcomes after Transurethral Resection of Prostate for Patients with Benign Prostatic Obstruction

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Presented By: Anurag Rath, Dr

Introduction: This original work done in patients with Benign Prostatic Obstruction aims to find out the impact of duration of medication therapy on the outcomes of TURP. Medical management of BPO is recommended as the first line of treatment and surgery is usually reserved for those who have failure of medical management and/or complications of BPO (refractory retention, vesical calculus, recurrent UTI or hematuria). However, there is some pointing evidence that delay in the surgery may affect the overall outcomes of transurethral resection of prostate (TURP). Presently, there is a lacuna on the impact of delay in surgery owing to prolonged duration of preoperative medical therapy on the outcomes of surgery. We aimed to find this impact with the hypothesis that patients who are on long term medication therapy have less improvement in their subjective symptoms and objective bladder function parameters compared to patients who undergo surgery earlier.

Methods: An observational prospective cohort study was conducted to evaluate the outcomes after TURP with respect to prior duration of pre operative medical management as <3, 3-12 and >12 months. Based on the existing literature, the expected mean IPSS reduction was 10 points from baseline. A sample size of 72 (24 in each group) would have 90% power to detect a significant difference in the three groups at 5% significance level. With an expected dropout rate of 10%, we aimed to recruit 90 patients in our study. Sample size calculation was done using G Power 3.1. 9.7Baseline characteristics (age, co-morbidities, ASA grade, duration and type of medical therapy, indication of surgery, serum PSA, IPSS, Ultrasound imaging with post-void residual urine (PVR), UDS storage and voiding pressures) were collected for all patients undergoing TURP. Operative details (surgical time, resected prostate weight) and post-operative outcomes (post-operative stay, catheter duration and Clavien-Dindo grade of complications) were noted. Follow up was done at 6 weeks, 3 months and 6 months with IPSS, PVR and UDS storage/voiding pressures. Primary outcome was PROM (IPSS based improvement of symptoms) at 3 months. Secondary outcome measures included PROM at 6 weeks and 6 months, complete emptying of bladder (as measured by Ultrasound based PVR), Urodynamics Storage and Voiding pressures and comparison between patients who received only alpha blockers and those who also received 5-alpha reducectase inhibitors. One way ANOVA was used for testing of mean between three independent groups whereas Repeat measure ANOVA was used for repeated observations. A p-value of <0.05 was considered statistically significant. All analysis was done using SPSS software, version 25.0

Results: 87 men undergoing TURP from Jan 2022-Dec 2023 were divided into three groups based on duration of preoperative medical therapy - <3 months (n = 24), 3-12 months (n = 27) and >12 months (n = 36). Baseline parameters including age, co-morbidities, prostate size, ASA grade, serum PSA, resection time, resected prostate weight, post-operative stay, catheter duration and post-operative complications were found to be similar across all three groups. However, the patients in >12 months group had poorer percent reduction in IPSS [30 ± 14.3 vs. 42.4 ± 10.3 vs. 39.1 ± 15.9, p = 0.002], PVR [40.8 ± 16.6 vs. 48.9 ± 20.6 vs. 63.3 ± 14, p < 0.001], and UDS storage [14.8 ± 12.4 vs. 16.7 ± 18.1 vs. 32.1 ± 21, p = 0.002] and voiding pressures [9.2 ± 11.4 vs. 19.7 ± 12.6 vs. 18.8 ± 13.1, p = 0.005] compared to the other group of patients. This difference in outcomes was consistent irrespective of the type of medication therapy (alpha blockers vs. combination therapy). There was a significant negative correlation between duration of medical therapy and IPSS reduction [r(86)=-0.25, p = 0.008] (Figure attached).

Conclusions: The patients who were on prolonged medication therapy prior to undergoing TURP despite being similar to other group of patients in terms of their baseline characteristics and operative parameters had significantly lesser improvement in terms of PROM and objective parameters (reduction in PVR, and Urodynamic storage and voiding pressures). The delay in surgery due to prolonged pre-operative medical therapy is associated with poorer IPSS, PVR, Urodynamic storage and voiding pressure improvements.

Funding: None.

MP03-11 Time-Driven Activity-Based Costing Analysis of Rezum Water Vapor Therapy and Transurethral Resection of the Prostate

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Presented By: Daniel Qian

Introduction: Decreasing reimbursement and rising costs of labor, space, and equipment present financial challenges to health systems. Current pricing methods for procedures rely on top down estimates that often fail to capture indirect costs. We performed a bottom up time driven activity based costing
(TDABC) analysis for 2 surgical options for benign prostatic hyperplasia (BPH), transurethral resection of the prostate (TURP) and Rezum, a minimally invasive treatment. We sought to calculate more precise cost estimates and identify cost drivers for both. Estimates were then compared to Medicare reimbursement.

**Methods:** Following established TDABC methodology, process maps were developed for each treatment. Time stamps for all activities and personnel were recorded for Rezums and TURPs. Personnel costs were determined using capacity cost rates using data from the Bureau of Labor Statistics. Overhead, equipment, space, and consumables data were collected from operations/financial departments within the health system. Sensitivity analyses were performed to evaluate potential savings opportunities.

**Results:** Data from 15 Rezum and 8 TURPs was used. The average length of time was 119 minutes (SD = 13.1) for TURP and 37 minutes (SD = 6.9) for Rezum. The total estimated cost for TURP was $3,414 (Table 1), with the largest cost drivers being consumables (35%) and overhead (33%). The estimated cost for Rezum was $1,976, with the largest drivers being consumables (35%) and overhead (33%). In sensitivity analyses, simulating a Rezum was $1,976, with the largest drivers being consumables (35%) and overhead (33%). The estimated cost for TURP was $3,414 (Table 1), with the largest cost drivers being consumables (35%) and overhead (33%). The estimated TURP cost was 77% of the $4,414 Medicare reimbursement (13.16 work RVUs). Our Rezum cost was 111% of the $1,785 Medicare rate was 77% of the $4,414 Medicare reimbursement (13.16 work RVUs). Our estimated TURP cost was more than 1% in either procedure. Our estimated TURP cost was 3% savings in total cost for TURP and 1% savings for Rezum. Similarly, increasing depreciation time of equipment and buildings from 5 to 10 years does not decrease total cost by more than 1% in either procedure. Our estimated TURP cost was 77% of the $4,414 Medicare reimbursement (13.16 work RVUs). Our Rezum cost was 111% of the $1,785 Medicare rate (5.93 work RVUs), a difference of $191.

**Conclusions:** Sensitivity analyses demonstrated that current processes are efficient, and adjustments in speed of care are not a realistic source of savings. The analysis and comparison to Medicare payments reveal a potential barrier for widespread adoption of Rezum, as well as a financial justification for TURP as a preferred treatment option for BPH.

**Funding:** This project was supported with funding from the American Urological Association’s (AUA) Summer Medical Student Fellowship.

**MP03-12 Temporary Implant Nitinol Device (iTIND) in Chinese Males With Lower Urinary Tract Symptom Secondary to Benign Prostatic Hyperplasia with 1 Year Follow Up**

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Presented By: Steffi Kar Kei Yuen, MBBS, FRCS(Ed (Urol))

**Introduction:** To report the initial clinical experience in Chinese male who had temporary implantable nitinol device (iTIND) for the treatment of lower urinary tract symptoms (LUTS) due to benign prostatic hyperplasia (BPH).

**Methods:** A prospective series of consecutive patients undergoing iTIND from November 2022 to January 2024(ClinicalTrials.gov Identifier: NCT05440981). Inclusion criteria: 50-80 years old, prostate volume 25-70cc. Main exclusion criteria: obstructive median lobe, previous prostate surgery. Under local anaesthesia, iTIND is implanted as a same day procedure. Patient returns 7 days later for iTIND removal transurethrally in outpatient setting. Follow-up were conducted at 3, 6 and 12 months.

**Results:** 13 patients with BPH/LUTS were enrolled. Median(interquartile range) patient age was 66(64-71) years, pre-operative prostate volume was34.5(30.3-43.1) mL, PSA was1.74(0.94-2.39)ng/ml, Qmax was7.2(5.1-11.8) mL/s, IPSS was20.3(14.8-27.8), and IPSS QoL score was 4(4–5). All the implantations were successful, with no intraoperative complications recorded. All patients were discharged on the same day of surgery. All devices were successfully retrieved 7 days later under local anaesthesia. No Clavien–Dindo Grade ≥II complications were recorded. A reported median pain VAS score of 5 (2-6) upon device retrieval. Compared 3 month to baseline, there was significant improvement in the mean ± SD Qmax of 11.8 ± 3.7 mL/s(+49.4%, p = 0.001) and post-void residual urine of 52 ± 34.8mL(-49.1%, p = 0.025), as well as mean ± SD IPSS 12.6 ± 6.9(-41.1%, p = 0.013) and QOL scores 3.1 ± 0.9(-28.9%, p = 0.009). Such significant improvements were still evident at 12 months follow up with mean ± SD IPSS of 16.4 ± 7.0(-33.3%, p = 0.048) and QOL scores 3.6 ± 1.1(-25.0%, p = 0.033). Over 12-month period, one patient required medical therapy for BPH, one required retreatment with other form of minimally invasive surgical treatment. There was no significant change in IIEF-5 score at 12 months compared to baseline.

**Conclusions:** iTIND implantation is feasible, safe and effective in providing relief of BPH-related LUTS, at least until 12 months postoperatively. Careful patient selection is crucial for maximal benefit from iTIND.

**Funding:** Nil.

**MP03-13 One-Year Results After Single-Center Water Vapor Thermal Therapy for Symptomatic Benign Prostatic Hyperplasia**

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Presented By: Basri Cakiroglu, MD

**Introduction:** Rezūm vapor ablation is a minimally invasive treatment for benign prostatic hyperplasia (BPH) that uses injections of sterile water vapor directly into the prostate for tissue ablation. Although Rezūm is currently indicated for use in men with prostate sizes ≥30 and ≤80 ml, it is unclear how effective Rezūm is for men in urinary retention. We sought to determine whether Rezūm is effective in the treatment of catheter-dependent urinary retention secondary to BPH.

**Methods:** Between January 1, 2022, and December 31, 2022, a cohort of 71 patients presenting with moderate to severe lower urinary tract symptoms (LUTS) associated with benign prostatic...
hyperplasia (BPH) were enrolled in the study. These individuals opted for Rezüm therapy as their selected treatment approach. Primary outcome measures employed for BPH diagnosis and follow-up included the International Prostate Symptom Score (IPSS), Maximum Flow Rate (Qmax), Post-Void Residual Volume (PVR), Quality of Life (QoL), prostate volume (PV), prostate-specific antigen (PSA), and the International Index of Erectile Function (IIEF), questionnaire.

Results: Out of the 71 patients included in the study, the median age was 62.1 ± 9.3 years, with a median prostate volume of 60.4 ± 16.6 mL. A median lobe was present in 47.8% (34/71) of patients. Preoperatively, IPSS was 21.9 ± 5.2, Qmax was 9.67 ± 3.2, QoL was 3.35 ± 0.61, IIEF-5 was 23.9 ± 5.4, total PSA was 2.43 ± 1.27 ng/mL, and PVR was 177.4 ± 216.5 mL. The study included patients with varying ASA classifications. The patients were classified as ASA 1 to ASA 4, with 13 classified as ASA 2, 6 as ASA 3, and 1 as ASA 4. Prostate volumes for 52 patients ranged between 30-80 mL, while 13 patients had a prostate volume exceeding 80 mL; there were no patients with a prostate volume below 30 mL. Five patients had indwelling catheters. The middle lobe was present in 34 patients. The average prostate length for the patients was 3.7 ± 1.1 cm. General anesthesia was administered to 55 patients, while 16 underwent surgery with intravenous sedation. On average, patients received 6.5 ± 2.0 injections, and they were discharged on the same day. The catheter duration was an average of 4.8 ± 1.9 days. Following catheter removal, five patients experienced urinary retention, and catheters were reinserted. A week later, catheters were removed, and spontaneous voiding was achieved. The 3-month follow-up, IPSS was 10.1 ± 5.6, Qmax was 24.5 ± 3.7, QoL was 1.2 ± 0.51, IIEF-5 was 24.5 ± 5.4, total PSA was 1.8 ± 0.9 ng/mL, and PVR was 177.4 ± 216.5 mL. At the 12-month follow-up, IPSS was 6.0 ± 3.1, Qmax was 18.12 ± 3.7, QoL was 1.2 ± 0.51, IIEF-5 was 24.5 ± 5.4, total PSA was 1.8 ± 0.9 ng/mL, and PVR was 24.9 ± 25.2 mL.

Conclusions: Rezüm therapy is considered a safe, effective, and minimally invasive option for the treatment of men with moderate to severe lower urinary tract symptoms (LUTS).

Funding: There is no financial support.

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**MP03-15 Augmented Triphasic Visualization of Rezüm BPH Treatment in the OR and Office: Initial Feasibility Study**

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Introduction: Rezüm™ is water vapor treatment done in the operating room or office for BPH. Treatment is unpredictable since results can vary due to prostate tissue consistency and imprecise areas of treatment. We propose that real-time tissue perfusion monitoring during treatment will result in more consistent outcomes. ActivSight™ connects between a standard surgical camera and scope. It measures tissue perfusion through two complimentary advanced imaging modalities: indocyanine green fluorescence angiography (ICG-FA) and laser speckle contrast imaging (LSCI). Results are displayed to the surgeon as a real-time color heatmap, overlaid on the surgical video, indicating the degree of tissue perfusion.

Methods: A single surgeon’s experience was retrospectively reviewed with IRB approval. 13 patients consented to the addition of ActivSight™ and treatment was guided by real time perfusion status. We documented imaging of the treatment decision making based on perfusion along with short-term follow up safety and efficacy.

Results: 13 patients underwent Rezüm™ with ActivSight™: 11 in the OR included ICG-FA and LSCI perfusion monitoring, 2 in the office with only LSCI. Follow up ranged from 1 to 12 weeks. One patient was excluded due to a persistent Foley. Pre-op averages: age at treatment 65 yo (Range 48–83), prostatic urethral length 3.5 cm (1.5–6.0), number of treatments 7.8 (4–15), IPSS 23.8 (4–30), QOL 4.5 (2–6), and PVR 84 mL (0–500). Post-op averages: IPSS 15 (2–25), QOL 3.14 (1–6), PVR 36 mL (0–131). LSCI gave both quantitative and qualitative data feedback in real time. As the treatment progressed, treated tissue perfusion decreased. When ICG was infused, most of the signal documented along with uroflowmetry (Qmax and PVR), and validated questionnaires (IPSS, IPSS QoL, BPHII, IIEF-15, MSHQ-EjD function and bother).

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**MP03-14 Rezüm Water Vapor Therapy for Large Volume (≥80 mL) Benign Prostatic Enlargement: Large, Multi-Center Real-World Cohort**

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Presented By: Dean Elterman

Introduction: Open or laser prostatectomy are the standard treatments for benign prostatic hyperplasia (BPH) of large volume prostate ≥80 mL. Rezüm is a minimally invasive procedure to ablate benign prostatic tissue. Herein, we report the prospective, multi-center results of the largest cohort of prostates ≥80 mL treated with Rezüm.

Methods: A prospective registry was established for Rezüm therapy in Canada (2019) at two high-volume centers. We reviewed data for patients followed between April 2019 and June 2023. All patients had baseline medical and BPH history
was seen within one minute and washed out within 10 minutes. Infusion after the treatment showed areas of suboptimal treatment that needed additional treatment or showed adequate results. 3-month post op cystoscopy images showed defects consistent with adequate treatment.

**Conclusions:** Augmented visualization of tissue perfusion is feasible with Rezum™, IPSS, QOL, and PVR numbers all improved after treatment. No serious adverse effects resulted from the addition of LSCI and ICG-FA and the real-time feedback of the ablation of tissue perfusion allowed for targeted therapy. Preliminary results are promising, but further follow up will be needed. This is the first demonstrated utilization of real time perfusion monitoring with water vapor BPH therapy.

**Funding:** None.

**MP03-16 Thulium VApo Resection of Prostate (ThuVaRP) as a Valid Therapeutic Option in Benign Prostate Obstruction (BPO)**

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Presented By: Giuseppe Saitta, MD

**Introduction:** Although HoLEP is commonly as endoscopic therapeutic technique for the treatment of Benign Prostatic Hyperplasia (BPH), in addition to other endoscopic techniques (e.g. Rezum, Aquabeam, etc.), Thulium VApo Resection of Prostate (ThuVaRP) is less widespread and studied. In this article we would like to discuss this technique and its clinical outcomes, side effects and cost analysis.

**Methods:** 358 consecutive patients underwent this operation (by a single surgeon) between March 2018 and January 2023. The following parameters were considered pre- and post-procedure, after 1, 3, 6, 12 months: PSA, maximum flow rate (Qmax), post-void residual urine volume (PVR), prostate volume verified by transrectal ultrasound, International Prostate Symptom Score (IPSS). Complications were registered.

**Results:** Mean age was 66.5 years old (49–84), mean PSA was 2.4 ng/ml (0.8–5.2), mean prostate volume before surgery was 63 cc (40–180). Mean surgical procedure time was 46 min (18–93), mean catheterization time was 29 h (14–42), mean hospital stay was 2.2 days (1.5–4.2). 42 patients (11.7%) presented hematuria within 24 hours after the operation, resolved with bladder washing within 2 days, 1/358 (0.3%) needed early reoperation, to perform hemostasis. 9 patients (2.5%) developed fever in the first day after operation, so they were treated with antibiotics. The rate of Stress Urinary Incontinence (SUI) was 7.8, 4.7, 2.5, 1.3% at 1, 3, 6, 12 months post surgery, respectively. Urinary retention was described in 18 (5%) patients within one month after operation, 12 of them (3.3%) needed to retake alpha-blockers for some months and 5 of them (1.7%) needed to undergo ad endoscopic re-operation (TURP). PSA and prostate volume showed significant decrease at 1, 3, 6, 12 months (p < 0.05); Qmax improvement and PVR reduction at 1, 3, 6 months (p < 0.05).

**Conclusions:** ThuVaRP represents a valid therapeutic option in Benign Prostate Obstruction (BPO), in terms of good functional outcomes and side effects comparable to other endoscopic techniques. Moreover the technique is cheaper than HoLEP for reduced maintenance costs and non-use of any morcellator.

**Funding:** None.

**MP03-17 Does Resected Prostate Weight Predict Outcomes in Endoscopic Enucleation of the Prostate? Results from the REAP Database**

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Presented By: Khi Yung Fong

**Introduction:** This study aimed to determine if the correlation between preoperatively measured prostate volume and actual resected prostate weight is an accurate predictor of short-term AEEP outcomes using the REAP international database.

**Methods:** 649 patients from 2 participating REAP centers, with data on both preoperative ultrasound-derived prostate volume and resected specimen weight measured using a weighing scale after surgery, were included. 2 models were used to investigate the effect of preoperative volume-specimen weight discordance on postoperative outcomes. In Model 1, logistic regression residuals were used to divide the cohort into 3 centiles, corresponding to: 1) less-than-expected resected specimen weight; 2) appropriate concordance between prostate volume and resected specimen; 3) more-than-expected resected specimen weight. In Model 2, prostate density was assumed at 1g/ml, and the population divided into1) less-than-expected resected specimen weight; 2) appropriately concordant prostate volume and resected specimen; 3) more-than-expected resected specimen weight. Patient demographics, perioperative parameters, and outcomes were compared between these two groups. Correlation between model-derived residuals and changes in measurements of IPSS, QoL, Qmax, and PVR from baseline to 3 months were investigated.

**Results:** In Model 1, larger prostates were associated with both less-than-expected and more-than-expected resected specimen weight (p < 0.001). Model 1 showed an increasing trend of operation time (p = 0.012) and enucleation time (p = 0.015) as resected prostate weight increased, and a decreasing trend of acute urinary retention (p = 0.005). Laser type, enucleation method, and early apical release did not differ significantly. Patients with more-than-expected resected specimen weight had a higher incidence of incontinence in Model 2 (p = 0.025). The highest contributor to the overall significant result was stress urinary incontinence (SUI)
of <1 month in duration (18.3% in less-than-expected resected weight vs 37.9% in more-than-expected specimen weight, p = 0.059). Outcomes >3 months were not significant. In correlation analysis, greater-than-expected resected prostate weight was associated with greater improvement in Qmax at 3 months, but also with a postoperative incontinence at 3 months.

Conclusions: If the resected specimen weight is more than expected according to preoperative ultrasound measurement, greater Qmax improvement is expected, but incontinence is commoner in the short term. Most other outcomes are not affected by the degree of volume-weight discordance.

Funding: NIL.

MP03-18 Effects of Benign Prostatic Hyperplasia Surgery on Positive Airway Pressure Therapy Compliance in Sleep Apnea

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Presented By: Linda Huynh, PhD

Introduction: Obstructive sleep apnea (OSA) and benign prostatic hyperplasia (BPH) are common, comorbid conditions in aging men. Despite the high efficacy of continuous positive airway pressure (CPAP) in reversing upper airway obstruction in OSA, one of the greatest barriers to treatment is CPAP nonadherence. For patients with BPH, nighttime awakenings due to lower urinary tract symptoms (LUTS) may interfere with CPAP adherence. The aim of the present study is to assess CPAP adherence rates before and after surgical intervention for treatment of BPH.

Methods: A within-subject retrospective analysis was performed at a single institution between October 2013 and October 2023. Seventy-six men with OSA and BPH were queried and thirty-seven men undergoing surgical intervention for BPH were identified. Baseline CPAP adherence measures were collected one to six months prior to surgery and compared to CPAP adherence measures immediately following and six months post-intervention via Paired-samples T-Tests. Analysis was repeated after stratification of OSA severity by the apnea-hypopnea index (AHI); mild, moderate, and severe disease were defined as AHI 5–15, 15–30, and >30, respectively.

Results: At diagnosis, mean ± SD age and AHI were 69.5 ± 8.0 years and 32.4 ± 21.8, respectively. Of the 37 patients, 8(21.6%), 12(32.4%), and 17(45.9%) patients had mild, moderate, and severe OSA, respectively. Overall, 17(45.9%), 6(16.2%), 5(13.5%) and 9(24.3%) men underwent transurethral resection of the prostate (TURP), laser TURP, holmium enucleation, and prostatic implantation, respectively. Post-surgery, there was no significant difference in number of CPAP usage days per month compared to pre-procedure (24.8 ± 8.2 vs. 26.6 ± 7.6, p = 0.073). However, when assessing number of days per month with CPAP usage ≥4 hours, there was a significant increase of 2.7 ± 1.08 days per month following the procedure (21.33 ± 9.7 vs. 24.0 ± 8.9, p = 0.018) and this increase persisted through six-month follow-up (p = 0.021). When stratified by AHI, patients with severe OSA improved the most - the number of days per month with CPAP usage ≥4 hours increased by 3.9 ± 1.8 days in the month following the BPH procedure and rose to 4.6 ± 1.7 days per by six months post-procedure (p < 0.05).

Conclusions: Our findings indicate that surgical intervention for BPH may significantly improve CPAP compliance, as defined as number of days per month with CPAP usage ≥4 hours. This benefit is most profound in patients with severe OSA, contributing to a 15.3% increase in compliance by six months post-procedure. For patients with BPH and OSA, surgical intervention for BPH may not only improve LUTS but could also enhance patient adherence to CPAP therapy.

Funding: NA.

MP03-19 Early Apical Release Improves Recovery of Postoperative Urinary Continence

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Presented By: Pablo Suarez

Introduction: Holmium laser enucleation of the prostate (HoLEP) is a minimally invasive procedure with growing acceptance as the gold standard for surgical extirpation for benign prostatic hyperplasia (BPH). The procedure was first described using a traditional en bloc (TEB) approach. Postoperative transient urinary incontinence remains a significant concern for both patients and surgeons. While the early apical release (EAR) has been touted for its potential to reduce incontinence, data have been limited. This study evaluated differences in postoperative continence rates between EAR and TEB within the first 6 months after surgery.

Methods: A retrospective cohort study of patients who underwent HoLEP at a single academic center between 2018-2024 was performed. Demographics, comorbidities, and perioperative outcomes were abstracted from the electronic medical record. The primary outcome was self-reported continence at the 1, 3, and 6 month follow-up visits. Secondary outcomes included operative time, enucleation efficacy (enucleated weight/operative time), enucleation ratio (enucleated weight/transitional zone volume), estimated blood loss, and perioperative complications. Student’s t-test, chi-square analysis and multivariable logistic regression models were used for analysis.

Results: A total of 435 patients were included, out of which 313 were treated with TEB and 122 with EAR. Other than a higher mean age in the EAR group, (72.7 ± 7.0 vs 70.8 ± 8.8, p = 0.036),
there were no differences in demographics, comorbidities, or disease-specific measures such as prostate size, prior BPH procedures and recurrent urinary tract infections. Amongst perioperative outcomes, a lower mean operating time in the EAR group was observed (131 ± 49.2 vs 167.6 ± 111.8, p = 0.001). Relative to TEB, EAR had higher continence rates at the 1, 3, and 6 month follow-up period (Figure 1B). These differences were significant even after adjusting for clinical variables related to continence.

Conclusions: This study demonstrates that EAR not only has equal safety and efficacy compared to TEB, it also improves postoperative continence recovery.

Funding: N/A.

MP03-20 Salvage vs. Primary Holmium Laser Enucleation of the Prostate in the Management of Benign Prostatic Hyperplasia

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1Department of Urology, University of California Irvine

Presented By: Narmina Khanmammadova, MD

Introduction: Holmium laser enucleation of the prostate (HoLEP) is the preferred treatment for benign prostatic hyperplasia (BPH). Primary HoLEP (P-HoLEP), has a low retreatment rate of 2% over a 20-year postoperative period. In contrast, transurethral resection of the prostate (TURP) and minimally invasive techniques such as prostatic urethral lift and Water Vapor Therapy have higher retreatment rates of 15%, 13%, and 6% respectively within 5 years. HoLEP also serves as an effective salvage option (S-HoLEP) for retreatment. This study evaluates the safety and effectiveness of S-HoLEP compared to P-HoLEP.

Methods: Between November 2022 and November 2023, 181 patients underwent HoLEP at a high-volume center with a single surgeon. After excluding 13 patients with neurological diseases, data was collected from 122 (72.6%) P-HoLEP and 46 (27.4%) S-HoLEP patients, and the outcomes were compared between the two groups.

Results: The mean age, the median BMI and preoperative AUA symptom scores were comparable between the two groups (p = 0.235, p = 191, p = 0.832, respectively). TURP was the most common type of procedure preceding S-HoLEP (35%, n = 16) and 15% (n = 7) of patients had a history of multiple interventions. Preoperatively, the median prostate volume and postvoid residual volume (PVR) were greater in the P-HoLEP group than in the S-HoLEP group (p = 0.007 and p = 0.003, respectively). S-HoLEP had a shorter operative time compared to P-HoLEP (p = 0.003). The estimated blood loss and perioperative complications were comparable between the two groups (p = 0.217 and p = 0.563, respectively). No differences were observed in postoperative outcomes between P-HoLEP and S-HoLEP, including the median length of catheterization (p = 0.845) and hospital stay (p = 0.197), readmission rates within 90 days after surgery (p = 0.393), PVR (p = 0.672), AUASS (p = 0.335), and stress urinary incontinence rates at 3 months after the procedure (p = 0.707).

Conclusions: S-HoLEP is a safe and viable option for patients with refractory lower urinary tract symptoms due to BPH who need further surgical intervention. Patients who underwent S-HoLEP demonstrated functional outcomes comparable to those of P-HoLEP.

Funding: None.

MODERATED POSTER SESSION 4: STONES - URETEROSCOPY 2

**Table 1. Pre, intra, and postoperative characteristics of P-HoLEP vs. S-HoLEP.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>P-HoLEP (n=122)</th>
<th>S-HoLEP (n=46)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DEMOGRAPHICS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age, mean ± SD</td>
<td>73 ± 9</td>
<td>71 ± 10</td>
<td>0.235</td>
</tr>
<tr>
<td>BMI, median (IQR)</td>
<td>25.95 (24 - 29.37)</td>
<td>27.22 (24.72 - 31.03)</td>
<td>0.191</td>
</tr>
<tr>
<td><strong>PERIOPERATIVE FACTORS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preop PVR, median (IQR)</td>
<td>212.5 (80 - 508.8)</td>
<td>89 (80 - 171.3)</td>
<td>0.003</td>
</tr>
<tr>
<td>History of urinary retention, n (%)</td>
<td>68 (55.7%)</td>
<td>47 (52%)</td>
<td>0.038</td>
</tr>
<tr>
<td>Preop use of alpha-blockers, n (%)</td>
<td>97 (79.5%)</td>
<td>96 (79.1%)</td>
<td>0.992</td>
</tr>
<tr>
<td>Preop use of ARs, n (%)</td>
<td>33 (43.4%)</td>
<td>13 (30.5%)</td>
<td>0.156</td>
</tr>
<tr>
<td>Prostate volume, median (IQR)</td>
<td>70 (57 - 130)</td>
<td>59 (40 - 84)</td>
<td>0.069</td>
</tr>
<tr>
<td>Preop urinary tract infection, median (IQR)</td>
<td>0 (0 - 0)</td>
<td>0 (0 - 0)</td>
<td>0.003</td>
</tr>
<tr>
<td><strong>POST-OPERATIVE OUTCOMES</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Procedure time, min, median (IQR)</td>
<td>114 (79 - 145)</td>
<td>90 (69 - 119)</td>
<td>0.003</td>
</tr>
<tr>
<td>EBL, ml, median (IQR)</td>
<td>25 (20 - 50)</td>
<td>25 (14 - 46)</td>
<td>0.217</td>
</tr>
<tr>
<td>Urinary complications, n (%)</td>
<td>3 (2.5%)</td>
<td>6 (9.6%)</td>
<td>0.863</td>
</tr>
</tbody>
</table>

**Funding:** N/A.

MP04-01 Relationship Between Renal Pelvis Pressure and Post-Ureteroscopy Infection in a Live Swine Model

Brian Eisner1, Juliana Villanueva Congote1, Michal Segall1, David Hinojosa-Gonzalez1, Jennifer Saunders2, Erin Chaussee2, Jay Budrewicz3, Brian Eisner1

1Massachusetts General Hospital, 2Boston Scientific Corporation, 3CBSET, 4Massachusetts General Hospital, Harvard Medical School

Presented By: Brian Eisner, MD

Introduction: The purpose of the current study was to evaluate the relationship between renal pelvis pressure and post-ureteroscopy infection in a live swine model.

Methods: A 1-hour flexible ureteroscopy was performed in Yorkshire pigs (n = 36; female; ~60 kg each). Control group used standard saline irrigation, while experimental groups used saline irrigation mixed with 1.5 x 107 CFU/ml E. coli to simulate an infected renal stone. Pigs were divided into 5 groups: Group 1 (n = 7, saline irrigation), Group 2 (n = 7, e. coli irrigation, renal pelvis pressure 37 mm Hg for 60 minutes), Group 3 (n = 7, e. coli irrigation, renal pelvis pressure 37 mm Hg for 30 minutes and 75 mm Hg for 30 minutes), Group 4 (n = 7, e. coli irrigation, renal pelvis pressure 37 mm Hg for 50 minutes and 75 mm Hg for 10 minutes), Group 5 (n = 8, e. coli irrigation, renal pelvis pressure 75 mm Hg for 60 minutes).

Results: Analysis revealed significant differences in physiological parameters across groups with groups at higher renal pelvis pressure demonstrating the most change (ANOVA p < 0.05, shown in table 1). Positive blood cultures were seen in 0% of
animals in Group 1, 0% of animals in Group 2, 28.6% of animals in Group 3, 28.6% of animals in Group 4, and 75% of animals in Group 5 (Fisher’s exact test, p = 0.004).

**Conclusions:** Our study in this live pig model of ureteroscopy for an infected stone showed that higher renal pelvis pressures were associated with greater inflammatory response and risk of post-operative urosepsis. The greater the amount of surgical time at a renal pelvis pressure of 75 mm Hg (compared to 37 mm Hg), the greater the inflammatory response. Most importantly, translocation of bacteria to the bloodstream (i.e. bacteraemia) was seen in 0% of control animals and experimental animals at a renal pelvis pressure of 37 mm Hg, 29% of experimental animals in each experimental group whose renal pelvis pressure was 37 mm Hg for part of the procedure and 75 mm Hg for the remainder, and 75% of experimental group whose renal pelvis pressure was 75 mm Hg throughout the procedure, suggesting that a greater amount of time at a renal pelvis pressure of 75 mm Hg increases risk of developing bacteraemia.

**Funding:** Boston Scientific Corporation.

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**MP04-02 Incidence of Ureteral Strictures Following Ureteral Access Sheath Passage: An In-Depth Study of 550 Contemporary Cases**

Andrei D. Cumpanas1, Jaime Altamirano-Villarroel1, Seyed Amirvahidbouh Lavasani1, Seyed Amirvahidbouh Saadat1, Jacob C. Tsai1, Marissa Ericsson2, Jaylen M. Lee3, Bruce M. Gao1, Zachary E. Tano1, Pengbo Jiang1, Roshan M. Patel1, Jaime Landman1, Ralph V. Clayman1

1Department of Urology, University of California Irvine, Orange, CA, USA, 2Biostatistics, Epidemiology and Research Design (BERD), University of California, Irvine, Orange, CA, USA

**Presented By:** Andrei D. Cumpanas, MD

**Introduction:** Although the overall incidence of ureteral stricture following ureteroscopy (URS) is low (0.3-3%), we hypothesize that the risk may rise as the depth of ureteral injury increases. Accordingly, we sought to determine the risk of developing a stricture based on the specific post-ureteroscopic lesion scale (PULS) score.

**Methods:** Between 2018 – 2022, 684 patients underwent URS at our institution; among them, there were 550 patients, without a prior ureteral stricture, and 3-6 month post-operative imaging, who could be included in this study. Ureteral stricture formation was defined as: the presence of new hydronephrosis (either on US or CT), nuclear medicine split renal function T1/2 > 20 minutes, or endoscopic evidence of stricture on a subsequent ipsilateral procedure remote from the stone bed. To minimize the risk of coefficient estimates bias with low-event rates, a penalized logistic regression analysis was employed to assess the correlation between ureteral injury penetration depth and stricture formation.

**Results:** De-novo ureteral stricture rates for PULS 0, 1, and 2 were 0% (0/235), 0.48% (1/208), and 1.09% (1/92, respectively). PULS 3 injuries had a 13% (2/15) risk of stricture formation; there were no PULS 4 or PULS 5 lesions. Among the four cases of ureteral stricture, there were no calcifications noted within the bed of the stricture. Upon a Firth penalized logistic regression analysis, we found that when urothelial splitting (i.e., PULS 2 or higher) occurred, the odds of developing strictures were 13 times higher (OR: 12.82; 95% CI: 1.32 – 124.55, p = 0.028). Furthermore, visualization of periureteral fat (i.e., PULS 3 or higher) increased the odds of developing a ureteral stricture 40 times (OR: 40.39; 95% CI: 5.27 – 309.27, p = 0.001) (Figure 1). Based on these findings, we propose a simplified two-tier system for categorizing URS-associated ureteral injury (Figure 1).

**Conclusions:** De-novo post-URS stricture rates rose sharply when the ureteral wall integrity was disrupted (PULS 2 or higher). A full-thickness ureteral tear (PULS 3) resulted in a ureteral stricture in 13% of our patients.

**Funding:** None.

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**MP04-03 Urologist’s Fatigue and Discomfort in Different Body Regions After Performing Flexible Ureteroscopy**

Sarah Razavi3, Emeka Udedibia1, Kristin L Chrouser2, M. Susan Hallbeck1, Hamid Norasi1, Arun Rai2, Karen Huang4, David Hoening4, Zeph Okeke1

1The Smith Institute for Urology, Zucker School of Medicine at Hofstra/Northwell Health, 2VA Ann Arbor Healthcare System, 3Robert D. and Patricia E. Kern Center for the Science of
Healthcare Delivery, Mayo Clinic, 4The Smith Institute for Urology, Zucker School of Medicine at Hofstra/Northwell Health, 5The Smith Institute for Urology, Zucker School of Medicine at Hofstra/Northwell Health, Lake Success, New York, USA.

Presented By: Sarah Razavi, MD

Introduction: The goal of this study was to assess self-reported surgeons’ fatigue and discomfort in different body regions after performing flexible ureteroscopy.

Methods: An anonymous survey was designed and distributed among urologists and trainees in four hospitals. Participants rated their discomfort in different body and hand regions as well as overall fatigue before and after the procedure. Regression analysis was used to identify predictors of fatigue.

Results: Fifty-seven procedural surveys were included in the final analysis. Respondents were 41.2 ± 16.4 years of age. Forty percent of respondents were male and 75% were right-hand dominant. The mean fatigue score doubled after performing flexible ureteroscopy (1.5 versus 3 p < 0.001). Female surgeons and small-handed surgeons (glove size < 6.5) had significantly higher fatigue after procedures (p = 0.041, and p = 0.02, respectively). Forty-three percent of participants reported increased neck discomfort after operating, 35% in the right shoulder, 33% in the upper back, and 33% in the right elbow. This was significantly different between men and women. Regarding hand discomfort, increased discomfort was reported mostly in the thenar area (36.8%) followed by thumb (30%) and hypothenar region (21%). In univariate analysis, gender, glove size, height, and surgery duration predicted fatigue after ureteroscopy. Yet only surgery duration remained significant in multivariable analysis (P < 0.001, R2 = 0.4).

Conclusions: This study found doubling of fatigue level post-ureteroscopy. Women urologists and small handed urologists had a significantly greater increase in their fatigue level. Additional studies are needed to determine the causality of these findings and explore potential interventions aimed at reducing procedure-related discomfort among all urologists especially women and small handed urologists.

Funding: None.
Methods: STENTS participants completed questionnaires at baseline and on postoperative day (POD) 1, 3, 5, 7-9, and 30 days after stent removal. Pain distribution and intensity were characterized with the Brief Pain Inventory, in which participants localized specific sites of pain using a detailed body map, indicating the site of most intense pain at each time point. These findings were stratified by sex and primary stone location.

Results: 424 participants enrolled in STENTS at five US centers; 47% were female and mean age was 49 years (SD 17). Dominant stone locations were renal (50%) and ureteral (50%). Within the cohort, the most frequent sites of pain were the back followed by abdomen and pubic region. The site of most intense pain on POD 1 was equally reported in the ipsilateral back (38%) and abdomen (38%) followed by pubic region (24%). On POD 5, 42% reported pain in the ipsilateral back as most intense, followed by abdomen (34%) and pubic region (24%). Men were significantly more likely to report ipsilateral back as the most intense pain site on POD 1 and POD3, independent of dominant stone location; they also experienced more burning with urination on all PODs (p < 0.01). Women more often reported pain in the renal region on POD1 (p = 0.012) and in the pubic region on POD3 (p = 0.003). Participants with a dominant renal stone were significantly more likely to have ipsilateral back pain on POD 1 and 5 and report a higher pain intensity score on POD 1. Participants with ureteral vs. intrarenal stones were significantly more likely to have 1) baseline abdominal pain, 2) most intense pain in the pubic region on POD 1, and 3) burning with urination on POD 1.

Conclusions: Pain distribution after URS with ureteral stent, including location of most severe pain, changed over time, and differed between sexes and stone location. These results inform preoperative counseling and may contribute to a better understanding of the typical patient experience and identification of pain phenotypes.

Funding: NIDDK.
Introduction: To assess the effect of using an ureteral access sheath on the maximal intra-pelvic pressure (IPP max) during retrograde lithotripsy of hard and soft stones in porcine models.

Methods: A 22Fr percutaneous tract was established in the upper calyces of the kidneys of three female porcine models. A custom-made balloon foley catheter containing a urodynamic catheter inserted in the pelvicalyceal system. The urodynamic catheter was connected with a urodynamic device for real time pressure measurement. A Pusen Uscope 7.5 Fr single use ureteroscope (Zhuhai Pusen Medical Technology, China) was used with manual pump irrigation. Artificial stones were created using BegoStone/C212 with different ratios stone to water (15:3 and 15:6). Stones with a 15:3 and 15:6 powder-to-water ratio were defined as hard and soft stones, respectively. The stones were inserted in the pelvicalyceal system through the percutaneous tract. Retrograde intrarenal lithotripsy was performed without ureteral access sheath (UAS) and with a 9.5/11 Fr UAS in three settings, lasing in the center of the calyx, lithotripsy of soft stones and lithotripsy of hard stones.

Results: Using a manual irrigation pump without using an UAS, the IPP max in the renal pelvis when the laser was activated in the center of the calyx was 55 cmH2O, respectively. Furthermore, the IPPmax during flexible retrograde lithotripsy of soft and hard stones was 62 and 65 cmH2O respectively. Using a manual pump and with the use of an UAS, the IPP max in the renal pelvis when the laser was activated in the center of the calyx was 18 cmH2O (Figure 1). Measuring the IPPmax during flexible retrograde lithotripsy of soft and hard stones, IPPmax was found 25 and 29 cmH2O respectively.

Conclusions: Using manual pumping without an UAS can increase the IPP max to unsafe levels during retrograde flexible lithotripsy even with a 7.5 Fr flexible scope. The use of an UAS can maintain the IPPmax in safe levels.

Funding: This research received no specific grant from any funding agency.
Conclusions: A random forest model performed well in predicting sepsis after endourologic stone surgery. Such a model may help guide preoperative surgical optimization and planning pending external validation.

Funding: NIDDK 5T35DK093430.

MP04-09 Maximum Extraction Forces in Kidney Stone Basketing: Preliminary Report of First Clinical Trial with Robotic and Conventional Ureteroscopy

Rifat Burak Ergül1, Tzevat Tefik1, Rifat Burak Ergül2, Anıl Tantekin1, Muhammet Fırat Özervarlı2, Ismet Nane3, Faruk Özcın2, Olivier Traxer1

1Department of Urology, Istanbul Faculty of Medicine, Istanbul University, Istanbul, Turkey, 2Department of Urology, Istanbul Faculty of Medicine, Istanbul University, Istanbul, Turkey, 3Sorbonne University, GRC n°20, Groupe de Recherche Clinique sur la Lithiase Urinaire, Hôpital Tenon, France

Presented By: Rifat Burak Ergül, MD

Introduction: Widespread use of flexible ureterorenoscopy (f-URS) has led to more common observation of ureteral iatrogenic injuries, such as strictures, perforations and rarely avulsions. In this abstract, we measured the maximum forces during the extraction of kidney stones from the ureteropelvic junction up to the mid-ureter with a basket.

Methods: Six patients were prospectively included in the study. Demographic data of the patients and preoperative JJ stent were noted. All patients underwent either robotic (Roboflex Avicenna, Elmed, Turkey) or conventional fURS (Storz Flex X2, Germany). Ureteral access sheath (UAS) (Colplast ReTrace 10-12 F, Denmark) was used in all cases. The maximum extraction forces (MEFs) were continuously recorded [in Newton, (N)] with a digital force gauge (DFS II, Chatillon/C210). All MEFs were recorded as 1.6 +/- 1.1 N. The detailed MEFs of patients are shown in the Table. Figure 2 shows the graph chart of patient 1. The average MEF in men was 3.01 N, the average MEF in women was 1.01 N. Similarly, in patients with no preoperative JJ stent and stones of 6mm in size, the average MEFs were higher in men (3.04 vs 2.20 N).

Conclusions: Attempting to remove a large stone in a tight ureter using excessive force is risk for ureteral injury. At the same time, fragmenting a stone into smaller pieces, when could painlessly be expelled from the normal ureter, would be unnecessary. The optimum stone size and MEF that can be removed with a basket efficiently without damaging the ureter is not certain. To our knowledge, this is the first clinical study measuring MEF in humans while the stone is being extracted from the proximal ureter with a basket. In this cohort, men seem to have higher MEF compared to women. Application of this model, especially for stone basketing safety and f-URS training, may reduce the learning curve and complication rates.

Funding: None.

MP04-10 Is Ureteral Access Sheath Necessary for Maintaining Safe Irrigation Temperatures During Flexible Ureteroscopy with a 7.5Fr Scope and a High-Power TFL? An in-vivo Experimental Study

Athanasios Vagionis1, Angelis Peteanaris1, Konstantinos Pagonis1, Vasileios Tatanis1, Panagiota Kallidonis1, Evangelos Liatsikos1

1University of Patras

Presented By: Athanasios Vagionis, MD, Msc, PHDc

Introduction: To assess the effect of high power Thulium Fiber Laser (TFL) in the temperature of the irrigation fluid with and without an ureteral access sheath (UAS) during flexible ureteroscopy and flexible retrograde intrarenal lithotripsy in a porcine model.

Methods: A 22Fr percutaneous tract was established in the upper calyces of the kidneys of three female pigs. A custom-made balloon Foley catheter containing a K-type thermocouple was inserted in the pelvicalyceal system. A data logger (TC08, Pico Technologies, UK) was connected with the K-type thermocouple to measure temperature in real time. A Pusen Uscope 7.5 Fr single use ureteroscope (Zhuhai Pusen Medical Technology, China) was used along with manual pump irrigation. BegoStone™ powder (Begostone, Bego, Lincoln, RI, USA) was mixed with water in different powder-to-water ratios (15:3 and 15:6). Stones with a 15:3 and 15:6 powder-to-water ratio were defined as hard and soft stones, respectively. Using the percutaneous tract, the stones were placed in the pelvicalyceal system. Retrograde intrarenal lithotripsy was performed without ureteral access sheath (UAS) and with a 9.5/11Fr UAS in three settings, lasing in the center of the calyx, lithotripsy of soft stones and lithotripsy of hard stones. A LaserClast Thulium Power TFL (EMS Urology, Switzerland) was activated in a setting of 60W power until cumulative energy of 3KJ was emitted. Temperature measurements were obtained.
Results: When UAS was not used and the laser was activated in the center of the calyx the highest temperature raised in the irrigation fluid exceeded 44°C. In the soft and hard stone lithotripsy settings the peak temperature exceeded 46 °C and 48 °C respectively. Moreover, in all settings the temperature raised rapidly and remained in high levels during the tests. The measured respective figures for the 10/12Fr ureteral access sheath were less than 39 °C when the laser was activated in the center of the calyx and less than 40 °C and 41 °C for the soft and the hard stones respectively. The temperature increase followed a gradual increase and the peak temperatures did not exceed acceptable limits.

Conclusions: This in vivo study showed that without the use of an UAS during prolonged use of high power TFL, the temperature of the irrigation fluid increases under conditions of manual pump irrigation over the acceptable limits for renal intraparenchymal backflow.

Funding: This research received no specific grant from any funding organization.

MP04-11 Healthcare Utilization for Renal Events after Steerable Ureteroscopic Renal Evacuation vs Ureteroscopy: 1-Year Results of the Aspire Study

Karen Stern3, Brian Matlaga1, Thomas Mueller2, Brett Johnson3, Jay Page4, J. Stuart Wolf5, Glenn Preminger6, Tom Chi7

1Johns Hopkins University School of Medicine, 2New Jersey Urology, Summit Health, 3University of Texas Southwestern Medical Center, 4Arizona Urology Specialist, 5The University of Texas at Austin, Dell Medical School, 6Duke University Health System, 7University of California, San Francisco, 8Mayo Clinic Arizona

Presented By: Karen Stern, MD

Introduction: Urolithiasis is a condition of substantial healthcare burden in need of a reliably effective treatment. ASPIRE is a prospective, randomized, multi-center study to evaluate the safety and efficacy of steerable ureteroscopic renal evacuation (SURE) vs ureteroscopy (URS) with basketing. 30-day results demonstrated that SURE is safe and, compared to URS, stone clearance (percent stone volume reduction) and residual stone volume (RSV) were significantly better with SURE, independent of baseline stone volume. To better understand the effect on downstream healthcare burden, we studied the 1-year incidence of healthcare consumption (HC) events, defined as any renal event requiring healthcare resource utilization.

Methods: Candidates for URS laser lithotripsy ≥18 years old with ≥1 renal stone and 7-20mm total stone burden were enrolled across 11 U.S. institutions. Subjects were randomized 1:1 between SURE and standard URS with basketing. SURE was performed using the CVAC Aspiration System, a novel steerable catheter system with dedicated irrigation and aspiration lumens used to remove stone fragments and dust after laser lithotripsy. HC events included emergency department (ED) visits, hospitalization and retreatment and were assessed using a Kaplan-Meier time-to-event analysis and compared between groups through 1-year.

Results: 123 subjects were randomized and 101 qualified for the efficacy analysis (SURE 46 vs URS 55); 12-month subject retention was 95%. At 1-year, the cumulative incidence of HC events was significantly lower for SURE versus URS (3 HC events in 2 subjects vs. 14 HC events in 9 subjects, p = 0.015, Figure 1). Kaplan-Meier analysis demonstrated that by 12 months, 95.6% of SURE subjects were free of HC events versus 83.5% for URS subjects.

Conclusions: At 1 year, HC events are significantly lower after SURE compared to URS. These results suggest SURE may have the potential for a positive clinical and health economic impact in the treatment of urolithiasis. Whether improved stone clearance contributes to lower HC events warrants further study.

Funding: Calyxo, Inc.

MP04-12 No Strings Attached: Evaluation of The Patient Experience of Stenting with an Extraction String

Golena Fernandez Moncaleano8, Jennifer M. Thelus1, Stephanie Daignault-Newton2, Jerison Ross3, David Wenzler4, Jeremy Konheim5, Casey A. Dauw6, Khurshid R. Ghani7

1University of Michigan / Medical Student, Clinical Trial Coordinator, 2University of Michigan / Statistician, 3University of Michigan / Project Manager, 4Comprehensive Urology / Urologist, 5IHACares, 6University of Michigan / Chief Division

Introduction: Urolithiasis is a condition of substantial healthcare burden in need of a reliably effective treatment. ASPIRE is a prospective, randomized, multi-center study to evaluate the safety and efficacy of steerable ureteroscopic renal evacuation (SURE) vs ureteroscopy (URS) with basketing. 30-day results demonstrated that SURE is safe and, compared to URS, stone clearance (percent stone volume reduction) and residual stone volume (RSV) were significantly better with SURE, independent of baseline stone volume. To better understand the effect on downstream healthcare burden, we studied the 1-year incidence of healthcare consumption (HC) events, defined as any renal event requiring healthcare resource utilization.

Methods: Candidates for URS laser lithotripsy ≥18 years old with ≥1 renal stone and 7-20mm total stone burden were enrolled across 11 U.S. institutions. Subjects were randomized 1:1 between SURE and standard URS with basketing. SURE was performed using the CVAC Aspiration System, a novel steerable catheter system with dedicated irrigation and aspiration lumens used to remove stone fragments and dust after laser lithotripsy. HC events included emergency department (ED) visits, hospitalization and retreatment and were assessed using a Kaplan-Meier time-to-event analysis and compared between groups through 1-year.

Results: 123 subjects were randomized and 101 qualified for the efficacy analysis (SURE 46 vs URS 55); 12-month subject retention was 95%. At 1-year, the cumulative incidence of HC events was significantly lower for SURE versus URS (3 HC events in 2 subjects vs. 14 HC events in 9 subjects, p = 0.015, Figure 1). Kaplan-Meier analysis demonstrated that by 12 months, 95.6% of SURE subjects were free of HC events versus 83.5% for URS subjects.

Conclusions: At 1 year, HC events are significantly lower after SURE compared to URS. These results suggest SURE may have the potential for a positive clinical and health economic impact in the treatment of urolithiasis. Whether improved stone clearance contributes to lower HC events warrants further study.

Funding: Calyxo, Inc.
of Endourology, Urology Associate Professor, Co-Director Endourology Fellowship, University of Michigan / Professor of Urology, Co-Director Endourology Fellowship, University of Michigan

Presented By: Golena Fernandez Moncaleano, MD

Introduction: Ureteral stents with extraction strings are used for convenient removal and short dwell time. However, some surgeons believe it may be more painful for patients and increase complications. To date, no studies have examined the experience of patients undergoing ureteroscopy with strings vs. no string vs. stent omission via validated patient-reported outcomes (PROs). We assessed this in a multi-center cohort with the goal to inform patient care.

Methods: Using the Michigan Urological Surgical Improvement Collaborative (MUSIC) clinical registry, we identified ureteroscopy and stone intervention procedures with PROs across centers in Michigan from 2021-2023. Patients completed online questionnaires of PROMIS © pain intensity and pain interference at 3 timepoints: preoperatively, 7-10 days, and 4-6 weeks after surgery. Three groups were assessed: stent with string, stent without string, and stent omission. All stented patients had stents removed before day 7-10 responses. Our primary outcome was difference in symptoms at 7-10 days. Using multivariable linear regression, we compared PROs after adjusting for pre-surgery score, age, gender, pre-stenting, stone size, stone location, and chronic pain. We also compared 30-day post-operative emergency department (ED) visits.

Results: We identified 536 ureteroscopies with PRO data from 9 centers: stent with strings n=200, stent without string n=128, stent omission n=208. Mean age was 60; 49% male. Mean stone size was 7mm (IQR: 5-10). At day 7-10, patients with a string reported lower pain intensity in the preceding 7 days, compared to patients without a string (Fig 1A; 54.2 vs 56.5, p = 0.04). Patients undergoing stent omission reported the lowest pain intensity. Differences in pain interference were not statistically significant between patients with string vs. no string at 7-10 days (Fig 1B; 59.7 vs 61.4, p = 0.18). Stent omission patients had the lowest ED visit rate (4.8%); there were no differences in ED visits between patients with string (9%) vs. no string (7.8%) (p = 0.2).

Conclusions: We found no clinically significant differences in pain intensity or interference in patients with a string vs. no string, and no difference in ED visits. This information can guide patients as they make a decision on whether to consider an extraction string strategy.

Funding: Blue Cross Blue Shield of Michigan.

MP04-13 Infection Risk in Patients with Mixed Flora in Urine Cultures Prior to Ureteroscopy and Laser Lithotripsy

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1Department of Urology, Duke University Medical Center, 2Duke Center for Antimicrobial Stewardship and Infection Prevention, Duke University Medical Center

Presented By: Michael Lipkin, MD

Introduction: Prior to endourological surgery, urine cultures inform preoperative antibiotic choice and duration. The presence of mixed flora (MF) in preoperative urine cultures holds unclear clinical significance. This study examines infectious outcomes after ureteroscopy in patients with preoperative MF urine cultures.

Methods: A retrospective cohort study was conducted on adult patients who underwent ureteroscopy with laser lithotripsy between January 2014 and June 2023 who had urine cultures performed within 60 days preoperatively. Patients were categorized into cohorts based on their preoperative urine culture: MF, negative, or positive. MF cultures were polymicrobial cultures in which known uropathogens were either absent or present in tenfold lower quantities than nonpathogenic organisms. Rates of postoperative urinary tract infection within 14 days were compared between cohorts, and logistic regression was performed adjusting for demographic and clinical variables.

Results: We identified 5,060 patients who underwent ureteroscopy with laser lithotripsy (2,111 MF, 1,451 negative, 1,498 positive). Preoperative antibiotics within 7 days were used more often in the MF cohort (32%) than in the negative cohort (25%, p < 0.001) but less often than in the positive cohort (66%, p < 0.001). Postoperative infections were observed in 99 patients (5%) in the MF cohort, compared with 49 (3%) in the negative cohort (p = 0.001).

Table. Multivariable logistic regression of variables associated with postoperative infection
MP04-14 Tip Bendable Suction Ureteral Access Sheath Versus Traditional Sheath in Retrograde Intrarenal Stone Surgery: An International Multicentre, Randomized, Parallel Group, Superiority Study

Wei Zhu1, Guohua Zeng1

1The First Affiliated Hospital of Guangzhou Medical University

Presented By: Wei Zhu, MD, PhD

Introduction: Retrograde intrarenal surgery (RIRS) is the main treatment for upper urinary tract stones. The Ureteral Access Sheath (UAS) serves as a supplementary tool, facilitating direct kidney access during RIRS. High quality of evidence comparing tip bendable suction ureteral access sheath (S-UAS) with traditional UAS in Retrograde Intrarenal Stone Surgery (RIRS) for the treatment of renal and ureteral stones is lacking. The purpose of the study is to compare the efficacy and safety of S-UAS with traditional UAS in RIRS for the treatment of renal or ureteral stones ≤ 30 mm.

Methods: An international, multicenter, and superiority randomized controlled trial included 320 intention-to-treat patients across 8 medical centers in China, the Philippines, Malaysia and Turkey from August 2023 to February 2024. The inclusion criteria were patients ≥ 18 years old with renal or ureteral stones ≤ 30 mm. RIRS was performed using either S-UAS or traditional UAS. The primary outcome was the immediately stone-free rate (SFR). Secondary outcomes included SFR 3 months after initial treatment, operating time, hospital stay, auxiliary procedures, complications (using the Clavien-Dindo grading system), and improvement in the Quality of Life (QoL) score.

Results: The S-UAS group demonstrated a significantly higher immediately SFR (31.9% [difference], p < 0.001) and SFR at 3 months post-operation (17.5% [difference], p < 0.001) compared to the traditional UAS group, as determined by the one-side superiority test. Additionally, the S-UAS group exhibited a lower postoperative fever rate (11.9% [difference], p < 0.001), reduced use of stone baskets (-70.9% [difference], p < 0.001), and better QoL improvement (7.25 [difference], p < 0.001). No statistically significant differences were observed in operation time, hospital stay, or the need for second-stage RIRS.

Conclusions: In RIRS for renal or ureteral stones ≤ 30 mm, S-UAS exhibited superior performance compared to traditional UAS, demonstrating higher SFR, reduced postoperative fever rate, and improved QoL outcomes. S-UAS emerges as a prudent and advantageous alternative to traditional UAS for RIRS.

Funding: None.
Conclusions: This study identifies the influence of various endoscopic features driving experts to characterize stones as “impacted.” These results allow for replicable ground truth classification of endoscopic findings against which preoperative impaction prediction modeling can be based. 

Funding: None.


1University of British Columbia, 2Kansas University, 3Ohio State University, 4Mount Sinai Hospital, 5Loma Linda University, 6Yonsei University, 7Hospital CUF Descobertas, 8University Southern Denmark, 9Sorbonne University Tenon Hospital, 10Mayo Clinic Arizona

Presented By: Mitchell R. Humphreys, MD

Introduction: Thulium fiber lasers (TFL) have emerged as an effective treatment for endoscopic lithotripsy. In this prospective, international registry, the Endourological Society’s T. O. W. E. R. Research Consortium reports their experience utilizing the TFL, SOLTIVE™ SuperPulsed Laser (Gyrus ACM, Brooklyn Park) to provide real-world data. The objective was to determine the impact of surgeon alteration of TFL laser settings during treatment of ureteral and kidney stones.

Methods: Patients undergoing lithotripsy for ureteral (n = 103) and kidney (n = 258) stones with 3 month (m) data using a TFL laser were prospectively treated across eight international institutions between 12/2021- 4/2023. Imaging performed for stone free rate (SFR) reporting: 28% CT scan, 43% US, 25% KUB, 14% not reported. Baseline characteristics, adverse events, and post-operative outcomes were collected. All stones were treated with the following settings for the 1st minute of laser time (subsequent changes at surgeon discretion): Left Pedal (Kidney) – 0.2J, 100Hz, 0.4J, 40Hz, 0.05J, 400HzRight Pedal (Kidney) – 0.6J, 30Hz, 1J, 20Hz, 0.1J, 200HzLeft Pedal (Ureter) – 0.05J, 50Hz, 0.15J, 14HzRight Pedal (Ureter) – 0.1J, 50Hz, 0.11, 20Hz.

Results: Laser setting were changed in 46% of kidney stone cases with larger stones (12.53 ± 5.79mm vs 9.94 ± 5.29mm, p < 0.001), but no significant difference in 3m SFR (71.22% vs 62.18%, p = 0.1236). When comparing the initial (first half of cases) to the later experience, settings were more frequently changed (52.34% vs 40%, p = 0.0467) and the 3m SFR was higher (72.66% vs 61.54%, p = 0.0575). Laser settings were changed in 60% of ureteral cases with no difference in stone size (8.6 ± 7.5mm vs 8.5 ± 6.9mm, p = 0.8562) or in 3m SFR (79.03% vs 92.68%, p = 0.094). Settings were more frequently altered in the initial half of cases (63.46% vs 56.86%, p = 0.4393) and SFR at 3 months were slightly higher (88.46% vs 80.39%, p = 0.2538). Figure 1 shows the influence of stone diameter and laser setting changes.

Conclusions: Surgeons altered the default TFL settings more for ureteral stones and large kidney stones. In both groups, initial cases saw more setting alterations consistent with learning curves and attempts to better understand TFL capabilities. 

Funding: This study was sponsored by Olympus Corporation of the Americas.

MP04-17 The Relationship Between Neutrophil/Lymphocyte Ratio, Platelet/Neutrophil Ratio, and Risk of Urosepsis in Patients who Present with Ureteral Stones and Suspected Urinary Tract Infection

Juliana Villanueva Congote, Juliana Villanueva Congote, Michal Segall, David Hinojosa-Gonzalez, Brian Eisner

1Massachusetts General Hospital, Harvard Medical School

Presented By: Juliana Villanueva Congote, MD

Introduction: Patients who present with ureteral stones and concomitant urinary tract infection, prompt drainage of the kidney and infection is the standard of care. Even in patients who are promptly drained with ureteral stent of nephrostomy and treated with appropriate antibiotics, the mortality rate due to urosepsis has been reported at nearly 9%. Predictive tools for early sepsis detection have become essential. The Neutrophil-to-Lymphocyte Ratio (NLR) and Platelet-to-Lymphocyte Ratio (PLR) are potential biomarkers for predicting infection risk in these patients.

Methods: A retrospective cohort analysis involving patients diagnosed with obstructing ureteral stones who underwent urgent stent placement due to suspected urinary tract infection (UTI) in the emergency room (ER) was conducted. The baseline characteristics of patients were age, sex, comorbidities, and urological history. Laboratory data collected during hospitalization included total leucocyte and platelet counts and blood cultures. Ratios were calculated from the serum studies obtained upon admission to the ER. A logistic regression model was utilized to predict the incidence of positive qSOFA score (sepsis prediction score), the need for vasopressors, intensive care unit (ICU) admission, and sepsis, using NLR and PLR as independent variables.
Results: Between January 2016 and December 2020, 143 patients with a diagnosis of obstructing ureteral stone were admitted to the ER with a suspected UTI, 11.9% showed a positive qSOFA score, 20.3% required vasopressor support for >1 hour after ureteral stent placement, 28.7% required ICU admission, and 16.8% met sepsis criteria. Sepsis was defined as patients who were qSOFA positive and required vasopressors for more than 1 hour following stent placement. Logistic regression analysis revealed that PLR and positive blood cultures correlated significantly with positive qSOFA scores. Using logistic regression analysis, PLR, NLR, and positive blood culture were each independent predictors of vasopressor requirements, ICU admission, and urosepsis.

Conclusions: Our findings demonstrate that NLR and PLR are valuable prognostic markers for predicting urosepsis risk among patients with urolithiasis undergoing ureteral stent placement for obstructing ureteral stone and suspected concomitant urinary tract infection. These biomarkers could aid clinicians in early risk stratification and prompt intervention to mitigate adverse outcomes.

Funding: None.

MP04-18 Safety and Efficacy of Ureteroscopic Lithotripsy and RIRS under Regional Anesthesia at a Primary Clinic
Joon Chae Na1, Seung Ki Min1
1Goldman Urology Clinic

Introduction: Despite the prevalence of ureteroscopic lithotripsy and RIRS for ureteral and kidney stones primarily in secondary and tertiary hospitals, its adaptation in primary care settings remains limited. This study aims to demonstrate the safety and efficacy of conducting ureteroscopic stone surgeries under regional anesthesia in a primary care setting, challenging the traditional hospital-centric model.

Methods: We conducted a retrospective review of 195 cases of ureteroscopic surgery for ureteral and kidney stones at our primary care clinic from July 2020 to December 2023. All procedures were performed under regional anesthesia by the same urologist. Data collected included patient demographics, stone characteristics, operative time, complications, and postoperative recovery.

Results: Among 195 cases 106(54.4%) cases consisted of stones located in the upper ureter or kidney. Patients were anesthetized under spinal block in 172 (88.2%) cases, caudal block in 7 (3.6%) cases, and no regional block in 11 (5.6%) cases. Sedation was done in 51 (26.2%) cases. The average size of the stones treated was 10.5(SD9.3) mm. Operation time was <1.0 hour in 60 (30.8%) cases, 1.0–2.0 hours in 44 (22.6%) cases, and 2.0–3.0 hours in 31 (15.9%) cases. The procedure was successfully completed in all cases. No severe complications requiring transfer to a higher-level facility occurred.

Conclusions: Our findings suggest that ureteroscopic lithotripsy and RIRS under regional anesthesia can be safely and effectively performed in a primary care setting. This approach may allow for broader access to essential urologic procedures, reducing the need for referrals and the burden on secondary hospitals. Further studies are recommended to validate these results and explore the potential for primary care facilities to adopt more advanced urological procedures.

Funding: None.

MP04-19 Evaluating the Efficiency and Safety of Suctioning Ureteral Access Sheaths in Renal Stone Treatment: A Systematic Review and Meta-Analysis
Farras Setiawan1, Missy Savira1
1Universitas Indonesia

Introduction: This study assesses the efficacy and safety of suctioning ureteral access sheaths (sUAS) compared to traditional UAS (tUAS) during retrograde intrarenal surgery (RIRS) for renal stones.

Methods: A systematic search was performed across five electronic databases from March 1st to March 30th, 2024, to gather relevant literature. The ROBINS-I tool was utilized to evaluate study quality. A meta-analysis was conducted to compare the RIRS outcomes between the sUAS and tUAS cohorts.

Results: The analysis incorporated seven studies totaling 1887 patients (all retrospective in design). The data indicated that sUAS led to a reduction in surgical duration (mean difference (MD) -4.65, 95% Confidence Interval (CI) -6.08 to -3.22, p < 0.00001). The stone-free rate (SFR) for residual fragments (RF) smaller than <2 mm and <4 mm was higher for sUAS patients on the first postoperative day (RR 1.18, 95% CI 1.08–1.28, p = 0.0002; RR 1.19, 95% CI 1.06–1.33, p = 0.002), as well as for SFR (<2 mm) on postoperative day 30 (RR 1.09, 95% CI 1.02–1.17, p = 0.01). Patients with sUAS also exhibited a reduced risk of overall postoperative complications (RR 0.47, 95% CI 0.37–0.60, p < 0.0001), postoperative fever (RR 0.41, 95% CI 0.29–0.57, p < 0.0001), and postoperative sepsis (RR 0.46, 95% CI 0.26–0.80, p = 0.006).

Conclusions: sUAS outperformed tUAS regarding postoperative outcomes, yielding shorter surgical times, higher rates of stone-free conditions, and fewer complications post-surgery in renal stone treatment.

Funding: None.
MP04-20 Who’s at Risk? New Postoperative Hydronephrosis in Ureteroscopy Patients without Prior Hydronephrosis


1University of Michigan / Endourology Fellow, 2University of Michigan / Statistician, 3University of Michigan, 4University of Michigan / Project Manger, 5Sparrow Medical Group / Urologist, 6Comprehensive Urology / Urologist, 7Michigan Institute of Urology / Urologist, 8University of Michigan / Chief Division of Endourology, Urology Associate Professor, 9Comprehensive Urology / Urologist, 10University of Michigan / Professor of Urology, 11University of Michigan / Research Fellow, 12Department of Urology

Presented By: Golena Fernandez Moncaleano, MD

Introduction: In the United States, low imaging rates after ureteroscopy (URS) are well documented. Previous studies indicate that new postoperative hydronephrosis can occur in up to 2.9% of cases and can be associated with renal compromise. Predicting patients at greatest risk for new postoperative hydronephrosis could inform imaging guidelines. We used data from a clinical registry to better understand new onset postoperative hydronephrosis and associated risk factors.

Methods: Using the Reducing Operative Complications from Kidney Stones (ROCKS), a statewide clinical registry of diverse practices from the Michigan Urological Surgery Improvement Collaborative (MUSIC), we retrospectively identified all URS for stone treatment between Q3 2020 and Q2 2023. Since our primary goal was to identify new postoperative hydronephrosis, we included patients who had preoperative imaging such as computed tomography (CT) or ultrasound (US) and did not have preoperative hydronephrosis. New postoperative hydronephrosis was defined as hydronephrosis seen more than 4 weeks postoperatively. We then compared demographic and clinical variables between patients with new postoperative hydronephrosis and patients who did not develop hydronephrosis using the Pearson’s Chi-squared, Wilcoxon rank sum and Fisher’s exact test. Small sample size precluded logistic regression.

Results: Preoperative CT or US from 31 practices was available for 4742 patients prior to URS, of which 1627 also had postoperative imaging within 60 days of surgery. New postoperative hydronephrosis was seen in 87 (5.3%) of postoperatively screened patients more than 4 weeks following surgery, among them 6 patients (0.12%) developed ureteral stricture. Factors significantly associated with new postoperative hydronephrosis after 4 weeks included larger stone size, use of a ureteral access sheath, ureteral stent placement after surgery, longer stent dwell time and presence of residual stones (Table).

Conclusions: New onset postoperative hydronephrosis occurred in 1 in 20 patients after ureteroscopy. However in the vast majority, the findings were transient. Very few patients developed stricture. Our work demonstrates the need for pragmatic imaging guidelines, as there some patients who may not need routine imaging to rule out hydronephrosis.

Funding: Blue Cross Blue Shield of Michigan.

Table: Comparison of patients with new postoperative hydronephrosis to patients who did not develop postoperative hydronephrosis, p-value

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Hydrogenosis (n=87)</th>
<th>Non-hydrogenosis (n=4675)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>40 / 59</td>
<td>0.972</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td>American Indian or Alaska native</td>
<td>2 (2.9%)</td>
<td>24 (0.5%)</td>
</tr>
<tr>
<td>Stone Size</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stricture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location Of Largest Stone</td>
<td>3.0 (0.0 - 10.0)</td>
<td>3.0 (0.0 - 7.0)</td>
<td>0.0005</td>
</tr>
<tr>
<td>Presence of Bilateral Stones</td>
<td>21 (25%)</td>
<td>212 (15%)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Number of Stones</td>
<td>1 (0 - 5)</td>
<td>1 (0 - 5)</td>
<td>0.992</td>
</tr>
<tr>
<td>Stone Type</td>
<td>3 (4.5%)</td>
<td>10 (0.2%)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Stone Location</td>
<td>28 (28%)</td>
<td>28 (28%)</td>
<td>0.992</td>
</tr>
<tr>
<td>Occupation</td>
<td>350 (89%)</td>
<td>350 (89%)</td>
<td>0.992</td>
</tr>
<tr>
<td>Hospital Stay</td>
<td>2 (2 - 10)</td>
<td>2 (2 - 10)</td>
<td>0.992</td>
</tr>
</tbody>
</table>

MP04-21 Are Endourologist More Likely to Definitively Treat Symptomatic Stones on Initial Presentation?

Mouneeb Choudry, Victoria Edmonds, Christopher Ballantyne, Nathaniel Oswald, Daniel Heidenberg, Mitchell Humphreys, Karen Stern

1Mayo Clinic Arizona

Presented By: Mouneeb Choudry, MD

Introduction: Patients presenting to the Emergency Department (ED) with obstructing ureteral stones often undergo surgical

Results: Preoperative CT or US from 31 practices was available for 4742 patients prior to URS, of which 1627 also had postoperative imaging within 60 days of surgery. New postoperative hydronephrosis was seen in 87 (5.3%) of postoperatively screened patients more than 4 weeks following surgery, among them 6 patients (0.12%) developed ureteral stricture. Factors significantly associated with new postoperative hydronephrosis after 4 weeks included larger stone size, use of a ureteral access sheath, ureteral stent placement after surgery, longer stent dwell time and presence of residual stones (Table).
intervention during the acute episode. In the setting of obstruction without infection, primary treatment of the stones, versus stenting and staged ureteroscopy, is usually an option. We evaluated whether fellowship-trained endourologists were more likely than their non-endourology colleagues to proceed with primary ureteroscopy (versus stenting) while treating acute obstructing stones on-call.

**Methods:** A retrospective review was performed of all patients who presented to the Mayo Clinic Arizona Emergency Department (ED) with an acute episode of ureterolithiasis confirmed on non-contrast CT (NCCT) between August 2023 and June 2024. Patients discharged with MET were excluded, and all surgical candidates were included. Additional exclusion criteria included signs of active infection (fever, concern for sepsis), urinalysis concerning for infection, and intraoperative findings consistent with infection. Surgeon subspecialty was noted and, stone burden, ureteral stone location, stone density (Hounsfield units, HU) and periureteral density (HU) were measured on NCCT. T-tests and Chi-squared tests were used to compare baseline characteristics of those who received definitive stone treatment at initial presentation and those that did not. Logistic regression modeling was used to determine the impact of provider subspeciality on definitive stone treatment while controlling for stone location and size.

**Results:** 99 patients were identified, of which 59 patients received definitive treatment and 40 patients underwent ureteral stent placement with plan for interval stone treatment (Table 1). Stone size and location were similar between both groups. Periureteral density was significantly lower in the definitive treatment group (p-value = 0.045). When controlling for stone size and location, endourologists on-call were 4.32 times more likely to treat ureteral stones at time of presentation than non-endourologists (OR 4.32, 95% CI 1.73-21.07, p-value 0.005). For patients for whom treatment was initially deferred, 60% (24) of these patients had interval definitive treatment performed by an endourologist.

**Conclusions:** Endourologists are more likely than their non-endourology colleagues to provide definitive stone treatment at the time of initial presentation of a symptomatic, obstructing ureteral stone without evidence of infection.

**Funding:** None.

**MODERATED POSTER SESSION 5: LAPAROSCOPIC AND ROBOTIC PROSTATE CANCER 1**

**MP05-01 Prospective Randomized Evaluation of Organ Retrieval Site for Hernia Development following Robot Assisted Laparoscopic Radical Prostatectomy**

Tunkut Doganca1, Mustafa Bilal Tuna1, Omer Burak Argun2, Ilter Tufek3, Can Obek2, Ali Riza Kural2

1Acibadem Maslak Hospital, 2Acibadem University, Urology, 3Acibadem Taksim Hospital, Urology

Presented By: Tunkut Doganca

**Introduction:** Minimally invasive techniques are gradually being used for surgical treatment of prostate cancer. However, the incisional hernia development after these techniques are yet to be evaluated. In this study, we compared 3 different organ retrieval site for the risk of incisional hernia development following robot assisted laparoscopic radical prostatectomy.

**Methods:** Between January 2020 and May 2021, 149 patients were enrolled for the study. In the first, second and third group, organs were retrieved through suprabumilical, right abdominal (through the assistant port) and Pfannenstiel incisions respectively. Patients were grouped according to the penultimate number of the social security numbers. In the postoperative period, the area where the organ was removed was evaluated by ultrasonography. Valsalva maneuver was applied during the ultrasonographic examination.

**Results:** We observed hernia in 20 patients. The frequency of hernia development for operations with different incision locations are as follows: Supraumbilical 9/49, Assistant port 10/49, Pfannenstiel: 1/51.

**Conclusions:** Hernia development is significantly associated with incision location, we see that it is lower for pfannenstiel incision compared to supraumbilical and assistant port incision. We did not observe any other factor associated with hernia development.

**Funding:** None.

**MP05-02 Extraction Site Incisional Hernia After Robotic-Assisted Laparoscopic Prostatectomy: A Comparison of Vertical Versus Transverse Incisions Across All Robotic Platforms**

Ethan Vargo1, Hayden Hill1, Shilpa Argade1, Joel Vetter1, Brijesh Patel1, Mark Biebel1, Marjorie Hosto1, Alethea Paradis1, Sherb Figenshau1

1Washington University in St. Louis

Presented By: Ethan Vargo, DO

**Introduction:** Incisional hernia (IH) at the specimen extraction site during robotic-assisted laparoscopic prostatectomy (RALP) remains...
a non-trivial postoperative complication. We examined IH rates among patients undergoing RALP at a single institution on all three da Vinci platforms (Intuitive Surgical, Sunnyvale, CA) when transverse versus vertical specimen extraction incisions were performed.

**Methods:** A single surgeon performed RALPs between June 2018 and November 2022. Procedures were performed on the SI, XI, and single port (SP) robotic platforms. Prior to August 1, 2020, specimens were extracted through midline supraumbilical vertical incisions. After this date, extraction was through a transverse incision. Fascia was closed in a running fashion with 0-polyglactin 910 suture. Preoperative patient characteristics, intraoperative data, and postoperative rates of IH were examined. Vertical and transverse IH rates were compared using the univariate Fisher test.

**Results:** We identified 334 patients who underwent RALP with either a vertical or transverse extraction incision. Mean patient age was noted to be significantly lower within the SI/XI cohort at 64.3 +/- 6.9 years compared to the SP cohort at 66.8 +/- 7.9 years (p = 0.044). Intraoperatively, operative time was noted to be significantly shorter for the SI/XI cohort compared to the SP cohort at 214.9 +/- 33.5 minutes and 241.4 +/- 46.9 minutes, respectively (p = 0.001). Within the SI/XI RALP cohort, 155 patients underwent vertical incisional extraction while 145 patients underwent transverse extraction. A significant difference in the rate of IH was appreciated between the vertical and transverse extraction groups at follow-up at 8.4% and 2.1%, respectively (p = 0.019). Within the SP RALP cohort, 11 patients underwent vertical incisional extraction, while 23 patients underwent transverse incisional extraction. Patients who underwent a vertical extraction following SP RALP experienced an 18% rate of IH, however, this was non-significant. No patients who underwent transverse incisional extraction within the SP RALP cohort experienced an IH.

**Conclusions:** Transverse extraction incisions during RALP across all three robotic platforms demonstrate a lower rate of herniation compared to vertical extraction incisions.

**Funding:** None.

**MP05-03 Identifying Criteria to Risk Stratify Patients for Same Day Discharge after Robot-assisted Radical Prostatectomy**

Narmina Khanmammadova¹, Andrei D. Cumpanas¹, Daniel Jiang¹, Kristene Myklak¹, Sohrab N. Ali¹, Mohammed Shahair², David I. Lee¹

¹Department of Urology, University of California Irvine, ²Department of Urology, Al Zahra Hospital

Presented By: Narmina Khanmammadova, MD

**Introduction:** Currently, no well-defined criteria exist to identify ideal candidates for same-day discharge (SDD) after robot-assisted radical prostatectomy (RARP). We sought to assess the 5-item frailty index (5-iFI) score, American Society of Anesthesiologists’ (ASA) physical status classification system score, age, operative time, and immediate post-operative patient-reported pain scores as potential criteria to identify candidates for SDD after RARP.

**Methods:** Data was collected prospectively from 299 patients who underwent RARP. From May 2021 to December 2023. We calculated the 5-iFI score by giving a point to each of the following parameters: chronic obstructive pulmonary disease or pneumonia, congestive heart failure, hypertension, diabetes, and functional health status. Logistic regression was used to evaluate the ability of the 5-iFI score, ASA score, age, operative time, and perioperative pain scores to predict the likelihood of SDD status. All patients were planned to be sent home on the same day, however, some preferred to stay overnight.

| Table 1. Cohort characteristics and outcomes. |
|---------------|-------------|-------------|-------------|
| **5-iFI score** | **Variable** | **Mean ± SD** | **Mean ± SD** | **Mean ± SD** |
| Age, years, mean ± SD | 60 ± 4 | 69 ± 4 | 69 ± 4 | <0.001 |
| ASA score, n (%) | 3 (1.3%) | 1 (0.9%) | 0 | — |
| BMI, kg/m², mean ± SD | 26.4 ± 4 | 26.9 ± 4 | 28.1 ± 4 | 0.015 |
| Clinical stage, n (%) | 1 | 21 (19.4%) | 31 (20.5%) | 9 (17.5%) | 0.004 |
| IPSS at 6 months | 8 (4.1%) | 10 (5.8%) | 0 | — |
| IH at 90 days | 0 | 1 (0.9%) | 1 (0.6%) | 0.982 |
| SDD as a percentage | 123 (66%) | 184 (35%) | 188 (33) | 0.002 |
| Postoperative complications, n (%) | 7 (3.5%) | 9 (1.8%) | 5 (0.8%) | 0.008 |

**Conclusions:** The 5-iFI score is a simple tool that can help urologists identify candidates for the SDD pathway after RARP.

**Funding:** None.

**MP05-04 Development of a Predictive Nomogram to Assist in Clinical Decision-Making Algorithm Towards Optimal Patient-Specific Approach for Robotic Radical Prostatectomy**

Nicolas Soputo¹, Roxana Ramos-Carpinteiro¹, Jaya S Chavali¹, Adriana M Pedraza¹, Carter D Mikesell¹, Ruben Olivares², Jihad Kaouk¹

¹Glickman Urological & Kidney Institute, Cleveland Clinic, ²Glickman Urological & Kidney Institute

Presented By: Nicolas Soputo, MD

**Introduction:** To develop a patient selection algorithm to better guide clinical decision-making towards the different approaches of Multi-Port (MP) and Single-Port (SP) robotic radical prostatectomy (RARP).

**Methods:** A retrospective review was performed on the IRB-approved database to identify all consecutive patients who underwent Transperitoneal MP, Extrapерitoneal SP, and...
Transvesical SP-RARP between 2018 and 2024. Baseline clinicodemographic variables were collected. Univariate and multivariate regression analyses were used to construct two separate nomograms to predict the likelihood of MP versus SP-RARP as well as Extraperitoneal versus Transvesical SP-RARP.

**Results:** RARP was completed in 529 patients, which included 91 (17.2%) Transperitoneal MP-RARP, 195 (36.9%) Extraperitoneal SP-RARP, and 243 (45.9%) Transvesical SP-RARP. All SP cases were successfully completed without the need for conversion or additional ports. When comparing MP versus SP, lower prostate cancer risk categories, smaller prostate glands, and a more significant history of previous abdominal surgery as represented by a higher Hostile Abdomen Index (HAI) were identified as clinically significant predictors of SP-RARP. Within the SP-RARP cohort, all three aforementioned variables and the absence of any adverse features on preoperative Magnetic Resonance Imaging (MRI) favored Transvesical over Extraperitoneal SP-RARP. Internal validation of the two nomograms demonstrated reasonable performance with an AUC of 0.73 and 0.77, respectively. Considering the likelihood ratio cutoff points of 0.87 and 0.54 for the two models, all cases of SP-RARP and Transvesical SP-RARP who scored above the threshold demonstrated superior perioperative outcomes.

**Conclusions:** Herein, we have developed a novel patient selection algorithm aimed to better guide clinical decision-making in the evolving landscape of contemporary RARP approaches. The findings highlighted in this study, which was based on more than five years of clinical experience, can be useful for institutions seeking to adopt or expand their SP-RARP practices and to ensure optimal perioperative outcomes.

**Funding:** None.

**MP05-05 A Propensity Score-Matched Case-Control Study on Exogenous Testosterone in Delaying Biochemical Recurrence Post-RP**

Yeagyeong Hwang¹, Muhammed A. Moukhtar Hammadm¹, Joshua Tran¹, Mai Xuan Nguyen¹, Tuan Thanh Nguyen¹, Hana Sophia Nakamura¹, Eliad Amini¹, Rafael Gevorkyan¹, Catherine Fung¹, Linda My Huynh¹, Faysal Yafi¹, Thomas Ahlering¹

¹University of California, Irvine Medical Center

Presented By: Yeagyeong Hwang, BS

**Introduction:** Historically, testosterone replacement therapy (TRT) can improve functional outcomes in hypogonadal men, but is contraindicated in men with prostate cancer. In 2020, our team published that TRT can reduce and delay time to biochemical recurrence (BCR). The current study propensity score matches these patients and provides longer follow up on oncologic outcomes.

**Methods:** Prospectively collected data from 151 patients between 2009-2018 on TRT were propensity-score matched to 300 patients not on TRT. These patients were enrolled under approved IRB (#1998-84) who underwent robotic radical prostatectomy under a single surgeon at a single institution. Multivariable logistic models were utilized to generate propensity scores. We included age, body mass index, pathologic grade, preoperative PSA levels, SHIM scores, prostate size, TNM stage, and preoperative testosterone (T), sex hormone-binding globulin, and calculated free testosterone. Primary endpoint was BCR and the secondary endpoint included adverse cardiovascular events (ACE). Time to BCR was analyzed using Kaplan-Meier survival curves. Cox regression was employed to find predictors of BCR. Electronic surveys were sent to assess ACE.

**Results:** Patients were well matched. The only significant differences were in T levels, calculated free T, and follow-up time. In regression analysis, higher calculated free T patients were less likely to have a BCR (P < 0.001). Conversely, higher grade, stage, and preoperative PSA were more likely to have a BCR (P < 0.001). Importantly, patients receiving TRT had a 47% reduction in BCR (P = 0.011). No significant differences in ACE were reported in the groups.

**Conclusions:** TRT continued to have protective effects in delaying and, more importantly, preventing BCR.

**Funding:** None.
Introduction: Generally, bladder neck sparing (BNS) during radical prostatectomy has been reported to improve urinary continence in the early postoperative period. We have previously reported that BNS during robot-assisted radical prostatectomy (RARP) contributes to postoperative not only urinary continence but also voiding function. However, there have been no reports that focused on the anatomical and histological features on BNS procedure. On the other hand, it has been reported that parasympathetic nerves are abundantly located around bladder neck. Therefore, in this study, we focused on the nerve localization around prostatic base and analyzed its density to clarify the mechanism by which BNS contributes to urinary continence and improvement of lower urinary tract function.

Methods: The subjects were 152 patients who underwent RARP and were able to preserve bladder neck at our institutions (average age 67.4 ± 5.2 years). The patients in which urethra was completely isolated from circular muscle of bladder neck were defined as the patients with BNS. The bottom section of prostatectomy specimen was extracted, and the nerve localization in this section was evaluated by HE staining. The proportion of tyrosine hydroxylase (TH)-positive and negative nerves were calculated by immunohistochemical staining. In addition, nerve densities (anterior, posterior) around prostatic base were histologically evaluated in three grades. A correlation analysis between nerve density and 1-hour pad test at 3 months, flow rate (Qmax), voided volume, post-voided residual urine, IPSS, and OABSS at 1, 3, 6, 9, and 12 months after RARP.

Results: Posterior bladder neck nerve density was significantly higher than anterior that (p < 0.05). TH-negative nerves were significantly abundant in posterior bladder neck compared to anterior that (p < 0.05). Posterior bladder neck nerve density was significantly associated with 1-hour pad test at 3 months, Qmax at 6, 9 months, and PVR at 3, 9 months after RARP (p < 0.05, respectively). No significant relationship was observed between posterior bladder neck nerve density and IPSS or OABSS. On the other hand, there was no significant relationship between anterior bladder neck nerve density and any of parameters.

Conclusions: The patients with high nerve density at posterior bladder neck had a high proportion of detrusor nerves, and early improvements in urinary continence and voiding function were observed after RARP. These results suggested that preserving the nerves at posterior bladder neck was important in BNS techniques at RARP.

Funding: None.

MP05-07 Combining ADT with Apalutamide as Neoadjuvant Therapy Enables Patients with Inoperable Prostate Cancer to become Candidates for Radical Prostatectomy and Potentially Enhances their Survival Rates

Yongbao Wei

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Presented By: Yongbao Wei

Introduction: The efficacy of neoadjuvant therapy in improving the prognosis of advanced prostate cancer (PCa) is still unclear. Previous retrospective and phase II clinical studies have focused on neoadjuvant therapy, which combines androgen deprivation therapy with new-generation androgen receptor signaling inhibitors or chemotherapy. These studies have primarily examined endpoints such as pathological downstaging, progression-free survival, prostate-specific antigen (PSA) reduction, and local symptom relief. However, to the best of our knowledge, no research has explored the safety and effectiveness of neoadjuvant therapy in increasing the resectability of unresectable primary PCa tumors.

Methods: In this retrospective study, we sought to assess the potential benefits of using apalutamide as a neoadjuvant therapy to improve the resectability rate of radical prostatectomy (RP). Our study included PCa patients diagnosed and treated by the Fujian Prostate Disease Diagnosis and Treatment Alliance, which comprises 45 medical centers, from January 2021 to August 2023. Patients were selected based on specific inclusion and exclusion criteria. The primary endpoint of our study was the number of patients who achieved resectable surgery following neoadjuvant apalutamide therapy. Secondary endpoints included the extent of tumor stage regression, PSA reduction and treatment-related side effects.

Results: Our initial report includes 17 patients with unresectable primary lesions who underwent a median of 4 months of neoadjuvant apalutamide treatment. All successfully underwent RP. These patients had a median age of 67 years, a median body mass index of 23.8 kg/m², and a median initial PSA level of 70.12 ng/ml. Their median needle biopsy Gleason score was 9 points. They were newly diagnosed with stage cT4N0-1M0-1b. The median duration of ADT plus apalutamide treatment was 4 months, and their preoperative PSA levels ranged from less than 0.01 to 4.09 ng/ml. The median operative time was 200 minutes, with a median intraoperative blood loss of 60 ml. All patients experienced improved lower urinary tract symptoms and lower Gleason scores after RP, with one patient achieving complete pathological remission. The median follow-up time was 13 months, during which six patients maintained PSA relief, and one patient experienced an initial PSA decline followed by an increase. No grade 3 or higher complications were reported.

Conclusions: Our study supports the use of apalutamide as a neoadjuvant therapy to enhance the success rate of RP without a significant increase in perioperative complications. This neoadjuvant therapy appears to be manageable, but its clinical value and potential impact on survival require further confirmation through additional clinical research.

Funding: None.

MP05-08 Is Neoadjuvant Therapy Prior to Radical Prostatectomy Benefit for High-risk Prostate Cancer

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Presented By: Yun-Jui Li, MD

Introduction: The benefit of neoadjuvant therapy prior to radical prostatectomy (RP) for patients with high-risk prostate cancer remains unclear, and current guidelines do not strongly recommend its use. Nevertheless, neoadjuvant therapy is still...
Conclusions: Our study highlights the difference in pathological responses, down-staging of MRI-estimated cancer, and lower positive surgical margin rates compared to ADT alone. The novel hormone agent group achieved a significantly higher rate of minimal residual disease compared to the control group (43% vs 11%, p = 0.003). Following neoadjuvant hormonal therapy, patients in the treatment group showed lower MRI-estimated cancer stage and positive surgical margin rates than those in the control group.

Methods: A retrospective review was performed on the prospectively maintained, IRB-approved database of the Single-Port Advanced Research Consortium (SPARC) to identify all patients who underwent SP-RARP between 2018 to 2023. Baseline clinicodemographic, perioperative, and postoperative data were evaluated and categorized based on the three different approaches of SP-RARP. Statistical analysis was performed using R Packages for Statistical Computing with descriptive statistics as presented.

Results: A total of 1867 patients were included, which comprised 568, 994, and 260 cases of TP, EP, and TV SP-RARP. Despite the similarities in age and BMI, history of previous abdominal surgery was more prevalent in the TV cohort (TP 13.2% vs EP 31.2% vs TV 49.3%, p < 0.05). Patients with higher-grade diseases who required pelvic lymph node dissections were more commonly referred for either TP or EP SP-RARP. Intraoperatively, the TV approach was associated with the least amount of intraoperative blood loss and the need for additional ports. All procedures were completed successfully without the need for conversion. Intraoperative complications were identified in 2.2%, 0.7%, and 0.3% of the TP, EP, and TV cases, respectively. TV SP-RARP was associated with the shortest length of stay and reduced opioid prescription (median length of stay, TP 24 vs. EP 8 vs. TV 5.8 hours, p < 0.05; discharge opioid, TP 31.1% vs. EP 31.9% vs. TV 7.9%, p < 0.05%). The 90-day rates of postoperative complication (p = 0.144) and hospital readmission (p = 0.127) remained comparable across all three approaches. At a median follow-up duration of 12 months, an earlier return of urinary continence was achieved following TV SP-RARP and oncological outcomes remained favorable across the three groups.

Funding: Nil.

Introduction: The Single-Port (SP) robotic platform was first introduced in 2018. The distinguishing features of the novel purpose-built platform, especially its narrow profile and double-jointed instruments, offered an improved maneuverability and ergonomics, especially when performing procedures in a shallow and smaller surgical working space. In the past few years, several approaches of SP robotic radical prostatectomy (RARP) have been introduced, including the Transperitoneal (TP), Extrapерitoneal (EP), and the more regionalized Transvesical (TV) techniques. The aim of this study was to evaluate for the differences in perioperative outcomes between the three most used approaches of SP-RARP, based on a large multi-institutional series.

Methods: A retrospective review was performed on the prospectively maintained, IRB-approved database of the Single-Port Advanced Research Consortium (SPARC) to identify all patients who underwent SP-RARP between 2018 to 2023. Baseline clinicodemographic, perioperative, and postoperative data were evaluated and categorized based on the three different approaches of SP-RARP. Statistical analysis was performed using R Packages for Statistical Computing with descriptive statistics as presented.

Results: A total of 1867 patients were included, which comprised 568, 994, and 260 cases of TP, EP, and TV SP-RARP. Despite the similarities in age and BMI, history of previous abdominal surgery was more prevalent in the TV cohort (TP 13.2% vs. EP 31.2% vs. TV 49.3%, p < 0.05). Patients with higher-grade diseases who required pelvic lymph node dissections were more commonly referred for either TP or EP SP-RARP. Intraoperatively, the TV approach was associated with the least amount of intraoperative blood loss and the need for additional ports. All procedures were completed successfully without the need for conversion. Intraoperative complications were identified in 2.2%, 0.7%, and 0.3% of the TP, EP, and TV cases, respectively. TV SP-RARP was associated with the shortest length of stay and reduced opioid prescription (median length of stay, TP 24 vs. EP 8 vs. TV 5.8 hours, p < 0.05; discharge opioid, TP 31.1% vs. EP 31.9% vs. TV 7.9%, p < 0.05%). The 90-day rates of postoperative complication (p = 0.144) and hospital readmission (p = 0.127) remained comparable across all three approaches. At a median follow-up duration of 12 months, an earlier return of urinary continence was achieved following TV SP-RARP and oncological outcomes remained favorable across the three groups.
Conclusions: Herein, we reported the outcomes of three contemporary approaches of SP-RARP, with added values towards enhancing patient comfort and postoperative recovery. Compared with the other techniques, the TV approach was associated with a significantly reduced length of stay, opioid requirements, major postoperative complication, as well as an earlier return of urinary continence.

Funding: None.

MP05-10 Robot-Assisted versus Open Radical Prostatectomy in the Treatment of Localized Prostate Cancer: 3-Year Results from a Prospective Cohort Study

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¹Seoul National University Hospital,²Myongi Hospital

Presented By: Chang Wook Jeong, MD, PhD

Introduction: Radical prostatectomy remains the primary treatment for localized prostate cancer (PCa). Despite its use for over two decades, the benefits of robot-assisted radical prostatectomy (RARP) remain unclear. We evaluated the surgical, functional, and oncological outcomes between RARP and open radical prostatectomy (RRP)

Methods: This prospective cohort study included men who underwent radical prostatectomy between March 2016 and April 2020. Four surgeons with diverse experience contributed to this study. We excluded patients who received preoperative androgen deprivation therapy, had an initial prostate-specific antigen level of >50 ng/mL, had a clinical T stage of ≥T3b, and those aged under 50 or over 80 years. The primary outcome was the 90-day complication rate. Surgical and oncological outcomes were compared. Continence and potency recovery were depicted using Kaplan–Meier curves and assessed using the log-rank test. To balance baseline characteristics, stabilized inverse probability of treatment weighting (siPTW) was used.

Results: Among the 1,306 patients assessed, 1,055 were included after exclusion and adjustment using the siPTW (sIPTW) was used.

Table 1: Comparison of Surgical and Pathological Outcomes Between Robot-Assisted Radical Prostatectomy and Open Retropubic Radical Prostatectomy

<table>
<thead>
<tr>
<th>Outcome</th>
<th>RARP (n=220)</th>
<th>RRP (n=835)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation time, minutes (mean [SD])</td>
<td>185.9±42.6</td>
<td>238±65.7</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Estimated blood loss, mL (median [IQR])</td>
<td>150 (75–225)</td>
<td>225 (150–325)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Positive margin rate, %</td>
<td>11.8 (9.4)</td>
<td>16.7 (12.5)</td>
<td>0.046</td>
</tr>
<tr>
<td>PSM, %</td>
<td>11.8 (9.4)</td>
<td>16.7 (12.5)</td>
<td>0.046</td>
</tr>
<tr>
<td>Pathological grade, pT-stage, (%)</td>
<td>5 (4)</td>
<td>7 (6)</td>
<td>0.039</td>
</tr>
<tr>
<td>Pathological grade, N-stage, (%)</td>
<td>5 (4)</td>
<td>7 (6)</td>
<td>0.032</td>
</tr>
<tr>
<td>Continuity post-void, mL (mean [SD])</td>
<td>163.7±39.3</td>
<td>171±47.8</td>
<td>0.337</td>
</tr>
<tr>
<td>PSA level, ng/mL (mean [SD])</td>
<td>0.07±0.40</td>
<td>0.09±0.42</td>
<td>0.314</td>
</tr>
<tr>
<td>Pathological organ-confined, (%)</td>
<td>89.5 (88.5)</td>
<td>94.8 (92.5)</td>
<td>0.005</td>
</tr>
<tr>
<td>Positive surgical margins, (%)</td>
<td>11.8 (9.4)</td>
<td>16.7 (12.5)</td>
<td>0.046</td>
</tr>
<tr>
<td>Pathological organ-confined, (%)</td>
<td>89.5 (88.5)</td>
<td>94.8 (92.5)</td>
<td>0.005</td>
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<td>94.8 (92.5)</td>
<td>0.005</td>
</tr>
</tbody>
</table>

Conclusions: The findings indicate that RARP is associated with a better safety profile and surgical outcomes without compromising short-term oncologic outcomes. While continence recovery was comparable between the methods, RARP may offer superior potency recovery.

Funding: This research was supported by a grant from the Patient-Centered Clinical Research Coordinating Center (PACEN) funded by the Ministry of Health & Welfare, Republic of Korea (grant number: HC19C0164) and Alvogen Korea. None of the sponsors had any access to the data or any influence on or access to the analysis plan, the results, or the manuscript.

MP05-11 A Hybrid Approach to Hood-Sparing Robotic Prostatectomy to Maximize Functional Outcomes and Maintain Oncologic Efficacy

Ethan Vargo¹, Joel Vetter¹, Eric Kim¹, Sherb Figenshau¹

¹Washington University in St. Louis

Presented By: Ethan Vargo, DO

Introduction: We detail our approach and experience with a hybrid version of the endopelvic hood-sparing robotic-assisted radical prostatectomy (RARP) using the da Vinci robotic platform (Intuitive Surgical, Sunnyvale, CA).

Methods: We retrospectively reviewed the records of 200 patients who underwent RARP by a single surgeon. Patients were propensity-matched into three cohorts depending on biopsy and prostatectomy Gleason Grade Groups: traditional retropubic (RP) (n=80), retzius-sparing (RS) (n=40), and hood-sparing (HS) (n=80). Patient characteristics, oncologic, and functional outcomes were examined. Zero pads per day defined return of continence. Erections suitable for penetrative intercourse with/without medications defined return of sexual function.

Results: Patient characteristics were similar between cohorts excluding prostate specific antigen (PSA) levels (p=0.014), which were significantly lower in the RS cohort (7.1 +/- 5.3 ng/mL) compared to RP (9.2 +/- 9.3 ng/mL) and HS (8.8 +/- 8.9 ng/mL). Clinically significant positive margin rates were significantly higher (p=0.046) in the RS cohort (32.5%) compared to RP (17.5%) and HS (13.9%). Biochemical recurrence and metastasis rates were similar between all cohorts. Median time to continence was significantly lower for RS and HS-RARP (p<0.001) compared to RP-RARP at 1.3, 1.6, and 5.4 months, respectively. Median time to return of sexual function was significantly lower for RS and HS-RARP (p<0.001) compared to RP-RARP at 4.0, 7.7, and 15.1 months, respectively.
Conclusions: Our hybrid HS-RARP approach provides functional outcomes similar to RS-RARP with the oncologic control of traditional RP-RARP.

Funding: None.

MP05-12 Real World Impact of United States Prostate Cancer Screening Recommendations in 2012 and 2016: Assessing Tumor Volume, Surgical Margins, Pathologic Stage and Grade

Thomas Ahlering¹, Eliana Haddadin¹, Mai Xuan Nguyen¹, Joshua Tran¹, Zaki Zeidan¹, Yeageyong Hwang¹, Whitney Zhang¹, Maria Epino¹, Erica Huang¹, Catherine Fung¹

¹University of California, Irvine Medical Center

Presented By: Thomas Ahlering, MD

Introduction: The US Preventive Services Task Force (USPSTF) issued a grade D recommendation in 2012 against PSA-based screening for prostate cancer. Subsequently in 2016, the recommendation was modified to grade C. The current study seeks to further assess the real world impact of these two recommendations at our institution.

Methods: Patient data was prospectively entered into an electronic database under approved institutional review board protocol at the University of California, Irvine (#1998-84). 1206 patients undergoing a radical prostatectomy were retrospectively analyzed. Patients were excluded for insufficient clinical data, underwent simple prostatectomy, or had neoadjuvant therapy. These patients were categorized into 3 eras based on their date of surgery and the USPSTF recommendation: Pre (n = 583), Grade D (n = 279), and Grade C (n = 344) (5/2006 - 5/2012, 5/2012 - 4/2017, 4/2017 - 5/2020, respectively). Differences in demographics were assessed using student t tests and Chi squared.

Results: Based on baseline demographics, no change from the grade D recommendation to the subsequent grade C recommendation was observed. We combined the two groups and compared the Pre (2006-2012) vs Post (2012-2020). Significantly more adverse cancer (measured by grade, stage, and margin; p < 0.001) was seen in the Post era. This is especially true when analyzing biopsy tumor volume (bTV), with almost 30% of patients having a greater than 40% TV. Patients in the Post era were more likely to have a BCR at 10 years (p = 0.007) and subsequent treatment (p = 0.014). These patients also had a lower time to treatment (p < 0.001) as compared to the Pre group.

Conclusions: A persistent increase in intermediate and high-risk cancer is evident in the Post era (2012-2020) as compared to the Pre era (2006-2012). The grade D recommendation had lasting and long-term unintended consequences and the subsequent C recommendation had no apparent impact.

Funding: None.

MP05-13 A Comparative Study Between Apical Margin Positivity Between Single Port and Multiple Port Robotic Radical Prostatectomies

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¹Department of Urology, Yale School of Medicine

Presented By: Ankur Choksi, MD

Introduction: It is suspected that the lack of an EndoWrist and a more flexible instrument shaft of working instruments with the Da Vinci Single Port robot makes the apical dissection more challenging during a robot-assisted radical prostatectomy. The objective of this study is to determine whether the single port approach is associated with a higher rate of positive apical surgical margins.

Methods: We retrospectively analyzed the pathologic reports of patients who underwent robot-assisted radical prostatectomy (RALP) from January 2021 to June 2023. The primary outcome was a positive apical margin and the secondary outcome was any positive surgical margin. Patients were stratified by whether they underwent a single-port (SP) or multiport (MP) RALP. Student t-test and Pearson chi-squared test
of independence was used to compare continuous and categorical variables respectively. Propensity score matching of nearest neighbors with predetermined co-variates (age, BMI, prostate volume, PSA, clinical T stage, and biopsy Gleason grade) was performed to identify the treatment effect of using the single port robot on apical and all surgical margin positivity.

**Results:** A total of 473 patients were identified of which 379 underwent multi-port RALP by 8 different surgeons and 94 patients underwent single-port RALP by two different surgeons. There was a total of 79 positive apical margins (58 MP vs. 21 SP, p = 0.101) and 160 surgical margins (122 MP vs. 38 SP, p = 0.131). The groups were similar with respect to age, BMI, PSA, prostate volume, PSA density, abnormal DREs, prior biopsy status and clinical T stage. The biopsy pathology distribution between the two groups was not independent (p = 0.008), and duration between biopsy and RALP was shorter for multi-port patients (p = 0.027). On propensity score matched analysis, treatment using the single port robot was not a predictor of positive apical surgical margins (OR: 1.33, 95% CI: 0.97 – 1.81, p = 0.075) or any positive surgical margins (OR: 1.15, 95% CI: 0.83 – 1.61, p = 0.405).

**Conclusions:** Rates of positive surgical margins, including apical margins, are comparable between single- port and multi-port robotic radical prostatectomies.

**Funding:** None.

### MP05-14 Predictors of Outpatient Single-Port Robotic Radical Prostatectomy

Nicolas Soputro1, Roxana Ramos-Carpinteyro1, Jaya S Chavali1, Adriana M Pedraza1, Carter D Mikesell1, Jihad Kaouk1

1Glickman Urological & Kidney Institute, Cleveland Clinic

**Presented By:** Nicolas Soputro, MD

**Introduction:** In recent years, the purpose-built Single Port (SP) robotic platform has been increasingly utilized for various approaches of robotic radical prostatectomy (RARP) with demonstrable benefits favoring enhanced postoperative recovery. This study sought to evaluate the different perioperative variables that may serve as important clinical predictors when selecting patients for outpatient SP-RARP.

**Methods:** A retrospective review was performed on the IRB-approved, prospectively maintained database to identify 485 consecutive patients who underwent SP-RARP between 2018 and 2023. A comparison analysis was performed on patients who were managed as outpatients versus inpatients following their respective SP- RARP. A separate analysis was performed after excluding patients with pre-planned admissions to identify the risk factors for unplanned admissions. Statistical analysis was performed using R.

**Results:** All procedures were successfully completed without any conversion or additional ports. After excluding patients with pre-planned admissions, outpatient SP-RARP was successfully achieved in 86.6% with a median LOS of 4.6 hours (IQR 3.8–6.1 hours). Our multivariate regression analysis identified cardiac comorbidity and preoperative IPPS as predictors of outpatient SP-RARP. In addition, the absence of cardiac comorbidity, previous abdominal surgery, and lower postoperative pain score were protective against the risk of unplanned admission. Furthermore, the two encounter types had comparable 90-day rates of postoperative complication (p = 0.136) and hospital readmission (p = 0.942).

**Conclusions:** Outpatient management models can be successfully achieved in most patients who underwent SP-RARP (86.6%) while maintaining similarly low perioperative morbidity profile. Nevertheless, appropriate patient selection based on the baseline clinicodemographic characteristics remains essential to ensure the safety and ongoing success of outpatient SP-RARP.

**Funding:** None.

### MP05-15 Long Term Oncological Outcomes of Robot Assisted Radical Prostatectomy (RARP) for Localized High-grade Prostate Cancer

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1Department of Urology, University of Rochester, 2University of Rochester

**Presented By:** Victor Sandoval, MD

**Introduction:** There is paucity of data in the literature on long term oncological outcomes for high-risk prostate cancer (PCa) after RARP. Herein we assess outcomes on patients who underwent RARP for high- risk PCa Grade Group (GG) 4 and 5.

**Methods:** Data was available for 98 patients who underwent RARP with prospective follow-up ranging from 8 to 18.1 years. Chi-square was used to calculate for categorical variables, T-test or one-way ANOVA for continuous variables. Kaplan-Meier method was used to estimate the survival function of time to biochemical recurrence (BCR) Overall Survival (OS) and cancer specific survival (CSS). Cox hazard model was used to study the effects of some clinical covariates on the time to recurrence and death.

**Results:** 62 (64.2%) had T3 disease at time of surgery and 21 (21.42%) had lymph node metastasis (LNM). On preoperative biopsy 76 (77.6%) had GG 4 and 22 (22.4%) had GG 3. On final pathology 19 had (19.4%) GG 2, 36 (36.7%) GG 1, 21 (21.4%) had lymph node metastasis (LNM). On preoperative biopsy 76 (77.6%) had GG 4 and 22 (22.4%) had GG 3. On final pathology 19 had (19.4%) GG 2, 36 (36.7%) GG 1, 21 (21.4%) had lymph node metastasis (LNM). On final pathology 19 had (19.4%) GG 2, 36 (36.7%) GG 1, 21 (21.4%) had lymph node metastasis (LNM).
BCR 47.5 months (12-74). T3 stage and LNM were significantly associated with adjuvant therapy (aRT). Pre-op PSA level was significantly associated with pathological stage and LNM. BCR free survival was 82% at 130 months. OS was 88% at 130 months. CSS was 100% during our follow-up period. On the univariate analysis, pre-op PSA (HR 1.04 95%CI 1.0-1.01), LNM (HR 1.59 95% CI 1.12-2.2) and pathology T stage (HR 1.59 95% CI 0.9-2.3) were significantly associated with OS (≤ 0.05). However, no variables were clinically significant on the multivariate analysis.

**Conclusions:** RARP provides excellent long-term outcomes in patients with localized high-risk PCa. PSA and disease stage at diagnosis remain strong predictors of BCR or need for additional treatment.

**Funding:** None.

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**MP05-16 The Different Etiologies and Subsequent Management of Patients with Aborted Radical Prostatectomy**

Carter Mikesell¹, Jihad Kaouk¹, Nicolas Soputro¹, Jaya Chavali¹, Adriana Pedraza¹, Roxana Ramos-Carpinteyro¹, Ruben Olivares¹

¹Cleveland Clinic

**Presented By:** Carter Mikesell, MD

**Introduction:** Radical prostatectomy (RP) has long been the mainstay treatment for localized clinically significant prostate cancer. Despite best efforts in preoperative evaluations and optimizations, RP may still fail to be completed due to surgical and/or medical issues that arise at the time of the procedure. The aim of this present study was to describe the different etiologies of aborted RP (aRP) and their subsequent management.

**Methods:** A retrospective review was performed on the IRB-approved database to identify all patients whose RP were aborted following induction of anesthesia. Perioperative clinical and demographic and follow-up parameters were collected. Statistical analysis was performed with descriptive statistics as presented.

**Results:** Of the 44 aRP procedures, 11 were secondary to anesthesia concerns and 34 were due to surgical challenges. Most of the anesthesia concerns (64%) were related to respiratory compromise due to the Trendelenburg positioning for Transperitoneal Multi-Port Robotic RP (MP-RARP). Half of the surgical indications for aRP pertained to hostile abdomen in patients with previous history of abdominal surgery. One patient was noted to have both anesthesia and surgical reasons for aRP, with the first being ventilation issues during MP-RARP that prompted the conversion to open RP. The procedure was subsequently aborted following an intraoperative finding of a deep and narrow pelvis. Surgery was reattempted in 25 patients (56.8%) with 84% done robotically, while 18 (40.9%) were managed with radiation with or without androgen deprivation therapy and one (2.3%) elected for active surveillance. At a median follow-up of 35 months, biochemical recurrence and metastatic disease were identified in four and two cases, respectively.

**Conclusions:** Despite the rarity, aRP remains an important risk to consider in patients undergoing RP. Nevertheless, redo surgery following aRP can be completed successfully and should be considered as one of the main alternatives in accordance with the surgical plans initially agreed on by the patient.

**Funding:** None.

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**MP05-17 Assessment of Pelvic Floor Muscle Tone Via Digital Rectal Examination during Kegel Exercises is a Valuable Predictor of Urinary Continence Recovery Following Robotic-Assisted Radical Prostatectomy**

Yu Zhang¹, Ravi Munver¹

¹Hackensack University Medical Center

**Presented By:** Yu Zhang, MD

**Introduction:** Several factors may contribute to the recovery of urinary continence following radical prostatectomy. We studied the relationship between pelvic floor muscle (PFM) tone and urinary continence recovery following robotic-assisted radical prostatectomy (RARP).

**Methods:** A prospective cohort of patients that underwent RARP by between May 2021 and October 2023 was evaluated. International Prostate Symptom Score (IPSS) and Quality of Life (QoL) scores were obtained pre- and postoperatively. Postoperative evaluation of PFM tone based on digital rectal exam during Kegel exercises and queries regarding pad usage were recorded. Patient demographics are listed in Table 1.

**Results:** A total of 62 patients met inclusion criteria based on routine follow-up and questionnaire completion. At 6 months, 36 patients’ PFM tone strength was evaluated, and patients with very weak/weak and moderate PFM tone used more pads per day (PPD) than patients with strong PFM tone (2 v. 1, p = 0.008). The very weak/weak and moderate PFM tone groups had higher IPSS and QoL scores as compared to the strong PFM tone group (p = 0.043 and p = 0.006, respectively) [Table 2]. At 12 months, 23 patients’ PFM tone strength was evaluated, and the very weak/weak and moderate PFM tone groups used more PPD than patients with
strong PFM tone (1 vs. 0, p = 0.007). The very weak/weak and moderate PFM tone groups also had higher IPSS and QoL scores as compared to the strong PFM tone group (p = 0.037 and p = 0.006, respectively) [Table 3].

Conclusions: The results of this study emphasize that strong postoperative PFM tone is associated improved postoperative continence, lower pad use, and higher patient satisfaction following RARP.

Funding: None.

MP05-18 Lower Urinary Tract Function after Robot-Assisted Radical Prostatectomy in Patients with Preoperative Low Bladder Contractility

Junya Hata², Takahiro Tsumori¹, Akari Hiraguri¹, Yu Endo¹, Yuki Harigane¹, Kei Yaginuma¹, Seiji Hoshi¹, Yuichi Sato¹, Hidenori Akaahata¹, Soichiro Ogawa¹, Yoshiyuki Kojima¹

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Presented By: Junya Hata, MD

Introduction: Our previous study reported that preoperative lower bladder contractility index (BCI) was a predictive factor of postoperative detrusor underactivity (DU) at 1 month after robot-assisted radical prostatectomy (RARP). This result suggested that the decrease in reserve capacity of bladder function preoperatively might contribute to the development of postoperative DU in relatively early phase after RARP. In addition, in this study, the patients with postoperative DU after RARP have the deterioration of lower urinary tract symptoms including International Prostatic Symptom Score (IPSS) and Overactive Bladder Symptom Score (OABSS). However, the prognosis of lower urinary tract function and symptoms including voiding and storage in the patients with lower bladder contractility remained unclear. In our prospective study, we analyzed the time-dependent change of lower urinary tract function and symptoms in the patients who underwent RARP.

Methods: One-hundred-fifteen patients (mean age 66.6 ± 5.0 years) who underwent RARP in our institution were enrolled in this study. Urodynamic study (UDS) was performed before RARP for all of these patients. These patients were divided into two groups, normal bladder contractility group (patients with BCI>100: normal contractility group; n = 70) and low bladder contractility group (patients with BCI<100: low contractility group; n = 45). In these two groups, lower urinary tract symptom including IPSS, Quality of Life (QOL) score, OABSS, and lower urinary tract function including maximum flow rate (Qmax), voiding volume, or postvoiding residual volume was evaluated at 1, 3, 6, 9, and 12 months after RARP, respectively.

Results: IPSS voiding scores 1, 3, 6, 9, and 12 months after RARP were significantly higher (p < 0.05), and the Qmax before and 1, 3, 9, and 12 months after RARP were significantly lower in the low contractility group (p < 0.05). Comparing preoperative and postoperative parameters, IPSS voiding scores in the normal contractility group were significantly improved from 6 months after RARP, whereas those in the low contractility group were almost unchanged. Qmax and the 1-hour pad test in both groups were temporarily deteriorated 1 month after RARP, whereas voided volume and postvoiding residual volume were significantly decreased from 1 to 12 months after RARP. The correlation analysis by scatter plots showed that Qmax per voided volume showed less improvement in the low contractility group.

Conclusions: This observational study showed that patients with preoperative low bladder contractility were not expected to show improvement in voiding symptoms and function after RARP.

Funding: None.

MP05-19 Near Infrared Nerve-Specific Fluorophores for Fluorescence Guided Prostatectomy

Connor Barth¹, Nathan McMahon¹, Lei Wang¹, Summer Gibbs¹

¹Trace Biosciences

Presented By: Connor Barth, PhD

Introduction: Nerve damage impacts ~8% of all surgical outcomes worldwide, incurring undue pain, loss of function, and high costs to healthcare systems. Conventional intraoperative nerve detection uses anatomical knowledge and white light (WL) visualization. However, nerves can be difficult to identify by conventional methods. Fluorescence-guided surgery (FGS) offers a potential means for enhanced intraoperative nerve identification and preservation.

Methods: We have developed novel near-infrared (NIR) nerve-specific fluorophores that provide excellent nerve contrast with the ability to identify buried and invisible nerve structures. Additionally, we have characterized the nerve visualization performance in canine prostate models and resected human specimens to support clinical utility for prostatectomy.

Results: Several lead candidates of our novel fluorophores displayed bright NIR nerve-specific fluorescence contrast. The lead NIR nerve-specific fluorophore, BCP-T108-35, enabled buried nerve visualization in a swine iliac nerve where conventional WL visualization was insufficient for nerve identification during robotic surgery. Our lead agents also demonstrated compatibility with the da Vinci Firefly system to produce high contrast nerve visualization in cavernous nerves following administration to canine prostate
and resected human prostate tissue, validating utility for improved nerve identification during prostatectomy.

Conclusions: FGS has the potential to eliminate intraoperative nerve damage. Work is underway towards an investigational new drug application to the FDA for first-in-human clinical trials with our nerve specific fluorophores. Upon successful translation, this technology will provide enhanced visualization of nerves intraoperatively, to improve outcomes in nerve sparing prostatectomy surgery.

Funding: Funding for this is generously provided by the NIH (R44CA247639, R43NS127689, R43CA272030), NSF (IIP 2036434), and ARPA-H (75N91023C00042).

MP05-20 Impact of Tumor Volume and Surgical Margins on Mortality Post-Robotic Radical Prostatectomy

Thomas Ahlering\(^1\), Zaki Zeidan\(^1\), Joshua Tran\(^1\), Mai Xuan Nguyen\(^1\), Eliana Haddadin\(^1\), Yeagyong Hwang\(^1\), Whitney Zhang\(^1\), Maria Epino\(^1\), Erica Huang\(^1\), Catherine Fung\(^1\)

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Presented By: Thomas Ahlering, MD

Introduction: Positive surgical margins (PSMs) following radical prostatectomy (RP) have long been seen as inherently unfavorable. The current literature is divided on the impact of PSM on long-term outcomes. We posit that high pathological tumor volume (pTV) is logically a potential source for increasing PSM, prostate cancer specific mortality (PCSM), and overall mortality (OM).

Methods: We utilized Kaplan-Meier (KM) survival curves to assess mortality endpoints for our study. 1322 patients were stratified based on margin status and pTV greater or less than 40%. These patients were prospectively entered into an electronic database between 2002–2018 after RP by a single surgeon. All study procedures were conducted under an approved institutional review board protocol at the University of California, Irvine (HS#1998-84).

Results: At baseline, patients with >40% pTV had significantly more aggressive cancer (measured by grade and stage) (Table 1). At 10-years, this group saw significantly higher rates of biochemical recurrence, OM, and PCSM (p < 0.001). Importantly, a significant association was observed between high pTV and PSM rates (including multifocal margins). Figure 1 depicts a 15-year KM analysis for OM and PCSM (p < 0.001). Margin status in the absence of high pTV did not show a significant impact on long-term mortality.

Conclusions: Our study challenges the common belief that PSMs are inherently oncologically adverse. Monitoring PTV can be a key predictor of long-term adverse oncologic effects and a more reliable predictor of PCSM. Minimizing PSMs remains a critical surgical principle, but in prostate cancer, it needs to be weighed against urinary and sexual function outcomes.

Funding: None.
MP06-01 Diagnostic Accuracy of Contrast-Enhanced Ultrasoundography for the Assessment of Small Renal Mass: A Prospective Study

Jae-Wook Chung1, Jae-Wook Chung1, Seo Young Park2, Yun-Sok Ha1, Jun Nyung Lee1, Bum Soo Kim1, Tae-Hwan Kim1, Gihl Suk Yoon3, Tae Gyun Kwon1, See Hyung Kim2

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Presented By: Jae-Wook Chung, MD

Introduction: We prospectively compared the diagnostic accuracy of kidney dynamic computed tomography (KDCT), magnetic resonance imaging (MRI), and contrast-enhanced ultrasonography (CEUS) for the assessment of small renal mass (SRM) (≤ 4 cm).

Methods: We carried out a prospective single-center study from January 2021 to July 2023. We included 76 patients with SRM who underwent renal biopsy or nephrectomy (partial or radical). All patients underwent KDCT, MRI and CEUS prior to renal biopsy or nephrectomy. All radiologic images were interpreted by a single expert uro-radiologist. Imaging results were compared with histological outcomes.

Results: Seventy-six patients with SRM (mean age: 58.4 ± 13.1 years) who underwent renal biopsy or nephrectomy (n = 11) or nephrectomy (partial or radical) (n = 65) were enrolled. All patients underwent KDCT, MRI, and CEUS prior to renal biopsy or nephrectomy. The mean maximal tumor size was 21.0 ± 9.8 mm. The mean R. E. N. A. L nephrometry score was 7.0 ± 1.7. Fifty-six patients had renal cell carcinoma (RCC) (clear cell: 42; papillary: 7; chromophobe: 5; succinate dehydrogenase deficient: 1; unspecified RCC: 1). Twenty patients had a benign tumor (angiomyolipoma: 11; oncocytoma: 3; others: 6). Clinicopathologic variables were comparable in RCC and benign groups. The sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of KDCT were 89.3%, 10.0%, 73.5%, and 25.0%, respectively. The sensitivity, specificity, PPV, and NPV of CEUS were 85.7%, 50.0%, 82.8%, and 55.6%, respectively.

Conclusions: The diagnostic accuracy of KDCT, MRI, and CEUS were 68.4%, 68.4%, and 76.3%, respectively. CEUS demonstrated the highest sensitivity, positive predictive value (PPV), and negative predictive value (NPV), potentially enhancing the evaluation of SRM.

Funding: None.

MP06-02 CT Volumetric Analysis: Association of Renal Parenchyma and GFR Alteration in Nephrectomy Patients

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Presented By: Wasin Saengthongpithak, MD

Introduction: The widespread use of cross-sectional imaging increases the detection of renal cell carcinoma (RCC). Nephrectomy is a primary treatment for RCC, with an inevitable loss of renal function. Previous studies revealed an association between reduced GFR and worsened survival. Our study examined the accuracy of predicted GFR based on volumetric analysis of anticipated postoperative renal parenchyma (VA-GFR) and actual new baseline GFR (Nb-GFR).

Methods: A total of 118 patients underwent partial (PN), radical (RN), or donor (DN) nephrectomy at Siriraj Hospital, Bangkok, between 2017 and 2021 were retrospectively reviewed. All patients had pre- and postoperative contrast-enhanced CT scans and serum creatinine tests, except for DN patients who only had preoperative imaging. CT-based volumetric analysis was utilized to measure total, expected, and actual post-nephrectomy parenchyma volumes and tumor volume. The VA-GFR was calculated based on the fraction of renal parenchyma remaining postoperatively. Pearson correlation determined relationship between actual Nb-GFR and VA-GFR. Linear regression analysis evaluated predictors of actual Nb-GFR.

Results: Of 118 patients, there were 40, 40, and 38 patients underwent PN, RN and DN, respectively. The DN cohort were the youngest among all groups. The PN cohort had a greater prevalence of comorbidities compared to RN and DN. Mean preoperative GFRs were 75.6, 79.4, and 106.4 in PN, RN, and DN cohorts. Mean preoperative parenchyma volumes were 308.2 ml, 286.9 ml, and 270.4 ml in PN, RN, and DN, respectively. Mean postoperative parenchyma volumes were 285.0 ml and 182.5 ml in PN and RN, respectively. The actual mean Nb-GFR was the lowest in RN patients (58.0 in RN, 71.0 in PN, and 67.1 in DN). The VA-GFR had a strong correlation with the actual Nb-GFR in RN and DN cohorts (r = 0.63 and 0.79 in RN and DN, respectively) and a very strong correlation in the PN cohort (r = 0.81). RN patients had significant volume compensation compared to PN patients (10.8% vs −4.4%, p < 0.001).

On multivariate analysis, age, gender, preoperative GFR, VA-GFR, and RN were significantly associated with Nb-GFR.
**Conclusions:** It has been observed that a decline in renal function following nephrectomy can lead to reduced survival. CT volumetric analysis has demonstrated a high correlation to the actual Nb-GFR. An accurate Nb-GFR prediction can play a crucial role in counseling patients and planning their management.

**Funding:** None.

**MP06-03** Prospective Analysis on the Predictive Ability of Technetium-(99mTc) Sestamibi Scans for Benign vs. Malignant Renal Tumors

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Presented By: Katherine Kim, MD

**Introduction:** Technetium-(99mTc) sestamibi single photon emission computed tomography (SPECT) is an imaging study that has shown promise in differentiating benign and malignant renal masses by quantifying mitochondrial tracer uptake. Recently, institutions that have tried to validate these findings found discordance between scans and its final pathology. We aim to interpret our initial experience with sestamibi SPECT in predicting renal tumor pathology.

**Methods:** A prospective, IRB-approved review of a Renal Cancer Database was queried to identify patients undergoing a sestamibi SPECT followed by biopsy or surgical pathology from July 2019 to September 2022. SPECT scans were reviewed by a radiologist and were defined as no/low uptake to signify either papillary or clear cell carcinoma, or high uptake to signify a benign mass or hybrid oncocytoma/chromophobe tumor (HOCT). The diagnosis on SPECT was compared to pathology on biopsy and/or surgical pathology. Positive and negative predictive value, sensitivity and specificity were calculated.

**Results:** 16 patients received sestamibi SPECT and had corresponding pathology. Of these, 3 scans were indeterminate and excluded. Only 1 patient (7.69%) had a high uptake of sestamibi, but was false positive with pathology showing chromophobe renal cell carcinoma (RCC). 12 were read as having no/low uptake. Of these, 8 (61.5%) had concordant pathology confirming RCC and 4 (30.8%) were discordant with benign pathology (3 oncocytomas and 1 granuloma). Overall, this resulted in a sensitivity of 0% [95% CI, 0.00% – 60.24%] and specificity of 88.9% [95% CI, 51.75% - 99.72%]. Positive predictive value is 0% and negative predictive value is 66.7%. See Table 1.

**Table 1. Two-by-two contingency table of sestamibi and pathology results.**

<table>
<thead>
<tr>
<th>Benign Pathology</th>
<th>Sestamibi High Uptake (n = 1)</th>
<th>Sestamibi No/Low Uptake (n = 12)</th>
<th>Sensitivity = 0.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Chromophobe</td>
<td></td>
<td>0 (0%)</td>
<td></td>
</tr>
<tr>
<td>1 Granuloma</td>
<td></td>
<td>4 (30.8%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Malignant Pathology</th>
<th>Sestamibi High Uptake (n = 1)</th>
<th>Sestamibi No/Low Uptake (n = 12)</th>
<th>Specificity = 88.9%</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Clear Cell RCC</td>
<td></td>
<td>1 (7.69%)</td>
<td></td>
</tr>
<tr>
<td>3 Papillary RCC</td>
<td></td>
<td>8 (61.5%)</td>
<td></td>
</tr>
<tr>
<td>1 Chromophobe RCC</td>
<td></td>
<td>38 (30.8%)</td>
<td></td>
</tr>
</tbody>
</table>

**Conclusions:** Current studies on sestamibi SPECT’s diagnostic utility are mixed with some showing it is a promising non-interventional predictor of benign renal masses, while others are more skeptical of its utility. Our study showed only a 67% chance of predicting RCC, which is less than previous studies. SPECT’s ability to predict benign pathology is still unclear. Thus, larger multi institution prospective studies that compare SPECT to pathology are warranted to better define the role of sestamibi SPECT as a tool to predict renal tumor pathology.

**Funding:** None.

**MP06-04** Determining Stone Growth and New Stone Formation on Longitudinal CT Scan Images: Automated Machine Learning Image Analysis in the PUSH Trial

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1Children’s Hospital of Philadelphia, 2University of Texas Southwestern Medical Center, 3University of Washington, 4Cleveland Clinic, 5National Institute of Diabetes and Digestive and Kidney Diseases, 6Duke University, 7University of Pennsylvania

Presented By: Gregory Tiasian, MD

**Introduction:** Kidney stone growth and new stone formation are clinically important outcomes and thus common endpoints in clinical trials. To date, manual review of CT scans has been necessary to identify kidney stones and determine stone growth and new stone formation, which is laborious and prone to human error. We sought to determine the performance of an automated machine learning algorithm to ascertain stone growth, new stone formation, and stone loss over longitudinal CT studies obtained in the Prevention of Urinary Stones with Hydration (PUSH) trial conducted by the Urinary Stone Disease Research Network (USDRN).

**Methods:** We evaluated the performance of a machine learning algorithm to determine pre-specified outcomes of stone growth and new stone formation on CT for the PUSH trial. Stones were defined as a cluster of voxels ≥8mm³ with Hounsfield Unit (HU) values higher than a threshold set to mean plus 4 standard deviations of HU values of all voxels within the kidney under consideration. We randomly selected 62 pairs of CT images at baseline and at the end of the 2-year follow-up from PUSH trial participants >18 years that represented four scenarios determined by the machine learning algorithm: 1) Growth of at least one existing stone by ≥2mm; 2) Formation of at least one new stone ≥2mm; 3) No stone growth or new stone formation; and,
MP06-05 Artificial Intelligence for Automated Renal Stone Quantification and Individual Stone Metrics from CT Data: Evaluation of Clinical Acceptability and Ease-of-use

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Introduction: Advancement of artificial intelligence (AI) in medicine requires algorithm development and validation, but also clinical integration of algorithm output. The purpose of this study is to evaluate the clinical acceptability and ease-of-use of the output of an internally developed AI program for automated stone quantification and individual stone metric reporting from CT data in patients with stone disease.

Methods: A stone quantification and reporting AI program was developed and implemented in the radiology clinical workflow at our center. It automatically segments kidneys, detects stones, and provides quantification of overall stone burden and individual stone metrics (diameter, volume, composition) from CT data. Output display was designed by radiologists, urologists, and AI scientists. It includes a kidney rendering showing stone presence and location as well as individual stone reports magnified in coronal and axial planes with stone size and composition (Fig 1). Three radiologists independently reviewed a series of 10 cases processed by the program. Number of stones averaged 3 (range 0 to 12). Reviewers evaluated the clinical acceptability of the program’s output compared to existing manual quantification, rated the quality of renal stone renderings, individual stone reports, and default window levels, and reported overall ease-of-use using a 5-point Likert scale. Scores were compared to assess inter-reviewer reliability.

Results: Program output is clinically acceptable with 96.7% of the renderings rated as acceptable. Pairwise class agreement among reviewers on acceptability of the stone rendering was near perfect with a Gwet AC1 ranging from 0.89-1.0. Ease-of-use and default window levels were rated acceptable with perfect agreement (1.0). Individual stone reports were rated acceptable in 83.3% of cases and showed pairwise agreement ranging from substantial to perfect (0.89-1.0). Agreement of stone satisfaction ranged from 0.65-0.89 with 90% of cases rated clinically acceptable. On the category of “Usefulness” 90% of the cases were rated acceptable with agreement ranging from substantial to almost perfect (0.75–0.89).

Conclusions: Output from an internal AI program for fully automated renal stone quantification and individual stone metrics is clinically acceptable and easy-to-use for automated quantitative analysis of urinary stone burden in the clinical practice.

Funding: None.

MP06-06 Does Deep Learning Reconstruction Improve Ureteral Stone Detection and Subjective Image Quality in the CT Images of Patients with Metal Hardware?

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Introduction: Interpreting CT scans in patients with metal hardware may be challenging due to the metal artifact causing image noise, particularly when lower radiation doses are utilized. Those with metal prostheses presenting with signs and symptoms of urinary stones may therefore pose a diagnostic challenge. The purpose of this study was to compare ureteral stone detection and image quality of CT scans with and without deep learning reconstruction (DLR) and metal artifact reduction (MAR), at different radiation doses in the presence of metal hip prostheses.

Methods: Ten urinary system combinations (each with a different combination of ureteral stones sized from 4-6 mm) were separately implanted into a cadaver with bilateral hip prostheses. Each set was scanned under two different radiation doses (Conventional Dose (CD) = 141 mAs and Ultra-low Dose (ULD) = 7.0 mAs). For each dose, two scans were obtained: one with DLR and MAR, and a second scan with no additional reconstruction. Utilizing a modified 5-point Likert scale, two blinded radiologists reviewed images and ranked each image in terms of Artifact, Image Noise, Image Sharpness, Overall Quality, and Diagnostic Confidence. The stone detection accuracy was determined at each setting.
Results: ULD with DLR and MAR resulted in significantly improved subjective image quality in all 5 measured domains (p < 0.05 for all) compared to ULD (Figure 1). Additionally, the subjective image quality for ULD with DLR and MAR was greater than the subjective image quality for CD in all 5 measured domains (p < 0.05 for all). The stone detection accuracy of ULD was significantly improved with the application of the DLR and MAR (p < 0.05). The stone detection accuracy of ULD with DLR and MAR was similar to the stone detection accuracy of CD (p > 0.05).

Conclusions: The application of DLR with MAR to ULD resulted in improved subjective image quality across all domains and provided sensitivity comparable to conventional dose CT for stone detection in patients with hip prostheses. Use of DLR with MAR may allow the application of low dose protocols in patients with hip prostheses.

Funding: None.

MP06-07 Is Completely Fluoroscopy-Free Retrograde Intrarenal Surgery Safe and Efficacious For Renal Stones?

Christopher Connors¹, Christopher Connors¹, Kavita Gupta¹, Raymond Khargi¹, Blair Gallante¹, William Atallah¹, Mantu Gupta¹

¹Icahn School of Medicine at Mount Sinai

Presented By: Christopher Connors, BA

Introduction: While there has been a movement towards minimizing the use of fluoroscopy during retrograde intrarenal surgery (RIRS), few techniques omit fluoroscopy throughout all aspects of the procedure. In this study, we evaluate the safety and efficacy of a completely fluoroscopy-free (FF) technique of RIRS (FF-RIRS) for renal stones.

Methods: In August 2024, we changed our technique of ureteroscopy to be totally FF. We prospectively collected data on the first 50 FF patients and compared them to a cohort of 25 prior patients who had undergone conventional RIRS (C-RIRS) who had CT follow up. In the FF technique, a flexible ureteroscope (Storz Flex-X2) is placed into the bladder then up the ureteral orifice using a no-touch technique. If too tight, a guidewire (Sensor™) is placed and passage is again attempted. If still too tight, dilation is done under direct vision to 10F. In over 95% of cases, this allows the scope to be placed into the ureter to complete ureteroscopy, renal mapping, and laser lithotripsy. The majority of cases are done stent-free, but if a stent is deemed necessary, an appropriately sized stent is placed over the guidewire with a flexible ureteroscope in the bladder observing stent deployment. Baseline characteristics, safety outcomes, and stone-free rates were compared between FF-RIRS and C-RIRS groups. Stone-free rates were assessed via CT scan in all patients 6 weeks postoperatively.

Results: There were no significant differences in demographics, comorbidities, stone burden, or stone composition between groups. In the C-RIRS group, median fluoroscopy time and effective dose was 9 seconds and 0.22 mSv, respectively. Median OR time was significantly shorter in the FF group (46 vs 60 mins, p = 0.004). There was no difference in complications (6% vs 8%, p = 1), ED visits (0% vs 4%, p = 0.33), or readmissions (4% vs 4%, p = 1) between FF-RIRS and C-RIRS groups. Both groups showed equivalent stone-free rates across all residual fragment (RF) categories including zero RF (FF-RIRS: 82% (41/50) vs C-RIRS: 80% (20/25)), RF < 3mm and RF ≥ 3mm, p = 1. Stent placement was lower in the FF group (14 vs 96%, p < 0.001). There were no failures to implement the FF technique in any patients.

Conclusions: Completely FF-RIRS is safe and efficacious in patients with renal stones and significantly decreases radiation exposure to both patients and healthcare workers.

Funding: None.

MP06-08 The RADPAD: Evaluation of a Novel Lead-Free Radiation Protection Shield and Comparison to Conventional Lead Apron

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¹Department of Urology, Loma Linda University Health

Presented By: Zhamshid Okhunov, MD
**Introduction:** Percutaneous nephrolithotomy (PCNL) routinely requires fluoroscopy which exposes the surgeon to ionizing radiation. Standard lead aprons and thyroid shields do not protect the head, arms, and legs. The RADPAD® is a novel lead-free shield that can be positioned directly in the surgical field to block scatter radiation. The primary objective of this study was to assess the effectiveness and added protection of the RADPAD® compared to conventional lead.

**Methods:** To simulate a PCNL, a radiographic phantom patient and a mannequin surgeon were utilized (Figure 1a). Using a real-time dosimeter, radiation doses were measured in μSv at seven distinct anatomical locations on the surgeon: head, neck, chest, abdomen, pelvis, forearm, and leg. Three shielding devices were evaluated (Figure 1b): a conventional lead apron with a thyroid shield (LATS), a double-thickness RADPAD® (R2), and a triple-thickness RADPAD® (R3). The effectiveness of combining LATS with R2 or R3 was also examined and compared to baseline (no lead). Five trials of five seconds of fluoroscopy were conducted for each site and shielding combination. The Mann-Whitney U test was used to compare exposures with p < 0.05 significant.

**Results:** LATS alone significantly reduced radiation exposure at all protected sites compared to baseline, reaching reductions >95% (p < 0.05). There was no protection by LATS to the head, forearm, and leg of the surgeon. Use of R2 or R3 alone significantly reduced radiation at all tested sites (p < 0.05) compared to baseline, except the legs. Compared to LATS alone, use of R2 or R3 significantly reduced radiation exposure to the head (up to 48%) and forearm (up to 84%; p < 0.05). Combining LATS with R3 resulted in the greatest reduction in radiation, performing significantly better than LATS alone at the head, pelvis, and forearm (p < 0.05). No single shielding device or combination significantly reduced radiation exposure to the legs.

**Conclusions:** The LATS alone reduced radiation >95% at shielded sites, but provided no protection to the head, forearm, and leg. Addition of the RADPAD® to conventional LATS functions as an effective and novel strategy that reduces radiation exposure at all measured sites except the legs, and provides important protection to the head and arms of the surgeon without increasing the weight burden.

**Funding:** None.

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**Introduction:** Surgical decompression of infected obstructive ureteral stones is a common urologic emergency requiring immediate attention. An incorrectly placed stent could result in life-threatening complications. Pulsed fluoroscopy has been shown to be safe in many elective urologic indications, but its safety has not been demonstrated in emergent kidney decompression. The purpose of this study was to compare surgical outcomes and radiation exposure between pulsed and continuous fluoroscopy during emergent ureteral stent placement.

**Methods:** A retrospective review was performed on patients requiring emergent ureteral stenting due to urolithiasis at a single institution from 2021 to 2023. Baseline demographics, surgical parameters, postoperative outcomes, and radiation exposure parameters were recorded and compared between stents placed using pulsed and continuous fluoroscopy. Chi-square test and t-test were used to compare outcomes, with p-value <0.05 considered significant.

**Results:** In the 117 patients who underwent emergent ureteral stent placement, pulsed fluoroscopy was utilized in 51 cases (43.6%). At baseline, there was no significant difference in age, sex, BMI, stone size, stone location, or laterality between the pulsed and continuous fluoroscopy groups. Obstruction and hydronephrosis were higher in the pulsed fluoroscopy group (98% vs 87.9%; p = 0.04). Operative times were similar between the two groups (19.1 vs 19.4 min; p = 0.86). In all cases with pulsed fluoroscopy, retrograde pyelography was performed and was adequate (100% vs 97%; p = 0.2). There was a significant reduction when using pulsed fluoroscopy in fluoroscopy time (8.6 vs 15.4 sec; p = 0.011), cumulative radiation dose (1.9 vs 4.6 mGy; p = 0.007), and dose area product (0.82 vs 1.7 Gy cm²; p = 0.023). All stents were inserted successfully with adequate renal decompression, and none required repositioning in either group. Postoperatively, there was no difference in ICU admission rates (3.9% vs 7.6%; p = 0.41), need for pressors (7.3% vs 13.6%; p = 0.32), overall complication rates (7.3% vs 4.5%; p = 0.44), or length of stay (4.1 vs 3.6 days; p = 0.56) between the pulsed and continuous fluoroscopy groups.

**Conclusions:** In experienced hands, pulsed fluoroscopy provides all information necessary to allow safe and efficient renal decompression. This study demonstrates another urologic procedure which can be safely performed using radiation reduction strategies in harmony with the As Low As Reasonably Achievable (ALARA) principle.

**Funding:** None.

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**Introduction:** Can Low Dose CT be Used for Diagnosing Stones in Obese Patients? A Multicenter Analysis

**Methods:**

**Results:**

**Conclusions:**

**Funding:** None.
Introduction: Obesity is a risk factor for both stone formation and recurrence. Following the ALARA (as low as reasonably achievable) protocol, low dose (LD) CT has been implemented for diagnosis of stones in many patient populations but is not traditionally recommended for obese patients (BMI >30 kg/m²). The purpose of this study was to evaluate the clinical utility of low dose CT scans in obese patients with nephrolithiasis.

Methods: A review of patients undergoing CT scans for kidney or ureteral stones at two academic institutions was conducted. Patients were included if their BMI was >30 and they had both a conventional and LD CT within 100 days of each other. LD was defined as dose-length product (DLP) <256 mGy*cm (<4 mSv). Those with interval treatment on the same side or documented stone passage were excluded. All scans were reviewed by a board-certified radiologist. Data were collected on radiation exposure, stone presence, location, and stone size. Paired comparisons were conducted using Wilcoxon signed rank test, with p < 0.05 considered significant.

Results: Thirty-eight patients met inclusion criteria with an average BMI of 36.1 kg/m² (range: 30.2-63.8) and an average duration of 55 days between CT scans. The average effective dose from LD CT was significantly lower than conventional CT (2.3 vs 13.1 mSv; p < 0.001). When compared to conventional CT, 67/75 stones (89.3% sensitivity) were seen on LD CT. All 8 stones (6 patients) missed on LD CT were ≤4 mm in size. The mean BMI in these patients where stones were missed on LD CT was 37.6 kg/m². None of the false negatives would have altered management. There was no significant difference in measurement of stone size between LD and conventional CT (average: 1.2 vs 1.14 cm; p = 0.2). The sensitivity for clinically significant stones (>4 mm) was 100%.

Conclusions: Low dose CT in patients with BMI >30 kg/m² accurately identified clinically significant stones while reducing risks associated with radiation exposure. These data suggest that LD CT can be considered to diagnose kidney stones in non-infected patients with BMI >30 kg/m².

Funding: None.

MP06-11 Urologists may Outperform Radiologists in NCCT Stone Size Measurement Accuracy

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Presented By: Israel Benzekry, MD

Introduction: Non-contrast computed tomography (NCCT) is the gold standard tool to define the size and location of stones in the urinary tract. Stone size plays a major role in the management of nephrolithiasis and ureterolithiasis according to both American and European guidelines. Therefore, precise stone measurements are a vital part of proper treatment. This study aims to assess discrepancies in measurements of urinary calculi on NCCT between urologists and radiologists and compare them to the exact size measured ex-vivo of stones removed or passed spontaneously.

Methods: Patients diagnosed with a stone in the urinary tract on NCCT were included in the study if during their hospital stay, the stone was removed complete via surgery (ureteroscopy, percutaneously, or cystoscopy) or passed spontaneously. The stones were manually measured using a caliper and were assessed using NCCT by a radiologist and a fellowship trained endourologist, both of whom were blinded to each other’s measurements and actual stone size. A multivariate linear regression analysis was conducted, and the root mean square error (RMSE) as well as the percentage of explained variance (R²) were used to compare the ability of the radiologist and urologist in predicting the maximal stone diameter and volume. Additional variables that might have contributed to a more accurate prediction of the stone’s size were assessed as well.

Results: The study included 21 patients with a total of 30 stones. The radiologist’s measurements of stone size were less precise than those made by the urologist (RMSE = 1.12 vs 0.86, R² = 0.78 vs. 0.86). Similarly, the assessment of stone volume by the radiologist showed a significantly lower predictive precision compared to the urologist (RMSE = 38.99 vs. 23.89, R² = 0.51 vs. 0.81). Of note, the higher the stone density on NCCT, the more precise measurement of the stone volume made by the radiologist. The presence of a ureteral stent or the stone’s location did not influence the accuracy (p-values of 0.11 and 0.24 respectively).

Conclusions: The urologist’s measurements of stone size on NCCT offered a more accurate assessment of the true stone dimensions and volume. These results underscore the importance of having a urologist review and assess the imaging before making any treatment decisions.

Funding: None.

MP06-12 Preoperative Myosteatosis and Peri-operative Hypochloremia: Unveiling Independent Risk Factors for 180-Day Complications After Radical Cystectomy

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Presented By: Wassapol Sornthai, MD

Introduction: Radical Cystectomy (RC) is a mainstay treatment for muscle-invasive bladder cancer (MIBC). However, this extensive treatment requires careful intraoperative care and prehabilitation for optimal outcomes. Recent studies have identified sarcopenia, myosteatosis, and serum markers like the systemic inflammation response index (SIRI) as factors influencing patient prognoses and susceptibility to postoperative complications. This study aimed to investigate the impact of preoperative myosteatosis, sarcopenia, and novel serum markers as potential predictors of postoperative complications within 180 days after radical cystectomy in patients diagnosed with MIBC.

Methods: A retrospective study was conducted on MIBC patients treated with RC at Siriraj Hospital, Bangkok, Thailand, between 2013 and 2023. Myosteatosis and sarcopenia were assessed within 3 months before surgery using cross-sectional computer tomography at the L3 spine level to calculate psoas muscle density (PMD), psoas muscle index (PMI), axial muscle density (AMD), axial muscle index (AMI), skeletal muscle density (SMD), skeletal muscle index (SMI), visceral fat density (VFD), and visceral fat index (VFI). Additionally, the age-adjusted Charlson comorbidity index (ACCI), immediate pre- and post-operative serum chloride levels, neutrophil-to-lymphocyte ratio (NLR), platelet-to-lymphocyte ratio (PLR), pre-operative Prognostic Nutritional Index (PNI), and SIRI were...
evaluated. Patients who received adjuvant chemotherapy or radiation were excluded, ensuring a minimum 180-day follow-up. Major complications were defined as those classified by the Clavien-Dindo classification grade 3-5 (CDC3-5). Cutoff points of myosteatosis were developed and evaluated using ROC curves.

**Results:** In the 6-month follow-up, 39 patients (30.7%) experienced major complications out of 127 included. 71 patients (55.9%) had ACCI > 4 at the time of surgery. Novel serum markers, including NLR, PLR, PNI, and SIRI, and sarcopenia were not associated with 180-day CDC3-5. Low PMD, SMD, and AMD, and immediate post-operative serum chloride level were significantly associated with CDC3-5 (odds ratio, 3.88, 3.01, 2.64, 0.846, respectively). Myosteatosis’s cutoff points were defined by PMD ≤ 43.5 (AUC 0.629), SMD ≤ 32.5 (AUC 0.623), and AMD ≤ 37.5 (AUC 0.626). Multivariable analysis revealed that patients with statistically significant lower PMD (p = 0.002) had more severe 90 and 180-day postoperative complications. Immediate post-operative hypochloremia (p < 0.001) was an independent risk factor for CDC3-5 at 90-and 180-day evaluations.

**Conclusions:** Myosteatosis, particularly at the psoas muscle, and immediate postoperative hypochloremia were associated with significant major complications up to 180 days in patients undergoing RC for bladder cancer.

**Funding:** -

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**MP07-01 Assessing Applicable Cutoffs for Tumor Volume: Pre and Post Radical Prostatectomy**

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Presented By: Yeagyeong Hwang, BS

**Introduction:** Current literature is conflicted on the role, if any, of tumor volume (TV) in predicting positive surgical margins (PSM) and long-term outcomes such as biochemical recurrence (BCR) or mortality (OM). The current study explores biopsy TV (bTV) and pathologic TV (pTV) concordance and predictors of oncologic outcomes.

**Methods:** Between 2006 and 2018, 1019 men underwent robotic radical prostatectomy by a single surgeon. Patients were excluded if they had neo-adjuvant or missing TV data (n = 446). Two cutoff levels for TV were compared at >20% (vs 1-19%) and >40% (vs 1-39%). Sensitivity and specificity analyses were performed. Logistic regression was utilized to find predictors of surgical and oncologic outcomes.

**Results:** Overall demographics for our patients are described in Table 1. Multivariate regression adjusting for preoperative PSA, age, and BMI are reported in Table 2. When comparing high (>40% TV) and low (>20% TV) cutoffs, the odds ratio for adverse disease is 2.33 vs. 2.59 for pathologic Gleason grade and 3.64 vs 3.13 for pathologic stage 3, respectively. In sensitivity analysis comparing biopsy to pathologic TV, utilizing a cutoff of 40% saw the highest sensitivity (0.82), positive predictive value (0.93) and accuracy (79.3%).

**Conclusions:** Our analysis shows the advantages of utilizing a 40% cutoff for bTV and pTV. This cutoff held better predictive value and accuracy in translating preoperative to postoperative TV. While both biopsy and pathologic TV are significant predictors or oncologic outcomes, pTV more accurately predicts adverse outcomes (PSM, Grade, Stage, BCR and OM). While bTV is a more practical tool for clinical use preoperatively.

**Funding:** None.

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**MP07-02 Application of Machine Learning in Pathomics Analysis of Whole Mount Histopathology for the Identification of High-Risk Pathological Tumor Features in Prostate Cancer**

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Presented By: Wen Liu, PhD

**Introduction:** To explore the utility of pathomics features and machine learning models in predicting high-grade prostate cancer, cribriform architecture, and PTEN expression loss in prostate cancer.

**Methods:** In our retrospective study, we enrolled prostate cancer patients who had undergone radical prostatectomy at our center. We categorized each patient’s pathological grade (high-grade: ISUP grade group ≥ 3 and low-grade: ISUP grade group ≤ 2), presence of cribriform architecture (present or absent), and PTEN expression status (expressed or lost) based on pathological whole slide images (WSI). Patients were randomly divided
into training and testing sets at a 7:3 ratio. Utilizing CellProfiler image analysis software, we identified cell and nuclear contours and extracted pathomics features from three levels: cellular, nuclear, and pathological image. Feature reduction was performed using T-tests, Pearson correlation coefficients, and LASSOregression, and the retained features were incorporated into eight machine learning algorithms: logistic regression, naive Bayes, support vector machine, random forest, extremely randomized trees, extreme gradient boosting, light gradient boosting machine, and multilayer perceptron, to construct pathomics models. Model performance was evaluated using ROC-AUC, accuracy, sensitivity, specificity, precision, and F1 score, and the best model for predicting various adverse pathological features was selected.

Results: This study comprised 329 patients, with tumor lesions delineated in 954 slides, generating 285,034 image patches. Among these, 202 patients were utilized to predict PTEN expression status. The high-grade group consisted of 100 cases (30.4%). The pathomics model, constructed using logistic regression, exhibited superior performance in identifying high-grade prostate cancer, demonstrating consistent efficacy in both the training set (AUC = 0.926, 95% CI 0.892–0.960, accuracy = 0.865) and the testing set (AUC = 0.826, 95% CI 0.736–0.916, accuracy = 0.828). In the cribriform architecture group, comprising 199 cases (60.5%), the pathomics model developed with the random forest algorithm showcased optimal performance in identifying cribriform architecture in prostate cancer. Specifically, in the random set, the AUC was 0.934 (95% CI 0.900–0.967) with an accuracy of 0.861, while in the testing set, the AUC was 0.853 (95% CI 0.776–0.929) with an accuracy of 0.808. However, for the PTEN expression loss group, the performance of pathomics models constructed with eight machine learning algorithms was suboptimal, with the testing set showing an AUC and accuracy below 0.7.

Conclusions: This study successfully developed identification models for high-grade prostate cancer and cribriform architecture using pathomics features, offering valuable insights for pathologists’ diagnostic processes. However, the efficacy of pathomics features in predicting PTEN expression in prostate cancer was found to be inadequate. Further refinement of research methodologies is warranted to elucidate the correlation between digital pathological images and molecular expression.

Funding: National High Level Hospital Clinical Research Funding (BJ-2023-105).

MP07-03 Single-Port Transvesical Radical Prostatectomy after Previous BPH Procedures: Surgical Technique and Clinical Outcomes

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Presented By: Carter Mikesell, MD

Introduction: The Single-Port (SP) robotic platform has been increasingly utilized for various urological procedures, including for robot-assisted radical prostatectomy (RARP) using a Transvesical (TV) approach. The SP system has many advantages including a short hospital stay, decreased post-operative pain, and an extraperitoneal approach. Radical prostatectomy after previous prostate surgery for benign prostatic hyperplasia (BPH) has been described as a more difficult procedure with longer operating room time, increased blood loss, and a higher complication rate. We aim to demonstrate our technique and clinical outcomes for SP TV RARP in patients with a history of prostate interventions for BPH.

Methods: In this study, we retrospectively analyzed and Institutional Review Board (IRB)-approved prospectively maintained database of patients who underwent SP TV RARP after prior prostate intervention for BPH. The study period was between 2022 and 2024. Patient clinicopathologic variables and perioperative outcomes were collected prospectively.

Results: Since 2020, we have performed SP transvesical RARP in 265 patients. Within our cohort, 6 patients diagnosed with NCCN intermediate risk, clinically localized prostate cancer had prior prostate surgery for BPH, including transurethral resection of the prostate (TURP), prostatic urethral lift (PUL), and photovaporization of the prostate (PVP). All cases were completed successfully without complications, conversion from a transvesical approach or the use of an additional port. These patients had median length of stay less of 12.4 hours, low pain scores at the time of discharge not requiring opioids at the time of discharge. Median urinary catheter duration was 4 days with a median time to continence of 105 days.

Conclusions: SP TV RARP can be safely and effectively performed in complex surgical patients, such as those with previous prostate interventions for BPH. SP TV RARP allows for easy identification of the ureteral orifices and an extraperitoneal approach to allow for fast recovery and a low complication rate.

Funding: None.

MP07-04 Early Oncological Outcomes Following Robot-Assisted Radical Prostatectomy with The Hood Technique vs. Standard Nerve Sparing Technique

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Presented By: Carter Mikesell, MD

Introduction: The Single-Port (SP) robotic platform has been increasingly utilized for various urological procedures, including for robot-assisted radical prostatectomy (RARP) using a Transvesical (TV) approach. The SP system has many advantages including a short hospital stay, decreased post-operative pain, and an extraperitoneal approach. Radical prostatectomy after previous prostate surgery for benign prostatic hyperplasia (BPH) has been described as a more difficult procedure with longer operating room time, increased blood loss, and a higher complication rate. We aim to demonstrate our technique and clinical outcomes for SP TV RARP in patients with a history of prostate interventions for BPH.

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Results: Since 2020, we have performed SP transvesical RARP in 265 patients. Within our cohort, 6 patients diagnosed with NCCN intermediate risk, clinically localized prostate cancer had prior prostate surgery for BPH, including transurethral resection of the prostate (TURP), prostatic urethral lift (PUL), and photovaporization of the prostate (PVP). All cases were completed successfully without complications, conversion from a transvesical approach or the use of an additional port. These patients had median length of stay less of 12.4 hours, low pain scores at the time of discharge not requiring opioids at the time of discharge. Median urinary catheter duration was 4 days with a median time to continence of 105 days.

Conclusions: SP TV RARP can be safely and effectively performed in complex surgical patients, such as those with previous prostate interventions for BPH. SP TV RARP allows for easy identification of the ureteral orifices and an extraperitoneal approach to allow for fast recovery and a low complication rate.

Funding: None.
Presented By: Narmina Khanmammadova, MD

Introduction: The Hood technique in robot-assisted radical prostatectomy (RARP) preserves critical periurethral anatomical structures within the preperitoneal space including endopelvic fascia, puboprostatic ligaments, anterior vessels, and detrusor apron. Early functional outcomes are superior to standard nerve-sparing (SNS). However, the oncological safety is not well reported, and many urologists prefer to use this technique only in low-risk patients. Herein, we describe our early oncological outcomes of the Hood technique compared to the SNS technique in RARP.

Methods: Data was collected from 212 patients who underwent RARP from May 2021 to March 2023. The following patients were excluded: preoperative history of focal/hormone/radiation therapy (n = 13); died before 1-year follow-up (n = 2), lost to follow-up (n = 21), and had PSA persistence (n = 30). Oncological outcomes of the 146 patients who were followed for at least 1 year were assessed, comparing SNS (n = 53) to the Hood technique (n = 93). Biochemical recurrence (BCR) was defined as a PSA value >0.2 ng/mL after RARP by at least two consecutive measurements. The BCR-free survival of the two groups was estimated using Kaplan-Meier curves.

Results: No differences in baseline demographics and tumor characteristics were observed between the two groups (Table 1). Of note, this cohort consisted of ~85% high and intermediate-risk patients. The median follow-up time was 17.5 (13–23) months. The surgical margin rates of the two groups were comparable (7.5% in the Hood group vs. 5.7% in the SNS group, p = 0.469). There was no significant difference in PSA persistence between the two groups (32.1% vs. 12.9%, p = 0.009), which could be explained by lead-time bias (i.e., longer follow-up time in the SNS group). 24-month Kaplan-Meier analysis (Figure 1) showed no difference in BCR-free survival between the two techniques (p = 0.4).

Conclusions: The Hood technique in RARP has similar early oncological outcomes compared to the standard NS technique.

Funding: None.

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Presented By: Michael Raver, BS

Introduction: Robotic-assisted radical laparoscopic prostatectomy (RARLP) is an effective treatment for prostate cancer but carries the risk of incontinence and erectile dysfunction. Single port (SP) RARLP offers a less invasive approach compared to multiport (MP) RARLP but there is minimal data on patient-reported outcomes. Our study compares postoperative erectile function, continence, and quality of life for SP and MP RARLP.

Methods: We queried a prospective IRB-approved single-center prostate cancer database for patients undergoing RARLP from June 2021 to July 2023. Demographics, as well as preoperative and postoperative data on Sexual Health Inventory for Men (SHIM), International Prostate Symptom Score (IPSS), International Consultation on Incontinence Questionnaire (ICIQ), and IPSS-Quality of Life (QOL) scores were collected. Patients with baseline SHIM less than 17 were excluded from the study. A RM-ANOVA was performed to compare the effect of SP versus MP approach on SHIM, IPSS, and QOL scores at 4–8 weeks and at 3, 6, and 12 months.

Results: 227 patients were assessed for QOL, 112 SP and 115 MP. 115 patients were assessed for SHIM, 55 SP and 60 MP. Demographics and perioperative characteristics are included in Table 1. There were no significant differences in postoperative IPSS or ICIQ scores. Graph 1 displays trends in postoperative QOL and SHIM scores. Postoperative SP QOL scores were less than MP on RM-ANOVA (p = 0.0006). On post hoc analysis, the difference between mean scores was significant at 3, 6, and 12 months (2.4 vs 3.1, p < 0.001; 2.0 vs 2.7, p = 0.007; 1.7 vs 2.3, p = 0.02). Postoperative SP SHIM scores were greater than MP on RM-ANOVA (p = 0.007). On post hoc analysis, the difference was only significant at 6 and 12 months (11.4 vs 7.9, p = 0.03; 13.9 vs 8.5, p = 0.003).
Conclusions: SP RARLP is associated with improved postoperative SHIM and QOL scores, with the improved return to erectile function observed up to a year after surgery. Further multicenter analysis to validate these findings is recommended.

Funding: None.

MP07-06 Single-Port Robotic Transvesical Partial Prostatectomy: A Novel Approach for Focal Treatment in Prostate Cancer

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Presented By: Nicolas Soputro, MD

Introduction: Given the favorable cancer-specific survival rates in localized prostate cancer and the negative impact of whole-gland treatments on functional outcomes, the field is moving towards precision strategies such as focal therapy and organ-sparing surgery. We aim to report medium-term functional and oncologic outcomes for the initial Single-Port Robotic Transvesical Partial Prostatectomy (SP-TVTRAPP) patient cohort.

Methods: We analyzed a prospectively maintained database of 20 patients who underwent SP-TVTRAPP between February 2020 and March 2024. Inclusion criteria were PSA ≤ 10 ng/mL, clinical stage ≤ cT2b ISUP Grade Group ≤ 3, unilateral lesions on mpMRI with positive biopsy cores on the same side, and pre-operative IIEF-5 ≥17. We also considered bilateral prostate cancer in the anterior zone and invisible mpMRI tumors confirmed by unilateral positive biopsies.

Results: At baseline, patients had an average age of 61 years, a median PSA of 4.8 ng/mL (interquartile range [IQR] 3.7-7.7), and a median SHIM score of 24 (IQR 18-25). All procedures were completed without complications, need for additional ports, or conversion. Following a median hospital stay of 4.2 days, 94% of cases were discharged without opioid prescriptions, and Foley catheters were removed after approximately 4 days. At 6 weeks, 3 months, 6 months, and 12 months post-procedure, potency rates, defined as a SHIM score ≥ 17, were 45.0%, 77.7%, 83.3%, and 87.5%, respectively. When potency was defined as having erections sufficient for penetration, the rates were 80.0%, 88.8%, 88.8%, and 93.7% for the same time intervals. Regarding urinary function, 60.0% were continent at 1 week, increasing to 85.0% by 6 weeks, 88.8% at both 3 and 6 months, and reaching 93.7% at 12 months post-surgery. Oncologically, 30.0% experienced upgrading and 40.0% upstaging within this cohort. Negative surgical margins were attained in 85.0% of the cases and the median PSA was 0.4 ng/mL twelve months after SP-TVTRAPP. Two men were diagnosed with residual GG1 cancer in the protocol biopsies and are currently on active surveillance. At a mean follow-up of 15.5 months (0.2-34.8) months, none of the patients has required secondary interventions, and all remain free of both clinically significant residual prostate cancer and metastatic disease.

Conclusions: SP-TVTRAPP represents a promising treatment for certain patients with localized prostate cancer. This targeted surgical method has been associated with a faster postoperative recovery and has demonstrated high rates of early recovery in erectile function and urinary continence, while ensuring oncologic safety.

Funding: None.

MP07-07 Comparison of da Vinci and Hinotori Surgical Robot Systems and the Hugo Robotic-Assisted Surgery System for Robot-Assisted Radical Prostatectomy

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Presented By: Hiroshi Yamane, MD

Introduction: In recent years, several surgical assistive robots have been developed and are widely used in Japan. This study compared the surgical outcomes of robot-assisted radical prostatectomy (RARP) using the da Vinci, hinotori, and Hugo robot-assisted surgery systems.

Methods: Patients who underwent RARP for prostate cancer at the Tottori University Hospital between April 2022 and February 2024 were included in this study. The patients were divided into three groups: da Vinci, hinotori, and Hugo. We retrospectively compared the patient backgrounds, surgical outcomes, and perioperative results among the three groups. The chi-square test and Kruskal–Wallis test were used for statistical analyses.

Results: The 149 patients included 87, 49, and 13 in the da Vinci, hinotori, and Hugo groups, respectively. There were no significant differences in patient backgrounds among the three groups. The median operative time was 285.0 minutes for da Vinci, 343.0 minutes for hinotori, and 280.0 minutes for Hugo group, with Hugo significantly shorter (p = 0.002). Median docking time was 7.0 minutes for da Vinci, 13.0 minutes for hinotori, and 16.0 minutes for Hugo, with da Vinci significantly shorter (p < 0.001). There were no significant differences in blood loss or perioperative complications among the three groups.

Conclusions: There were no significant differences in postoperative complications among the three groups, and surgery was safely performed in each group. The da Vinci had a shorter docking time and shorter time to start the console than the hinotori and Hugo.

Funding: No funding.
**MP07-08 Clinical Experiences of Laparoscopic Radical Prostatectomy using Japanese Surgical Robot HINOTORI First 66 Cases in a Single Hospital**

H. Mukouyama, H. Nakasone, K. Tsujimura, T. Okegawa, T. Inamoto, J. Inoguchi

**Methods:** We conducted a retrospective analysis on 92 consecutive patients operated on using the da Vinci surgical system at our institution.

**Introduction:** The Hinotori surgical support robot was commercialized on September 2020 and introduced to our hospital on February 2022. Primary experiences are going to be reported.

**Methods:** A retrospectively checked medical charts which were comprising all medical records of the first 66 consecutive patients undergoing a robot-assisted laparoscopic prostatectomy using HINOTORI. From February 2022 through February 2024, we operated 66 patients who diagnosis organ confined prostate cancer. The mean age was 69.0 years (range: 55 to 81), and all patients were ECOG-PS 0 or 1, their PSA level were under 20. And one patient’s total Gleason score was 10, 4 patients were 9, 15 patients were 8, 28 patients were 7, the others were 6.

**Results:** Mean operating time was 322 minutes (range: 199 to 586). No serious complications had been observed.

**Conclusions:** HINOTORI is the one which has four robot arms, the arm has eight-axis so the movements are sophisticated and smoothly just like human arms. We would like to continue and accumulated robot-assisted laparoscopic operations which are not only prostate but also the others using HINOTORI.

**Funding:** None.

**MP07-09 An Analysis of Financial and Surgical Outcomes of Robot Assisted Radical Prostatectomy: Hinotori™ vs. da Vinci Xi**


**Introduction:** The Hinotori surgical system, the first robot-assisted surgery system developed in Japan, received Japanese regulatory approval in August 2020. Robotic surgery, primarily using the da Vinci surgical system, has become widespread in various surgical procedures worldwide. However, there remains insufficient evaluation of the safety and medical costs associated with the use of the Hinotori surgical system. The aim of this study was to assess the safety and medical costs differences of robot-assisted radical prostatectomy (RARP) between patients operated on using the da Vinci Xi and Hinotori™ robotic system at our institution.

**Methods:** We conducted a retrospective analysis on 92 consecutive patients with prostate cancer who underwent RARP with the da Vinci Xi surgical system (da Vinci group: 43 patients) and the Hinotori™ surgical system (Hinotori group: 49 patients) between July 2022 and December 2023. To evaluate the surgical safety and medical cost in detail, we used an electronic medical record system with the Diagnosis Procedure Combination (DPC), widely applied for standardizing and transparency in the Japanese healthcare system.

**Results:** Both groups did not differ significantly in baseline characteristics. For surgical safety, there were no significant differences between the two groups in measures such as estimated blood loss, complications during surgery, major complications after surgery (Clavien-Dindo grade 3 or 4), or length of hospital stay. However, in the Hinotori group, both mean operative and console times were significantly longer than those in the da Vinci group (363 vs. 270 minutes, p < 0.001 and 268 vs. 205 minutes, p < 0.001, respectively). For medical costs, according to DPC data, there was no difference between the two groups in surgical procedure fee (¥1,569, 170 vs ¥1,570, 798, p = 0.824), drug administration fee (¥37, 572 vs ¥39, 457, p = 0.959), and consumable material fee (¥9, 321 vs ¥9, 366, p = 0.129).

**Conclusions:** Our results suggest that despite the longer surgical duration, the Hinotori surgical system could provide equivalent safety and medical costs to those of the da Vinci® Xi system for patients undergoing RARP. Further research is required to apply the Japanese-developed Hinotori™ surgical system to various types of surgeries.

**Funding:** None.

**MP07-10 Regret Analysis in Discharge Pathway Selection Following Robot-Assisted Radical Prostatectomy**


**Introduction:** Same-day discharge (SDD) is a new approach in the practice of robot-assisted radical prostatectomy (RARP). However, some patients may prefer an overnight hospital stay. We evaluated patients’ perspectives toward the discharge process following RARP.

**Methods:** A 24-question survey was distributed to 385 patients who had RARP between June 2020 and June 2023. 186 (48%) patients responded to the survey. Any overnight stay was considered inpatient. To differentiate between high and low regret scores (RS), a threshold score of 15 was employed. A score of 0 signifies no regret, and 100 reflected absolute regret.

**Results:** Table 1 presents patient demographics and clinical features. The median RS showed no significant difference between the SDD (n = 101) group and the inpatient (n = 75) group (both: 0 (0 – 5), p = 0.963). 17% of all participants experienced high RS. Both SDD and inpatient groups had 17% of participants with high RS (p = 0.963). The inpatient group was older (p = 0.025), had higher disease grades (p = 0.011), and had longer surgery time (p < 0.001). The lower RS group reported higher levels of education, notably in the SDD group (p = 0.002, p = 0.023, respectively). The most frequently mentioned complaints were post-operative pain and catheter discomfort. Patients with higher RS reported not receiving enough explanation regarding
the discharge process and treatment (p < 0.001, both). The rate of confusion regarding admission/discharge in the SDD group was higher with high RS compared to their low RS counterparts (p = 0.003). Patients in the high RS groups of both pathways reported a greater frequency of clinic visits (p = 0.038), and those in the inpatient high RS subgroup experienced a higher incidence of emergency room visits within the first week post-operation (p = 0.024).

Conclusions: There were no differences in regret scores after inpatient or SDD RARP. Factors contributing to increased RS included lower education level and perceptions of insufficient explanation of the discharge pathway. Clear preoperative counseling to set proper expectations on admission/discharge is key to patient satisfaction.

Funding: None.

MP07-11 Single Session of Robotic-assisted Radical Prostatectomy following Targeted biopsy with Frozen section in High Risk Prostate Cancer

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Presented By: Tae Young Park, MD

Introduction: Diagnosis and treatment of prostate cancer (PCa) have been performed by separated pathway through biopsy and prostatectomy. Although high diagnostic accuracy of multiparametric magnetic resonance imaging (mpMRI), a biopsy-free therapeutic pathway in PCa is limited due to uncertainty with missed diagnosis. To evaluate the validity of single session diagnosis and treatment of PCa, we investigated the impact of only targeted biopsy (TB) with frozen section, and sequential robotic-assisted radical prostatectomy (RARP).

Methods: The single session of TB with frozen section and sequential RARP were performed in 21 patients, who had suspicious high risk PCa including Prostate Imaging-Reporting and Data System (PI-RADS) 5 lesion on mpMRI and prostate-specific antigen level >20 ng/ml. We utilized transperineal 2 core TB and frozen section providing immediate results to mitigate the risk of uncertainty.

Results: The mean immediate results reporting time (SD) of TB frozen section were 15.1(3.8) minutes. All of patients in final specimen pathology were significant PCa; grade group 3: 8 (38.1%); grade group 4: 7 (33.3%); grade group 5: 6 (28.6%). Of the 21 patients, 7 (33.3%), 4 (19.1%) and 10 (47.6%) had stage pT2, pT3a and pT3b disease, respectively. Positive surgical margins were reported in 5 of the 21 (23.8%) patients in the final pathology report, including 1 of 7 (14.3%) with stage pT2 and 4 of 14 (28.6%) with ≥pT3. No intraoperative complications or blood transfusions were reported.

Conclusions: The single session of TB with frozen section and RARP could provide the immediate treatment without uncertainty and complications of prostate biopsy.

Funding: None.

MP07-12 Clinical study on Extraperitoneal approach in Robot-Assisted Radical Prostatectomy – Compared to Transperitoneal Approach

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Presented By: Atsushi Igarashi, MD

Introduction: A comparative study was conducted on the perioperative outcomes of Transperitoneal Approach (Tp) and Extraperitoneal Approach (Ep) in robot-assisted radical prostatectomy (RARP).

Methods: Among 950 cases of RARP performed between January 2014 and April 2023, 355 Tp with extended lymph node dissection (ELND) and 539 EP without ELND were included for evaluating perioperative outcomes and complications within 3 months. ELND was undergone for patients whose risk of lymph node metastases was over 5 – 10% according to the preoperative Briganti nomogram. For cases categorized as high risk or above according to the NCCN classification after 2017, neoadjuvant therapy with Degarelix and Estramustine was administered for 6 months preoperatively, followed by Ep without ELND. Total anatomical reconstruction (TAR) was performed in all cases after July 2016. Propensity scores were calculated with age, BMI, American Society of Anesthesiologist (ASA) score, prostate volume (PV), number of surgeries by expert surgeons, nerve preservation or not, TAR or not, presence of diabetes mellitus (DM), and oral antithrombotic medication as covariates. 1:1 nearest-neighbor propensity score matching (PSM) was employed.

Results: There were no significant differences between the two groups regarding age, BMI, ASA scores, number of DM, oral antithrombotic medication, and TAR. On the other hand, PV, PSA levels, Grade Group ≥3 at biopsy, CT stage >2, cases without nerve preservation, and number of surgeries by expert surgeons were significantly higher in Tp. PSM yielded a population of 321 cases each. As the table shows, after PSM, the median blood loss was 100 in Tp vs. 200 ml in Ep (p < 0.001), time for port placement was 20 vs. 35 minutes (p < 0.001). The rate of Clavien-Dindo Grade III or higher complications was 3.6% in Tp (13 cases), including 4 port-site hernias, 4 infectious lymphoceles, 3 intestinal injuries, 1 internal hernia, and 1 strangulated ileus. In contrast, only 1 intestinal injury was observed in Ep during specimen removal. The peritoneum was injured in 96 of the Ep, but the operation was completed without changing the approach.
Conclusions: Ep RARP, despite significantly increasing port placement time and blood loss, remains a safe procedure with fewer severe complications.

Funding: None.

MP07-13 Robotic-Assisted Radical Prostatectomy with Combined Urethral Suspension and Intra-Peritonealizing Tuck: An Early Institutional Experience

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Presented By: Naveen Pokala, MD

Introduction: Cancer control, erectile function and urinary continence are the most important outcomes after robotic-assisted radical prostatectomy (RARP). Lymphoceles are problematic and are the most common complication after pelvic lymph node dissection (PLND). We made a technical modification to our urethral suspension that incorporates an intra-peritonealizing bladder tuck. Our hypothesis is that this alteration in technique will reduce symptomatic lymphoceles while preserving early continence rates.

Methods: We performed a retrospective analysis of patients at a single institution who underwent RARP with PLND and had a urethral suspension. The intervention arm had the modified procedure of urethral suspension and intra-peritonealizing tuck. The two groups were compared for demographics, pre- and post-operative pathological characteristics, and peri-operative complications. For binary outcomes, univariate analysis was performed using the Fisher’s exact test. For ordinal outcomes, the Wilcoxon rank-sum and Kruskal-Wallis tests were applied. The primary outcome was symptomatic lymphocele rates, and the secondary outcome was continence rates at two months, as measured by mean response to the questionnaire (1.93 vs 2.19, p = 0.08) and for frequency of each response (p = 0.16).

Conclusions: Urethral suspension with bladder tuck significantly decreases symptomatic lymphocele rates without compromising early continence rates after robotic-assisted laparoscopic radical prostatectomy with pelvic lymph node dissection.

Funding: None.

MP07-14 Initial Experience on Extraperitoneal Single-site Robot-assisted Radical Prostatectomy with Extended Pelvic Lymph Node Dissection

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Presented By: Di Gu

Introduction: Limited data are available on the feasibility of extraperitoneal single-site robotic assisted radical prostatectomy (ess-RARP) with extended pelvic lymph node dissection (ePLND). Symptomatic lymphoceles continue to be a serious complication of essRARP, and there is still no efficient way to prevent it. We aim to describe our surgical technique and initial experience of essRARP with ePLND and summarize its effectiveness.

Methods: 31 patients underwent essRARP with ePLND from June 2023 to December 2023 at a single center. All patients had high-risk localised or locally-advanced prostate cancer and had very high risk for lymph node invasion (LNI), defined by the EAU 2023 Guidelines. Very high risk for LNI was defined as 30% risk for LNI, as calculated by the Briganti 2017 nomogram. Surgery was performed using the Da Vinci Xi system. ePLND includes removal of the nodes overlying the external iliac vessel, the nodes within the obturator fossa located cranially and caudally to the obturator nerve, and the nodes medial and lateral to the internal iliac artery. We performed fenestration of the peritoneum at the completion of the case to allow for transperitoneal reabsorption of the lymphatic fluid to prevent lymphocele accumulation.
Results: Overall, 31 patients received essRARP with ePLND, reporting a median (interquartile range [IQR]) number of nodes removed of 23 (18-29). Median operative time was 210 min (IQR 185-226). Median console time was 150 min (IQR 136-170). Median hospital stay was 7 day (6-8). Lymph nodes invasion was found in 7 (22.58%) patients. Median pelvic drainage volume was 315 ml (IQR 130-590) and median catheter duration was 170 (IQR 185-226). Median console time was 150 min (IQR 136-200) removed of 23 (18-29). Median operative time was 210 min (IQR 200-250).

Conclusions: For high-risk prostate cancer, essRARP+ePLND is a safe, feasible and effective option, with excellent perioperative results and oncologic outcomes are observed at short-term follow-up.

Funding: None.

MP07-15 Robotic Simple Prostatectomy Followed by Radiation Therapy Versus Robotic Radical Prostatectomy: Propensity Matched Analysis of a Treatment Pathway for Men with Prostate Cancer and Prostatomegaly

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Presented By: Daniel Segal, MD

Introduction: Radiation Therapy (RT) and Robotic-Assisted Laparoscopic Prostatectomy (RALP) remain the standard of treatment for men with clinically significant localized prostate cancer (PCa). Prostatomegaly in this scenario presents a challenge and is thought to result in worse functional outcomes for men undergoing treatment. We explore a novel treatment pathway of robotic assisted simple prostatectomy (RASP) followed by RT to decrease urinary toxicity to patients with large prostates (≥80cc).

Methods: A retrospective review was conducted of patients who underwent RASP then RT at our institution. Propensity scoring based on demographic, clinical, and imaging features was performed to generate a one-to-one matched cohort of patients managed with RALP as a primary treatment for PCa. Operative data, oncologic outcomes and urinary functional outcomes were collected.

Results: From 2016-2021, 13 patients underwent RASP then RT (intensity-modulated radiation therapy, median 25 fractions [IQR 20-35], total 6000Gy [IQR 4500-7280]) for PCa. This was matched with 13 patients that underwent RALP alone. Median prostate volume in each group was 135cc. The operative time for RASP cases was significantly shorter than for RALP cases: 126 minutes (IQR 116-186) vs 315 minutes (IQR 291-353), p < 0.001. Oncologic and safety outcomes did not differ significantly. No patients in the RASP cohort demonstrated SUI at any point compared to 92% and 88% of RALP patients at 3 and 6 months respectively.

Conclusions: We describe a treatment pathway for patients with prostate cancer and prostatomegaly (≥80cc) involving RASP then RT. We demonstrated improved urinary outcomes with SUI rate of 0% in our pathway. There were no significant oncologic or safety differences between the groups. Due to the inherent difficulty in performing RALP on larger prostate glands a surgeon may prefer to use this pathway of RASP followed by RT for large prostates in patients whom urinary functional outcomes are important.

Funding: N/A.

MP07-16 WITHDRAWN
Results: A total of 185540 patients were included. The physician’s recommendation of CDS was significantly influenced by the patient’s age, race, income, home location, diagnosis year, Gleason score, prostate-specific antigen (PSA), and TNM stage. About 5.6% PCa patients refused CDS, most of whom were older, non-White race, lack of partners, living outside of metropolitan areas, with higher PSA or lower clinical TNM stage. Patients who refused CDS had an increased risk of cancer-specific mortality and overall mortality than those who performed CDS.

Conclusions: Physicians may weigh a host of sociodemographic and clinical factors prior to making a CDS recommendation. Patients’ refusal of recommended CDS affected survival and was potentially modifiable by certain sociodemographic factors. Physicians should fully consider the hindrances behind patients’ CDS refusal to improve patient-doctor shared decision-making, guide patients toward the best alternative and achieve better outcomes.

Funding: None.

MP07-18 Association Between Alcohol Intake and Prostate Cancer Risk: Results from National Health and Nutrition Examination Survey 2001-2010 and Mendelian Randomization Analyses

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Presented By: Weisi Chen

Introduction: Nowadays, the prostate cancer (PCa) incidence is increasing, which has been attracted all over the world. Researchers were searching the risk factors and protective factors of the incidental of PCa. Several researchers had found that alcohol intake maybe affected on prostate cancer incidence. However, the relationship between alcohol intake frequency and prostate cancer risk remains unclear and complicated. We use National Health and Nutrition Examination Survey (NHANES) database and Mendelian randomization (MR) to analyze and study the relationship between alcohol intake and PCa incidence.

Methods: We conducted an observational study using data from NHANES from 2001-2010. Frequency of alcohol intake was derived from drinking questionnaires, and then weighted multivariate adjusted logistic regression was used to evaluate the correlation. The data of mendelian randomization was extracted from the genome-wide association study (GWAS). We analyzed alcohol intake frequency (n = 462346) and PCa (n = 140254) from Europe population while alcohol intake frequency (n = 2658) and PCa (n = 5408) from East Asian population. We used inverse-variance weighted (IVW), weighted median and MR-Egger analyses as analysis and Cochran’s Q test, MR-Egger intercept and the leave-one-out sensitivity to verified the result.

Results: We had enrolled 7435 individuals (weighted = 56, 733, 088) in the observational study of NHANES. Studies on NHANES have shown no link between coffee and prostate cancer. The IVW method shown that alcohol intake frequency was linked with the incidence of PCa in Europe population (OR = 0.116; 95% CI: 0.0137; p = 0.0481; β = -2.153; se=1.089), which maybe a protect factor in PCa incidence. While there seems no link with the incidence of PCa in East Asian population (OR =
1.002; 95% CI: 0.95; p = 0.937; \beta: 0.002; se: 0.027). The weighted median and the weighted mode shown similar results in Europe population (p < 0.05). Besides, Cochran’s Q test and leave-one-out sensitivity tests also verified that the MR result was convincing.

**Conclusions:** Alcohol intake links with PCa incidence. Our results shown that the alcohol intake maybe a protective factor to PCa incidence. But we supposed that whether alcohol intake frequency is a protective factor or a dangerous factor depended on the frequency of alcohol intake.

**Funding:** None.

**MP07-19 Cost Analysis of Inpatient vs. Same-Day Discharge Pathway for Robot-Assisted Radical Prostatectomy**

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Presented By: Daniel Jiang, MD

**Introduction:** Same-day discharge (SDD) following robot-assisted radical prostatectomy (RARP) may reduce healthcare expenses while maintaining excellent perioperative surgical outcomes. While some surgeons have begun to adopt this strategy, the extent of cost reduction and impact on profitability are not well-defined. We performed a cost analysis to assess the differences in expenditures and revenue between inpatient RARP and RARP with SDD.

**Methods:** After receiving approval from the IRB, data was prospectively gathered from 258 consecutive patients who underwent RARP at a single center from May 2021 to August 2023 including pre-operative, intra-operative, and post-operative patient and tumor characteristics. Any overnight stay after surgery was classified as inpatient. The finance and billing department of the hospital conducted the data acquisition for charges, direct costs, total costs, net revenue, contribution margins, and profit.

**Results:** During the study period, 224 (86.8%) patients underwent successful SDD while 34 (13.2%) patients had an inpatient stay. No significant differences were observed in the pre-operative, intra-operative, and post-operative metrics between the SDD group and inpatient group, including comparable readmission rates, emergency department visits, and calls/messages to providers (Table 1). On average, the total costs for patients undergoing RARP with SDD were $15,875 (54.6%) less than those for inpatient RARP with total charges also reduced by $69,790 (53.6%) per patient. The revenue as a percentage of total cost was notably higher for SDD (150% vs 125%). However, the profit margin, calculated as net revenue minus total cost, was found to be 9.1% lower for SDD RARP.

**Conclusions:** SDD following RARP leads to a reduction in total costs and charges by more than 50%, with comparable profit margins compared to inpatient RARP. This cost efficiency was accomplished without compromising peri-operative outcomes, evidenced by equivalent rates of readmissions and emergency department visits. SDD for RARP is an opportunity to alleviate the economic strain of robotic surgery while sustaining both peri-operative outcomes and profitability.

**Funding:** None.
Conclusions: Our cases highlight the challenging nature of minimally invasive TPE for symptomatic LAPC. Despite its complexity, these techniques prove viable and valuable in managing LAPC-related symptoms, emphasizing their practical utility in clinical settings.

Funding: None.

MP07-21 Urinary Continence following Radical Prostatectomy: Perfect Continence vs Occasional Dribbling in Pad-Free Men

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Presented By: Yeagyeong Hwang, BS

Introduction: Assessing the return of urinary continence after a radical prostatectomy is pivotal for a patient’s quality of life. Previously, we established that more than two-third of our men who report being pad-free have occasional incontinence. Characterizing men with complete control and those with occasional incontinence may potentially provide crucial information for physicians to provide meticulous care of these patients.

Methods: Robot-assisted radical prostatectomy (RARP) was performed on 209 consecutive patients under a single surgeon from 2016 to 2023. Patients with zero-pad continence and complete follow-up data were included. Data on self-administered American Urological Association symptom score (AUAss) and continence questionnaires (EPIC) were prospectively collected preoperatively and 3 months following surgery. T-test was performed to compare time to urinary continence in pad-free men with perfect continence versus occasional dribbling.

Results: Of the 209 men, 86 were “perfect” who reported never leaking, and 123 were “imperfect” with occasional leakage but no pads. Compared to the “perfect” group, the “imperfect” group had higher AUAss and bother scores both preoperatively (p = 0.003) and postoperatively (p < 0.001). At 3-month post-op, the largest change in AUAss was observed in weak stream, intermittency, and straining in both groups. Overall, the “perfect” group became continent much quicker (median 9.0 versus 17.0 days; P = 0.037).

Conclusions: 59% of men who report being pad-free at 3-months following a RARP have occasional urinary leakage. On average, “perfect” group had greater improvements in the urinary quality of life and individual AUAss. The “imperfect” group takes longer to become continent and there appears to be a close association with recovery time and change in continence over time. These findings suggest that patients with “imperfect” continence should be examined and explored to improve the prognosis of these patients.

Funding: None.

MP07-22 Extraperitoneal Single-site versus Multiports Robot-assisted Radical Prostatectomy with Pelvic Lymph Node Dissection

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Presented By: Di Gu

Introduction: Existing studies have demonstrated that high-risk prostate cancer patients are more prone to experience lymph node metastasis. However, limited data are available on the feasibility of single-site extraperitoneal robotic assisted radical prostatectomy (ssRARP) simultaneously with pelvic lymph node dissection (PLND). We aim to describe our surgical technique and initial experience of single-site extraperitoneal robotic assisted radical prostatectomy (ssRARP) simultaneously with pelvic lymph node dissection (PLND) and summarize its effectiveness.

Methods: From May 2020 to September 2023, retrospective surgical data from 114 consecutive prostate cancer patients who underwent RARP were included in the study, all performed by a single surgeon at a single center. These 94 patients were categorized into two groups based on the surgical approach: 62 patients in the ssRARP+PLND group (research group), 32 patients in the mpRARP+PLND group (control group). The perioperative outcomes used for comparison consisted of age, initial PSA levels, initial TNM stage, Gleason scores, operative time, blood loss, length of hospital stay, complications, postoperative pathological stage, surgical margins, number of lymph nodes removed, number of positive lymph nodes, postoperative pelvic drainage volume, time before catheter removal and urinary continence rates.
Results: All patients underwent surgery successfully. The baseline data of four groups showed no statistical differences (p > 0.05). In the perioperative data, research group exhibited statistically significant differences in median operative time (176 min) and median blood loss (50 ml) when compared to the control group (208 minute; 50 ml) (p <0.05). Additionally, the average length of hospital stay (9 days) was shorter in the research group compared to the control group (10d) (P <0.05). It is important to note that there were no statistically significant differences (P > 0.05) in the number of lymph nodes removed between the study groups (13) and the control groups (14.5). Furthermore, there were no differences (P > 0.05) between the research and control groups in terms of surgical margins, catheter removal, immediate urinary continence rates, and perioperative complications. It is remarkable that our initial series of ssRARP procedures encountered a relatively higher incidence of lymphoceles (14 patients). In order to mitigate the accumulation of lymphatic fluid in the extraperitoneal space, we adjusted our technique to include fenestration of the peritoneum at the completion of the case to allow for transperitoneal reabsorption of the lymphatic fluid to prevent lymphocele accumulation and subsequent infection. Subsequent to this modification, we have not observed any cases of symptomatic lymphoceles, including in ssRARP+PLND. However, it is undeniable that our study is limited by its retrospective nature and by the follow-up duration.

Conclusions: For high-risk prostate cancer, ssRARP+PLND is a safe, feasible and effective option, with excellent perioperative results and oncologic outcomes are observed at short-term follow-up. Additionally, compared to mpRARP, the single-site approach has advantages in terms of operative time, blood loss, and length of hospital stay.

Funding: None.

MP07-23 A Rare Case of Prostate Cancer Complicated by Urethral Stricture Treated with Robotic-Assisted Radical Prostatectomy using the Novel Hinotori Surgical Robot System and Perineal Urethrostomy

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Presented By: Shinro Hata, MD, PhD

Introduction: Pyoderma gangrenosum is a disease characterized by chronic and recurrent necrotizing skin ulcers, predominantly affecting the lower leg extensor side and rarely occurring in the genital area. Herein, we report a case of prostate cancer with urethral stricture due to pyoderma gangrenosum which was treated with robot-assisted radical prostatectomy (RARP) and perineal urethrostomy formation.

Methods: The patient was a 76-year-old male. Five years ago, he visited a previous physician with complaints of ulceration of the glans penis and penile pain. A fistula between the ulcer and the urethra was identified on the retrograde urethrography, and a percutaneous cystostomy was created. Four years ago, he was referred to our department for further evaluation and treatment. Biopsies of the ulcer and the urethral stricture revealed granulation tissue. Due to severe penile pain, oral prednisolone was initiated as diagnostic therapy, resulting in pain relief and ulcer improvement. We diagnosed the urethral stricture due to pyoderma gangrenosum, and prednisolone was gradually tapered with plans for urethroplasty. One year ago, he was diagnosed with prostate cancer with a Gleason score 4+4 adenocarcinoma (cT2aN0M0). We decided on a one-stage surgical approach for prostate cancer and urethral stricture.

Results: In April of the current year, RARP using the novel hinotori surgical robot system and Blandy perineostomy were performed. The endopelvic fascia was incised and the adhesions around the urethra were found to be mild, allowing for perineal urethrostomy creation after cystostomy removal. An inverted-U incision was made in the perineum, the urethra was opened on the ventral side, and a catheter was inserted. The urethral mucosa and dermis were sutured to form the urethral neo-meatus. PSA level was undetectable one month postoperatively. Urinary incontinence improved to the level of using safety pads nine months postoperatively.

Conclusions: The hinotori surgical robot system is very useful for one-stage surgery such as in this case because it allows simultaneous robotic and perineal procedures, and its unique docking-free design keeps the area around the ports neat. The perineal urethrostomy was performed using a non-transecting technique, preserving urethral blood flow by only opening the ventral side of the urethra. The Blandy technique was chosen for its ability to create a large urethral meatus with minimal risk of meatal stricture.

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MP08-01 Two Pathways of Calcium Oxalate Stone Formers Have Differing Risk Factors for Plaque and Plug Formation

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Presented By: Daniel Wong, MD

Introduction: Idiopathic calcium oxalate stone formers (ICSFs) are a heterogeneous group. By examining stones for the presence of Randall’s Plaque (RP), we can delineate two distinct calcium stone forming phenotypes. We investigate factors among these two groups to ascertain drivers of papillary features involved in early stone formation.

Methods: ICSFs undergoing stone removal procedures were consented for study between August 2005 and May 2023. Stone material was collected intact when possible. Papillae were imaged endoscopically per standard protocol. Two 24-hour urine tests were collected post operatively while patients were off stone prevention medications. Chart review was performed for comorbidities and medication usage related to stone formation. Extracted stones were photographed then imaged by micro-CT and reviewed for evidence of RP attachment.

Results: Of 105 ICSFs, 42 patients had evidence of RP stones. RP stone formers began having stones at a younger age than non-RP stone formers (34.5 vs 41.8, p = 0.03). RP stone formers had higher RP papillary scores than non-RP stone formers (1.23 vs 0.58, p < 0.001). Non-RP stone formers had higher plugging scores than RP stone formers (0.93 vs 0.39, p < 0.001). Diabetes had a strong negative correlation with plaque severity among RP stone formers while there was no correlation in non-RP stone formers. History of UTI had a strong positive correlation with plug severity among non-RP stone formers but not RP stone formers. Multivariable models for plug or plaque severity were created using comorbidities such as age, sex, BMI, hypertension, hyperlipidemia, tobacco use, sleep apnea, and asthma. In RP stone formers, diabetes remained the most significant predictor of RP severity and stepwise regression isolated diabetes alone as the best fit model. In non-RP stone formers, prior UTI remained the most significant predictor for plugging severity on multiple linear and stepwise regression.

Conclusions: RP stone formers and non-RP stone formers have different predictors for papillary features involved in early stone growth. RP stone formers with diabetes are less likely to have severe plaque features. Non-RP stone formers with prior UTIs appear to have more papillary plugging.

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MP08-02 Automatic Kidney Stone Segmentation in CT Scans Using Deep-Learning Neural Networks

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Presented By: Murillo Bouzon, MD

Introduction: The gold standard radiological exam for kidney stone diagnosis is the non-contrast computed tomography (NCCT) due to its high sensitivity and specificity. During the analysis of the CT scans, the radiologist must not only detect the stones but also gather other information such as the number of stones, location, size and density, skin-stone distance, and infundibulum-pelvic angle, for example. To help the diagnosis, automatic segmentation of stones in CT exams is a valuable tool that may help locate the stones and estimate their sizes faster. Deep-learning neural networks, such as the U-Net architecture, demonstrated promising results in medical image segmentation. However, these deep-learning algorithms need large datasets of images manually labeled for training the learning model. To solve this problem, we developed a novel dataset of manually annotated images to train a deep-learning neural network model for kidney stone segmentation on CT scans.

Methods: The U-Net architecture was used for urinary stone segmentation due to the consistent results obtained in the literature related to medical image segmentation. To create the dataset, we manually annotated 838 CT scans, marking the stone regions. Then, we trained a U-Net for urinary stone segmentation using the annotated CT images and evaluated its performance.
MP08-03  Effect of Supplemental Protein on Urinary Stone Risk: Comparative Crossover Study

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Presented By: Daniel Wong, MD

Introduction: High protein diets are increasingly popular. Consumption of supplemental protein to support these diets has increased. While non-dairy animal protein consumption is associated with stone formation, the effects of specific supplemental protein sources has not been investigated. We report a comparative controlled crossover diet study in which the effects on urinary stone risk factors of whey, pea, soy, and rice protein isolates were evaluated.

Methods: With IRB approval, volunteers without history of stone disease were enrolled. Participants received a 5 day frozen meal plan and three 20g protein shakes per day. The exact same stone path planning system based on the characteristics extracted from the segmentation of the stone.

Results: Nine participants (8 M, 1 F) were enrolled. Within individual urine volume and creatinine did not differ across the 4 phases, indicating consistent urine collections. Urine calcium was significantly higher and pH was lower with whey and rice protein consumption. Urine oxalate was significantly higher in the pea phase. Supersaturation (SS) of calcium oxalate did not differ between phases. Despite having the highest estimated net GI alkali absorption (NGIAA), urine was most acidic and had highest net acid excretion on the whey protein diet. When correcting for sulfate excretion, estimated net diet acid load correlated closely with urine pH and net acid excretion.

Conclusions: Whey and rice protein consumption resulted in lower urine pH, higher urinary calcium, and higher uric acid SS compared to pea and soy proteins. These results suggest that NGIAA is not the only determinant of urine acidity, and this must be considered as isolates vary with respect to amino acids and other unmeasured constituents. Pea proteins resulted in increased oxaluria and calcium phosphate SS. These data may be useful in clinical stone prevention.

Funding: This work was made possible by Midwest Stone Institute and Washington University Institute of Clinical and Translational Sciences grant UL1TR002345 from the National Center for Advancing Translational Sciences (NCATS) of the National Institutes of Health (NIH).

MP08-04  The Potential Role of Sodium/Glucose Cotransporter 2 (SGLT2) Inhibitors in the Treatment of Cystinuria

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Presented By: Wilson Sui

Introduction: Disrupting the disulfide bond of the dimer, cystine, using thiol-containing medications has historically been the standard pharmacologic strategy for patients with cystinuria. Despite these medications, frustratingly high stone recurrence rates are commonplace. The Maillard reaction, which is a non-enzymatic reaction that requires heating between an amino acid and carbohydrate, was hypothesized that continuous washing of cystine stones with glucose could theoretically prevent growth of an existing cystine stone or even reduce its size. Sodium/Glucose Cotransporter 2 (SGLT2) inhibitors, well known for inducing glucosuria, were used to test this hypothesis in an initial series of patients.

Methods: Patients with cystinuria from September 2019 to May 2023 who received off-label dapaglifozin (Farxiga™) were identified. Patients who were on thiol or other clinical trial medications were taken off the medication for at least 30 days prior to starting dapaglifozin. Demographic information, past medical history, medication information and stone-related measures were extracted. A symptomatic stone event was defined by stone passage or surgical intervention.

Results: Ten cystinuric patients were prescribed SGLT2 inhibitors with a median follow up of 13.5 months. Each patients’ historic stone event rate was tallied and compared to the event rate while prescribed SGLT2 medication. Overall, 80% of patients experienced fewer or equivalent stone events and half had stable stone volume during therapy. 24-hour urine collections revealed a significantly higher citrate excretion while on the medication (719mg ± 254 vs 1172mg ± 649, paired T-test p = 0.03). Eight patients had negative cystine capacity at baseline, yet seven
experienced fewer stone events while on medication: four experienced no stone growth. One patient was taken off the SGLT2 inhibitor due to an adverse reaction; three others experienced mild, self-resolving effects and yet stayed on the medication. 

Conclusions: Cystinuric patients treated with a SGLT2 inhibitor experienced fewer stone events while on medication compared to their historic rates and also exhibited decreased or stable stone growth. There were few medication related side effects, almost all of which were temporary. SGLT2 inhibitors may be a promising long-term therapy for patients with cystinuria. 

Funding: N/A.

MP08-05 WITHDRAWN

MP08-06 Effectiveness of Mirabegron VS. Imidafenacin in Improving Double J stent-related Symptoms: An Initial Prospective Open Interventional Study

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Presented By: Ethan Victor Mallari, MD

Introduction: Stent-related symptoms are common with varying degrees of discomfort. Among these, there will be complaints of varying pain intensity, pain interference, urinary symptoms, and bother, which can significantly impact their quality of life (Harper et al., 2022). In addition, some of these patients may have unplanned additional consults or hospital visits, which can also affect the economic domain of their lives. Given its potential impact, some studies emerged to answer this symptomatology. Objectives: The primary objective of this study is to determine the effectiveness of Mirabegron vs. imidafenacin in decreasing urinary tract symptoms due to ureteral
stenting. Specific Objectives (1) To determine the effects of mirabegron with alpha-blockers vs. imidafenacin with alpha-blockers on stented patients in terms of USSQ urinary symptoms. (2) To compare the effects of mirabegron with alpha-blockers vs. alpha blockers plus imidafenacin and alpha blockers only in terms of efficacy in managing pain related ureteral stent symptoms using the Visual Analog Scale (VAS).

Methods: This investigation was performed as a prospective, open interventional study to compare the effects of mirabegron with Tamsulosin vs. imidafenacin with Tamsulosin on stented patients. This study was conducted in 2 tertiary hospitals in Manila. A total of 40 patients who underwent double J stent insertion were randomly assigned to the Mirabegron+ tamsulosin (group A), Imidafenacin+Tamsulosin (group b), and Tamsulosin only (group C) group, respectively.

Results: Mirabegron with Tamsulosin was superior in terms of reducing urinary frequency (p value = 0.004), intermittency (p value = 0.041), and urge incontinence (p value = 0.008). On the other hand, Imidafenacin with Tamsulosin was superior to Tamsulosin alone in reducing urge incontinence. No significant differences were seen across the groups regarding urgency, dysuria, hematuria and pain control.

Conclusions: The use of combination therapy in managing stent-related symptoms is efficacious and safe. Mirabegron with Tamsulosin was superior in terms of urinary frequency, intermittency, and urge incontinence. However, there were no significant differences in other USSQ domains. With this, we present potential treatment options for patients facing these uncomfortable symptoms.

Funding: None.

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**MP08-07 Bisphosphonate Treatment is Associated with Lower Incidence of Urology Encounters, Kidney Stone Diagnoses and Procedures**

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Presented By: Tyler Sheetz, MD

Introduction: Barriers to the adoption of preventative pharmacologic treatment for kidney stones include cumbersome metabolic workups, poor patient compliance, and medication side effects (particularly to thiazides, a common stone-prevention medication). One promising alternative is an off-label use of bisphosphonates (BPs) which are affordable, conveniently dosed weekly, and already utilized in the treatment of osteoporosis. BPs have been studied for the prevention of nephrolithiasis via reduction of hypercalciuria and inhibition of calcium-based stone crystallization, though clinical data are limited. We aimed to evaluate BPs in the preventative treatment of recurrent nephrolithiasis via a novel large population study.

Methods: Using a de-identified IRB-exempt tool, we selected patients with an osteoporosis diagnosis who had been on bisphosphonates in the past 1 year and past 20 years, and compared kidney stone outcomes to a cohort of osteoporosis patients not on the medication. Associations between BP use and kidney stone outcomes (urology encounters, kidney stone diagnoses and procedures) were tested with Chi-Square analysis with p < 0.05 considered statistically significant.

Results: We first examined the association of BP therapy with rates of a urology encounter, kidney stone diagnosis, and kidney stone procedure within the past 1 year (Fig 1a, n = 13, 518 BP and n = 22, 882 no BP) and found a 0.13% incidence of a urology encounter (compared to 3.5% not on BP, p < 0.0001), 0.30% prevalence of kidney stone diagnosis (compared to 3.6% not on BP, p < 0.0001), and 0% incidence of kidney stone procedure (compared to 0.21% not on BP, p < 0.0001). We then examined the association of BP therapy with rates of a urology encounter, kidney stone diagnosis, and kidney stone procedure over the past 20 years (Fig 1b, n = 25, 063 BP and n = 26, 121 no BP) and found a 0.49% incidence of a urology encounter (compared to 10.7% not on BP, p < 0.0001), 0.87% prevalence of kidney stone diagnosis (compared to 6.8% not on BP, p < 0.0001), and 0.04% incidence of kidney stone procedure (compared to 1.0% not on BP, p < 0.0001).

Conclusions: Data from a large, retrospective cohort suggests a protective association of BP treatment against having a kidney stone diagnosis or procedure at our institution. Randomized controlled trials evaluating BP impact on stone recurrence are warranted to confirm these findings and potentially implement BPs into practice.

Funding: None.

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**MP08-08 Feasibility and Patient Satisfaction of Virtual Dietician Counseling in the Prevention of Recurrent Nephrolithiasis: A Pilot Study**

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Presented By: Brett Johnson, MD

Introduction: Kidney stone disease (KSD) is a common disease process that can cause diminished quality of life, chronic kidney disease, and renal failure. Metabolic management of kidney stone disease often utilizes 24-hour urine collections (24U), and while pharmacological management is an important tool, dietary interventions are critical to the management of KSD. Effective dietary education with supportive follow-up visits is paramount to ensuring diet adherence. A registered dietician (RDN) is a valuable addition to the treatment team, yet often underutilized. We sought to demonstrate feasibility of RDN virtual visits for patients receiving treatment for KSD.
Methods: A pilot feasibility trial was initiated for new and recurrent stone formers. Stone forming patients were recruited to participate in 3 RDN visits (within 2 weeks from enrollment, 6 weeks, 3 months). Baseline and study completion 24U studies were collected. Wisconsin Stone Food Screener (WSFS) was obtained prior to each visit and a Wisconsin Stone Quality of Life (WISQOL) and a satisfaction survey were obtained directly following. Given the exploratory nature of this study, power calculation was not performed.

Results: A total of 21 patients enrolled in this ongoing study. Eleven participants have completed all three visits and the completion 24U, while an additional 9 patients are currently enrolled. One patient withdrew due to a death in the family. Among those that completed the study, visit compliance was 100%. Patient satisfaction was excellent with median satisfaction scores of 24/25, 25/25, and 25/25 for the initial, 6-week, and 3-month visits, respectively. Median WisQol scores improved from 123/140 to 128/140 following the initial visit. While not powered for significance in 24U parameters, mean urine sodium decreased 17mg/TV, uric acid 72mg/TV, and total volume increased 95mL/day (figure). Nine of 11 (81%) demonstrated a decrease in urine sodium.

Conclusions: Virtual visit with a RDN is feasible and well received by motivated KSD patients. This initial pilot outlines a potential clinical protocol and demonstrates feasibility. Stone formers expressed a high level of satisfaction with these visits and demonstrated excellent visit compliance. Further studies are needed to determine improvements in urine parameters and clinical reduction in stone events.

Funding: None.

MP08-09 Pharmacotherapy and Stone Mineral Subtype Influence Long-term Recurrence Rates in Calcium Stone Formers

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Presented By: Vincent Bird, MD

Introduction: Long-term recurrence data on kidney stones is limited. We investigated stone recurrence in calcium-oxalate (CaOx) and calcium-phosphate (CaP) stone formers over a 10-12-year follow-up period.

Methods: We retrospectively identified patients from a surgical database with 1) CaOx or CaP stones, 2) post-surgical computed tomography imaging, and 3) at-least 10 years of clinical follow-up and imaging. Data on medical therapy (MT), defined as being on thiazide/thiazide-like diuretic, potassium citrate, and/or allopurinol, was collected. Patients’ records were reviewed for stone recurrence over a 10-12-year period. Associations between stone type, medical therapy, and time to recurrence were analyzed with Kaplan-Meier survival curves and Cox proportional hazard models. Multivariate analysis was done using Cox proportional hazard model.

Results: Of the 149 individuals who met inclusion criteria, 87 (58.3%) underwent baseline 24-hour urine testing, and 46 (30.8%) were prescribed MT in the form of thiazide (26/46; 57%), potassium citrate (25/46; 54%), allopurinol (5/46; 11%). Compared to non-MT, patients on MT were more likely to have diagnosis of hypertension (p = 0.008) and be hypocitraturic at baseline (p = 0.01). Over a mean of 10.6 years, patients on MT had significantly fewer stone events compared to those not on MT (21.3% vs 37.5%, p = 0.04) with 8(17%) individuals discontinuing their MT over the study period. Patients with predominantly CaP mineral subtype had more stone events than CaOx (64% vs 36%, p = 0.006), a phenomenon likely driven by higher baseline urine pH (>6, 58.8% vs 33.9%, p = 0.02). By survival analysis, the impact of stone subtype and MT became apparent at follow-up month 20 and 60, respectively.

Conclusions: In a population of calcium stone formers at high recurrence risk, patients with CaOx mineral subtype and on MT had the lowest stone event rate on long-term follow-up. These findings suggest that the beneficial effect of medical therapy may take up to 5 years to become evident clinically and by surveillance imaging.

Funding: None.

MP08-10 Is Hyperoxaluria in Patients with Urinary Stone Disease Associated with Worsening Renal Function?

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-A124-
It is well known that hyperoxaluria is associated with urinary supersaturation of calcium oxalate and crystal formation, causing urolithiasis and bone mineralization. Recent studies have suggested an association between idiopathic and enteric hyperoxaluria with worsening renal function over time; a subset of patients will present with acute or chronic renal failure that may progress to end-stage renal disease. The goal of this study was to assess if persistent hyperoxaluria associated with urinary stone disease has been a neglected cause of chronic kidney disease.

Methods: The Registry for Stones of the Kidney and Ureter (ReSKU) was queried for all patients who underwent 24-hour urine studies from 2016 to 2023 and had an initial urinary oxalate ≥40mg/day. Demographic, disease specific and stone recurrence data were abstracted from the medical record. Patients were categorized into resolved hyperoxaluria if their last urinary oxalate was <40mg/day. The closest serum creatinine measurement to the initial 24-hour urine was abstracted in addition to the last one in the patient’s medical record. The estimated glomerular filtration rate (eGFR) was calculated at each timepoint using the chronic kidney disease epidemiology collaboration (CKD-EPI) equation.

Results: 333 patients met our inclusion criteria with a mean initial oxalate of 56 ± 31 mg/day. The median follow up was 6 months (IQR 1 - 23 months). The mean difference in serum creatinine was 0.03 ± 0.23 mg/dL. 155 (47%) patients underwent multiple 24-hour urines; of these patients, 52%, had persistently elevated urinary oxalate (<40mg/day) on their last available 24-hour urine. Only 10% of our cohort had enteric hyperoxaluria. There was no difference between age, gender, race or etiology of hyperoxaluria between those patients with corrected and those with persistently elevated urinary oxalate. There were no differences in advancing chronic kidney disease (stage 1 to 2) between those with normalized and persistent hyperoxaluria (5.6% vs 13.1%, p = 0.136).

Conclusions: There is no difference in progression to chronic kidney disease in patients with idiopathic and enteric hyperoxaluria who exhibit persistently elevated oxalate levels compared to those with normalized levels.

Funding: None.

Presented By: Maria Velasquez Escobar, MD

MP08-11 Thiazide Diuretics for Preventing Recurrent Kidney Stones: an Updated Systematic Review, Meta-Analysis and Trial Sequential Analysis of Randomized Controlled Trials

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Presented By: José Arnaldo S. da Cruz, MD, PhD

Introduction: Nephrolithiasis is a prevalent urological condition that carries significant patient burden and high recurrence rates. The treatment for recurrent stone disease, particularly in cases of idiopathic hypercalciuria, often includes the prophylactic use of thiazide diuretics. Although current guidelines recommend this practice, it has not yet reached consensus among healthcare professionals, due to uncertainties regarding the optimal dosage and the effectiveness of these drugs themselves. Thus, in this updated systematic review and meta-analysis, our goal is to evaluate the efficacy of thiazides in preventing stone recurrence, significantly increasing the sample size compared to previous reviews.

Methods: In agreement with the PRISMA statement, a systematic review was conducted across MEDLINE, Embase, Scopus, Cochrane, Web of Science, and Google Scholar. We included Randomized Controlled Trials (RCTs) comparing thiazide diuretics with placebo for the prevention of repeated kidney stone events. Our primary endpoint was the calculi recurrence rate. Secondary outcomes were 24-hour calcium and 24-hour citraturia. Additionally, we conducted a Trial Sequential Analysis (TSA) incorporating all included articles.

Results: We retrieved 10 studies, including 650 subjects in the experimental group (thiazides) and 672 in the control group (placebo). The primary outcome, calculi recurrence rate, showed significant statistical difference between groups, favoring the prophylactic use of thiazides. Patients treated with these diuretics had fewer instances of recurring stones (RR 0.63; CI95 0.49, 0.83; p = 0.0007; I² = 65%). In terms of urinary parameters, 24-hour calcium was decreased in the experimental group (MD -40.59; CI95 -76.39, -4.79; p = 0.03; I² = 84%), whereas no significant difference was found in 24-hour citraturia (MD
Tamsulosin is commonly used for medical expulsive therapy (MET) in patients with ureteral stones. The off-label use of tamsulosin (FDA Category B) in pregnant women with symptomatic urolithiasis is controversial. We aimed to evaluate obstetric and neonatal outcomes for pregnant women prescribed tamsulosin as MET for suspected renal colic.

Methods: A retrospective review of pregnant patients with suspected symptomatic urolithiasis at our institution from 2009 to 2021 was performed. All patients who underwent surgical intervention (stent, nephrostomy tube, or ureteroscopy) were included, along with a similar number of the most recent patients who matched criteria and were managed expectantly. Symptomatic urolithiasis was defined as flank pain with documented hydronephrosis and one of the following: microscopic or gross hematuria, stone crystals on urinalysis, pyuria, absent ureteral jets, or definitive stones on imaging. Obstetric outcomes included preterm labor and time from initial presentation to first surgical intervention. Neonatal outcomes included APGAR scores and severe neonatal complications.

Results: We identified 196 women with suspected urolithiasis during pregnancy of whom 89 received tamsulosin and 107 did not control. There was no significant difference in mean gestational age (GA) at initial presentation between groups. Mean duration of tamsulosin prescription was 26 days (range 1 to 175), occurring during the first, second, and third trimester in 15 (8%), 97 (49%), and 84 (43%) patients, respectively. Among patients who required intervention, there was a longer time to intervention in those who were prescribed tamsulosin (mean 2.0 vs. 7.9 days, \( p = 0.01 \)), with no difference in narcotic utilization. Conversely, patients who did not require a procedure and were prescribed tamsulosin were more likely to be prescribed narcotics as well during the stone event (82% vs. 37%, \( p < 0.001 \)). There was no difference in preterm labor rates between the tamsulosin and control groups (11% vs. 12%). No significant differences in neonatal outcomes were identified including APGAR scores, GA at delivery, neonatal intensive care unit admission, respiratory distress syndrome, and intraventricular hemorrhage.

Conclusions: In pregnant women with renal colic, use of tamsulosin was not associated with adverse maternal or neonatal outcomes in this cohort. In those requiring a procedure, use of tamsulosin was associated with prolonged time to intervention. Patients managed non-surgically using tamsulosin were more likely to be co-prescribed a narcotic.

Funding: None.
Conclusions: The overall FI for the AUA Kidney Stone Medical Management Guidelines was 4. In comparison to 8 previously published urologic fragility studies with a mean FI of 2.8, AUA cited RCTs demonstrated greater robustness. Significant outcomes presented with lower FIs, however, and thus warrant cautious interpretation as their significance is more vulnerable to smaller changes in data. Guidelines for acetohydroxamic acid and nitrofurantoin should also be cautiously interpreted as each was based on a single RCT. By outcome type, readmission was reported limitedly across studies. Inclusion of RCTs assessing nitrofurantoin, acetohydroxamic acid, and readmission outcomes is recommended to enhance AUA Guidelines.

Funding: None.

MP08-15 A Prospective Observational Study to Correlate the Ureteral Wall Thickness (UWT) with Severity of Symptoms and Spontaneous Passage (SP) of Solitary Ureteral Stones of ≤10 mm
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Presented By: Raisa Shetty, Urology Resident

Introduction: Inflammatory changes due to long standing stone reduce the possibility of Spontaneous Passage (SP) of the stone. UWT is maximum wall thickness of the ureter where the stone is located in axial section. Primary objective was to study predictive factors for spontaneous passage of ureteral stones of ≤10mm. Secondary Objectives were to assess symptom severity, spontaneous passage rates, ureteral wall thickness, degree of Impaction, type of treatment, stone free rates, Complications, Auxiliary Procedure required.

Methods: Prospective observational study done in a single center in 54 patients with single ureteral stone of 10 mm size or less. Initial evaluation consisted of NCCT and patients were divided into two groups based on whether spontaneous passage of stone had happened with Medical Expulsion therapy. 27 patients had spontaneous stone passage and 27 required surgical intervention for stone removal (Group 1 and Group 2).

Results: Group 1 had smaller maximal stone diameter (Median, IQR in mm = 5.5(5-7) vs 7.8(6-8.5), p < 0.001). Group 1 had lesser Ureteral wall thickness on NCCT scan (Median, IQR in mm = 0.9(1-1.23) vs 1.5(1-2.1), p=0.001). Stone location, symptom severity, stone density, degree of hydronephrosis, renal parenchymal thickness were not statistically significant variables between both the groups. Standard binary multivariate logistic regression analysis was done to know the predictive factors for intervention for stone removal which showed that history of recurrent stone formation correlated negatively with risk of requiring intervention and maximal stone diameter and ureteral wall thickness correlated positively with risk of requiring intervention.

Conclusions: Maximal stone diameter and ureteral wall thickness were predictive factors for spontaneous expulsion for ureteral stones of size 10 mm or less.

Funding: None.

MP08-16 CitraLith™ Powder Supplement is Effective and Tolerable for Patients with Nephrolithiasis
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Presented By: Jennifer Lu, MD

Introduction: The first line treatment for prevention of calcium oxalate stones is dietary adjustment, but the first line medication is potassium citrate to alkalinize the urine and increase urine citrate levels.
The most common formulary of potassium citrate poses challenges to compliance because the pills are difficult for patients to take due to the large size and GI side effects. This study aims to investigate the tolerability and efficacy of a different form of pharmacological treatment, CitraLith™, a powder concentrate of potassium citrate, magnesium citrate, and sodium citrate, available to treat patients with calcium nephrolithiasis.

Methods: A retrospective study was conducted of patients who began taking CitraLith™ (Theralogix, Rockville, MD) between April 2022 and December 2023 at a single institution. Results of 24hr urine studies (Litholink, Chicago, IL) collected prior to CitraLith™ initiation were compared to 24hr urine studies collected >3 months post-initiation. Subjects were surveyed via telephone about their experience with the supplement.

Results: 43 patients were started CitraLith™. 27 patients (13 females, 14 males) had pre-supplement and post-supplement 24 hour urine studies included in the analysis, 38 patients responded to the survey. There was a significant difference between initial urinary citrate level prior to beginning CitraLith™ (348 mg/L) compared to follow up level (434 mg/L) (p = 0.003). Urinary potassium increased from 53 mg/L to 58 mg/L after (p = 0.044), and magnesium increased from a mean of 86 mg/L to 112 mg/L (p = .002). Despite a 13.2% increase in total fluid consumption, this did not reach statistical significance (1.82L to 2.06L, p = 0.15). This correlated with 10.5% of patients identified that they increased their oral consumption of the water/CitraLith combination. There was no difference in average urinary pH (5.97 to 6.23, p = 0.6). 65.8% of the subjects classified the supplement as easy to take, although 15.8% reported mild GI side effects. 76.6% of patients found the taste of supplement palatable.

Conclusions: CitraLith™ significantly increased urinary citrate and magnesium levels in this cohort, therefore indicating its potential role in treating recurrent calcium nephrolithiasis. The powder supplement was well tolerated by the cohort and may therefore be implemented as a reasonable alternative in patients struggling to comply with potassium citrate tablets or capsules. Further research is necessary to determine the efficacy and tolerability of CitraLith™ in direct comparison to potassium citrate.

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MODERATED POSTER SESSION 9: EPIDEMIOLOGY, SOCIOECONOMIC AND HEALTH CARE POLICY: STONES/BPH 1

MP09-01 Surgery-related health care utilization by patients undergoing placement of ureteral stent following ureteroscopy for USD - Results from STENTS

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Presented By: Brett Johnson, MD

Introduction: Urinary stone disease (USD) is a widely prevalent condition that often necessitates surgical intervention in the form of ureteroscopy with ureteral stenting. We sought to determine the frequency and risk factors associated with an unplanned healthcare utilization event related to ureteroscopy with ureteral stenting within 30 days post-procedure. Analysis of the data collected from the Study to Enhance uNderstanding of sTent-associated Symptoms (STENTS), a prospective multicenter observational cohort study was performed.

Methods: Demographic, medical, surgical, and post-operative data were collected prospectively across four tertiary care centers for patients undergoing ureteroscopy for USD with the Urinary Stone Disease Research Network (USDRN). Any utilization of the healthcare system within 30 days was assessed for potential relationship to the stone procedure. Data were analyzed to determine which factors were associated with a higher risk of having an unplanned encounter (UE) related to surgery. Univariate analysis of nominal data were analyzed with a Chi2 or Fisher Exact test, and means were compared with a t-test.

Results: A total of 484 patients (451 adults) underwent ureteroscopy for USD (424 unilateral, 60 bilateral). Mean age was 49 years and 47% were female. A total of 171 clinical encounters were analyzed to determine if they were surgery-related. Overall, 49 (10.1%) patients had at least one UE within 30 days. Age, race, sex, or previous stone history were not different for those that required an UE. Case duration, stone size, use of a ureteral access sheath, stent diameter, presence of residual stone, or irrigation method also did not differ between the groups. However, the presence of a chronic pain condition, intraoperative ureteral injury, and longer stent dwell time were all associated with a higher incidence of an UE (table).

Conclusions: The prevalence of unplanned healthcare utilization related to ureteroscopy and stent for USD in our cohort was high at 10%. Those with a chronic pain condition were almost three times more likely to require an UE. Those with longer stent dwell time and a ureteral injury were also more likely to have an UE. These findings may help identify patients at higher risk of utilizing healthcare resources following USD surgery and could enable proactive targeted interventions.

Funding: NIH/NIDDK.
MP09-02 Neighborhood Socioeconomic Disadvantage is Associated with Worse Urinary Risk Factors and Access to Medical Management for Urolithiasis

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Presented By: Anna Zampini, MD, MS, MBA

Introduction: 24-hour urine (24hU) testing guides counseling to prevent recurrent urolithiasis. Poor socioeconomic status is a risk factor for stone disease, however, these associations are often based on complex statistics not readily available in clinical practice. Area Deprivation Index (ADI) is a quantitative measure of socioeconomic status that assigns a percentile based on mean income, education, employment, and housing quality from United States census data using a geocoded residential address. ADI has been linked to peri- operative outcomes across multiple disciplines but not yet urolithiasis. This study aimed to characterize relationships between ADI and urolithiasis risk factors.

Methods: Patients undergoing percutaneous nephrolithotomy from 2017-2022 were retrospectively reviewed. Addresses were geocoded to national ADI score, with the lowest quartile (scores 1-25) representing the least, and the top quartile (76-100) the most disadvantaged. Demographics, 24hU parameters, and stone composition data were evaluated.

Results: 1859 patients underwent percutaneous nephrolithotomy during the study period, of whom 900 completed a 24-hour urine study. There were more female and black patients (55.3% vs. 42.2% p = 0.032; 16.2% vs. 3.9% p < .001, respectively) in the most disadvantaged quartile. Patients with high ADI and low socioeconomic status were less likely to undergo 24-hour urine testing compared to the least disadvantaged quartile (44.2% vs. 63.6%, p < .001). Higher ADI score was associated with lower 24-hour urine volume and citrate. Calcium phosphate stones were more common in the top quartile, whereas mixed calcium stones were more prevalent in the bottom quartile.

Conclusions: Higher ADI is associated with multiple risk factors for recurrent urolithiasis including lower 24hU study completion rate, low urinary volume, and hypocitraturia. ADI may serve as a simple clinical tool to identify patients at high need for metabolic stone prevention and more comprehensive endourologic care.

Funding: None.

MP09-03 Disparities in Kidney Stone Treatment: A Qualitative Analysis of Patient Experiences Obtaining Care for Kidney Stone Disease

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Presented By: Ibukunoluwa Ibrahim, BS

Introduction: Traditional claims dataset analyses have exposed disparities in treatment delays for kidney stones along lines of socio-economic status. Analyzing patient experiences through qualitative semi-structured interviews allows for the elucidation of common root causes leading to care delays in patients with kidney stones.

Methods: Fifteen participants were recruited from a group of adult patients at a safety net hospital who had been referred for urological care after presenting to the Emergency Department for kidney stones. These patients were selected for semi-structured interviews if they failed to present to the urology clinic after 60 days of referral placement. Interview transcriptions were coded and analyzed using thematic analysis.

Results: Of the 15 participants, the median age in years was 49 (range 22-72), 47% were female, 40% were White, 40% were Hispanic, 20% were Black, and 25% were non-English speakers. The main result revealed that patients experiencing care delays experienced shared patient-extrinsic obstacles in obtaining timely care in the form of care costs and skepticism from health care providers, such as perceptions of being drug-seeking or feigning pain. They also experienced shared patient-intrinsic obstacles such as gaps in understanding of the dangers of stone disease and difficulty navigating care coordination (Table 1).

Table 1: Patient demographics and 24-hour urine parameters according to area deprivation index quartiles.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Overall (n=60)</th>
<th>Low Deprivation (n=15)</th>
<th>Medium Deprivation (n=15)</th>
<th>High Deprivation (n=15)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>58.7 ± 10.3</td>
<td>58.7 ± 10.3</td>
<td>58.0 ± 12.3</td>
<td>59.4 ± 12.4</td>
<td>0.57</td>
</tr>
<tr>
<td>Sex (female)</td>
<td>58 (96.7)</td>
<td>10 (66.7)</td>
<td>10 (66.7)</td>
<td>18 (120)</td>
<td>0.032</td>
</tr>
<tr>
<td>Comorbidities</td>
<td>19 (31.7)</td>
<td>7 (46.7)</td>
<td>4 (26.7)</td>
<td>8 (26.7)</td>
<td>0.306</td>
</tr>
<tr>
<td>Diabetes mellitus type 2</td>
<td>4 (6.71)</td>
<td>1 (6.7)</td>
<td>1 (6.7)</td>
<td>2 (13.3)</td>
<td>0.152</td>
</tr>
<tr>
<td>Chronic kidney disease</td>
<td>10 (16.7)</td>
<td>3 (20)</td>
<td>3 (20)</td>
<td>4 (26.7)</td>
<td>0.009</td>
</tr>
<tr>
<td>Urinary tract infection</td>
<td>10 (16.7)</td>
<td>4 (26.7)</td>
<td>4 (26.7)</td>
<td>2 (13.3)</td>
<td>0.012</td>
</tr>
<tr>
<td>Hypertension</td>
<td>13 (21.7)</td>
<td>5 (33.3)</td>
<td>4 (26.7)</td>
<td>4 (26.7)</td>
<td>0.002</td>
</tr>
<tr>
<td>Cholesterol-elevated</td>
<td>9 (15)</td>
<td>4 (26.7)</td>
<td>3 (20)</td>
<td>2 (13.3)</td>
<td>0.302</td>
</tr>
<tr>
<td>24u Urine Parameters*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volume (ml)</td>
<td>1013.6 ± 948.0</td>
<td>2006 ± 798.1</td>
<td>904 ± 689.3</td>
<td>1598 ± 684.3</td>
<td>0.782</td>
</tr>
<tr>
<td>pH (lower)</td>
<td>6.0 ± 0.54</td>
<td>6.0 ± 0.54</td>
<td>6.0 ± 0.54</td>
<td>6.0 ± 0.54</td>
<td>0.264</td>
</tr>
<tr>
<td>pH (higher)</td>
<td>6.3 ± 0.71</td>
<td>6.3 ± 0.71</td>
<td>6.3 ± 0.71</td>
<td>6.4 ± 0.74</td>
<td>0.002</td>
</tr>
<tr>
<td>Calcium (mg/dl)</td>
<td>235 ± 170.8</td>
<td>247 ± 170.8</td>
<td>252 ± 181.6</td>
<td>200 ± 178.2</td>
<td>0.144</td>
</tr>
<tr>
<td>Oxalate (mg/dl)</td>
<td>45.1 ± 5.1</td>
<td>44.1 ± 5.1</td>
<td>43.1 ± 5.1</td>
<td>44.1 ± 5.1</td>
<td>0.246</td>
</tr>
<tr>
<td>Citrate (mg/dl)</td>
<td>163 ± 21.95</td>
<td>164 ± 21.95</td>
<td>164 ± 21.95</td>
<td>163 ± 21.95</td>
<td>0.002</td>
</tr>
<tr>
<td>Phosphate (mg/dl)</td>
<td>100 ± 118.5</td>
<td>100 ± 118.5</td>
<td>100 ± 118.5</td>
<td>100 ± 118.5</td>
<td>0.226</td>
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<tr>
<td>Magnesium (mg/dl)</td>
<td>86 ± 8.2</td>
<td>86 ± 8.2</td>
<td>86 ± 8.2</td>
<td>86 ± 8.2</td>
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<td>Calcium:Phosphate ratio</td>
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<td>1.3 ± 0.3</td>
<td>1.3 ± 0.3</td>
<td>1.3 ± 0.3</td>
<td>0.144</td>
</tr>
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</table>

Table 2: Common themes among patient experiences during nephrolithotomy care for kidney stone disease.

<table>
<thead>
<tr>
<th>Patient Code</th>
<th>Description</th>
<th>Description of follow up</th>
<th>Patient Code</th>
<th>Description</th>
<th>Description of follow up</th>
</tr>
</thead>
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<td>Not interested in or follow up</td>
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</tr>
<tr>
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</tr>
<tr>
<td>Patient 25</td>
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<td>Not interested in or follow up</td>
</tr>
<tr>
<td>Patient 29</td>
<td>Not interested in or follow up</td>
<td>Not interested in or follow up</td>
<td>Patient 30</td>
<td>Not interested in or follow up</td>
<td>Not interested in or follow up</td>
</tr>
</tbody>
</table>

* 24-hour urine samples with complete data for all variables included in statistical analysis.
Conclusions: This study provides insight into the factors that impact care delays for patients with kidney stone disease. Findings from this work have allowed for the identification of common themes in patient experience such as cost barriers and feelings of skepticism around their motivation for presenting for care with stone disease. Absence of prior knowledge of the severity of the consequences of stone disease and limited experience navigating care coordination were highlighted as patient-intrinsic obstacles. These findings may provide insight as to how patient experiences in care delays manifest along lines of socioeconomic status.

Funding: John A. Watson Faculty Scholars Grant.

MP09-04  The Second Endourological Society Census Report

Malone R. Locke1, Ala’a Farkouh2, D. Duane Baldwin2, Mordechai Duvdevani3, Senthil Nathan4, Charles D. Scales Jr.5, Necole M. Streeper5, Timothy D. Averch7

1University of South Carolina School of Medicine, 2Department of Urology, Loma Linda University Health, 3Department of Urology, Hadassah Ein-Kerem University Hospital, The Hebrew University, 4Department of Urology, University College Hospital London, London, UK, 5Division of Urologic Surgery, Duke University School of Medicine, 6Department of Urology, Pennsylvania State University College of Medicine, 7Division of Urology, Department of Surgery, Prisma Health Midlands, University of South Carolina School of Medicine

Presented By: Malone R. Locke, MS

Introduction: As part of the Endourological Society’s initiative to continuously enhance the field of endourology, the second annual census was circulated after the World Congress of Endourology and Uro-Technology (WCET) 2022.

Methods: An anonymous survey was created using Qualtrics Endourology and Uro-Technology (WCET) 2022. The survey was disseminated via email to all Endourological Society (ES) members (n = 1, 502) between October 4th, 2022, and January 26th, 2023. A total of 46 questions were included in the survey and covered different aspects including demographics, practice patterns, satisfaction, impact of COVID, WCET 2022 attendance, and future opportunities.

Results: A total of 404 (26.9%) ES members (91.8% male and 8.2% female), representing 63 different countries participated in the survey. Fellowship-trained endourologists constituted 58.9% of respondents, and the most common practice setting was academic (55.2%). The most common practice scope was complex retrograde endoscopy (83.4%), followed by percutaneous nephrolithotomy (79.5%) and medical management of urolithiasis (72.5%). Work schedules were variable with 51.1% working 40–60 hours/week and 35.3% working >60 hours/week. More than 80% were satisfied with their practice; however, 42.4% indicated that COVID made satisfaction worse. Of the participants, 49.5% were satisfied with their compensation, and 7.3% plan to retire within the next 5 years. When asked about the future of endourology, 92.9% had a positive outlook. Of the respondents, only 36.8% attended WCET 2022, with the most chosen reason for attendance being an interest in learning new research and technology. For lack of attendance, cost of travel and lodging was reported as a determining factor by 45.4%.

Conclusions: These survey results report important trends within the field of endourology and demonstrate the robust outlook of ES members for the future. By demonstrating important practice patterns and member needs, this information can be used to improve the responsiveness of the Society to its members and to continually strengthen the Endourological Society.

Funding: N/A.

MP09-05  The Financial Impact of Benign Prostatic Hyperplasia

Taylor Hall1, Wilson Sui1, David Bayne1, Thomas Chi1, Sultan Al Azzawi2, Heiko Yang1, Camila Velasquez Escobar1

1University of California San Francisco, Department of Urology, 2University of California San Francisco School of Medicine

Presented By: Taylor Hall, Medical Student

Introduction: Benign prostatic hyperplasia (BPH) is known to negatively affect quality of life and is estimated to cost the private healthcare sector up to $4 billion annually. While prior studies have evaluated the economic impact on healthcare systems, there are few data on the impact of financial toxicity amongst BPH patients. Our objective was to characterize financial toxicity among US adults through questionnaires for financial toxicity and disease-specific health-related quality of life.

Methods: A survey of adults with self-reported BPH was conducted through a national registry of volunteers (Research Match(TM)). The survey captured demographics and medical history in addition to a 12-item measure of health-associated financial toxicity (COST-11 score). Symptom severity was measured using the International Consultation on Incontinence Questionnaire—Urinary Incontinence Short Form (ICIQ-UI SF), the International Prostatism Symptom Score (IPSS) and the LURN Symptom Index-10 (LURN-10). Financial toxicity was defined as having a COST-11 score ≥ 20. Chi-square and students t-tests were used for categorical and continuous variables respectively. Predictors of worse symptom scores were identified using multivariable linear regression models.

A

![Image](image1.png)

B

<table>
<thead>
<tr>
<th>Financial Toxicity</th>
<th>Low Financial Toxicity</th>
<th>High Financial Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean IPSS</td>
<td>14 ± 8.25</td>
<td>18 ± 8.10</td>
</tr>
</tbody>
</table>

**Conclusions:** These survey results report important trends within the field of endourology and demonstrate the robust outlook of ES members for the future. By demonstrating important practice patterns and member needs, this information can be used to improve the responsiveness of the Society to its members and to continually strengthen the Endourological Society.
Results: A total of 467 responses were obtained from men with self-reported BPH, 21% of whom met criteria for financial toxicity. Patients with financial toxicity reported lower average incomes (p < 0.001), less education (p = 0.018) and high proportions of Medicaid or uninsured status (p < 0.001). Patients reporting high financial toxicity had worse IPSS (Figure A); average IPSS results were 14 vs 18 (p < 0.001) for low and high financial toxicity groups respectively (Figure B). These patients also reported using higher mean incontinence products per week (23.36 vs 39.41, p < 0.001). On multivariable linear regression models, higher financial toxicity remained significantly associated with worse IPSS (p < 0.001), ICIQ-UI SF (p < 0.001) and LURN-10 (p < 0.001) scores.

Conclusions: In men with BPH, financial toxicity is associated with worse self-reported measures of urinary symptoms and incontinence product use. These patients represent a vulnerable group who not only have worse quality of life but also limited healthcare resources to address these needs. This highlights the need for physicians to consider socio-economic and financial pressures that make it challenging for patients to receive quality and consistent healthcare.

Funding: N/A.

MP09-06 Spontaneous Stone Passage Nomogram
Kavita Gupta1, Anna Ricapito2, Raymond Khargi3, Alan Yaghoubian4, Christopher Connors5, Johnathan Khusid6, Blair Gallante2, William Atallah6, Mantu Gupta2
1Department of Urology and Kidney Transplant, University of Foggia, Foggia, Italy, 2Mt. Sinai Medical Center and Icahn School of Medicine, 3Mt. Sinai medical Center and Icahn School of Medicine, 4Mt Sinai Medical Center and Icahn School of Medicine, 5Mt Sinai Medical Center and Icahn School of Medicine, 6Mt. Sinai Medical Center and Icahn School of Medicine

Introduction: Whether or not a patient who presents to the ER or the office will pass a newly diagnosed ureteral stone remains a conundrum to the treating physician. We developed two calculators to predict spontaneous stone passage (SSP) using radiographic and clinical data: one based on literature and expert consensus (expert calculator) and one based on an unsupervised computer selection (machine learning calculator). Additionally, we compared them with an existing SSP predictor (MIMIC calculator).

Methods: Consecutive patients (131) presenting with solitary ureteral stones (≤10 mm) on CT were prospectively enrolled. Exclusion criteria included contraindication to trial of SSP, ureteral stent and anatomic anomaly. Demographic, clinical and radiographic data were obtained (Table 1). SSP was defined as passage of stone without operative intervention in a time period permitted by AUAguidelines. Both calculators were derived from data using multivariate logistic regression. Following creation of the 2 calculators each were tested on 58 independent patients. Discrimination, calibration and clinical utility/net benefit of the developed models were assessed in the validation cohort. Area under curve (AUC) values were used as a measure of discriminative ability of the calculators.

Results: Of 131 patients, 51% had SSP. Demographics, baseline characteristics, tamsulosin use, degree of hydronephrosis and stone density were similar between groups. Stones that passed were significantly closer to the bladder than those that did not (8.6 vs. 11.8mm, p = 0.01) and were significantly smaller in length, width, and height (3.20 vs 3.46, 4.0 vs. 4.57, 4.37 vs. 5.88 mm respectively, p < 0.001). The expert calculator included stone width, ureteral width at max stone width (UW), ureteral diameter above stone, and distance from UVJ to bottom of stone, and had an AUC of 0.85 for the test set. The parameters selected by the machine learning algorithm included stone width, UW, and the use of an anticholinergic, and it had an AUC of 0.740 for the test set. Additionally, the MIMIC calculator’s AUC was 0.588 (0.489-0.686) with our test set.

Conclusions: We created an easy to use calculator that outperformed both an existing and machine-made calculator. This tool can help providers and patients make a better informed decision for the treatment of ureteric stones.

Funding: None.

MP09-07 The Pregnant Healthcare Worker Can Perform Their Job with Safe Levels of Radiation to the Fetus
Margaret Knoedler1, Zoe Blumenthal1, Robert Tyllo1, Jennifer Mihalo2, Emily Serrell1, Michelle Semins1
1University of Wisconsin, 2West Virginia University, 3University of West Virginia

Introduction: Ionizing radiation to the fetus has known teratogenic effects. During a single gestational period, the United States Nuclear Regulation Commission exposure recommends fetal exposure be limited to 500 mrem. We aimed to assess the radiation exposure to fetuses of pregnant health care workers at three institutions by analyzing available fetal dosimeter data.

Methods: We performed an IRB-approved, multi-institutional (University of Wisconsin, University of West Virginia Wheeling and University of West Virginia Morgantown), retrospective review of the recorded radiation exposure from fetal dosimeters from January 2020 to July 2023. We included healthcare workers who declared a pregnancy and wore a fetal dosimeter for more than one month. Demographic information included healthcare workers’ age and department of employment. Individual monthly
radiation doses were measured by LANDAUER fetal dosimeters. Total recorded fetal doses during individual pregnancies were assessed. Predicted fetal doses were calculated assuming a 9-month pregnancy, as individuals wore fetal dosimeters for varying lengths during their pregnancies.

**Results:** From January 2020 to July 2023 there were 196 pregnancies from 178 individuals. Age at time of pregnancy was 30.5 (interquartile range 28-34) and healthcare employees wore their dosimeters on average 6 months per pregnancy. Most common departments included operating room, radiology and radiation oncology. About half of the pregnancies (106 pregnancies, 54%) had less than 10 mrem of exposure. Only 4 pregnancies had radiation doses above 100 mrem (2.04%). No pregnancy exceeded the exposure limit of 500 mrem, even when corrected for a 9-month dosimeter period (figure).

**Conclusions:** From January 2020 to July 2023 at three institutions, all 196 pregnancies in healthcare workers exposed to radiation were below recommended cumulative exposure limits for fetal safety. Pregnant healthcare workers can perform their jobs with safe levels of radiation exposure.

**Funding:** NA.

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**MP09-08 Impaired Access to Healthy Food and Lower Socioeconomic Status are Associated with Higher Stone Burden**

Ashwin Balakrishnan¹, Kevin Chang¹, Wilson Sui¹, Heiko Yang¹, Justin Ahn¹, David B. Bayne¹, Marshall Stoller¹, Thomas Chi³

¹University of California, San Francisco

Presented By: Ashwin Balakrishnan, MD

**Introduction:** Lower socioeconomic status (SES) has been found to be associated with repeat surgery for kidney stones. Multiple factors including impaired access to healthy and affordable foods can exacerbate poor dietary patterns leading to stone formation and recurrence. The goal of this study was to identify predictors of stone burden at presentation using publicly available census tract data including: 1) median household income, 2) area deprivation index, and 3) designation as low food access.

**Methods:** The Registry for Stones of the Kidney and Ureter was queried for all adult subjects between 2015 and 2023. We excluded patient living outside of California since census-tract level data for food access was only available for California. Demographic data including home census tract and clinical characteristics were abstracted for analysis. We then used publicly available census tract level data from the U. S. Census Bureau and Department of Agriculture to stratify patients into quartiles by median income, deciles by area deprivation index, and low food access status. Multivariable linear regression was used to identify significant independent predictors of stone burden.

**Results:** Of 1,975 subjects who met inclusion criteria, 391 (23%) live in a low food access census tract. Compared to patients living in census tracts with adequate access to healthy food, those living in low access tracts had higher BMI (median 27.3 vs 26.6, p = 0.029), higher proportion of symptomatic stones at presentation (15.9% vs 10.5%, p = 0.005), and larger stone burden at presentation (median 1.7cm vs 1.1cm, p < 0.001). Larger stone burden was also found in patients living in areas with higher area deprivation index (figure 1, p < 0.001). On multivariable linear regression controlling for demographic and clinical characteristics, BMI (β = 0.4 ± 0.1, p = 0.002), lower food access (β = 0.1 ± 0.1, p < 0.001), and lower median household income (β = -0.2 ± SE<0.001, p < 0.001) were significantly associated with increased cumulative stone burden at presentation.

**Conclusions:** Impaired access to healthy foods and lower SES were associated with higher stone burden at presentation in a cohort of patients from California. These findings highlight the need for stone disease prevention efforts and improved access to healthy foods in underserved communities.

**Funding:** None.
MP09-09 Unveiling Hidden Biases in Pain Management for Nephrolithiasis
Vishnuvardhan Ganesan1, Hailey Frye1, Deepak Agarwal1, Michael Borofsky1
1University of Minnesota

Presented By: Vishnuvardhan Ganesan, MD

Introduction: Kidney stones are the most common urologic reason for emergency department (ED) care. Numerous recent studies have sought to characterize pain management strategies for emergency stone care, specifically focusing on the prevalence of opioid use. However, there is a paucity of literature on how socioeconomic factors influence pain management approaches for patients with acute stones. We sought to further characterize the influence of such factors on likelihood of receiving opiates among a large scale database in a major U.S. hospital system.

Methods: An IRB approved population level health outcomes database encompassing patient visits across a 14 hospital system was utilized. Adult patients with ED presentations and ICD codes of N20 were abstracted from the years 2019 - 2022. Entries included patient information, clinical data and treatments provided. Statistical analysis was performed using t-test, chi-square test, and multivariable logistic regression models.

Results: 15,058 patients met the inclusion criteria. Overall 73.6% of patients received opioids. Opioid utilization was greater for men than women (77.5% vs 68.7%, p < 0.01), White patients vs. Black patients (73.9% vs. 69.5%; p = 0.02), English vs. non-English as primary language (73.8% vs. 68.9%, p < 0.01) and those with private health insurance (78.3% vs 75%, p < 0.01). Our adjusted multivariable regression model showed that females (0.59; 95% CI: 0.54-0.64), elderly patients (0.78; 95% CI: 0.76-0.80) and patients with self-pay or low-income insurance (0.86; 95% CI: 0.79-0.94) were independently less likely to receive opioids in the ED (Table 1).

Conclusions: Our study highlights disparities in use of opioids for pain management in kidney stone patients, particularly among women, Black individuals, and those with low-income or public insurance. This calls for a critical examination whether differences in care may be related to implicit bias. Further quality improvement efforts should focus on ensuring equitable pain management for all patients, regardless of their race, gender, or socioeconomic status.

Funding: None.

Table 1. Multivariable Logistic Regression of Factors associated with patients receiving Opioids in the emergency room.

<table>
<thead>
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<th>Variable</th>
<th>Adjusted Odds Ratio (95% CI)</th>
<th>P value</th>
</tr>
</thead>
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<tr>
<td>Female</td>
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<td>Asian</td>
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<tr>
<td>Black</td>
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<td>Hawaiian</td>
<td>0.98 (0.32 – 3.01)</td>
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<td>Other</td>
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</tbody>
</table>

MP09-10 Trends in Antibiotic Use for Discharged Kidney Stone Patients in United States Emergency Departments from 2015 to 2021
Jeffrey Johnson1, Richard Berman1, Ezra Margolin2, Jeffrey Johnson3, Ojas Shah4
1Columbia University Vagelos College of Physicians and Surgeons, 2Department of Urology, Duke University Medical Center, 3Department of Urology, Weill Cornell Medical College, 4Department of Urology, Columbia University Irving Medical Center

Presented By: Jeffrey Johnson, MD

Introduction: Patients with ureteral stones and concurrent urinary tract infections are at risk of developing sepsis and warrant urgent urinary drainage. However, it is often challenging to identify patients at presentation in the emergency department (ED) who may benefit from treatment. Patients without infection may be discharged from EDs with unnecessary empiric antibiotics, promoting antimicrobial resistance. This research evaluated the current trends in antibiotic use for kidney stone patients discharged from EDs in the United States (US) from 2015 to 2021.

Methods: National Hospital Ambulatory Medical Care Survey data were scaled to national estimates via a multistage weighting procedure. Concurrent infection was defined by ICD-10 codes for sepsis or urinary tract infection. Antibiotic use trends were estimated via logistic regressions on the timing of the encounter. To account for a graphically observed infection point in antibiotic use starting in 2020, an interaction term was included that separated modeled time slopes into two periods.

Results: 8,542,550 patients presented with kidney stones to the ED and were discharged the same day. 22% of patients received antibiotics at any point in the encounter, including 16% who received a prescription at discharge. Concurrent infection was identified in 12% of patients; among patients without concurrent infection, 17% received antibiotics. From 2015 to 2019, the use of antibiotics declined from 28% to 16% of encounters (annual OR 0.82, p = 0.004). However, this trend ended in 2020-2021, when the use of antibiotics rose to 24% of encounters (annual OR 1.65, p = 0.236). Antibiotic use was more common in female patients (OR = 2.26, p = 0.002) and patients with diagnosed infection (OR = 12.37, p < 0.001). The most common class of antibiotics given were cephalosporins (9.7%), followed by quinolones (7.8%), and sulfonamides (2.7%).
Conclusions: Antibiotics are commonly given to kidney stone patients both in the ED and at discharge, even in the absence of suspected infection. The rate of antibiotic use steadily declined from 2015-2019, but that trend did not continue in 2020-2021. These data suggest that antibiotics are frequently overused in the care of patients with kidney stones in the ED, representing an opportunity for improved antibiotic stewardship.

Funding: None.

MP09-11 Is Bipolar Enucleation of the Prostate an Effective and Cost-Efficient Alternative to Robotic Simple Prostatectomy?

Gabriel Martin1, Uy Lae Kim1, Jammie-Lyn Quines1, David Benjamin1, Ala’a Farkouh1, Akin S. Amasyali1, Sikai Song1, Kai Wen Cheng1, Evan Seibly1, Zhamshid Okhunov1, D. Duane Baldwin1

1Department of Urology, Loma Linda University Health

Presented By: Gabriel Martin, MD

Introduction: Holmium-laser enucleation of the prostate (HoLEP) and robotic-assisted simple prostatectomy (RASP) are accepted minimally invasive treatments for large prostates. However, both these procedures require costly capital expenditures and specially trained staff that may not be available in all centers. Recently, bipolar transurethral enucleation of the prostate (B-TUEP) has been described as a minimally invasive alternative for BPH, utilizing standard transurethral equipment available at all centers. However, there is no literature comparing cost between B-TUEP and RASP. The purpose of this study was to assess the efficacy, safety, and cost of B-TUEP compared to RASP.

Methods: A retrospective chart review of patients with symptomatic BPH in a single academic institution who underwent a B-TUEP or RASP was performed from February 2016 to June 2023. Clinical co-variates were collected, including demographics, medical co-morbidities, prostate size, and IPSS scores. Perioperative outcomes were assessed and compared, including operative time, blood loss, length of stay, post-op complications, and cost. Statistical analysis was performed using a two-tailed t-test, Wilcoxon signed-rank test, and Pearson Chi-square test, with p < 0.05 considered significant.

Results: A total of 125 patients were included, with 84 undergoing B-TUEP and 41 undergoing RASP. Significant baseline demographic differences between the surgery groups included a smaller average prostate size in the B-TUEP group (114 vs 163 g; p < 0.001) and a lower percentage of catheter-dependent patients compared to the RASP group (23.8% vs 41.5%; p = 0.042). B-TUEP had shorter operative times (110 vs 257 min; p < 0.001), decreased blood loss (75 vs 209 ml; p < 0.001), shorter hospital stays (0.49 vs 1.73 days; p < 0.001), and shorter catheterization durations (3.24 vs 11.29 days; p < 0.001) compared to RASP. There was no significant difference in overall complications (p = 0.19) and mean postoperative IPSS scores (p = 0.3) between the two groups. Finally, the mean perioperative and total costs of performing B-TUEP compared to RASP were significantly less (perioperative costs: $4, 638.81 vs $10, 040.36; p < 0.001 and total cost: $9, 802.76 vs $21, 737.57; p < 0.001).

Conclusions: B-TUEP provides improved outcomes and reduces cost by 55% compared to RASP. B-TUEP is a promising option for relief of symptomatic prostatic obstruction in patients with large prostates, and may be particularly desirable in centers without access to high-powered lasers or surgical robots.

Funding: None.

MP09-12 Effect of stone composition on the rate and timing of a second stone surgery

David Lifshitz1, Igal Shpunt1, Sagi Arieh Shpitzer1, Nadav Loebl1, Leor Perl1, Dmitry Enikeev1, Yaron Ehrlich1, Abd E. Darawsha1

1Rabin Medical Center, Israel

Presented By: David Lifshitz, MD

Introduction: Few studies have examined the relative risk of recurrence of different stone types. Surgical recurrence may be the most clinically significant type of stone recurrence. The purpose of this study was to compare in a large cohort the risk of recurrent stone surgery between calcium oxalate and non-calcium oxalate stone formers (SF).

Methods: A large healthcare database was searched for all patients with a stone analysis between 2013-2020. Clinical, demographic and healthcare data was collected including all surgical procedures for nephrolithiasis. Results were compared between groups according to stone composition, with calcium oxalate SF as reference. Surgical stone recurrence was defined as any surgical procedure for nephrolithiasis occurring more than 6 months following the first recorded stone surgery. Data was analyzed for up to 5 years from the initial stone surgery.

Results: A total of 11,982 surgical procedures were documented for 8,700 patients (74%) between 2000 and 2023. The overall 5-year surgical recurrence rate was 17.8% (2,097 out of 11,751 patients). Compared to calcium oxalate SF, individuals forming uric acid, calcium phosphate, infection, brushite, and cystine stones were 1.53, 1.62, 2.05, 2.74, and 3.43 times more likely, respectively, to undergo a second stone surgery within 5 years following the initial surgery (p < 0.001) (Figure 1). The median time to repeat stone surgery for cystine and infection SF, in comparison to calcium oxalate SF, was significantly shorter (p < 0.01), with borderline significance observed for uric acid SF (p = 0.053).

![Kaplan-Meier Survival Curves by Primary Stone Composition](image)
Conclusions: Stone composition significantly influences 5-year surgical stone recurrence rates, as well as the median time to recurrence. Non-calcium oxalate SF face a heightened risk of surgical recurrence. This data could prove valuable in guiding patient counseling regarding the necessity of metabolic evaluation and the adoption of preventive measures.

Funding: None.

MP09-13 Tranexamic Acid is Associated with Decreased Postoperative Transfusion Rate and Length of Stay after HoLEP

Maria C. Velasquez1, Pablo Suarez1, Wilson Sui1, Heiko Yang1, Jorge Mena1, Justin Ahn1, Thomas Chi1

1Department of Urology, University of California, San Francisco

Presented By: Maria C. Velasquez, MD

Introduction: Holmium laser enucleation of the prostate (HoLEP) is becoming the gold standard for surgical treatment of benign prostatic hyperplasia. While the procedure is safe and produces durable outcomes, perioperative bleeding remains a concern. Tranexamic acid (TXA) has been studied as an adjunctive therapy to promote effective postoperative hemostasis. While TXA has the potential to limit perioperative transfusion requirements and therefore promote faster discharge or same day surgery, these clinical benefits are not well described. We aimed to determine the impact of perioperative TXA on immediate postoperative outcomes.

Methods: A retrospective cohort study on patients undergoing HoLEP from a single academic institution from 2018-2022 was conducted. After 2019, to facilitate same day discharge, all patients undergoing HoLEP were given TXA unless medically contraindicated. Demographics, clinical and disease-specific patient characteristics, and surgical outcomes were abstracted. The primary outcomes were postoperative transfusion rate, prolonged hospital stay (admission ≥24hr) and Clavien Dindo II or greater complication. Multivariable linear and logistic regression models adjusting for age, BMI, prostate size, prior prostate surgery, hypertension, diabetes, and ASA ≥2 showed that TXA administration decreased both the risk of postoperative transfusion (OR 0.09; 95% CI 0.01–0.95) and prolonged hospital stay (OR 0.19; 95% CI 0.08–0.47) (Figure 1). The occurrence of Clavien Dindo II or greater complications was unaffected.

Conclusions: Although recent studies show no impact of TXA on postoperative outcomes, our study demonstrates that TXA has utility in reducing postoperative transfusion rates and length of stay. For patients undergoing HoLEP, TXA administration should be considered as part of standard care.

Funding: N/A.

MP09-14 The Environmental Impact of Cystoscopes – A Systematic Review and Quality Assessment of Life Cycle Assessments

Michael Baboudjian2, Emilie Dehlholm-Lambertsen1, Augusta Clara Olskjær Birkedal1, Nicklas Christian Funk1

1Ambu, 2Department of Urology, APHM, North Academic Hospital, Marseille, France

Presented By: Michael Baboudjian, MD

Introduction: There’s a belief that reusable medical devices are better for the environment compared to disposable ones, yet there’s insufficient evidence to support this notion. While we must continue to deliver evidence-based practice, limiting the path of healthcare greenhouse gas emissions is imperative to alleviate the impacts of climate change. We sought to provide a systematic literature review of studies conducting a Life Cycle Assessment (LCA) of single-use and reusable cystoscopes. This review marks the first attempt to assess the quality of published LCAs.

Methods: Embase, Pubmed, DTU find-it, HealthcareLCA and Google Scholar were searched for studies measuring the environmental impact of cystoscopes between 01.01.1990 and 01.04.2024. The review process adhered to PRISMA guidelines and data extraction was performed independently by two reviewers. ISO 14044 2006 Environmental management — Life cycle assessment — Requirements and guidelines, §5.2, an international standard specifying requirements and providing guidelines for life cycle assessment (LCA) was used as a checklist to assess the quality of each LCA. Each study was scored between 0 – 2 for subcategories of 1) General aspects, 2) Goal of the study, 3) Scope of the study, 4) Life cycle inventory analysis, 5) Life cycle impact assessment, 6) Life cycle interpretation, and 7) Critical review, with 2 demonstrating full compliance with LCA standards.

Results: 654 studies were identified of which five studies sought to conduct a LCA. Four out of five studies found single-use cystoscopes to have the lower CO2 footprint compared to reusable cystoscopes. The CO2 footprint of single-use cystoscopes ranged from 1, 43 kg CO2e to 2, 41 kg CO2e while the CO2 footprint for reusable cystoscopes ranged from 0, 53 kg CO2e to 4, 23 Kg CO2e. Results are shown in table 1.

Conclusions: Single-use cystoscopes might provide a lower CO2 footprint compared to reusable cystoscopes, however there is a need for further LCAs conducted in accordance with ISO 14044.

Funding: None.
Table 1: LCAs, CO2e and quality assessment

<table>
<thead>
<tr>
<th>Single-use CO2e/procedure</th>
<th>Reusable CO2e/procedure</th>
<th>Quality assessment Score 0–6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bertoli et al. 2024</td>
<td>15 g @ CO2laser</td>
<td>11</td>
</tr>
<tr>
<td>Kromble et al. 2023</td>
<td>2.40</td>
<td>14</td>
</tr>
<tr>
<td>Babuowani et al. 2023</td>
<td>2.05</td>
<td>17</td>
</tr>
<tr>
<td>Montovell et al. 2023</td>
<td>2.45</td>
<td>22</td>
</tr>
<tr>
<td>Hagen et al. 2022</td>
<td>2.41</td>
<td>16</td>
</tr>
</tbody>
</table>

MP09-15  The Statistical Fragility of Randomized Controlled Trials from the AUA Kidney Stone Surgical Management Guidelines

Esther Kim1, Daniel Wang1, Micah Levy1, Nathan Nguyen2, Christopher Connors1, Juan Sebastian Arroyave Villada1, Daniel Cohen1, Modassar Awan1, Michael Palese1

1Icahn School of Medicine at Mount Sinai, 2Carle Illinois College of Medicine

Presented By: Esther Kim, BS

Introduction: The AUA cites randomized controlled trials (RCTs) to establish its guidelines on the use of percutaneous nephrolithotomy (PCNL), ureteroscopy (URS), and shock wave lithotripsy (SWL) for stone management. The fragility index (FI) and fragility quotient (FQ) assess the strength of RCTs by measuring the minimum number of events needed to convert a statistically significant result to nonsignificant. A lower FI indicates a more fragile RCT as fewer alternative events are required to reverse significance. We assessed the statistical fragility of RCTs cited by the AUA Kidney Stone Surgical Management Guidelines.

Methods: AUA Guidelines were screened for two-arm RCTs with dichotomous outcomes. Median FI was calculated, reported with interquartile range [IQR], and analyzed for studies focusing on PCNL, URS, and SWL. Sub analysis assessed FI scores based on significant and nonsignificant outcomes, and specific primary outcomes reported in RCTs. FQ, the ratio of FI to sample size, was calculated to standardize FI across trials with different sample sizes.

Results: Of 235 cited studies, 33 were eligible two-arm RCTs representing 295 outcomes and 3209 patients. The overall FI and FQ were 5 [3-6] and 0.06 (0.03 - 0.10), with FIs of 2 [1-7] and 5 [3-6] for significant and nonsignificant outcomes, respectively. A lower FI indicates a more fragile RCT as fewer alternative events are required to reverse significance. We assessed the statistical fragility of RCTs cited by the AUA Kidney Stone Surgical Management Guidelines.

Conclusions: The overall FI for the AUA Kidney Stone Surgical Management Guidelines was 5, which when compared to 8 previously published urologic fragility studies with a mean FI of 2.8, suggests greater robustness in AUA cited RCTs. However, as significant outcomes presented with lower FIs, particularly for PCNL and SWL, cautious interpretation of these results is advised due to potential volatility with smaller shifts in data. AUA guidelines may benefit from RCTs with stronger significant FI scores in the future.

Funding: None.

MP09-16  Race and Increased Age are Predictors of Delayed Renal Decompression in Patients with Infected, Obstructed Nephrolithiasis

Daniel Sanford1, Vikas Bhatt1, Kamil Malshy1, Elias Hyams1, Gyan Pareek1, Dragan Golijanin1, Borijov Goijanin1, Alexander Homer1, Samuel Eaton1

1The Warren Alpert Medical School of Brown University; Minimally Invasive Urology Institute, The Miriam Hospital, Providence, RI

Presented By: Daniel Sanford, MD

Introduction: Previous literature has suggested a racial discrepancy in patients receiving timely decompression for infected, obstructed nephrolithiasis. We aimed to assess if these racial differences persist when hospital level factors are controlled for in the Medicare population, reducing institutional level confounding that previous studies did not address.

Methods: The 2016 Medicare limited data set was utilized to identify fee-for-service patients who presented with acute infected, obstructive urinary calculi. Rates of decompression, delays in decompression (≥ 2 days), and mortality were calculated. Sex, age, race, hospital, and extent of sepsis were controlled for. Univariate and multivariate linear regression was conducted for primary and secondary outcomes.

Results: Of 235 cited studies, 33 were eligible two-arm RCTs representing 295 outcomes and 3209 patients. The overall FI and FQ were 5 [3-6] and 0.06 [0.03-0.10], with FIs of 2 [1-7] and 5 [3-6] for significant and nonsignificant outcomes, respectively. 14, 13, and 6 RCTs were cited for PCNL, URS, and SWL, respectively. The FIs for PCNL, URS, and SWL were 5 [3-6], 5 [3-6], and 4 [3-5], respectively. Subgroup analysis compared RCTs with the same primary outcome and revealed FIs that ranged from 4 to 5 in PCNL, 3 to 5 in URS, and 4 in SWL (Table 1).

Table 1. Fragility Indices and Quotients for RCTs on Percutaneous Lithotomy (PCNL), Ureteroscopy (URS), and Shock Wave Lithotripsy (SWL)

<table>
<thead>
<tr>
<th>Outcome Type</th>
<th>Number of RCTs</th>
<th>Sample Size</th>
<th>Number of Outcomes</th>
<th>Median FI (IQR)</th>
<th>Median FQ (IQR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>16</td>
<td>1579</td>
<td>44</td>
<td>0.03 (0.02 - 0.05)</td>
<td>0.06 (0.03 - 0.10)</td>
</tr>
<tr>
<td>Significant</td>
<td>16</td>
<td>1579</td>
<td>44</td>
<td>0.03 (0.02 - 0.05)</td>
<td>0.06 (0.03 - 0.10)</td>
</tr>
<tr>
<td>Nonsignificant</td>
<td>31</td>
<td>2912</td>
<td>251</td>
<td>5 (3 - 6)</td>
<td>0.06 (0.03 - 0.10)</td>
</tr>
<tr>
<td>Overall</td>
<td>14</td>
<td>1418</td>
<td>128</td>
<td>0.05 (0.03 - 0.09)</td>
<td>0.06 (0.03 - 0.09)</td>
</tr>
<tr>
<td>Significant</td>
<td>3</td>
<td>643</td>
<td>12</td>
<td>0.02 (0.01 - 0.03)</td>
<td>0.06 (0.03 - 0.09)</td>
</tr>
<tr>
<td>Nonsignificant</td>
<td>13</td>
<td>1256</td>
<td>156</td>
<td>5 (3 - 6)</td>
<td>0.05 (0.03 - 0.09)</td>
</tr>
<tr>
<td>PCNL vs. Other Procedure</td>
<td>8</td>
<td>794</td>
<td>80</td>
<td>4 (3 - 5)</td>
<td>0.03 (0.03 - 0.07)</td>
</tr>
<tr>
<td>URS vs. Other Procedure</td>
<td>2</td>
<td>364</td>
<td>14</td>
<td>5 (4 - 6)</td>
<td>0.07 (0.02 - 0.13)</td>
</tr>
<tr>
<td>SWL vs. Other Procedure</td>
<td>2</td>
<td>139</td>
<td>14</td>
<td>4 (3 - 5)</td>
<td>0.10 (0.08 - 0.12)</td>
</tr>
<tr>
<td>Antimicrobial Prophylaxis in PCNL</td>
<td>1</td>
<td>101</td>
<td>30</td>
<td>5 (3 - 6)</td>
<td>0.05 (0.03 - 0.06)</td>
</tr>
<tr>
<td>Overall</td>
<td>13</td>
<td>968</td>
<td>109</td>
<td>0.09 (0.06 - 0.12)</td>
<td>0.05 (0.04 - 0.11)</td>
</tr>
<tr>
<td>Significant</td>
<td>13</td>
<td>968</td>
<td>109</td>
<td>0.09 (0.06 - 0.12)</td>
<td>0.05 (0.04 - 0.11)</td>
</tr>
<tr>
<td>Nonsignificant</td>
<td>12</td>
<td>853</td>
<td>86</td>
<td>0.09 (0.07 - 0.10)</td>
<td>0.06 (0.05 - 0.10)</td>
</tr>
<tr>
<td>Overall</td>
<td>13</td>
<td>918</td>
<td>108</td>
<td>0.09 (0.06 - 0.12)</td>
<td>0.08 (0.07 - 0.13)</td>
</tr>
<tr>
<td>Significant</td>
<td>6</td>
<td>378</td>
<td>23</td>
<td>0.08 (0.02 - 0.13)</td>
<td>0.09 (0.06 - 0.13)</td>
</tr>
<tr>
<td>Nonsignificant</td>
<td>12</td>
<td>530</td>
<td>84</td>
<td>0.09 (0.07 - 0.11)</td>
<td>0.08 (0.06 - 0.11)</td>
</tr>
<tr>
<td>Overall</td>
<td>12</td>
<td>903</td>
<td>66</td>
<td>0.03 (0.01 - 0.03)</td>
<td>0.07 (0.04 - 0.10)</td>
</tr>
<tr>
<td>Significant</td>
<td>5</td>
<td>856</td>
<td>10</td>
<td>0.02 (0.01 - 0.04)</td>
<td>0.09 (0.06 - 0.11)</td>
</tr>
<tr>
<td>Nonsignificant</td>
<td>7</td>
<td>903</td>
<td>36</td>
<td>0.03 (0.01 - 0.03)</td>
<td>0.09 (0.06 - 0.11)</td>
</tr>
<tr>
<td>Overall</td>
<td>2</td>
<td>442</td>
<td>22</td>
<td>0.01 (0.01 - 0.03)</td>
<td>0.06 (0.04 - 0.08)</td>
</tr>
<tr>
<td>Significant</td>
<td>2</td>
<td>442</td>
<td>22</td>
<td>0.01 (0.01 - 0.03)</td>
<td>0.06 (0.04 - 0.08)</td>
</tr>
<tr>
<td>Nonsignificant</td>
<td>4</td>
<td>461</td>
<td>64</td>
<td>0.04 (0.02 - 0.06)</td>
<td>0.06 (0.04 - 0.08)</td>
</tr>
</tbody>
</table>

Conclusions: The overall FI for the AUA Kidney Stone Surgical Management Guidelines was 5, which when compared to 8 previously published urologic fragility studies with a mean FI of 2.8, suggests greater robustness in AUA cited RCTs. However, as significant outcomes presented with lower FIs, particularly for PCNL and SWL, cautious interpretation of these results is advised due to potential volatility with smaller shifts in data. AUA guidelines may benefit from RCTs with stronger significant FI scores in the future.

Funding: None.
to 7.5%) increased probability of having delayed decompression. No differences in mortality were seen by race. Increasing age was paradoxically associated on multivariate analysis with decreased likelihood of decompression, increased probability of delays in decompression, and increased probability of mortality.

**Conclusions:** Race is an independent predictor of having delayed decompression and not having decompression in patients with infected obstructed calculi although these delays did not translate to worse mortality. These findings persist despite controlling for hospital factors, raising concern in regard to health equity for a disease that can be life threatening.

**Funding:** Not Applicable.

**MP09-17 Calling Patients Prior to Uroflowmetry Test Increases Patient Compliance**

Daniel Wang1, Hannah Freid1, Kenny Chin1, Micah Levy1, Esther Kim1, Juan Arroyave Villada1, Chris Connors1, Daniel Cohen1, Aaron Walt2, Modassar Awan1, Michael Palese1

1Icahn School of Medicine at Mount Sinai, 2SUNY Downstate Medical School

Presented By: Daniel Wang

**Introduction:** Uroflowmetry (uroflow) tests are commonly used in urology outpatient setting for evaluation of voiding complaints. To achieve an accurate and clinically useful test, patients require a voided volume of at least 150 mL, however, many patients fail to arrive at the office with full bladders, leading to invalid uroflow results, delays in treatment, and institutional delays and waste. This prospective study examined whether pre-visit phone call reminders could improve uroflow test compliance.

**Methods:** Male patients scheduled for uroflow at an outpatient urology office between March and September 2022 were called one day before their uroflow visit and reminded to arrive with a full bladder. Voicemails were left for patients who did not answer. The control group consisted of a retrospective cohort of patients who underwent uroflow between November 2021 and January 2022 but were not called prior to appointment. Uroflow results (voided volume and Qmax) and percent of patients with valid uroflow tests (i.e. voided volume ≥150 mL) were compared between called and non-called groups.

**Results:** 97 patients scheduled for a uroflow were called. 69% answered the phone while 31% received voicemails. Calls and voicemails lasted an average of 50.5 seconds and 59.1 seconds, respectively. 83.5% of called patients attempted a uroflow test at their scheduled appointment. Uroflow data from 90 uncalled patients were collected and analyzed. Among all patients, 44.8% had valid a uroflow test (i.e. voided volume ≥150 mL). However, patients who were called were significantly more likely to have a valid test compared to patients who had not been called (54.3% vs. 40.5%, p = 0.016). Moreover, patients who were called had significantly higher average voided volumes (209.1 vs. 152.0, p = 0.009) and Qmax measurements (14.5 vs. 11.1, p = 0.017) compared to the control group. No significant differences were observed between patients who answered the phone when called and those who received a voicemail message.

**Conclusions:** Though overall compliance remained low, brief phone calls or voicemail messages to patients scheduled for uroflow tests significantly increased the proportion of patients with valid uroflow measurements. This method may be useful for improving patient compliance and institutional delays.

**Funding:** None.

**MP09-18 Follow-up of urolithiasis patients. A survey from the young academic urologist (YAU)**

Victoria Jahreiss19, Lazaros Tzelves1, Vineet Gauhar2, Jeffrey Leow3, Francesco Esperto4, Esteban Emiliani5, Vincent De Coninck6, Thomas Tailly7, Etienne X Keller8, Michele Talso9, Senol Tonyali10, Emre T Sener11, Zeeshan Hameed12, Eugenio Ventimiglia13, Patrick Juleb-Jones14, Ioannis Mykoniatou15, Arman Tsaturyan16, Andreas Skolarikos17, Bhaskar Somani18, Amelia Pietropaolo18

1Second Department of Urology, National and Kapodistrian University of Athens, Sismanoglio General Hospital, 2Ng Teng Fong General Hospital, 242949, Urology, 3Department of Urology, Tan Tock Seng Hospital, 4Department of Urology, Campus Bio-Medico University, 5Department of Urology, Puigvert Foundation, Autonomous University of Barcelona, 6Department of Urology, Klinia Hospital, 7Department of Urology, Gent University Hospital, 8Department of MODERATED POSTER SESSION 9 -A137-
Introduction: EAU guidelines recommend rigorous follow-up protocols for urolithiasis patients’ post-intervention. While such follow-up is deemed crucial, with algorithmic approaches being potentially beneficial, there is a notable scarcity of data.

Methods: An invitation to participate in this survey was disseminated to various endourological societies across Europe, the UK, and Asia. The total number of invitations was 880, 340 participants responded, equating to a response rate of 38.6%. The survey assessed demographic data including age, years of practice, practice location, involvement in research, sector of employment (private, academic, or public), and completion of an endourology fellowship. The survey was designed to investigate: Awareness of the ALARA principle· Timing for assessing stone-free status post-surgery. The interval for follow-up imaging after achieving stone-free status and in cases of recurrent or residual fragments (CIRF). The average duration of imaging follow-ups after confirming stone-free status and for CIRFs, differentiated by patient risk category.

Results: A preference for CT scans over US +/- X-ray KUB was observed in Europe/UK compared to Asia for assessing stone-free rate (SFR) post-surgery for radioopaque stones (28% vs 10.7%, p = 0.011) and radiolucent stones (47.3% vs 30.7%, p < 0.001). Respondents engaged in research were more inclined to use CT scans for SFR assessment of radiolucent stones (45.3% vs 30.9%, p = 0.016). High-volume surgeons predominantly used US for SFR assessment of radiolucent stones, compared to other modalities. The timing for SFR evaluation was influenced by the continent of practice, practice setting, completion of endourology fellowship, and the volume of RIRS and PCNLs performed, with longer intervals in Europe, completed endourology fellowship and high volume, but not by age, years of practice, or research involvement. No significant differences were found in the intervals of imaging follow-up for stone-free patients based on demographic or professional variables, including awareness of the ALARA principle.

Conclusions: These findings reveal significant variations in practices for follow-up imaging and assessment of SFR among urologists worldwide, influenced by geographic, professional, and practice-related factors. While there is a clear commitment to adhering to follow-up protocols, the variability in practices highlights the necessity for further research.

Funding: Not applicable.
**MP10-01 Lower pole stones of 10-20mm size – A Prospective Randomised controlled study between MiniperC and RIRS using Thulium fiber laser**

Chandra Mohan Vaddi2, Ramakrishna Padaikula1, Siddalinga Swamy Pn1, Soundarya Ganesan1, Hemnath Ua2, Rakesh Panda2, Kartheek Ganapathri2, Vaibhav Joshi2

1Preeti Urology and Kidney Hospital, 2Preeti Urology and Kidney Hospital

Presented By: Chandra Mohan Vaddi, MCh Urology

**Introduction:** Primary Aim: To compare the different treatment modalities in terms of efficacy (stone free rate, need for auxiliary procedures) and safety (complication rate). Secondary aim: To compare the perioperative outcomes (operative time, fluoroscopic time, length of hospitalization).

**Methods:** Study Design: Prospective randomised controlled study • Study Centre: Preeti Urology & Kidney Hospital, Hyderabad • Study period: October 2021 – May 2022 • Study Population: Patients with lower pole stones 10-20mm Group A - RIRS, Group B – Mini PCNL • Method of randomisation: Block randomisation The energy source used was 60W Thulium Fiber Laser (TFL) (IPG Photonics, Oxford, Massachusetts, United States) in both Group A and B. Demographic data, stone parameters, laser time, total operating time were recorded, laser efficacy (J/mm3) and ablation speed (mm3/sec) were calculated. NCCT KUB was done at 3months post operatively to calculate stone free rate. Institutional Ethics Committee approval was obtained.

**Results:** Mean stone size was 13.93 ± 2.92mm in Group A and 15.04 ± 3.18mm in Group B. As regards to Group A, fluoroscopy time was significantly lower (31.96 ± 14.34 vs 337.68 ± 131.85, p < 0.001), hospital stay was significantly lower (1.37 ± 0.63 vs 3.24 ± 1.01, p < 0.001) and the stone free rate (SFR) was comparable to Group B (88.9% vs 92.3%, p = 1.000). There was no significant difference in operative time, complication rate or need for auxiliary procedure (Table 1).

**Conclusions:** RIRS with TFL is an effective alternative to miniPCNL for lower pole stones 10-20mm.

**Funding:** SELF

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**MP10-02 Mini versus standard PCNL for treatment of 10-25mm renal stones: a multi-institutional randomized controlled trial from the EDGE Consortium**

Seth Bechis6, Tyler Sheetz1, Sri Sivalingam2, Ben Chew3, Connor Forbes3, Ryan Hsi4, Nicole Miller4, Bodo Knudsen5, Michael Sourial5, Matthew Lee3, Jamie Finegan6, Victor Wong3, Roger Sur6, Manoj Monga6

1UC San Diego, 2Cleveland Clinic, 3University of British Columbia, 4Vanderbilt University, 5Ohio State University Medical Center, 6University of California, San Diego Health

**Introduction:** Minimally-invasive PCNL (MIP) has gained popularity due to perceived benefits of a smaller tract size resulting in less complications. Though preliminary comparative studies have been equivocal, no randomized controlled trial has evaluated MIP versus standard PCNL (sPCNL) tract sizes in a modern tubeless US practice setting. We aimed to compare these two cohorts using a multi-institutional randomized study design and examining intraoperative, perioperative, and clinical outcomes.

**Methods:** The study was IRB approved at participating EDGE institutions. Inclusion criteria included urologist-acquired renal access in a prone position with cumulative stone diameter of 10-25mm and ureteral stent only for postoperative drainage (“tubeless”). Procedures were performed from 2021 until 2024, and patients were randomized to receive 17Fr (MIP) vs 30Fr (sPCNL) tract. Statistical testing was performed with two-tailed Student’s t-test (unless otherwise indicated) with p < 0.05 indicating significance.

**Results:** The cohort consisted of 32 patients in the sPCNL arm and 33 patients in the MIP arm. Demographic variables were similar, except weight (77.8 kg vs 87.8 kg, p = 0.04) and BMI (26.9 vs 30.8, p = 0.006) which were higher in the MIP cohort. Age, gender, comorbidity measures, history of UTI and urosepsis, number (1.6±0.7 vs 2.1±1.5) and size (15.2±5.8 vs 14.4±4.8mm) of target stones, and skin-stone distance were not significantly different. There was no statistically significant difference in intraoperative variables (Table 1a) including blood loss and intrarenal pelvis pressures. Postoperative parameters (Table 1b) including inflammatory markers and mean PACU pain scores were also similar. The sPCNL group had a 9%
Methods: Adults with stones 10-25 mm were randomised to FURS or PCNL across participating NHS departments. 159 patients were randomised: 86 to PCNL and 73 to FURS. The primary outcome measure was health status Area Under the Curve (AUC), measured weekly with EQ-5D-5L until 12 weeks post-intervention. The primary economic outcome was the incremental cost per quality-adjusted life year (QALYs) gained at 12 months from randomisation.

Results: Complete stone clearance was higher with PCNL (71%) than FURS (48%). Mean health status was slightly in favour of PCNL assessed 12 weeks post intervention (0.06 (95% CI 0.11, 0.02), based on 0.818 (0.217) for PCNL compared to 0.794 (0.198) for FURS). At a threshold value of £20, 000 per QALY, PCNL has an 87% chance of being cost-effective. Limitations of the study were that blinding of participants and health care providers was not possible, and that the study did not recruit to target, partly due to effect of COVID on operative waiting times.

Conclusions: This study found that PCNL was more clinically effective for complete stone free status and more cost-effective than FURS based on a micro-costing basis, which is the effective cost of treatment to the NHS.

Funding: The PUrE trials were funded by the NIHR (National Institute for Health and Care Research, UK).
Post-operatively, the CT+iVR group had a statistically significant improvement in absolute stone-free (33.70% vs 20.22%, p = 0.043) and overall < 4 mm stone remnant rate (62.79% vs 48.20%, p = 0.044) (Figure 2). Moreover, the risk of Clavien II-IIIa complications significantly fell in the CT+iVR group (3.48% vs 12.35%, p = 0.03). A multivariate logistic regression analysis demonstrated that regardless of each surgeon’s years of PCNL experience, the individual surgeon’s objective clinical outcomes improved in the CT+iVR group.

**Conclusions:** Independent of a surgeon’s PCNL experience, the preoperative visualization of an iVR model of the stone-bearing kidney resulted in a statistically significant safer, more effective procedure.

**Funding:** None.

**MP10-06** Suction mini-PCNL facilitate the stone removal and keep a low renal pelvic pressure

Wen Zhong

1First Affiliated Hospital of Guangzhou Medical University

Presented By: Wen Zhong, PhD

**Introduction:** Mini percutaneous nephrolithotomy (mPCNL) has been a well established procedure for the management of renal stone. Small tract in mPCNL was likely to prolong operation time, bring high renal pelvic pressure (RPP) and postoperative fever. Suction mini PCNL (SMP) would suck out stone fragments and irrigation during PCNL. The present study compared the intraoperative RPP and stone removal efficiency between SMP and traditional mini-PCNL (mPCNL) in the treatment of renal calculi larger than 2.5cm to certify the hypothesis.

**Methods:** 110 patients were randomly divided into SMP group and mPCNL group. 18Fr suction sheath and peel-away sheath were used in SMP and mPCNL group, respectively. RPP was measured with pressure transducer.

**Results:** There was no significant difference between the two groups in age (40.1 ± 17.7 vs. 44.2 ± 21.1 y, P = 0.102), BMI (24.1 ± 6.5 vs. 23.5 ± 7.3 kg/m², P = 0.753), stone size (4.1±0.7 vs. 4.3 ± 0.9 cm, P = 0.945). The basal RPP in SMP and mPCNL group was 13.0 ± 3.2 and 21.1 y, P = 0.99 vs 3.14 ± 1.99, p < 0.001, postoperative hospital stay (2.66 ± 1.98 vs 3.60 ± 1.97, p = 0.019), and hospital stay (5.46 ± 3.39 vs 9.18 ± 2.76, p < 0.001).

**Conclusions:** Patients with negativeurine culture, butpositiveurine dipstick test, do notbeneefficicyantibioticsfor more than 3 days beforePCNL. A single dose of antibiotics isadequate for PCNL surgery.

**Funding:** None.

**MP10-05** Antibiotics strategy in patients with positive urine dipstick test but negative urine culture before percutaneous nephrolithotomy

Wen Zhong

1First affiliated hospital of Guangzhou Medical University

Presented By: Wen Zhong, PhD

**Introduction:** Middlestreamurineculture (MSUC) is a classical method to evaluate the UTI status, and further, the drug sensitive test is required to guide the antibiotics therapy in clinical practice. In different guidelines or expert consensus on PCNL, antibiotics treatment strategy in cases with positive MSUC is very clear that, sensitive antibiotics is administrated for 5-7 days. However, there is no clear guideline and consensus regarding to the antibiotics treatment strategy in patients with positive urine dipstick test but negative MSUC. Theresentence single center, open label, prospective randomized controlled trial aimed to evaluate the effects of preoperative single dose prophylactic antibiotic versus empirical antibiotic treatment on post-PCNL infection, therefore to provide high-level evidence for further clarification of peri-operative antibiotic strategy in these patients with positive urine dipstick test but negative MSUC.

**Methods:** Patients with renal stones and negative urine culture but positive urine dipstick test (white blood cells in urine, and/or positive nitrite) and plan to undergo PCNL were enrolled in the present RCT. Either single dose antibiocrempirical antibiotics were administrated in both groups. Postoperative fever, hospital stay, and postoperative antibiotic diuresis were compared.

**Results:** A total of 100 patients undergoing PCNL were enrolled in this study, including 50 cases in the single dose group and 50 cases in the empirical group. There was no significant statistical difference in baseline demographic data between the two groups, including age, gender, BMI, location of stones, stone size, preoperative hemoglobin, preoperative serum creatinine, urine routine white blood cell count, and positive urine nitrite (p > 0.05). The single dose group had advantages over the empirical treatment group in postoperative fever rate (10% vs 20%, p = 0.161), operation time (79.97 ± 28.89 vs 86.10 ± 37.88, p = 0.208), hemoglobin decrease (17.22 ± 11.63 vs 12.04 ± 14.11, p = 0.276), postoperative hospital stay (2.65 ± 2.01 vs 3.44 ± 2.01, p = 0.845), and stone removal rate (84% vs 78%, p = 0.317), but this difference was not statistically significant. The single dose group showed statistically differences compared to the empirical treatment group in terms of postoperative antibiotic use (1.86 ± 0.99 vs 3.14 ± 1.99, p < 0.001), postoperative hospital stay (2.66 ± 1.98 vs 3.60 ± 1.97, p = 0.019), and hospital stay (5.46 ± 3.39 vs 9.18 ± 2.76, p < 0.001).

**Conclusions:** In different guidelines or expert consensus on PCNL, antibiotic treatment strategy in cases with positive MSUC is very clear that, sensitive antibiotics is administrated for 5-7 days. However, there is no clear guidance in guidelines and consensus regarding to the antibiotic treatment strategy in cases with positive MSUC. The present study compared the intraoperative RPP and stone removal efficiency between SMP and traditional mini-PCNL (mPCNL) in the treatment of renal calculi larger than 2.5cm to certify the hypothesis.

**Funding:** None.
MP10-07  Stentless percutaneous nephrolithotomy: A prospective randomized controlled trial Objective: To evaluate the safety and feasibility of percutaneous nephrolithotomy (PCNL)

Wen Zhong1

1First affiliated hospital of Guangzhou Medical University

Presented By: Wen Zhong, PhD

Introduction: To evaluate the safety and feasibility of percutaneous nephrolithotomy (PCNL) without indwelling ureteral stent after surgery.

Methods: 80 patients were enrolled in this prospective randomized controlled study. Ureteral stents were placed or not placed at the end of PCNL procedures in different groups. Postoperative complications and WISQOL questionnaire scores were compared and analyzed in both groups.

Results: Both groups did not experience severe complications such as bleeding or sepsis after surgery, and there was no statistically significant difference in postoperative hospital stay (3.45 ± 2.92 vs 3.85 ± 1.93, p = 0.393). The postoperative hematuria (32.21% vs 62.41%, p = 0.001), LUTS symptoms (15.38% vs 41.46%, p = 0.010), and urinary reflux back pain (0% vs 2.5%, p = 0.159) in the stentless group were all lower than those in the stent group. There was no statistically significant difference (p < 0.05) in the incidence of renal fistula leakage and ureteral stone related events within one month after surgery. On the 3rd and 14th day after surgery, the WISQOL scores of the stentless group were higher than those of the stent group in terms of social (p < 0.001), emotional (p < 0.001), disease (p < 0.001), vitality (p < 0.001), and total score (p < 0.001). At 30 days after surgery, both groups had their internal stents removed, and there was no statistically significant difference in WISQOL.

Conclusions: Stentless PCNL surgery is safe and feasible, and does not increase the risk of postoperative renal fistula leakage or emergency events related to ureteral stones. However, it can significantly reduce hematuria, LUTS, and reflux back pain during urination caused by ureteral stent placement, and improve the patient’s quality of life.

Funding: None.

MP10-08 Utilization and Cost of Outpatient Percutaneous Nephrolithotomy in the United States

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Presented By: Jeffrey Johnson, MD

Introduction: Percutaneous nephrolithotomy (PCNL) is the preferred treatment for large or complex renal stones. New PCNL techniques have increased interest in reducing hospitalization durations and costs, as well as treating smaller stones. We analyzed the utilization, regional adoption, and costs of outpatient and inpatient PCNL in the United States (US) using a large geographically diverse cohort.

Methods: Patients undergoing PCNL between 2016 and 2019 were retrospectively identified via ICD-10-PCS and CPT procedure codes in the Premier Healthcare Database. Outpatient PCNL was defined as a discharge within 23 hours of the procedure while inpatient PCNL as a hospital admission beyond 24 hours. Demographic and clinical data including direct hospital costs (in 2022 US dollars) and Charlson Comorbidity Index (CCI) were reported. Wilcoxon Rank Sum and Chi Squared tests were used to compare differences between inpatient and outpatient PCNL. Logistic regression was performed to identify factors associated with undergoing outpatient PCNL.

Results: A total of 22,815 PCNLs were captured over the study period. Of these, 43% (9,792) were outpatient while 57% (13,023) were inpatient. Median age of included patients was 59 (Interquartile Range (IQR): 46-68) years. Median hospital stay for inpatient PCNL was 2 (IQR:1-4) days. Mean CCI amongst patients undergoing inpatient PCNL was higher than CCI for outpatient PCNL patients (1.08 versus 0.7, p < 0.001). Inpatient PCNL incurred more direct hospital costs when compared to outpatient PCNL ($19,578 versus $10,587, p < 0.001). Logistic regression revealed that patients who were female (odds ratio (OR) 0.86, 95% confidence interval (95%CI) 0.8 to 0.92), African American (OR 0.8, 95%CI 0.69 to 0.93), lived in rural regions (OR 0.79, 95%CI 0.7 to 0.9) or who had a higher CCI (OR 0.76, 95%CI 0.73 to 0.78) were less likely to undergo outpatient PCNL. The proportion of outpatient PCNLs increased across the study period from 52% to 63% (Figure 1).
Conclusions: The majority of PCNLs are performed as an outpatient surgery and associated with substantially lower costs. Inpatient PCNL remains commonly performed though, particularly among patients with more comorbidities.

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**MP10-09** Is pelvic urine culture related to stone compositions and postoperative febrile urinary tract infection after percutaneous nephrolithotomy?

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Presented By: Seungsoo Lee, MD

**Introduction:** We evaluated relationship between stone compositions and postoperative febrile urinary tract infections complications and pelvic urine culture in patients who underwent percutaneous nephrolithotomy.

**Methods:** From 2017 to 2023, 180 renal units of 169 patients who underwent percutaneous nephrolithotomy for renal and ureteropelvic junction stones by a single surgeon were evaluated. Pelvic urine culture samples were collected during surgeries. Renal calyx was punctured with Chiba needle, and then pelvic urine was aspirated with a syringe. The collected pelvic urine samples were cultured. Patients’ sex, age, body mass index (BMI), stone size, stone compositions, urine culture results and strains were analyzed.

**Results:** Among the 180 units, male was 117 (65.0%) and female was 63 (35.0%). Mean age was 58.2 years old and mean BMI was 24.5 kg/m². In stone compositions, calcium oxalate, uric acid, and calcium oxalate plus struvite were 105 (58.3%), 27 (15.0%), and 21 (11.7%), respectively. Twenty-nine (16.1%) samples were culture positive and 151 (83.9%) were culture negative (Table 1). Between the culture positive and negative groups, sex and stone compositions were statistically different. In culture positive group, female was more than male. Calcium oxalate and uric acid stones were more dominant in culture negative group, whereas carbapatite and struvite stones were observed more often in culture positive group. However, there was no association between pelvic urine culture and febrile urinary tract infectious complication (Table 2). The most common bacteria strain was Escherichia coli (10 units) followed by Enterococcus faecalis, Pseudomonas aeruginosa, Staphylococcus saprophyticus, and Enterococcus faecium (three units, respectively) (Table 3).

**Conclusions:** In pelvic urine culture positive group, infection-related stones including struvite and carbapatite stones are more common than in pelvic urine negative group. However, postoperative complication was not related with pelvic urine culture result. We presume there are many factors that affects postoperative complications besides infection.

**Funding:** None.

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**MP10-10** Factors Predicting Postoperative Acute Kidney injury in Patients undergoing Percutaneous Nephrolithotomy

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Presented By: Arun Chawla, MCh

**Introduction:** Nephrolithiasis is the third most prevalent condition treated by urologists. The most common stone is a renal stone, and the lifetime prevalence of this condition is 15%. PNL remains the standard procedure for large renal calculi. The main drawback of PNL is its affect on renal functions. The objective of this prospective observational study is to identify the Incidence, Risk factors, and Outcomes of post-PNL-AKI and to create Nomogram to predict post-PNL-AKI.

**Methods:** The present study was conducted on diagnosed patients of renal calculus disease getting admitted to Kasturba Medical College, Manipal. Demographic and laboratory, stone factors, intraoperative factors were considered. AKI was defined by KIDIGO guidelines. Post-operative AKI patients were followed up with creatinine values till 3 months.

**Results:** Among 322 patients analysed, 40 (12%) patients developed post-PNL-AKI. Male, HTN, Hyperuricemia, Staghorn calculi, higher Hounsfield Units, Stone Volume, B/L PNL, Tract Size, and Operative Time were significantly associated with post PNL-AKI. To nullify the confounding effect of other risk factors univariate and multivariate analysis was done which showed Stag horn, Volume of the stone, Operative time, B/L PNL, Serum Uric acid, Gender were found to be significant. Based on these factors a nomogram was created. Each factor is assigned points according to the nomogram, the points scale ranges from 140 to 320, and each individual factor is assigned score, and the total score is used to predict the AKI percentage. Internal
validation of the nomogram was done and the area under the ROC curve for Total Score predicting AKI was 0.984 (95% CI), with statistically significant (p = <0.001). At a cut-off of Total Score ≥226, it predicts AKI with a sensitivity of 100%, and a specificity of 97%. The area under the ROC curve for Probability predicting AKI was 0.984 (95% CI), was statistically significant (p = <0.001). At a cut-off of Probability ≥0.15, it predicts AKI with a sensitivity of 100%, and a specificity of 97%. Thus both demonstrating excellent diagnostic performance.

Conclusions: Up to twelve percent of patients can develop post-PNL AKI. Our Nomogram can predict percentage of pre-operative AKI in each individual patient, which will help in early identification, proper preoperative counselling and structured planning for the post-operative course to avoid further insult to the kidneys.

Funding: Nil.

MP10-12 Effect of irrigation solution temperature on complications of Percutaneous Nephrolithotomy: a systematic review of the literature, meta-analysis and trial sequential analysis of randomized clinical trials
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1German Hospital Oswaldo Cruz, 2University of São Paulo Medical School, 3University of Mogi das Cruzes, 4Pontifical Catholic University of São Paulo

Presented By: José Arnaldo S. da Cruz, MD, PhD

Introduction: Percutaneous nephrolithotomy (PCNL) is a widely practiced urological procedure for treating kidney stones. However, it introduces a significant risk of hypothermia due to prolonged anesthesia times and the substantial use of irrigation fluids. Consequently, the optimal temperature for the irrigation solution during PCNL, aimed at minimizing hypothermia and other related complications, is yet to be established. Therefore, this study seeks to explore the impact of different irrigation solution temperatures (cold/room versus warm/body temperature) on patient outcomes.

Methods: This systematic review was conducted in accordance with PRISMA guidelines. Medline, Cochrane, Embase and Scopus databases were searched in November 2023. We included randomized clinical trials that compared the effects and complication rates of different irrigation fluid temperatures in patients submitted to PCNL. Studies selection and data extraction were performed by multiple reviewers and a random-effects model was used for pooling of data. Our primary endpoint was hypothermia rate. Secondary outcomes were shivering rate, mean temperature decrease, mean patients’ final temperature, blood loss and operative time. This systematic review was conducted in accordance with PRISMA guidelines. Medline, Cochrane, Embase and Scopus databases were searched in November 2023. We included randomized clinical trials that compared the effects and complication rates of different irrigation fluid temperatures in patients submitted to PCNL. Studies selection and data extraction were performed by multiple reviewers and a random-effects model was used for pooling of data. Our primary endpoint was hypothermia rate. Secondary outcomes were shivering rate, mean temperature decrease, mean patients’ final temperature, blood loss and operative time.

Results: Both the groups were identical with respect to stone size (2.74cm vs 2.83cm; p = 0.6) and hardness (1359 vs 1289 HU; p = 0.7). The procedure time was comparable in both the groups with no statistical difference (32.2 vs 30.3min; p = 0.6). The fragmentation time and total laser energy used were not statically different in both groups (463.69 vs 453.18 seconds and 8.85 vs 9.14 watts; p = 0.7). There was no difference in stone clearance rates or morbidity in form of blood loss or pain score. The holmium laser produced bigger fragments as compared to TFL laser that produced more dust.

Conclusions: Both the holmium and TFL are equally effective lasers for calculi fragmentation in MiniPCNL.

Funding: Nil.

MP10-13 Excessive Blood Loss in Percutaneous Nephrolithotomy (PCNL): Does Evolving Indication translated into Outcome? A Randomized Controlled Trial
Rajesh Kukreja1,2
1Urocare Hospital, 2Catholic University of São Paulo

Presented By: Rajesh Kukreja, MD

Introduction: Miniaturised Percutaneous nephrolithotomy (MiniPCNL) has now become a well accepted option for management of small to medium sized renal stones. Holmium laser has been the standard choice of energy sources used to fragment the stones in this procedure. Thulium fiber laser has been recently introduced for intracorporeal fragmentation of stones in flexible ureterorenoscopy and MiniPCNL with supposedly faster ablation speed in flexible ureterorenoscopy. This prospective study aims to compare the two different types of lasers in MiniPCNL with respect to fragmentation time, total laser.

Methods: 90 patients with renal stones of size ranging between 15mm to 35mm were prospectively enrolled in this study and equally divided into two groups: A) Holmium laser (Quanta, Israel) and B) Thulium fibre laser (TFL) (Urolase SP, IPG Photonics). All procedures were carried out by a single surgeon in prone position. Procedures requiring more than one tract or more than one sitting were excluded. 16.5/17.5Fr MiniPCNL sheath (Karl Storz, Tuttingen) was used in all the cases. Laser settings range were identical in both the groups (1J, 10Hz to 3J, 15Hz) depending upon the surgeons comfort with stone fragmentation. Data were analysed using SPSS (Statistical Package for Social Sciences) 25.0 version. Intergroup comparison was done using Independent t-test (continuous variables) and chi-square test (categorical variable). p-value < .05 was considered statistically significant.

Results: Both the groups were identical with respect to stone size (2.74cm vs 2.83cm; p = 0.6) and hardness (1359 vs 1289 HU; p = 0.7). The procedure time was comparable in both the groups with no statistical difference (32.2 vs 30.3min; p = 0.6). The fragmentation time and total laser energy used were not statically different in both groups (463.69 vs 453.18 seconds and 8.85 vs 9.14 watts; p = 0.7). There was no difference in stone clearance rates or morbidity in form of blood loss or pain score. The holmium laser produced bigger fragments as compared to TFL laser that produced more dust.

Conclusions: Both the holmium and TFL are equally effective lasers for calculi fragmentation in MiniPCNL.

Funding: Nil.

MP10-11 Holmium vs Thulium Fiber Laser. Does it make a difference in MiniPCNL?
Rajesh Kukreja1
1Urocare Hospital

Presented By: Rajesh Kukreja, MD

Introduction: Percutaneous nephrolithotomy (PCNL) has now become a well accepted option for management of small to medium sized renal stones. Holmium laser has been the standard choice of energy sources used to fragment the stones in this procedure. Thulium fiber laser has been recently introduced for intracorporeal fragmentation of stones in flexible ureterorenoscopy and MiniPCNL with supposedly faster ablation speed in flexible ureterorenoscopy. This prospective study aims to compare the two different types of lasers in MiniPCNL with respect to fragmentation time, total laser.

Methods: 90 patients with renal stones of size ranging between 15mm to 35mm were prospectively enrolled in this study and equally divided into two groups: A) Holmium laser (Quanta, Israel) and B) Thulium fibre laser (TFL) (Urolase SP, IPG Photonics). All procedures were carried out by a single surgeon in prone position. Procedures requiring more than one tract or more than one sitting were excluded. 16.5/17.5Fr MiniPCNL sheath (Karl Storz, Tuttingen) was used in all the cases. Laser settings range were identical in both the groups (1J, 10Hz to 3J, 15Hz) depending upon the surgeons comfort with stone fragmentation. Data were analysed using SPSS (Statistical Package for Social Sciences) 25.0 version. Intergroup comparison was done using Independent t-test (continuous variables) and chi-square test (categorical variable). p-value < .05 was considered statistically significant.

Results: Both the groups were identical with respect to stone size (2.74cm vs 2.83cm; p = 0.6) and hardness (1359 vs 1289 HU; p = 0.7). The procedure time was comparable in both the groups with no statistical difference (32.2 vs 30.3min; p = 0.6). The fragmentation time and total laser energy used were not statically different in both groups (463.69 vs 453.18 seconds and 8.85 vs 9.14 watts; p = 0.7). There was no difference in stone clearance rates or morbidity in form of blood loss or pain score. The holmium laser produced bigger fragments as compared to TFL laser that produced more dust.

Conclusions: Both the holmium and TFL are equally effective lasers for calculi fragmentation in MiniPCNL.

Funding: Nil.
random-effects model was used for pooling of data. Our primary endpoint was hypothermia rate. Secondary outcomes were shivering rate, mean temperature decrease, mean patients’ final temperature, blood loss and operative time.

**Results:** We retrieved 4 articles, including 148 subjects in the experimental group (35.8°C-37.8°C) and 150 in the control group (20°C-22°C). The primary outcome, hypothermia rate, showed significant statistical difference between groups, occurring less frequently in the experimental branch than in the cold/room temperature irrigation group (RR 0.64; 95% CI 0.46, 0.89; p < 0.008; I² = 33%). Secondary outcomes such as shivering rate (RR 0.46; 95% CI 0.31, 0.67; p < 0.0001; I² = 0%) and mean final temperatures (MD 0.43; 95% CI 0.12, 0.75; I² = 82%) also showed statistically significant differences between groups, favoring the irrigation with heated fluid.

**Conclusions:** There was a decreased rate of hypothermia and shivering among patients undergoing PCNL with warm irrigation fluid. Mean final temperatures were also higher in the experimental group. As to blood loss, mean hemoglobin decrease showed no statistically significant difference between groups, prompting further investigation of the influence of irrigation solution temperature in blood loss volume.

**Funding:** None.

**MP10-13 Assessing the risk of bowel injury in lower calyx puncture during Percutaneous Nephrolithotomy in supine position compared to prone position – assessment according to CT-Urography**

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Presented By: Mohamed Igbaria, MD

**Introduction:** Injury during PCNL is a rare but serious complication. The purpose of this study is to investigate the existence of the intestine adjacent to the posterior lower pole of the kidneys and to evaluate the changes of the bowel location relatively to the kidneys based on CTU imaging in order to assess the risk of bowel injury during PCNL in both supine and prone positions.

**Methods:** A total of 50 CTU scans following a protocol which included supine and prone positions for each patient were evaluated. Estimated puncture area boundaries marked in the inferior posterior aspect of the kidney in coronal and axial view. In the coronal view, two horizontal lines inserted from the abdominal wall directed medially towards the kidneys, upper line reaches the renal hilum and lower line reaches the edge of the inferior pole. In the axial view, the area marked by a horizontal upper line that initiated from the renal hilum to the abdominal wall, and from the posterior aspect of the cortex transversally to the abdominal wall. The field between the described borders scanned for the presence of adjacent organs. Secondary outcomes included BMI, previous PCNL operations and previous abdominal operations.

**Results:** Fifty patients participated. In both sides of the kidneys an estimated intestinal injury was less likely to happen in supine position compared to prone position, on the right kidneys the intestinal existence within the marked limits was 10% and 26% respectively (P = 0.009), and on the left kidneys, the intestine presence observed in 32% of the cases compared to 42% respectively (P = 0.002). Both BMI values and previous abdominal operations showed no significant effect on intestinal location compared to the desired kidney portion.

**Conclusions:** The probability of intestinal presence adjacent to the renal posterior lower pole is high (27.5%), our data showed significant lower incidence of intestinal presence in the presumed puncture area of the lower calyx in supine position compared to prone. The findings support the usage of imaging that demonstrates the intestine during lower calyx puncture to avoid possible intestinal injury.

**Funding:** No funding.

**MP10-14 Retrograde intrarenal surgery(RIRS) versus Super Mini PCNL(SMP) for lower pole calyceal calculi of 10-20 mm size: A Randomized controlled trial**

Presented By: Victor Coelho, MBBS, MS, DNB

Introduction: Retrograde intrarenal surgery (RIRS) and super mini-percutaneous nephrolithotomy (SMP) are viable options for the treatment of renal calculi 1–2 cm. In lower pole calculi (LPC), there is a dilemma which option is to be used. We investigated this, using a prospective, randomised controlled trial to compare the safety and effectiveness of RIRS and SMP for treating patients with 1-2 cm LPC.

Methods: Between October 2022 and October 2023, a single centre, prospective, randomised, unblinded controlled trial was carried out at a single centre in India. In total, 77 consecutive patients with 1-2 cm LPC were randomised to undergo SMP or RIRS. The key outcome was the stone-free rate (SFR) one month after surgery. Stone-free rate was defined as no residual pieces of ≥0.4 cm on plain abdomen radiographs of the kidneys, ureters, and bladder, ultrasonography at 1-day, and computed tomography at 1-month post-operation. Secondary outcomes included peri-operative complications, blood loss, operating time, postoperative pain scores, auxiliary procedures, and hospital stay. The postoperative follow-up was set after 1 month. The analysis was based on intention-to-treat.

Results: 40 patients were randomised to the SMP arm and 37 to the RIRS arm. With a median age of 48 years in SMP (Retrograde Intrarenal Surgery) group and of 44.5 years in SMP (SuperMiniPCNL) group, stone size was comparable in both the groups. Post-operative haemoglobin drop was more in SMP group (Median, IQR in g/dl = 10.7-1.2 vs 3.0-0.8, p < 0.001). Operative time was more in the SMP group (Median, IQR in minutes = 80[65-90] vs 45[36-60], p < 0.001). Hospital stay was more in the SMP group (Median, IQR in hours = 72[66-96] vs 40[36-48], p < 0.001). Immediate post-operative pain VAS scores were higher in the SMP group (Median, IQR = 3[2-4] vs 2[2-2], p=0.002). Postoperative pain VAS scores at 48 hours were more in the RIRS group (Median, IQR = 1[0-1] vs 0[0-1], p=0.018). Stone free rates were similar in both groups at 1 month. There was one case each that required a blood transfusion, prolonged anti-biotics and one that developed a UTI in the RIRS group.

Conclusions: SMP for lower calyceal calculi results in more blood loss, has more operative times, hospital stay duration and higher immediate postoperative pain scores, lower delayed postoperative pain scores and similar stone free rates as RIRS.

Funding: None.

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Presented By: Elizabeth A. Baldwin

Introduction: Elevated renal pelvic pressure (RPP) during percutaneous nephrolithotomy (PCNL) increases pyelovenous backflow and infection risk. In contrast, low RPP may affect visualization, increase venous bleeding, and risk mucosal injury. In PCNL, surgeons use a variety of scope configurations, irrigation strategies, and instrumentation techniques that may affect RPP. The purpose of this study was to compare RPP during a PCNL with a rigid nephroscope using a variety of sheath, irrigation, and instrument combinations in a benchtop model.

Methods: Three silicone kidneys were created from a 3D model based on a patient’s CT. Renal access was established by placing a 30 Fr sheath in the upper, middle, or lower pole calyx. The kidney models were placed in a torso model to reproduce the anatomic position of a kidney during prone PCNL. RPP was measured via an arterial line transducer connected to the working port of a flexible ureteroscope inserted into the ureter. Five trials were performed for each of the following comparisons: (1) irrigation through a 26 Fr rigid nephroscope with and without metal sheath, (2) irrigation connected to the inflow or outflow port through a 26 Fr rigid nephroscope with metal sheath, and (3) with or without various instruments, including a two-prong grasper (2PG), and ultrasonic lithotripter (UL) with and without suction. Statistical analysis was performed using the Wilcoxon test, with p < 0.05 considered significant.

Results: Removal of the rigid nephroscope sheath resulted in a significantly lower RPP compared to use of the rigid nephroscope sheath (14.7 vs 19.1 mmHg, p = 0.012). When the rigid nephroscope was used with the sheath, irrigating through the inflow port resulted in a significantly lower RPP compared to irrigation through the outflow port (19.1 vs 32.7 mmHg, p < 0.001). The addition of the 2PG or UL with or without the rigid nephroscope sheath did not significantly alter the RPP (p > 0.05 for all). Use of the UL with suction significantly reduced RPPs in all scenarios (p < 0.001).

Conclusions: This study demonstrates several strategies for optimizing RPP during PCNL. Low pressure can be maintained by avoiding the metal sheath, irrigating through the inflow port, and continuous suction. In contrast, in patients with non-infectious stones who are experiencing venous bleeding, RPP can be increased to optimize visualization by irrigating through the outflow, using the metal sheath, and reducing the suction.

Funding: None.

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Presented By: Lucas Vergamini, MD

Introduction: High-power Holmium:YAG with MOSES laser is more efficient than SuperPulsed Thulium Fiber™ laser in mini-endoscopic combined intrarenal surgery

Lucas Vergamini1, William Ito1, Nicholas Choi2, Holly Du3, Mihaela Sardiu3, Donald Neff3, David Duchene3, Wilson Molina3, Bristol Whiles3

1University of Texas Southwestern, 2University of Kansas School of Medicine, 3University of Kansas Medical Center

MP10-15 Optimization of Renal Pelvic Pressures During PCNL: The Effects of Sheath Configuration, Instrumentation, and Irrigation

Elizabeth A Baldwin1, Kyu Park1, Nicole Mack1, Cliff De Guzman1, Toby Clark1, Matthew I Buell1, Kanha Shete1, Rose Lee1, Sikai Song1, Akin S Amasyali1, Ala’a Farkouch1, Evan Seibyl1, Zhamshid Okhunov1, D. Duane Baldwin1

1Department of Urology, Loma Linda University Health

MP10-16 High-power Holmium:YAG with MOSES laser is more efficient than SuperPulsed Thulium Fiber™ laser in mini-endoscopic combined intrarenal surgery

Lucas Vergamini, William Ito, Nicholas Choi, Holly Du, Mihaela Sardiu, Donald Neff, David Duchene, Wilson Molina, Bristol Whiles

1University of Texas Southwestern, 2University of Kansas School of Medicine, 3University of Kansas Medical Center

Presented By: Lucas Vergamini, MD

Introduction: Miniaturized endoscopic combined intrarenal surgery (mini-ECIRS) comprises the simultaneous use of two different but complementary surgical techniques to treat kidney stones: miniaturized percutaneous nephrolithotomy and retrograde intrarenal surgery. This study addresses the paucity of literature regarding comparing outcomes with the utilization of the
high-power Holmium:YAG (Ho:YAG) with Moses technology vs. thulium fiber laser (TFL) in mini-ECIRS.

Methods: A retrospective review was performed of patients undergoing supine mini-ECIRS between 08/2021 and 05/2023, regardless of stone size or complexity. Exclusion criteria included urinary diversion (i.e., ileal conduit), simultaneous utilization of >1 laser platform, cases using any other form of fragmentation, and patients with ureteral stones. The Ho:YAG platform (Lumenis Pulse P120H™) with Moses technology, 120W, Boston Scientific® and the TFL (Soltive SuperPulsed Thulium Fiber (SPTF), 60W, Olympus®) were compared. Perioperative antibiotics were managed per EDGE consortium criteria. Data on stone-free rate (SFR) was determined by assessing a CT scan performed on the first postoperative day and is presented as absence of stone fragments, no fragments larger than 2 mm, or no fragments larger than 4 mm.

Results: A total of 100 patients met the inclusion criteria, including 51 ECIRS procedures with Ho:YAG and 49 with SPTF. No significant differences in demographics or stone characteristics were detected between the two groups. Ho:YAG utilized less energy and time, resulting in higher ablation efficiency (p < 0.05) and less total operative time (p < 0.05). Overall, there was no difference in SFR in any category between Ho:YAG and SPTF (no fragments: RR 0.81, CI 95% 0.59–1.12, p = 0.21; fragments <2mm: RR 0.86, CI 95% 0.67–1.10, p = 0.23; fragments <4mm: RR 0.96, CI 95% 0.80–1.15, p = 0.67).

Conclusions: Although we observed an equivalent postoperative SFR, this study supports a faster operative time and higher intraoperative laser efficiency with the Ho:YAG over the SPTF in mini-ECIRS.

Funding: None.

MP10-17 Surgical considerations for patients who are severely mentally and physically incapacitated undergoing percutaneous nephrolithotomy

Jennifer Lu1, Cristofer Zillo1, Katy Su1, Jonathan Aronov1, Jose Torres1, Kerry Adler1, Eric Miller2, Jason Zhang1, David Schulsinger1

1Stony Brook University Hospital

Presented By: Jennifer Lu, MD

Introduction: Percutaneous nephrolithotomy (PCNL) is a common surgical treatment for large and complex stones within the intrarenal collecting system. Special surgical considerations are undertaken when operating on special populations, including patients who are severely mentally and physically incapacitated. The objective of this study was to characterize differences in perioperative measures and post-operative outcomes when comparing control patients to those who are severely mentally and physically incapacitated undergoing PCNL.

Methods: This was a retrospective study which reviewed charts of patients undergoing PCNL at a single institution from 2020 to 2023. Patients were placed into a special population of “severely mental and physically incapacitated” if they had both severe cognitive impairment and physically limited thereby unable to perform any independent activities of daily living. Categorical data was analyzed with chi-square tests and continuous data was analyzed with student t-test/ANOVA.

Results: 194 patients were included, of which 34 were considered “incapacitated” (19 female, 15 male) and 160 (71 female, 88 male) were without physical or mental disabilities. The incapacitated group included severe spina bifida (3), severe cerebral palsy (17), developmental delay (5), genetic abnormality (3), and/or severe traumatic brain injury (6). The incapacitated group was younger (45 vs 65 years, p < 0.001) and had more PCNL procedures done in the last 10 years compared to the functional group (2.27 vs 1.15, p < 0.001). This group was more likely to have recurrent UTI’s (77% vs 26%, p < 0.001). They also had increased number of unique organisms in their UTIs (3.5 vs 1, p < 0.001). Intraoperatively, there was no difference in regards to surgery duration or estimated blood loss. Post-operatively, the incapacitated group had more post-op complications with a 40% complication rate including sepsis, bleeding requiring transfusion, pneumothorax, compared to the functional group at 13% (p < 0.001). They also had longer average length of admission (6 days vs 2 days, p < 0.001) though there were no differences in ICU upgrades or readmissions after discharge.

Conclusions: Special populations of patients who are mentally and physically incapacitated showed significantly increased risk of post-op complications, post-op sepsis, and length of admission despite no measurable difference in surgical factors. This information should be used to better optimize pre-, intra- and post-operative care for this vulnerable population.

Funding: The authors do not have any funding or conflicts of interest to disclose.

MP10-18 Urinary Biomarkers as a Proxy for Renal Cellular Damage During Percutaneous Nephrolithotomy: Randomized Control Trial Comparing MiniPCNL Suction and Non-suction Sheaths to Standard 24Fr PCNL

Juan Serna1, Raymond Khargi1, Kavita Gupta1, Anna Ricapito2, Blair Gallante1, William Atallah1, Manitu Gupta1

1Icahn School of Medicine at Mount Sinai Department of Urology, 2University of Foggia Department of Urology

Presented By: Juan Serna, MD

Introduction: Acute Kidney Injury (AKI) is a significant complication after percutaneous nephrolithotomy (PCNL) due to the puncture and dilation of renal parenchyma to remove renal stones. PCNL technique trends have shifted towards the use of smaller caliber access sheaths leading to a varied array of MiniPCNL (mPCNL) systems. Urinary biomarkers have been
Introduction: Clinical guidelines for the surgical management of larger stones in pediatric patients are primarily based only on expert opinion. In a multicenter study, we compared outcomes of PCNL, ureteroscopy (URS), and SWL in pediatric patients, with an emphasis on treatment effect for larger stones (>15mm).

Methods: We performed a prospective observational clinical trial of patients aged 8-21 years having PCNL, URS, or SWL for kidney and/or ureteral stones from 2020-2023. The trial was embedded within clinical care in the 30 North American hospitals in the Pediatric Kidney Stone (PKIDS) Care Improvement Network. The primary outcome of stone clearance was assessed by ultrasound (±2 weeks) after surgery, considering heterogeneity of treatment effect by a priori categories of stone size (<7mm, 7-10mm, 11-15mm, and >15mm) and location (lower pole, non-lower pole, ureter). Patient-reported outcomes (PROs) were measured by PROMIS and urinary symptom scores after surgery. Stone clearance and PROs were compared using generalized linear models and ANCOVA, respectively, weighted with inverse propensity scores to balance patient, surgeon, and institutional characteristics across groups.

Results: Among 1237 patients with a median age of 15 years (IQR 12, 17), 98, 1070, 197 kidneys were treated with PCNL, URS, or SWL, respectively, by 126 urologists. For patients with stones >15mm, 28 underwent PCNL, 36 underwent URS, and 3 underwent SWL. PCNL was associated with a 39% higher stone clearance compared to URS (95% CI: 14.4-63.5) for stones >15mm. No differences were detected between treatments by stone location. Compared to URS, PCNL was associated with better urinary symptoms, pain, stress, anxiety, and sleep disturbances one week after surgery (Table).

Table: Impact of PCNL Compared to URS on Patient-Reported Outcomes of Physical, Emotional, and Social Health at One Week after Surgery. Adjusting for Baseline (pre-operative) Symptoms. Estimates with 95% confidence intervals not covering zero are bolded. Negative numbers represent lower symptoms for patients having PCNL compared to URS.

<table>
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<th>PRO</th>
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<th>Procedure effect (Estimate, 95% CI)</th>
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<td>URS</td>
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<tr>
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<td>URS</td>
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<tr>
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<td>PCNL</td>
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<td>PROMIS Stress Experiences</td>
<td>URS</td>
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<td>Referent</td>
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</table>

Table: Impact of PCNL Compared to URS on Patient-Reported Outcomes of Physical, Emotional, and Social Health at One Week after Surgery. Adjusting for Baseline (pre-operative) Symptoms. Estimates with 95% confidence intervals not covering zero are bolded. Negative numbers represent lower symptoms for patients having PCNL compared to URS.

Funding: None.
Conclusions: The PKIDS trial provides level 2 evidence for better stone clearance and patient experiences that support PCNL as the first-line surgery for children with kidney stones >15 mm. Use of SWL for kidney stones >15 mm is exceedingly rare, demonstrating its lack of clinical relevance for large kidney stones. These results support revision of guidelines to reflect these findings.

Funding: This work was supported through a Patient-Centered Outcomes Research Institute (PCORI) Program Award (CER-2018C3-14778). Dr. Schaeffer was supported in part by career development award NIH DK119535. All statements in this report, including its findings and conclusions, are solely those of the authors and do not necessarily represent the views of PCORI, its Board of Governors or Methodology Committee.

MP10-20 Suction mini PCNL as well alternative to standard PCNL in the management of moderate size kidney stone: A prospective randomized controlled trial

Wen Zhong

1First affiliated hospital of Guangzhou Medical University

Presented By: Wen Zhong, PhD

Introduction: MiniPCNL (mPCNL) has been a well-established procedure for the management of kidney stone. However, small tract in mPCNL was likely to prolong operation time, bring high renal pelvic pressure (RPP) and postoperative fever. Suction mini PCNL (SMP) would suck out stone fragments and irrigation during PCNL, therefore to facilitate stone removal in mPCNL. The present study compared the operation results and postoperative complications between SMP and standard PCNL (sPCNL) in the management of moderate size kidney stone of 2-5 cm.

Methods: 688 patients were randomly divided into SMP group and sPCNL group. 18Fr suction sheath and 24Fr peel-away sheath were used in SMP and sPCNL group, respectively. Operation results and postoperative complications between SMP and sPCNL were compared.

Results: There was no significant difference between the two groups in age, BMI, stone size (3.11±1.21 vs. 3.19±1.27 cm, P = 0.833), urinary tract infection (61/342 vs. 67/346, p = 0.607). There was no significant difference between SMP and sPCNL in operation time (40.9±12.4 vs. 41.7±13.5 min, p = 0.768), transfusion rate (6/342 vs. 2/346, p = 0.150), embolization (2/342 vs. 1/346, p = 0.556), postoperative fever (25/342 vs. 21/346, p = 0.515) and SFR (301/342 vs. 310/346, p = 0.510). However, tubeless PCNL was more frequently noted in SMP (107/340 vs. 29/342, p = 0.000). Less blood loss was noted in SMP than sPCNL (15.3±6.8 vs. 10.9±6.2 g/L, p = 0.021). The postoperative VAS score in SMP was less than sPCNL (6.72±1.12 vs. 4.92±1.12, p = 0.016), less analgesics (NSAID) was required in SMP group than in sPCNL group (71/342 vs. 34/346, p = 0.000). Shorter hospital stay was noted in SMP than in sPCNL (3.05±1.13 vs. 1.54±0.78 d, p = 0.005).

Conclusions: Suction mini PCNL is a well alternative to standard PCNL in the management of moderate size kidney stone of 2-4 cm. It can decrease bleedings, diminish nephrostomy tube need, reduce postoperative pain, and shorten hospital stays when compared to sPCNL.

Funding: None.

MP11-01 Current Online Trends for Surgical Treatment of Benign Prostatic Hyperplasia

Tyler Sheetz1, Spencer Chau1, Vivian Vo1, Tyler Sheetz1, Michelle C. Leach1, Vi Nguyen1, Jonathan Katz1, Seth K. Bechis1

1University of California San Diego

Presented By: Tyler Sheetz, MD

Introduction: With recent advances in surgical management of nephrolithiasis, patients have increased online access to information regarding several treatment options. We sought to use Google Trends to evaluate online interest regarding these procedures in the United States over time and to assess if there are any regional differences.

Methods: We used Google Trends to evaluate the popularity scores of several BPH procedures. ANOVA and average rate of change (ROC) of scores were calculated for the popularity scores of these procedures between 2004 and 2023. We also evaluated the urologist-to-population ratios of the 5 most popular states in which each term was searched using the AUA Practicing Urologist Census (5 = high, 1 = low). We used DISCERN instrument (discern.org.uk) to judge the quality of written information for the top hits for each Google search (5 = best, 1 = worst). To score readability, we used the Flesch-Kincaid (FK) Grade Score test.
**Results:** The overall rate of change of search trend was significant over the study period ($p < 0.001$; Fig 1a). There was a statistically significant decrease in the popularity score for Greenlight laser therapy ($p = 0.007$), open simple prostatectomy ($p = 0.032$), and prostate artery embolization ($p = 0.007$). There was an increase in popularity score for Urolift ($p = 0.385$) and TURP ($p = 0.455$), but these were not statistically significant. HoLEP and aquablation were more frequently searched in states with higher urologist-to-population ratios ($p = 0.930$, Fig 1b). DISCERN analysis revealed comparable quality information for most of the procedures, with robotic prostatectomy as the low outlier. FK scores indicated that high school reading comprehension was needed, with PAE and robotic prostatectomy having the greatest difficulty (Fig 1c).

**Conclusions:** There was increased interest in Urolift and TURP and decreased interest in Greenlight laser therapy, open simple prostatectomy, and prostate artery embolization between 2004 and 2023. The newer therapies of HoLEP and aquablation were more frequently searched in states with higher urologist-to-population ratios.

**Funding:** None.

**MP11-03 Impact of Laser Enucleation Equipment on Irritant Flow Rate**

Russell Terry$^1$, Kevin Morgan$^1$, John DiBianco$^1$, Alec Holloway$^1$, Benjamin Canales$^2$, Vincent Bird$^1$

$^1$University of Florida

Presented By: Russell Terry, MD

**Introduction:** Irrigation is critical for visualization during transurethral endoscopic surgery, especially that of laser endoscopic enucleation of the prostate (LEEP). However, there is a paucity of data evaluating resectoscope type and the effect of large laser fibers within the working channel on irrigant flow.

**Methods:** To determine the effect of scope manufacturer, we measured irrigation flow rates through four different resectoscopes (two Storz, two Wolf) with three different working channel configurations using five different irrigation systems. Saline irrigation was run through each equipment configuration for 30 seconds in duplicate. Irrigant volume was measured to determine flow rate in mL/min. A total of 100 runs were performed in 50 different equipment configurations.

**Results:** Graphical representation of our results are shown in figures 1 and 2. In order from highest to least, flow rates for resectoscopes were as follows: 28 Fr Storz, 26 Fr Storz, 26 Fr Wolf, and 24.5 Fr Wolf ($p < 0.0001$) with no statistically significant difference seen among the three working channel configurations. In order from highest to least, flow rates for irrigation systems were as follows: Y-tubing 150 cm, Level 1 150 cm, Y-tubing 100 cm, Y-tubing 100 cm, and Thermex 60 cm H2O ($p < 0.0001$). Within group standard errors were not significant except in Level 1 system, which produced inconsistent results ($p = 0.015$).
Conclusions: Flow rates followed the general principles of fluid dynamics with larger caliber scopes providing higher measured flow. Despite similar channel size, the Storz 26 Fr resectoscope had higher flow than the Wolf 26 Fr, perhaps due to shape and design. Despite the inconsistencies seen in the Level 1 Normoflo irrigation system, higher pressure irrigation also led to higher flow. Future studies with larger sample sizes are necessary to understand the cause of the noted Level 1 differences and to investigate if the differing rates are clinically significant during an operative procedure.

Funding: None.

MP11-04 Enhanced quick recovery with effective urinary outcomes following aquablation of prostate

Keng Ng1, Leshanth Uthayan1, Hashem Darwazeh1, Neil Barber1
1Frimley Health NHS Foundation Trust

Introduction: Aquablation surgery of prostate with robotic high velocity waterjet ablation of prostate combined with real time ultrasound guidance has gained popularity across urological centres due to its effectiveness in improving urinary symptoms while limiting sexual dysfunction following treatment of BPH. In our centre, majority of our aquablation cases are performed as daycase surgery with a return for trial without catheter a few days later. Due to the athermal nature of water ablation, we believe that following aquablation, our patients recover quicker, return to normal activities earlier and have improved urinary symptoms early on. We present our results of recovery and performance of our patients following aquablation.

Methods: Patients who had aquablation procedure from Jan 2023 to March 2024 were consented preoperatively and a total of 61 patients participated in our questionnaire study. Patients were given similar series of questionnaire at two weeks, one month and three months after the procedure. The questionnaires were given similar series of questionnaire at two weeks, one month and three months respectively. 74.3% of men described Qmax at 8.3mls/sec and a mean prostate volume of 87.3cc and 62% had trilobar prostatomegaly. Post op IPSS score reduced to 6.2, while for HoLEP was 1 day (range 1-2). The median duration of postoperative bladder irrigation for OP was 3 days (range 2-22), while for HoLEP was 1 day (range 1-2). The median duration of urinary catheterization for OP was 9 days (range 5-22), while for HoLEP was 1 day (range 1-2).

Results: A total of 50 patients were analyzed, 25 of whom underwent open simple prostatectomy and 25 underwent HoLEP. Age and prostate volume showed no significant differences between both groups. Seven (28%) patients who underwent OP required postoperative ICU admission, compared to none in the HoLEP group. The median hospital stay for OP was 4 days (range 3-24), compared to 1 day (range 1-2) for HoLEP. The median duration of postoperative bladder irrigation for OP was 3 days (range 2-22), while for HoLEP was 1 day (range 1-2). The median duration of urinary catheterization for OP was 9 days (range 5-22), while for HoLEP was 1 day (range 1-2). Nine (36%) patients in the OP group presented immediate/early postoperative complications compared to six (24%) patients in the HoLEP group. All complications were classified as grade 2 or less according to the

Conclusions: Our initial data investigating the recovery following aquablation from this cohort of patients showed promising results as majority of men have been shown to recover very quickly following surgery with rapid improvement in urinary symptoms and little or no impact on activities of daily living and outdoor activities early on. This encouraging results of enhanced recovery following aquablation will further boost the impact it has on BPH surgical treatment compared to other cathetering surgical techniques. Further work with larger numbers of aquablation compared to other BPH surgeries will be needed to consolidate this finding.

Funding: None.
Clavien-Dindo classification system. The OP approach had higher median direct costs with a median of US$4676 (range = 3946-17235), compared to HoLEP with a median of US$3360 (range = 3360-3796) (p < 0.001).

**Conclusions:** Open surgery had higher direct costs than HoLEP mainly due to increased costs related to hospital stay, ICU admission, complications and their management.

**Funding:** None.

MP11-06 Incidental prostate cancer after HoLEP: factors associated with clinically significant residual disease and further treatment

Hansen Lui1, Adam Bowles1, Steven Monda1, Blythe Durbin-Johnson1, Marc Dall’Erea1, Thenappan Chandrasekar1, Noah Canvasser1

1UC Davis Health

Presented By: Hansen Lui, MD, MS

**Introduction:** Higher rates of incidental prostate cancer (iPCA) are expected after holmium laser enucleation of the prostate (HoLEP) compared to transurethral resection owing to larger volumes of tissue resected. While patients with insignificant disease are often placed on active surveillance (AS), a small proportion will have clinically significant residual disease and warrant further staging and treatment. Our objective was to assess predictors of clinically significant iPCA and treatment after HoLEP.

**Methods:** We retrospectively reviewed patients who underwent HoLEP from February 2020 to October 2023 at a single institution, with follow up through February 2024. The primary outcome of our study was treatment versus active surveillance after diagnosis of iPCA. Multivariate (MIV) analysis with logistic regression was used to identify predictors of treatment over active surveillance after adjusting for clinical characteristics.

**Results:** A total of 491 patients underwent HoLEP and 11.4% had iPCA. Nine patients who with iPCA were treated with localized (n = 7) or systemic therapy (n = 2) versus 47 patients with AS. On MIV pre-operative PSAD was most significantly associated with treatment over active surveillance. (OR 2.98, 95% CI: 1.08–11.81, p = 0.035). While PSA doubling time and Gleason score trended towards an associate with treatment, these were not statistically significantly associated. (OR 10.75, 95% CI: 0.82–363.25, p = 0.072).

**Conclusions:** High pre-operative PSA density is associated with active treatment for iPCA after HoLEP and may help inform those who warrant additional staging MRI, prostate biopsies and potentially upfront prostatectomy instead of HoLEP. Post-operative PSA doubling time can help identify patients who may need treatment for iPCA after HoLEP. Longitudinal studies are required to further stratify prostate cancer progression risk within the iPCA population.

**Funding:** No funding sources.

MP11-07 Clinical outcomes of the Rivermark FloStent™: a multi-center study

Dean Elterman4, Peter Chin1, Peter Gilling2, Flavio Ordonez2, Javier Sanchez3, Dean Elterman4

1South Coast Urology, 2Tauranga Urology, 3Hospital Angeles Leon, 4University Health Network, University of Toronto

Presented By: Dean Elterman

**Introduction:** The FloStent™ is a novel implantable device for the treatment of BPH, deliverable via standard flexible cystoscope with no need for a post-procedure catheter. This multi-center study (RAPID-II) evaluates the early clinical outcomes.

**Methods:** An ethics-approved monitored multi-center clinical trial was initiated at three centers in Australia, New Zealand, and Mexico. Three-month outcomes are reported here.

**Results:** 39 implanted patients (mean age 63.5 ± 9.9 yr) were analyzed. Mean prostatic volume was 47.3 (range 25-78) mL. Most patients were symptomatic despite alpha blockers. Procedures were performed in an outpatient setting using standard flexible cystoscopes with patients in the supine position. 17 cases were done using lidocaine jelly only. All implantations were technically successful, without the need for post-procedure catheter. Both disposable (n = 12) and reusable (n = 27) cystoscopes were used. No device-related SAEs or UAEs were recorded. IPSS was significantly reduced at 2 weeks (8.4 ± 7.0 points) and further reduced at 3 months (11.1 ± 6.3 points), QOL score was reduced by an average of 2.5 and 2.7 points at 2 weeks and 3 months, respectively. Table 1 summarizes 3-month clinical impact on urinary and sexual function, per validated questionnaire.

**Conclusions:** The Rivermark FloStent™ is an ultra-minimally invasive BPH device that rapidly reduces urinary bother, with significant improvements seen as early as 2 weeks. The device

<table>
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<td>QOL</td>
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<td>46.1 ± 21.1</td>
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**Conclusions:** The Rivermark FloStent™ is an ultra-minimally invasive BPH device that rapidly reduces urinary bother, with significant improvements seen as early as 2 weeks. The device

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<td>2.7 ± 1.5</td>
<td>2.5 ± 1.4</td>
</tr>
<tr>
<td>MSHQ-EJD</td>
<td>9.9 ± 3.7</td>
<td>9.1 ± 4.5</td>
<td>10.8 ± 3.5</td>
</tr>
<tr>
<td>IIEF-15</td>
<td>46.1 ± 21.1</td>
<td>34.8 ± 21.8</td>
<td>52.3 ± 19.3</td>
</tr>
</tbody>
</table>

**Conclusions:** The Rivermark FloStent™ is an ultra-minimally invasive BPH device that rapidly reduces urinary bother, with significant improvements seen as early as 2 weeks. The device
MP11-08 Catheter Dependence After HOLEP: Urodynamic Finding of Hypocontractility Independently Associated

Dan Gralnek1, Ali Antar1, Margaret Knoedler2
1University Wisconsin Madison, 2University of Wisconsin Madison
Presented By: Dan Gralnek, MD

Introduction: Surgical treatment of benign prostatic hyperplasia (BPH) aims to improve bladder emptying. Holmium laser enucleation of the prostate (HOLEP) renders most patients catheter-free, but clinical tools to predict treatment failure are limited. We hypothesize that patients with diminished bladder contractility are more likely to be catheter dependent following HOLEP.

Methods: We identified patients who underwent pre-operative urodynamics from a prospectively maintained institutional database of HOLEP patients from 2018-2022 (n = 944). Clinical and urodynamic data, including calculated indices, were collected. Diminished bladder contractility was defined as bladder contractility index (BCI) <100. Catheter dependence was defined as the need for intermittent or indwelling catheter for bladder emptying.

Results: 119 patients completed urodynamics before HOLEP. Patients with diminished contractility had mean BCI 74.2 ±18.3 compared to patients with normal contractility 127.0±28.0 (p < 0.001). Diminished contractility was associated with higher filling volumes, maximum capacity, post-void residual, as well as lower pressure and flow during emptying (Table). On multivariable analysis BCI but not other indices, was independently associated with catheter dependence post-operatively (OR 0.97; 95% CI 0.94 -0.99; p = 0.048). Of 43 catheter-dependent patients before HOLEP, 10 required catheters after HOLEP; all of these had BCI <100.

Conclusion: Diminished bladder contractility, defined as BCI <100, was associated with need for catheter after HOLEP, which may improve patient counseling.

Funding: None.

MP11-09 Lateral Lobe Retraction using the Butterfly Device Leads to long-term safety and efficacy in men suffering from LUTS secondary to BPH: A 5-years follow-up study

Ran Katz6, Muhammad Sabih Abu Ahmed1, Ali Safadi1, Mahran Kabha2, Yoram Dekel1, Shmuel Roizeman3, Amnon Zisman3, Jack Baniel4, Shachar Aharoni5
1Ziv Medical Center, 2Carmel Medical Center, 3Cermel Medical Center, 4Shamir Medical Center, 5Rabin Medical Center, 6Ziv Medical Center, The Azriely faculty of medicine, Safed, Israel
Presented By: Ran Katz, MD

Introduction: To evaluate the long-term effectiveness and safety profile of Lateral Lobe Retraction (LLR) using the Butterfly implant in patients with BPH over a 5-year follow-up period.

Methods: Twenty men were included in the study; all were 12 months after the implantation of the butterfly device and followed up to 60 months. We measured the changes in IPSS from 12 months to the last FU visit, adverse events, and the response rates (decrease of at least 3 points in the IPSS) at 12 months and the last FU visit. Histological analysis was performed on 2 patients who underwent TURP 24 and 25 months after the implantation.

Results: Patients’ mean age was 69.8 years (61-84). At 12 months baseline, 14 patients (70%) reported a reduction of IPSS of at least 3 points. During their last FU visit, 19 patients (95%) maintained a reduction of at least 3 points. 2 patients experienced adverse events: one patient reported mild hematuria that resolved spontaneously and another developed urinary retention. Histological analysis demonstrated a durable response up to 60 months. We measured the changes in IPSS from 12 months after the implantation of the butterfly device and consequent TURP. It revealed normal prostate tissue with mild inflammation and no areas of ischemia or necrosis, highlighting a favorable safety profile. There were no signs of encrustation, tissue growth, or urinary stone formation. Remarkably, the Butterfly device was easy to remove even 3 years following implantation.

Conclusions: Lateral Lobe Retraction is a safe and effective method for treating LUTS, secondary to BPH. The Butterfly device offers a novel method of LLR utilizing a transurethral approach. The long-term Butterfly study (BM-011-LT) demonstrated a durable response up to 5 years and a favorable safety profile, supported by histological analysis and the low incidence of long-term study-related AEs. These findings support the use of the Butterfly implant as an effective long-term treatment for LUTS secondary to BPH.

Funding: Butterfly Medical, Yoeqnam, Israel

MP11-10 Cardiac events after transurethral surgery: a comparison of predicted and actual event rates

Connor M. Forbes1, Mohammadali Saffarzadeh1, Ghizlane Moussaoui1, Connor M. Forbes1
1Department of Urologic Sciences, University of British Columbia, Vancouver, Canada
Presented By: Connor M. Forbes, MD, FRCSC
**Table 1. Comparison of Revised Cardiac Risk Index (RCRI) predictions and actual incidence of 30-day cardiac events following endourologic interventions. Asterisk (*) denotes statistical significance (p<0.05).**

<table>
<thead>
<tr>
<th>RCRI score</th>
<th>Number of patients in each risk category</th>
<th>Predicted number of patients with cardiac complications within 30 days of surgery</th>
<th>Observed number of patients with cardiac complications within 30 days of surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>102</td>
<td>4.0 (2.9%)</td>
<td>1 (0.7%)</td>
</tr>
<tr>
<td>1</td>
<td>25</td>
<td>1.5 (1.1%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>0.6 (0.4%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>0.5 (0.3%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>4-6</td>
<td>0</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Total</td>
<td>136</td>
<td>6.5 (4.6%) *</td>
<td>1 (0.7%) *</td>
</tr>
</tbody>
</table>

**Introduction:** The Revised Cardiac Risk Index (RCRI) is a validated 30-day cardiac event risk calculator after non-cardiac surgeries. However, its accuracy has not been specifically evaluated in the context of minimally invasive endourologic interventions. We compared predicted outcomes by RCRI with the actual incidence of cardiac events after transurethral prostate surgery.

**Methods:** Patients undergoing Transurethral Resection of the Prostate (TURP) or Holmium Laser Enucleation of the Prostate (HoLEP) from August to December of 2022 were retrospectively reviewed. We analyzed pre-operative risk factors for RCRI risk calculation and post-operative cardiac events within 30 days as defined by the original cardiac VISION study used in the RCRI prediction index. Fisher’s exact test was used to assess statistical significance.

**Results:** The study population included 136 patients with an average age of 73.2 ± 7.9 (SD) years, 69 of whom (51%) underwent TURP, and 67 had HoLEP. The patients’ relevant pre-operative medical history included diabetes (19.9%), hypertension (42.6%), dyslipidemia (41.2%), coronary artery disease (10.3%), congestive heart failure (2.2%), myocardial infarction (5.1%), atrial flutter/fibrillation (10.3%), and cerebrovascular accident (11.8%). Myocardial Injury after Noncardiac Surgery (MINS) surveillance was needed for 25 patients (18.4%) per standard practice. No patient had any intra-operative complications. One patient experienced a non-fatal cardiac event (asystole) within hours of surgery. RCRI predicted 4.8% (n=7) of patients to have cardiac events (Table 1), significantly higher than the observed incidence of 0.7% (p = 0.03).

**Conclusions:** The risk of cardiac events in the 30-day post-operative period was significantly overestimated by the RCRI in our study population. More accurate risk counselling for minimally invasive transurethral prostate surgeries can support patients and surgeons in shared decision making.

**Funding:** None.

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**MP11-11 Preoperative incontinence is not associated with worse postoperative continence outcomes after HoLEP**

Thomas Chi, Nasir Oyelowo, Pablo Suarez, Maria Velasquez Escobar, Wilson Sui, Heiko Yang, Jorge Mena, Justin Ahn

**MP11-12 HoLEP in Patients with Neurologic Diseases: A Case Series with Early Post-op Continence**

James Jiang, Narmina Khanmammadova, Erika Park, Bruce Gao, Akhil Das
Presented By: James Jiang, MD

**Introduction:** Neurological disorders (ND) may lead to neurogenic lower urinary tract dysfunction, potentially altering the efficacy of Holmium laser enucleation of the prostate (HoLEP) for ND patients with lower urinary tract symptoms (LUTS) and benign prostatic hyperplasia (BPH). The literature on LUTS/BPH interventions frequently omits patients with ND due to increased risk of post-operative stress urinary incontinence (SUI). Here, we describe our experience with ND patients undergoing HoLEP.

**Methods:** Data was collected prospectively from 13 patients diagnosed with ND who underwent HoLEP from January to November 2023. Among these, 10 patients had Parkinson’s disease (PD), 1 had myasthenia gravis (MG), 1 had amyotrophic lateral sclerosis (ALS), and 1 had multiple sclerosis (MS). In our practice, we recommend an early apical release HoLEP technique and pelvic floor physical therapy (PFPT) immediately post-operatively for all ND patients with lower urinary tract symptoms (LUTS) and prophylactic chemo denervation for ND patients with LUTS/BPH interventions. We aim to evaluate the efficacy and safety of HoLEP for treatment of BPH in patients over 90 years old. In this case series, we aim to evaluate the efficacy and safety of HoLEP for treatment of BPH in patients over 90 years old.

**Results:** Five patients were identified during this time period whom were over 90 years old (table 1). Prostate sizes were 122, 88, 80, 117 and 30 grams. Four out of 5 patients were in urinary retention preoperatively and were managed with an indwelling Foley or intermittent catheterization (IC). All patients were on BPH medical therapy and failed prior trial of voids. In this case series, we found HoLEP to be a safe and effective option in the geriatric population of nonagenarians. These patients had a longer post-op catheter time which improved their chances of passing the first trial of void and minimized complications. HoLEP can be considered as a urinary retention treatment option in select patients above 90 years old.

**Funding:** None.

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**Table 1. Patient Characteristics and Outcomes for ND Patients undergoing HoLEP.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>ND Patients (n=5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years, median (IQR)</td>
<td>76 (73–82)</td>
</tr>
<tr>
<td>BMI, kg/m², median (IQR)</td>
<td>24.3 (22.5–26.2)</td>
</tr>
<tr>
<td>Prostate size, g, median (IQR)</td>
<td>122.5–88, 80, 117 and 30</td>
</tr>
<tr>
<td>Preoperative UUI, n (%)</td>
<td>5 (38.5%)</td>
</tr>
<tr>
<td>Preoperative UI, n (%)</td>
<td>5 (38.5%)</td>
</tr>
</tbody>
</table>

**Abbreviations:** IQR = Interquartile Range; BMI = Body Mass Index; SUI = Stress Urinary Incontinence; IC = Intermittent Catheterization; HoLEP = Holmium Laser Enucleation of the Prostate; ALS = Amyotrophic Lateral Sclerosis; PD = Parkinson’s Disease; MG = Myasthenia Gravis; MS = Multiple Sclerosis; BPH = Benign Prostatic Hyperplasia; SUI = Stress Urinary Incontinence; LUTS = Lower Urinary Tract Symptoms; HoLEP = Holmium Laser Enucleation of the Prostate.
MP11-14 Results of Daycase Aquablation of prostate performed following the Frimley Park Hospital protocol

Keng Ng1, Hashem Darvazeh1, Neil Barber1
1Frimley Health NHS Foundation Trust

Presented By: Keng Ng, FRCS(Urol), PhD

Introduction: Aquablation surgical treatment for prostate has gained momentum in the last few years due to its unique robotic controlled, ultrasound guided waterjet ablation of prostate resulting in significantly improved urinary flow and reduction in urinary symptoms with minimal effect on sexual function post surgery. Most urological centres worldwide would perform aquablation as an inpatient stay usually over 1 nightbefore trial without catheter and discharge the following day. At our centre, we have consistently performed aquablation as daycases with same day discharge and return for TWOC a few days later. We believe our Frimley Park protocol will allow most aquablation to be performed as daycases successfully, safely and therefore help reduce the burden of inpatient hospital stay.

Methods: Patients diagnosed with LUTS due to symptomatic BPH were counselled and consented for aquablation performed as daycases. All patients were considered for the study and were excluded if they were living outside locality (>50 miles), living alone or refused the daycase proposal. Aquablation was performed under general anaesthesia and following aquablation, 3 way catheter was inserted and continuous bladder irrigation maintained for 2-3 hours post op in recovery. Following bedside assessment, irrigation was stopped and patients were then discharged with catheter and returned 3 days later for TWOC. Preop data and post op data were recorded and efficacy and safety of this daycase protocol was analysed.

Results: Over the last 15 months, 72 patients have undergone aquablation as daycases in our institution. Mean preop prostate volume was 82.3cc (range 30–180cc, 62% trilobar prostatomegaly), with IPSS of 23, QoL 5, mean psa of 4.7 and max flow rate of 8.3mls/sec. 68 out of 72 patients were discharged as daycase following aquablation. Only 4 patients were kept for one overnight stay (2haematuria which required further irrigation overnight, 2 had nausea and vomiting due to anaesthesia). Only one patient returned 1 day later for haematuria which required inpatient bladder irrigation while the rest (67 patients) returned 3 days later for planned successful TWOC. At 3 months follow up, IPSS reduced to 7.8 with QoL 1.2 and mean post op prostate volume reduction of 65%. We believe that our Frimley Park Protocol - propertreatment planning with particular attention at bladder neck and veru sparing regions, two passes of aquablation sweeps, meticulous diathermy at bladder neck with limited resection of anterior prolapsing portion of prostate and adequate bladder washout will ensure successful and safe aquablation procedure to allow for daycase setting.

Conclusions: Following our protocol, majority of our aquablation cases have been performed consistently as daycases safely and effectively. As a consequence, we have managed improve our productivity in theatre utilisation, reduce workload on our nursing staff and therefore reduce the burden on NHS beds.

Funding: None.

MP11-16 Rivermark FloStent™ for urinary retention: the RAPID-UR study

Dean Elterman1, Dean Elterman1, Ingrid Perscky2, Ruben Urena2, Kevin McVary3
1University Health Network, University of Toronto, 2Pacifica Salud, 3Loyola University Medical Center

Presented By: Dean Elterman

Introduction: The Rivermark FloStent™ is a catheter-free BPH device that can be delivered via the working channel of a standard flexible cystoscope, in an outpatient setting. The device previously has been studied for treatment of LUTS due to BPH. The purpose of this ancillary study (RAPID-UR) was to evaluate FloStent performance for BPH-related urinary retention.
**MP11-17 RealPulse® Thulium:YAG vs. Holmium:YAG enucleation of the prostate: different laser, same outcome?**

Jasper Cornette1, Eduard Lambert1, Ruben De Groote1, Elisabeth Pauwels1, Frederiek D’Hondt1, Alexandre Mottrie1, Geert De Naeyer1, Peter Schatteman1

1OLV Aalst

**Introduction:** Laser endoscopic enucleation of the prostate (EEP) has become a gold standard procedure for surgical treatment of benign prostatic obstruction (BPO). Most clinical data is based on the use of Holmium:YAG laser. In the last decade, however, new lasers with technical modifications (other penetration depth, peak pulse, absorption coefficient, etc.) have been developed, but clinical data on their use on EEP is scarce. Besides their well-known function in urolithiasis, there is a need to validate their use in EEP. Therefore this prospective randomised trial wants to investigate if EEP with the new Realpulse® Thulium:YAG can give equal and safe results compared to the standard Holmium:YAG system.

**Methods:** All patients scheduled for EEP and willing to provide consent were randomised into two groups: group 1, Lumenis VersaPulse PowerSuite® Holmium Laser vs. group 2, Thulio Realpulse® Thulium:YAG laser. All procedures were performed by two experienced endo-urologists at OLV Aalst Hospital, Belgium. Demographics, intra-operative and post-operative data were prospectively collected. All data were analysed using SPSS version 29 (SPSS Inc. Chicago, IL, USA).

**Results:** From December 2023 to February 2024, 56 patients were included (24 patients in group 1 vs. 32 patients in group 2). Pre-operative data were not significantly different between the two groups (Table 1). Compared with holmium: YAG, Realpulse® thulium:YAG had equal enucleation efficiency (1.48 ± 0.78g/min vs. 1.34 ± 0.57g/min respectively; p = 0.670), resected volume (55.78 ± 40.67g vs. 62.13 ± 48.58g; p = 0.481), coagulation time (5.46 ± 2.60min vs. 8.02 ± 5.18min; p = 0.056), catheter time (1.08d (range 1-2) vs. 1.09d (range 1-2); p = 0.893) and hospitalization time (1.33d (range 1-4) vs. 1.22d (range 1-2); p = 0.726). There were no readmissions or re-operations in both groups.

**Conclusions:** This prospective randomised trial is the first report to demonstrate that Realpulse® Thulium:YAG enucleation of the prostate is equally safe and effective in the treatment of BPO in comparison with Holmium:YAG.

**Funding:** None.

**MP11-18 Fellowship Trained vs. Self Taught: A Comparison of the First 100 Holmium Laser Enucleation of Prostate Cases**

Rebekah Keller1, Rebekah Keller1, Karl Schranz2, Joel Vetter1, Brant Fulmer2, Charles Nottingham1

1Washington University, 2Geisinger Medical Center

**Introduction:** Holmium Laser Enucleation of the Prostate (HoLEP) is the gold standard for enlarged prostate in Europe, however adoption in the United States has been slow. We compared outcomes from the first 100 cases by a fellowship trained (FT) HoLEP surgeon vs. a self taught (ST) surgeon to identify barriers in learning the procedure.
Methods: We retrospectively reviewed the first 100 HoLEP cases from 2 surgeons from 2 institutions. One was FT and the other was ST in HoLEP. Outcomes examined were age, operative time, energy used, estimated blood loss (EBL), anticoagulation (AC) status, preoperative retention, post procedure catheterization time, conversion to transurethral resection of the prostate (TURP), morcellated tissue weight, return to operating room (OR) within and outside of 30 days, return to emergency room (ER), and readmission.

Results: We included all 200 patients for analysis. Operative time was higher for ST vs. FT, 137.8 minutes vs. 106.5 minutes (p < 0.001) as was days without a catheter, 7.3 days vs. 1.7 days (p value < 0.001), respectively. EBL was higher for ST, 131.3 mL vs. 86.9 mL (p < 0.001). Conversion to TURP was 16% for ST vs. 0% (p < 0.001). Morcellated tissue weight was also higher for FT vs ST, 72.4 g vs. 27.8 g (p < 0.001). There were no significant differences for age, AC status, energy used, patients in preoperative retention, post operative ER visits, return to OR within or outside of 30 days, or readmission.

Conclusions: Our data suggest that there are differences between ST and FT surgeons initially adopting HoLEP into practice including longer operative time, longer blood loss, and higher conversion to TURP. This data may help manage surgeon and patient expectations as these are likely surmountable barriers for providers first HoLEP cases in practice.

Funding: None.

Introduction: In recent years, thulium solid-state lasers have become widely used in urology for the treatment of benign prostatic hyperplasia (BPH). This study aimed to evaluate the effectiveness and safety of thulium solid-state laser application in the treatment of patients with BPH and compare it with traditional transurethral resection of the prostate (TURP). The objective of the study was to assess the outcomes of transurethral vaporization of the prostate using thulium laser compared to standard transurethral resection of the prostate.

Methods: The study included patients with confirmed diagnosis of BPH requiring surgical treatment. Patients were randomly allocated into two groups: Group 1 - 100 patients who underwent surgical treatment using thulium solid-state laser with specific energy parameters and frequencies adhering to safety and efficacy standards; Group 2 - 100 patients who underwent surgical treatment according to standard protocols of traditional transurethral resection of the prostate (TURP) without the use of laser technology. Parameters assessed included: resection time; improvement in maximum urinary flow rate (Q max), post-void residual volume (PVR), International Prostate Symptom Score (IPSS), and Quality of Life Index (QoL), as well as complications and side effects - assessment of frequency and types of complications and side effects after the treatment.

Results: The average age of patients in the two groups was 67 years (ranging from 46 to 98). The average prostate volume in Group 1 was 74.4 cm3, and in Group 2 it was 71.7 cm3. The mean vaporization time was 39.5 minutes, while the mean TURP time was 45.1 minutes. The duration of bladder drainage with a urethral catheter in Group 1 was 1.3 days, compared to 3.2 days in Group 2. Qmax significantly improved on average from 4.8 to 20.4 ml in Group 1 and from 4.6 to 19.1 ml in Group 2. PVR decreased in Group 1 from 94 to 17 ml and in Group 2 from 85 to 20 ml. Improvements in IPSS scores were also noted, decreasing from 20.1 to 6.2 in Group 1 and from 21 to 8.4 in Group 2, as well as QoL, decreasing from 4 to 1 in Group 1 and from 4 to 1.8 in Group 2. No patient required blood transfusions or repeat bladder drainage. In Group 1, one patient required the use of hemostatic agents, while in Group 2, 38 patients required them.

Conclusions: The results of the study indicate the high effectiveness and safety of using thulium solid-state laser in the treatment of patients with BPH. Laser treatment is associated with fewer complications and achieves significant improvement in clinical and functional parameters compared to traditional methods such as TURP. These findings confirm the significance of laser technology in modern urological practice and support its application in the treatment of BPH.

Funding: Funding Sources: None.

MP11-19 Application of Thulium Solid-State Laser in Surgical Treatment of Benign Prostatic Hyperplasia (BPH)

Roman Andreev1, Kolontarev Konstantin1, Dmitriy Pushkar1

1Russian University of Medicine, 2City Clinical Hospital named after S. P. Botkin of the Moscow Department of Health

Presented By: Roman Andreev, MD

Introduction: In recent years, thulium solid-state lasers have become widely used in urology for the treatment of benign prostatic hyperplasia (BPH). This study aimed to evaluate the effectiveness and safety of thulium solid-state laser application in the treatment of patients with BPH and compare it with traditional transurethral resection of the prostate (TURP). The objective of the study was to assess the outcomes of transurethral vaporization of the prostate using thulium laser compared to standard transurethral resection of the prostate.

Methods: The study included patients with confirmed diagnosis of BPH requiring surgical treatment. Patients were randomly allocated into two groups: Group 1 - 100 patients who underwent surgical treatment using thulium solid-state laser with specific energy parameters and frequencies adhering to safety and efficacy standards; Group 2 - 100 patients who

MP11-20 5α-Reductase Inhibitors Reduce the Risk of Cardiovascular Disease: A Prospective Cohort Study

Qing Yuan1, Qing Yuan1, Guorong Yang1, Yile You2, Tao Song1, Shengfeng Wang2

1Senior Department of Urology, the Third Medical Centre of Chinese People’s Liberation Army (PLA) General Hospital, 2Department of Epidemiology and Biostatistics, Peking University School of Public Health

Presented By: Qing Yuan, MD

Introduction: Benign Prostatic Hyperplasia (BPH) commonly manifests as Lower Urinary Tract Symptoms (LUTS), significantly affecting the quality of life in middle-aged and elderly men. A study investigated the 20-year epidemiological trends of BPH across 203 countries and regions, revealing a 105.70% increase in BPH cases in 2019 compared to 1990. As a cornerstone medication recommended by the American Urological Association (AUA) guidelines, 5-Alpha Reductase Inhibitors (5-ARIs) are widely used for BPH treatment due to their ability to reduce dihydrotestosterone (DHT) levels and thereby shrink prostate volume. Currently, the approved 5-ARIs for BPH treatment include finasteride and dutasteride. With the aging population, the incidence of BPH continues to rise, leading to an increasing user base of
5-ARIs. Consequently, greater attention is warranted for the adverse effects of 5-ARIs. Other study observed an increased incidence of self-harm and depression among users of 5-ARIs in elderly male populations aged over 66 years, with a trend towards higher rates over follow-up periods. Similarly, 5-ARIs were found to elevate the risk of dementia. It's reported that a higher risk of newly diagnosed type 2 diabetes in BPH males exposed to 5-ARIs compared to those receiving tamsulosin. However, the impact of 5-ARIs on Cardiovascular Disease (CVD) remains unclear. Despite findings from current cohort studies suggesting favorable cardiovascular safety of 5-ARIs without an increased risk of CVD, even potentially lowering the risk in BPH patients, cellular and animal experiments indicate a potential cardiac protective effect attributed to the reduction in DHT-induced cardiac hypertrophy by finasteride. However, studies in prostate cancer treatment have associated androgen deprivation therapy with an increased risk of CVD, and research on dutasteride for treating prostate cancer found a relatively higher incidence of heart failure compared to the placebo group. Some studies have also linked lower testosterone levels to increased risks of CVD and all-cause mortality. Thus, further evidence is needed to confirm the cardiovascular safety of 5-ARIs.

**Methods:** The study population was sourced from the UK Biobank (UKB). Initially, female participants and cancer patients were excluded, with subsequent inclusion limited to patients with BPH. Further exclusions were made for participants with a history of CVD prior to their initial BPH diagnosis. Medication exposure was defined based on previous studies, requiring patients to have received at least two prescriptions of 5-ARIs with a minimum interval of fewer than 180 days between each prescription. The 5-ARIs and alpha-adrenergic blockers included in the study were sourced from the 2021 version of the American Urological Association (AUA) BPH treatment guidelines. The primary outcome of the study was defined as the occurrence of CVD, encompassing coronary artery disease, stroke, heart failure, or atherosclerosis. Secondary outcomes included four specific components of CVD. All diseases were defined using International Classification of Diseases 10th Revision (ICD-10) codes. Multiple confounding factors were adjusted for in the analysis, including age, ethnicity, education level, Townsend deprivation index, smoking status, body mass index, physical activity, diet score of ≥4 points, lipid metabolism disorders, diabetes, hypertension, family history of CVD, alcohol consumption, and C-reactive protein levels. Time-dependent Cox regression was employed to calculate hazard ratios (HRs) with 95% confidence intervals (CIs) to assess the impact of 5-ARIs on CVD and its components. In the initial analysis, both the exposure and control groups included patients concurrently taking alpha-adrenergic blockers, while in the secondary analysis, all patients concurrently taking alpha-adrenergic blockers were excluded.

**Results:** The control group consisted of 23, 285 individuals with an average follow-up duration of 11.2 years, during which 3, 814 cardiovascular events occurred. The overall incidence density of cardiovascular events was 14.56 per 1, 000 person-years, including 8.26 per 1, 000 person-years for coronary heart disease, 4.50 per 1, 000 person-years for heart failure, 3.39 per 1, 000 person-years for stroke, and 0.83 per 1, 000 person-years for atherosclerosis. The exposed group comprised 627 individuals with an average follow-up duration of 10.3 years, during which 121 cardiovascular events occurred. The overall incidence density of cardiovascular events was 12.17 per 1, 000 person-years, including 7.04 per 1, 000 person-years for coronary heart disease, 4.44 per 1, 000 person-years for heart failure, 3.07 per 1, 000 person-years for stroke, and 0.45 per 1, 000 person-years for atherosclerosis. In univariate Cox regression analysis, the risk of developing CVD in the exposed group was reduced by 23.4% compared to the control group [HR 0.766, 95% CI (0.606, 0.970)]. After multivariable adjustment, this risk reduction was 24.4% [HR 0.756, 95% CI (0.597, 0.957)]. Although the HR values for individual components of CVD did not reach statistical significance, they all tended to decrease the risk of various CVD components. Sensitivity analysis, excluding patients concurrently using α1-adrenergic receptor blockers, yielded consistent results.

**Conclusions:** This study confirms the cardiovascular safety of 5-ARIs, which significantly reduces the risk of CVD and demonstrates potential protective effects on various components of CVD. This study alleviates concerns regarding 5-ARIs among the BPH population, but further validation through more precise randomized controlled trials is warranted in the future.

**Funding:** Beijing NOVA Program (grant number 20220484230).
MP12-01 The Financial Case for TULA and Outpatient based management of Non-Muscle Invasive Bladder Cancer: A UK Perspective

James Aljoe2, Hira Syed1, Matthew Deacon1, Sachin Agrawal1
1St Peter’s Hospital, 2Ashford and St Peter’s NHS Trust

Presented By: James Aljoe, MBBS

Introduction: Bladder cancer is Europe’s fifth most common cancer, with more than 200,000 new cases every year across the European Union (EU) alone. Bladder cancer has one of the greatest economic burdens of any cancer, costing over €5 billion every year in the EU. More efficient methods of treatment are needed. Outpatient based local-anaesthetic transurethral laser ablation (TULA) is accepted by the UK GIRFT Program for the management of recurrent bladder cancer especially in the elderly and frail. We present the financial case to adopt the use of a novel dual diode laser (980nm/1470nm) lasers and outpatient based care.

Methods: We performed a resource comparison between TURBT and TULA using both local and national audit data and costings. Income from national procedural fees (NHS UK Tariff) was assessed against organisational costs including staffing levels, capital expenditure and consumables. Opportunity costs such as impact on operating theatre capacity and hospital bed days were also evaluated.

Results: In the UK in 2022, 3812 TULA procedures were performed across 57 hospitals. Locally 990 TULA procedures were performed during the study period between 2017 and 2022 with annual growth year on year. TURBT has a national tariff cost of £2043.69 before market (location) factors and comorbidities are factored. Outpatient TULA treatment with a diode laser has a national tariff cost of £991.13. Average hourly, UK theatre costs are calculated at £940/hour for TURBT and £108/hour for TULA. Surgical time is estimated at 90 minutes for TURBT and 30 minutes for TULA. Therefore at our Trust we have released approximately 990 hours of operating time which equates to nearly £900,000 of savings. The average time spent in hospital following TURBT is 1.6 days and the average hospital bed costs £400/day. All TULA cases at our Trust have been performed as outpatient procedures to date. Thus whilst relieving pressures on hospital beds, this will equate to a saving of nearly £700,000 on hospital bed costs. Taking into account the cost of single-use fibres and nursing staff costs, local audit data estimates 990 TULA procedures have resulted in savings to the Trust of £2,370, 258. It is expected that 100 hospitals will offer TULA by the end of 2023 and current projections forecast 10,000 TULA procedures to be performed annually across the UK by the end of 2025. Therefore the expansion of this service is expected to deliver significant savings to the UK healthcare system in the management of NMIBC.

Conclusions: There are unprecedented pressures on Trusts in the post-pandemic era and an increasingly elderly population. TULA offers significant financial savings to organisations and health systems, along with creating surgical waiting lists and hospital bed capacity. The use of TULA has rapidly increased across the UK in the past 3 years supported by the national GIRFT programs. TULA offers a cost-effective and clinically equivalent alternative to TURBT in select cohorts with NMIBC with the potential to influence care nationally and internationally.

Funding: None.

MP12-02 Focal Cryotherapy for Localized Prostate Cancer: Initial Report from the International Focal Therapy Society (FTS) Registry

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Presented By: Sriram Deivasigamani, MD

Introduction: Focal cryotherapy was initially utilized to treat low-risk prostate cancer as an alternative to active surveillance. The development of imaging and biopsy techniques resulted in the accurate localization of the tumor that allowed focal therapy to be considered in intermediate and carefully selected localized high-risk disease. In this study, we present the first report of the oncological and functional outcomes of focal cryotherapy in patients with organ localized PCa, from our prospective, international multicenter Focal Therapy Society (FTS) registry.

Methods: An analysis of consecutive patients who underwent focal cryoaablation with > 6 months follow-up between 2005–2023 were conducted. These patient details were prospectively recorded in the FTS registry from the six centers (Five USA and One South America). The primary outcome was to determine the failure-free survival (FFS), defined as avoidance of salvage therapy including radical prostatectomy, radiation therapy, repeat ablation, systemic therapy, and metastasis/cancer-specific death. The secondary outcomes include cancer-specific survival (CSS), overall survival (OS) and metastasis-free survival (MFS) along with reporting the functional outcomes including urinary continence, defined as strictly no pad usage, and preserved erectile function (patient-reported, with/without pharmacologic intervention, defined as an erection sufficient for sexual intercourse of those patients who were initially potent IIEF 5 > 17) at 12 months.

Results: A total of 282 patients met the study inclusion criteria. The median follow-up was 24 months (interquartile range [IQR] 12–43). The median age was 72 years (IQR, 66–76) and median preoperative PSA was 6.8 ng/ml (IQR, 5–9.35). A total of 217 (77%) patients and 45 (16%) patients had D’Amico intermediate- and high-risk disease. A total of 282 patients met the study inclusion criteria. The median follow-up was 24 months (interquartile range [IQR] 12–43). The median age was 72 years (IQR, 66–76) and median preoperative PSA was 6.8 ng/ml (IQR, 5–9.35). A total of 217 (77%) patients and 45 (16%) patients had D’Amico intermediate- and high-risk disease. FFS was 74% (95% confidence interval [CI] 63–80%) at 5 years. The MFS, CSS and OS at 5 yrs yrs. was 97% (95% CI 89–99%), 99%
Primary focal cryoablation for prostate cancer has good long-term oncological control in men with localized PCa.

Conclusions: The UroNav Ablation (v 4.x)/DynaCAD Urology (v 5.x) systems have demonstrated precision in the FC of localized PCa, yielding minimal recurrences in the treated areas and maintaining a strong safety profile. Careful patient selection and rigorous post-FC monitoring are essential for securing the best PCa control outcomes.

Funding: No funding.

MP12-04 Long-Term Oncological Outcomes of Partial Gland Cryoablation of Localized Prostate Cancer with median follow-up 7 years: A Single Institution Experience

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Presented By: Sriram Devasigamani, MD

Introduction: Traditional radical approaches to treat clinically localized prostate cancer (PCa) have been largely oncologically effective but associated with complications and decline in functional outcomes, arguably making them unsuitable in all cases for treatment. This necessitates an alternative option, focal therapy (FT), which has good oncological control while reducing treatment-related functional detriments. Although mid-term oncological and functional outcomes of FT have been demonstrated, the long-term outcomes were lacking. We sought to report the long-term oncological outcomes of partial gland cryoablation (PGA) for non-metastatic PCa treatment.

Methods: This is an institutional review board-approved retrospective analysis of a prospectively maintained database of patients who have undergone PGA of the prostate at Duke between 2005 and 2020 with a minimum follow-up of 3 years. The primary outcome was to determine the 5-year and 10-year failure-free survival (FFS), defined as a requirement of radical, whole-gland therapy for recurrence and/or systemic therapy, or metastases/death (cancer-specific). Secondary outcomes include cancer-specific survival (CSS), overall survival (OS) and metastases/death (cancer-specific). Secondary outcomes include cancer-specific survival (CSS), overall survival (OS) and metastases-free survival (MFS). We also evaluated the functional outcomes including the continence rate defined as strictly "pad-free" and preserved erectile function (patient-reported, with/without pharmacologic intervention, defined as an erection sufficient for sexual intercourse of those patients who were initially potent, IIEF 5 > 17) at 12-months.

Results: A total of 70 patients with complete data met the study inclusion criteria. The median follow-up was 86 months (interquartile range [IQR] 46-113). The median age was 75 years (IQR, 69-80) and the median preoperative PSA was 6.5 ng/ml (IQR, 4.7-9.34). Of 70 patients, 43 (61%) and 6 (9%) patients had D’Amico intermediate- and high-risk disease. FFS was 92% (95% confidence interval [CI]: 81-96%) at 5 years and 70% (95% CI: 52-82%) at 10 years. The MFS, CSS, and OS at 10 years were 96% (95% CI: 86-99%), 98% (95% CI: 89-99%), and 89% (95% CI: 75-95%), respectively. There was a significant improvement in median IPSS from a baseline of 6.5 (IQR, 3-12) to 4 (IQR, 2-9) at 12 months, p = 0.03. About 73% (32/44) of patients who were initially potent were able to maintain erections sufficient for sexual intercourse and 97% (68/70) of patients are continent requiring no pad usage at 12-months follow-up.

Conclusions: Primary focal cryoablation for prostate cancer has good long-term oncological control in men with localized PCa.

MP12-03 Focal Cryoablation of the Prostate using UroNav/DynaCAD Ablation Guidance Software: Complications, Oncological and Functional Outcomes

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Presented By: Alessandro Marquis, MD

Introduction: Focal cryoablation (FC) for prostate cancer (PCa) is designed to treat only tumor regions, sparing healthy tissue. Accurate targeting of MRI-visible lesions is critical for successful treatment. This work assesses oncological and functional outcomes and complications of FC using the UroNav Ablation/DynaCAD Urology systems.

Methods: Patients (pts) diagnosed with single-lesion low to intermediate risk (GS £7) MRI-visible PCa were eligible for this prospective trial. Small volume GS 6 PCa at systematic (SB) biopsy was allowed. All pts were diagnosed through MRI-US fusion (targeted [TB]+SB) biopsy and treated with FC using the UroNav Ablation (v 4.x)/DynaCAD Urology (v 5.x) systems. The novelty of this software allows for pre-treatment planning of FC probes placement to achieve adequate treatment of the lesion and margin. FC protocol included a 12-month restaging MRI and biopsy (TB+SB). Functional outcomes were assessed with the IPSS, SHIM, and EPIC-26 questionnaires and complications with the CTCAE v 5.0.

Results: Between Dec 2020-Oct 2023, 49 pts underwent FC. To date, 20 pts completed the 12-month post-FC follow-up. 19 pts (95%) did not have recurrent/persistent PCa in the ablation zone, while one had persistent GS 3+4 PCa and underwent radical prostatectomy (RP). 7 pts (35%) had a new PCa outside the ablation zone: of these, 5 (25%) were followed on active surveillance (AS) (4 with GS 6 and 1 with GS 3+4 PCa), while 2 (10%) developed GS 8 PCa with one choosing additional FC and the other RP. Of the 7 pts with GS 6 PCa on SB at enrollment, 5 (25%) were continued on AS, while 2 (10%) progressed to higher grade PCa and were those who underwent additional FC and RP. At 12 months post-FC, 85% (17/20) of pts were salvage treatment-free. No one had metastatic PCa. PSA density values significantly decreased, confirming a biochemical response (0.17 ± 0.7 vs 0.06 ± 0.05, p < 0.001). Table 1 shows functional outcomes and complications.

Conclusions: In this multicenter international study of focal cryoablation for organ-localized prostate cancer, mid-term results appeared to be promising with good oncological control and low rates of treatment-related functional outcomes decline. Further multicenter studies with a larger sample size are required to validate these findings.

Funding: None.
FT may be a better option for men who desire to preserve good functional outcomes and thus quality of life.

**Funding:** None.

MP12-05  Initial Experience with Focal MRI-Guided Transurethral Ultrasound Ablation (TULSA) in Men with Localized Prostate Cancer

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Presented By: Ram Pathak, MD

**Introduction:** MRI-guided transurethral ultrasound ablation (TULSA) uses directional ultrasound and real-time MR thermometry-based control to thermally coagulate the volume of prostate tissue prescribed on T2-weighted images. The FDA registration study (NCT02766543) established safety and efficacy in a low and favorable intermediate-risk population receiving whole-gland ablation. Here we report our initial experience with focal ablation, as the first US academic center to offer TULSA therapy for prostate cancer (PCa) since initial FDA clearance.

**Methods:** Between July 2020 to March 2024, 50 patients received TULSA treatment at our institution according to the local standard of care and consented to data collection in the Customized TULSA-PRO Ablation Registry ("CARE", NCT05001477). 30 patients received focal ablation ranging from lesion-targeted to subtotalexcision. Patients received routine follow-up; data collection included PSA, biopsy, additional treatments for PCa, and Clavien-Dindo complications.

**Results:** At baseline, the median (IQR) age, PSA and prostate volume were 69 (65-75) years, 5.9 (4.1-9.1) ng/ml, and 37 (31-47) cc (max 63 cc). All had treatment-naive organ-confined prostate cancer, with clinical stage T1 (66%), T2 (7%), [GC1]T2a (13%), T2b (7%), or T2c (7%) and Grade Group (GG) 1 (3%), GG2 (80%) or GG3 (17%) disease. Available follow-up duration (median [IQR]) is 6 (3-24) months (max 36). Median (IQR) procedure time from positioning the anesthetized patient in the MRI to recovery was 2.4 (2.0 – 2.9) hours. The PSA nadir was 0.9 (0.7-1.7) ng/ml, a decrease of 84 (71-90)% from baseline. Outcomes at 1 year are available for 13 men. 2/13 had residual GG2 disease (13%), and 2 had low volume GG1 disease. None received additional treatment for PCa. There was no Grade III complication related to the TULSA procedure, and one Grade II (dysuria resolved with antibiotics). Procedure refinements include optimization of device positioning to ensure all target tissues fall within the maximum treatment depth, and restricting the angular extent of repeat exposures to protect the urethra.

**Conclusions:** Our early post-market experience treating GG2-3 prostate cancer with focal ablation plans demonstrate comparable safety and efficacy of TULSA to that reported in the pivotal study.

**Funding:** No funding.

MP12-06 Evaluating Outcomes of Local Recurrence Following Percutaneous Cryoablation of Renal Masses: A Comparative Analysis of Observation Versus Retreatment

Helen Kim1, Nicholas Pickersgill1, Ethan Vargo1, Joel Vetter1, Daniel Giardina1, Eric Kim1, Sam Bhayani1, Sherburne Figschau1

1Washington University in Saint Louis

Presented By: Helen Kim, MD

**Introduction:** Percutaneous cryoablation (PCA) has gained popularity in the management of small renal masses as an alternative to partial nephrectomy in select patients. Recurrences following PCA are managed with observation or treatment with repeat ablation or extirpative surgery; however, there is no consensus on the preferred approach or comparative survival outcomes. Our study aims to evaluate outcomes for patients with local recurrence following primary PCA.

**Methods:** Following Institutional Board Review approval, we performed a retrospective review of patients from 2005-2016 within our prospectively-maintained institutional database. 23 of 312 patients who developed local recurrence had sufficient data for analysis and were included. Patient demographics, Charlson Comorbidity Index (CCI), and tumor characteristics were assessed between the observation and treatment cohorts. Cox proportional hazard regression analysis was performed to identify predictors of overall survival (OS). Estimated OS curves were generated using the Kaplan-Meier method.

**Results:** Of the 23 patients who developed local recurrence, 10 were observed with serial imaging and 13 underwent re-treatment with PCA or extirpation. There were no statistically significant differences in demographic or tumor characteristics between the two cohorts. At a median follow-up of 44.5 months following recurrence, no difference in OS was observed between those who were observed versus those who underwent retreatment. No metastases occurred in either arm. Treatment was not predictive of improved OS on Cox regression analysis (HR 0.55, p = 0.403). Age (HR 1.14, p = 0.013) and increasing tumor size (HR 2.23, p = 0.006) were found to be predictive of worse OS on univariate Cox regression analysis. On multivariate analysis, increasing tumor size was predictive of worse OS (HR 1.85, p = 0.046).

**Conclusions:** In our single-institutional review of local recurrences following PCA, retreatment was not found to significantly increase survival; however, mortality events were limited, and a trend towards improved survival with retreatment was observed. Increasing age and tumor size were predictive of worse OS. Further investigations are warranted with a larger sample size and longer follow-up.

**Funding:** None.
MP12-07 Robot Assisted Focal Ablation (RAFA) Using Cryotherapy for Prostate Cancer: Initial Experience
Louis Liou1
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Presented By: Louis Liou, MD, PhD

Introduction: Mona Lisa (Biobot) has been developed for precise localization of transperineal biopsies utilizing fusion software with a smart robotic arm. Cryoablation needle placement for prostate cancer has been utilized with either a free hand or grid approach. The technology of the Mona Lisa robotic arm system has been combined with cryoablation to show feasibility and precision.

Methods: A single surgeon’s experience was retrospectively reviewed with IRB approval. 9 patients consented to the addition of the Mona Lisa to the standard cryoablation surgery. 8 total patients were treated completely. We documented the intraoperative technique, time, and short-term post-operative follow up of 3 months.

Results: The patients average age was 67 yo (range 62-72) with 6 cases being focal, one whole gland, one salvage, and one aborted. Average needles placed was 5 (3-8) while average time of procedure was 113 min (76-170 min). Patients in NCCN categories were - 4 Favorable Intermediate, 2 Unfavorable Intermediate, 2 High risk, 1 Low risk. Pre-op averages:PSA-9 (3-19), Size – 36 grams (17-58) PSAD-0.3 (0.11-0.58) IPSS-9.9 QOL-1.7 IIEF-19 Post-op averages:1 M-PSA-4.8 IPSS-11.7 QOL-2.2 IIEF-173M-PSA-5.2 IPSS-8 QOL-1.7 IIEF-24 Robot assited cryoablation with the Mona Lisa was performed in various clinical cancer scenarios and was able to be completed in all the cases but one. There were challenges with adaption of the unit to ablation. Multiple changes in the workflow and technology were implemented to improve the process. The sterile draping, needle guides, and software were part of these changes. The PSA kinetics, IPSS, IIEF were all consistent with cases done without robot assistance. PSA decrease by up to 50% while urinary function worsened after the first month but returned to baseline at 3 months. Erectile function did not change appreciably.

Conclusions: Although the Mona Lisa was developed for prostate biopsy, we have shown the feasibility in using the system for MRI fusion guided placement of needles for treatment. Short term outcomes have shown no major complications or differences from the standard procedure. Time of procedure did decrease with experience and the number of needles. More refinements of the system and protocol will allow efficient robotically assisted focal ablation (RAFA). This is the first study combining these two technologies in prostate cancer treatment.

Funding: None.

MP12-08 Salvage Focal Therapy Via High Intensity Focused Ultrasound (HIFU) for Radiorecurrent Localized Prostate Cancer: Upcoming Single Arm Phase II Clinical Trial
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1University of Florida department of Urology, 2University of Florida, 3University of Florida department of pathology, 4University of Florida department of radiology, 5University of Florida department of medical oncology, 6University of Florida department of Medical oncology

Presented By: Tarik Benidir, MD, M. Sc, FRCSC

Introduction: The American Urology Association (AUA) recently published their recommendations for the management of recurrent localized prostate cancer. Therein, High Intensity Focused Ultrasound (HIFU) was supported as a salvage therapeutic modality of care for radiorecurrent localized prostate cancer. To our knowledge, no well designed clinical trial exist in the PSMA PET era regarding the safety and feasibility of High Intensity Focused Ultrasound for the management of localized radiorecurrent prostate cancer.

Methods: This is a single arm phase II trial. Inclusion and Exclusion Criteria are found in table 1. Patients deemed eligible for salvage HIFU will undergo a one time treatment. Pre procedural AUA symptom score (AUASS) and Sexual Health Inventory for Men (SHIM) will be denoted and subsequently repeated.
at 3, 6, 9, 12 months. Patients will undergo PSA monitoring every 3 months, prostate MRI at 6 and 12 months. Mandatory Prostate Biopsy will be undertaken at the 12 months or earlier for cause.

Results: Primary outcomes: To evaluate the in-field failure free survival (IFFFS) of localized radio-recurrent prostate cancer at 12 months. Failure defined as grade group (GG)≥2. Secondary outcomes: To evaluate the local failure-free survival (IFFS + out-of-field treatment failures) at 12 months utilizing the same definition of failure. Furthermore, the study aims to determine the a) complication rates (Clavien Dindo≥3) within the first 12 months and the b) change in quality of life metrics before and after therapy (AUASS and SHIM). Time to whole gland or systemic therapy as well as time to androgen deprivation therapy onset will be assessed. Exploratory outcomes: MRI volume change, PSA change, PSA density change.

Conclusions: We hope this study will provide the highest level of evidence for the feasibility of salvage HIFU in radio-recurrent localized prostate cancer.

Funding: EDAP-TMS Focal One (industry sponsored).

MP12-09 Microwave Transurethral Thermodilatation Ablative Therapy for Symptomatic BPH: First Consecutive 55 Asian Patients who Failed Medical Therapy

Wai Man Chow

1UMP Specialist Medical Services

Presented By: Wai Man Chow, MB, BCh, FRCS (Glas.) FRCS (Urol.) FCSHK, FIHKAM (Surgery)

Introduction: Microwave transurethral ThermoDilatation (TUTD) offers a unique 45-minute, ambulatory outpatient procedure that is well tolerated under local anaesthesia for symptomatic benign prostatic hyperplasia (BPH) by using simultaneous focused microwave heating and pressurized balloon dilatation therapy. About 95% of patient do not require a post-treatment Foley catheter and experience significant immediate relief of their lower urinary tract symptoms (LUTS). We present our first 55 consecutive Asian patients who failed initial medical therapy, with clinical data pertaining to the clinical safety and efficacy of TUTD.

Methods: From August 2018 to December 2023, 55 patients (Age 52-79, mean 64) with LUTS, but deteriorating symptoms while on either monotherapy with alpha adrenergic blocker or combination 5-Alpha Reductase inhibitor were treated with the TUTD device, PROLIEVE. (Medifocus inc.) Their initial IPSS (17-35, median 22), QOL (4-6, median 5), PSA (0.57-7.7, mean 3.5), prostatic volumes (35-84cc, mean 65cc), Qmax (1.7–10.5 ml/s, median 7.5ml/s) and PMRV (150–230ml, median 190ml) were recorded pre-treatment. The parameters were assessed at 6 weeks, 3-, 6-months post-treatment.

Results: IPSS: 2-23 (median 12) at 6 weeks; 2-15 (median 9) at 3 months; 2-11 (median 7) at 6 month; QOL: 2-3 (median 3) at 6 weeks; 2-3 (median 2) at 3 and 6 months. Qmax: 3.6-14.9ml/s (median10ml/s) at 6 weeks; 6.8-17.5ml/s (median 13.2ml/s) at 3 months, 11–17ml/s (median 15ml/s) at 6 months. PMRV: 0–133ml (median 78ml) at 6 weeks, 0–120 ml (median 70ml) at 3 months; and 0–85ml (median 50ml) at 6 months. Urological complications e.g., clot retention and sepsis were not observed. One patient required temporary post-treatment Foley catheterization for 72 hours. Treatment related retrograde ejaculation or erectile dysfunction has not been reported. The procedure was well tolerated under local anaesthesia. Both voiding and storage symptoms improved.

Conclusions: Our experience with TUTD in 55 consecutive Asian patients after unsuccessful trial medical treatments for BPH compares favourably to the clinical outcomes and efficacy of the Caucasian cohort in the USFDA 5-year follow-up post-approval study. We observed initial immediate symptomatic relief with lasting post-treatment improvements into our 4 years follow up in IPSS, QOL, Qmax and PMRV. We conclude that microwave TUTD is safe and efficacious in the Asian population and should be offered as an cost effective option. Long term prospective data collection in a larger patient population remains in progress. A study on the treatment of acute/chronic urinary retention is also in progress.

Funding: None received.

MP12-10 Magnetic Resonance Imaging and Clinical Evaluation of Ultrasound-Guided Transperineal Laser Ablation of Benign Prostatic Hyperplasia

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Presented By: Kursat Kucuker, MD

Introduction: Soractelitethm transperineal focal laser ablation (TPLA) for the treatment of symptomatic benign prostate hyperplasia (BPH) using the Echolaser® system is a novel minimally invasive technique. Soractelitethm TPLA is able to generate a light-induced thermal heating and subsequent coagulative necrosis of the prostatic tissue. Our aim was to assess the impact of ultrasound guided TPLA regarding urodynamic improvement, monitoring clinical data, postprocedural complications and imaging findings at multiparametric magnetic resonance imaging.

Methods: From October 2022 to September 2023, 12 prospectively enrolled patients with moderate to severe LUTS (International Prostate Symptoms score ≥ 12) due to benign prostatic obstruction and refractoriness, intolerance or poor compliance to medical therapies underwent TPLA under US-guidance with a 1064-nm continuous-wave diode laser (Soractelite-EchoLaserX4) under local anaesthesia at the outpatient clinic. Patients were evaluated at 6months after TPLA with International Prostate Symptom Score (IPSS), Qmax, PSA, total prostate volume and prostate transitional zone (TZ) volume measured by MRI.

Results: Twelve consecutive patients were prospectively enrolled and were followed up 6 months after TPLA. Median age of the patients were 77.4years. All procedures were well tolerated, and no procedural complications were recorded. Four out of twelve patients experienced acute urinary retention before TPLA and all of them still live without urinary catheter after intervention. MRI assessed the changes over time with a 57% mean reduction of adenoma volume and 73% of the ablated area, associated with clinical and functional improvement and resolution of LUTS in all cases. At 6th month follow up, IPSS improved from 21.8 ± 6.8 to 10.6 ± 5.7 (p < 0.001), and Qmax from 7.1 ± 2.7mls to 13.6 ± 5.9mls (p < 0.001), prostate volume decreased from 81.8 ± 22.7ml to 45.9 ± 14.2ml (p = 0.035) PSA decreased from 8.1 ± 1.9 ng/mL to 3.2 ± 1.1 ng/mL (p < 0.05) and TZ of the prostate also decreased from 40.8 ± 7.9 to 23.1 ± 5.1 (p < 0.05).
Conclusions: TPLA for symptomatic BPH provides clinical benefits, and the treatment is well tolerated. Moreover, changes in volume of the prostate were noteworthy. It could be considered an alternative effective mini-invasive procedure to standard treatments for BPH in the outpatient setting. Long-term results are required before implementations of this technique in the urologist’s armamentarium.

Funding: No funding was secured for this study.

MP12-11 Upper Urinary Tract Urothelial Carcinoma - Nephroureterectomy or Laser Ablation?

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¹Russian University of Medicine, ²City Clinical Hospital named after S. P. Botkin of the Moscow Department of Health

Presented By: Roman Andreev, MD

Introduction: Upper urinary tract urothelial carcinoma (UTUC) is a rare and dangerous disease that requires serious treatment. Radical nephroureterectomy has long been the gold standard treatment for UTUC, but it should only be used for large tumors because it can lead to serious complications. In this regard, small tumors of low malignancy are the most promising to operate with flexible ureteroscopic laser ablation, which allows to save the organ and avoid the development of complications. Various types of lasers for the treatment of UTUC are discussed in the literature, but the efficacy and safety of the Thulium (Tm:YAG) laser for ureteroscopic ablation of UTUC has not yet been studied. The aim of the study: to evaluate the safety and efficiency of the Thulium laser in ureterorenoscopic ablation of UTUC to improve the treatment outcomes of patients with this disease.

Methods: To achieve this goal, a retrospective single center study of patients diagnosed with UTUC was performed between January 2018 and December 2022. All patients underwent ureterorenoscopy to visualize the tumor process, as well as a biopsy of the UTUC. Depending on the histopathological grade of the tumor, patients were recommended to undergo either radical nephrectomy (in case of high grade of malignancy) or retrograde intrarenal ablation of the tumor and follow-up (in case of low grade of malignancy). The study was conducted to evaluate the results of retrograde intrarenal ablation of urothelial carcinoma using the Thulium laser. Forty patients participated in the study, 23 of whom underwent radical nephrectomy surgery, while the remaining 17 patients who underwent laser Tm:YAG ablation alone were followed up for 15 months.

Results: The study demonstrated high safety and efficacy of retrograde intrarenal ablation of urothelial carcinoma using the Thulium laser. Among the 17 patients who underwent laser ablation of UTUC, reoperation was required only in one case (5.9% of cases), which was due to the original size of the tumor. It is worth noting that hemostatic drugs and hemotransfusions were not used in any of the cases. The use of this method allows preserving the organ and minimizing the development of complications associated with renal failure.

Conclusions: Evaluation of the results of retrograde intrarenal ablation of urothelial carcinoma using Thulium laser showed its high efficiency and safety. The use of this technique allows not only preserving the organ, but also avoiding complications in the form of renal failure. However, an additional study with a larger number of patients and a prospective study design is required to assess these results more accurately.

Funding: None.

MODERATED POSTER SESSION 13: PEDIATRIC UROLOGY

MP13-01 A Multichannel Ureteroscope Decreases Intrarenal Pressure and Increases Flow Rate Compared to a Single Channel Ureteroscope

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¹University of Michigan

Presented By: Anthony Bonzagni, DO

Introduction: Management of intrarenal pressure (IRP) is important during ureteroscopy. IRP is dependent on irrigation rate and outflow resistance. With single channel ureteroscopes (s-ureteroscopes), outflow resistance (ROUT) consists of resistance to flow down the ureter around the ureteroscope (RA). Tight ureters will have a higher RA value. Multichannel ureteroscopes (m-ureteroscopes) provide an additional path for fluid drainage - through a dedicated channel with resistance RB. Based on simple circuit principles, outflow resistance when using a m-ureteroscope will be: ROUT = RA*RB / (RA+RB) The objective of this study was to measure IRP and flow rate in a silicone kidney-ureter model using a m-ureteroscope and a s-ureteroscope across different outflow conditions.

Methods: For each trial, a m-ureteroscope (RIWO DURS, Richard Wolf) or s-ureteroscope (Viper, Richard Wolf) was placed into the pelvis of the kidney-ureter model. A 22-liter tank of deionized water positioned at different heights produced irrigation pressures from 50 to 150 cmH20. Resistance to flow...
down the ureter around the ureteroscope (RA) was simulated using catheters with resistance values from 0.9 to 4.9 cmH2O/(ml/min). IRP was measured with a fiber optic pressure sensor (Opsens) in the renal pelvis. Drainage fluid was measured to determine flow rate.

**Results:** At standardized flow rates with each resistance catheter (RA value) tested, IRP was lower with the m-ureteroscope compared to the s-ureteroscope (Fig 1). At set irrigation pressures for each resistance catheter tested, the m-ureteroscope produced greater flow rates than the s-ureteroscope (Fig 2).

**Conclusions:** The m-ureteroscope contains a dedicated drainage channel that lowers overall outflow resistance of the system. Thus, the m-ureteroscope produced lower IRP and greater flow rates than the s-ureteroscope.

**Funding:** Research grant from Richard Wolf.

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**MP13-02 First Prospective, In Vivo Experience Using a Novel Steerable Suction Ureteral Access Sheath in North America**

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¹Mayo Clinic Arizona

**Presented By:** Victoria Edmonds, MD

**Introduction:** Suction during ureteroscopy (URS) is an evolving technology that aims to improve the efficiency of the surgical management of renal stones. The ClearPetra endoscopic system uses negative pressure to suction dust through a ureteral access sheath (UAS) with a flexible tip. The UAS offers 40, 46, and 55 cm lengths and 11/13 or 12/14 Fr diameters and uses a steerable tip to evacuate dust and fragments. We report the first prospective, in-vivo, single-center experience using the flexible-tip suction UAS (FTS-UAS) in North America.

**Methods:** We prospectively identified and enrolled 13 consecutive patients with stone burdens of > 7.5 mm. The FTS-UAS was employed in place of standard UAS. Patients with a history of recurrent urinary tract infection or positive preoperative urine culture were excluded. Operative time, difficulty with equipment, basket use, and intra- or postoperative complications were recorded. Stone burden reduction was calculated using non-contrast CT scan (NCCT) at 6 weeks.

**Results:** Of 13 patients, 9 had multiple stones and 2 required bilateral URS for a total of 15 renal units. Mean cumulative stone diameter was 22.7 mm (SD 14.2, range 7.7-60). Mean stone density was 845.5 Hounsfield units (SD 286.5, range 372-1245). Mean operative time was 84 min 42 sec (range 38-159 min). One patient had a malrotated, low kidney and steep lower pole stones, which would have made standard UAS difficult (Figure 1). The Thulium Fiber Laser was used in all cases. In 2 cases, the UAS selected was too long, making suctioning less effective. Only 3 cases required a basket. There were 2 Traxer Grade 1 ureteral injuries from UAS placement but no other complications. Stone burden reduction was 73%; this was limited by only 2/13 patients having NCCT prior to abstract submission. No patients required a secondary procedure.

**Conclusions:** This is the first reported series of patients in North America to undergo URS using a FTS-UAS. The UAS allowed for effective extraction of stone burden, particularly in cases where anatomy and stone location would have otherwise made stone treatment difficult. There were no significant complications within the study period. Stone clearance rates to follow with expected improvement as experience with the sheath develops.

**Funding:** No funding was received for this work.

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**MP13-03 Ureteral Tissue Temperature During Ureteroscopy with Ho:YAG Laser Activation in an In Vivo Porcine Model**

Anthony Bonzagni¹, Timothy Hall¹, Ron Marom², Khurshid Ghani¹, William Robert¹

¹University of Michigan, ²Tel Aviv Medical Center

**Presented By:** Anthony Bonzagni, DO

**Introduction:** Ureteroscopy with laser lithotripsy is commonly performed. In some cases, laser activation within the ureter increases fluid temperature resulting in thermal injury to adjacent tissue, ureteral stricture, and subsequent renal loss. We sought to measure temperature of the outer ureteral wall during laser activation in a porcine in-vivo model.

**Methods:** To accommodate for the physiologic differences in porcine ureters (i.e., ureteral peristalsis and collapse during laser activation) a specially designed PFA ureteral tube (McMaster...
Carr) with four, 5 mm diameter holes at 1 cm intervals, was inserted via ureterotomy in two 50 kg pigs. Once the tube was positioned within the ureter 2 cm from the UPJ, an array of thermocouples was positioned on the outside of the ureter, so each thermocouple was co-located with a window on the tube (Fig 1).

A ureteroscope (LithoVue™ Elite, Boston Scientific) was inserted through the tube to the level of window 1. Using a Lumenis Pulse™ 120H Ho:YAG Laser and a 200-micron D/F/L laser fiber (Boston Scientific), energy was delivered for 60 seconds (100% duty cycle) at power (10 - 60W) and irrigation rate (8 - 40 mL/min). Trials were performed in triplicate for selected parameters, trials were also conducted at 50% operator duty cycle. Thermal dose was calculated for each trial with threshold of thermal injury considered to be 120 equivalent minutes.

Results: Ureteral wall temperature at window 1 exceeded thermal injury threshold at 15 and 20W with irrigation rate of 8 mL/min (Fig 2) and at 30W with irrigation rate of 15 mL/min. Employing a 50% duty cycle at those same settings decreased the thermal dose below threshold of injury. Trials with irrigation rate of 40 mL/min did not exhibit concerning ureteral wall temperature elevation.

Conclusions: In a porcine model, ureteral wall temperatures can exceed the threshold for thermal injury with commonly utilized laser power and irrigation settings. High irrigation rate or a 50% duty cycle can partially mitigate excessive heating. Funding: Research Grant from Boston Scientific.

MP13-04 Development and Initial Evaluation of a Cost-Effective Force Sensor for Ureteroscopic Application

Bruce Gao1, Jacob Tsai1, Andrei Cumpanas1, Jaime Altamirano-Villarroel1, Seyedamirvala Sadaat1, Victor Phan1, Evan Grohs2, Yi Xi Wu1, Zachary Tano1, Sohrab Ali1, Pengbo Jiang1, Ralph Clayman1

1Department of Urology, University of California, Irvine, 2Department of Physics, North Carolina State University

Introduction: Retrograde intrarenal surgery (RIRS) is one of the most common procedures in urology. During RIRS, ureteral access sheath (UAS) insertion at forces greater than 8 Newtons (N) risks high-grade ureteral injury. To monitor force, our institution utilizes a unique, Bluetooth equipped device (i.e., the University of California – Irvine Force Sensor (UCI-FS)). Given the unique nature of the UCI-FS, we sought to develop a cost-effective force sensor based on Boyle’s Law and the specific amount of force required to compress an occluded 1.0 mL syringe (Figure 1A).

Methods: We collected a total of 15 1.0 mL syringes from three different brands (n = 5/brand). After setting the plunger at 1.0 mL, the syringe was occluded, and the syringe plunger was compressed at a constant rate with the UCI-FS. As the plunger was compressed, UCI-FS forces of 4.00 N, 6.00 N, and 8.00 N were correlated with the milliliter graduations at the point of descent of the plunger. Testing was performed in quintuplicates for 225 readings total. A method for applying this clinically was developed, costing less than $4.00 (Figure 1B).

Results: 4.00 N, 6.00 N, and 8.00 N thresholds were precisely identified on a 1.0 mL Luer-Lok™ Syringe (Becton Dickinson, Franklin Lakes, NJ) as 0.30 mL, 0.20 mL, and 0.15 mL, respectively (Figure 1C). The 1.0 mL Tuberculin Syringe (Becton Dickinson, Franklin Lakes, NJ) and 1.0 mL Luer Slip Syringe (Berpu Medical, Zhejiang, China) were less precise, but compression from 1.0 mL to 0.40 mL, 0.25 mL and 0.20 mL corresponded to UCI-FS forces that did not exceed 4.00 N, 6.00 N, and 8.00 N, respectively (Figure 1D).

Conclusions: In a porcine model, ureteral wall temperatures can exceed the threshold for thermal injury with commonly utilized laser power and irrigation settings. High irrigation rate or a 50% duty cycle can partially mitigate excessive heating. Funding: The authors have no funding to disclose.

MP13-05 Automated Analysis of Stone Dust During Ureteroscopy to Predict Stone Free Status Using Computer Vision Models

Kimberly Maciolek3, Daiwei Lu1, Ipek Oguz1, Nicholas Kavoussi2

1Vanderbilt University, 2Vanderbilt University Medical Center, 3Vanderbilt University Medical center

Introduction: Currently, the gold standard for predicting stone-free status (SFS) during ureteroscopy is visual inspection with subjective criteria. Computer vision offers a means for objective measurement of stone dust during ureteroscopy.
Introduction: There are currently no objective means for assessing adequate kidney stone dust after laser ablation during flexible ureteroscopy (fURS). The association between stone dust and stone free status is also unclear. We sought to implement artificial intelligence powered computer vision models to evaluate stone dust after laser ablation and assess prediction of stone free status.

Methods: We collected 70 separate videos of stone dust after laser ablation (dusting settings) from patients undergoing fURS for intrarenal stones. The videos from the patients were classified based on stone-free status on postoperative imaging (i.e., no residual fragments seen). We extracted individual frames at 6 FPS and developed a deep convolutional neural network to predict stone free status postoperatively. We incorporated a previously validated stone segmentation model as an auxiliary input channel. Eighty percent of the frames (n = 26, 592 from 54 videos) were used to train the model and the remaining 20% of frames (n = 6, 648 from 16 videos) for testing. The predictions from individual frames were combined into a per video (i.e., per subject) prediction. Model performance of frame classification with a threshold of 0.5 was evaluated via accuracy, sensitivity, and specificity. Additionally, the area under the receiver operating curve (AUC-ROC) and overall accuracy of video classification were calculated.

Results: Thirty-two patients (46%) were stone-free and 38 patients (54%) had residual stone fragments on postoperative imaging. Mean time to postoperative imaging was 49 days (standard deviation: 20) with CT imaging performed in 61 patients (87%) and renal ultrasound in 9 patients (13%). Mean duration of the video clips for model training was 15s ±7s. The model demonstrated good performance of frame classification based on stone-free status with an accuracy of 0.70, sensitivity of 0.76 and specificity of 0.61. Across all thresholds of frame classification, the AUC-ROC of the model was 0.69 (Fig. 1). Additionally, the model demonstrated even higher accuracy of video classification for predicting stone free status (accuracy: 0.81).

Conclusions: Computer vision models show feasibility in predicting stone free status based on evaluation of residual dust after stone ablation. Further development and optimization of a computer vision model could improve surgical efficiency and stone free rates in real-time.

Funding: Vanderbilt Institute for Surgery and Engineering physician in residence program (Dr. Nicholas Kavoussi), NIH R21 1R21DK133742[IO1] (Drs. Nicholas Kavoussi and Ipek Oguz), Training Program for Innovative Engineering Research in Surgery and Intervention Project Number 3T32EB021937 (Daiwei Lu).

MP13-06 Initial Clinical Experience with a Robotic Combined Mini-Percutaneous Nephrolithotomy (PCNL) and Flexible Ureteroscopic Lithotripsy

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1Department of Urology, University of California Irvine, Orange, CA, USA, 2Ethicon, Research & Development, Redwood City, CA, USA, 3Department of Urology, University of Southern California, Los Angeles, CA, USA

Presented By: Andrei Cumpanas, MD

Introduction: We describe the initial clinical experience of a combined robotic-assisted mini-percutaneous nephrolithotomy (PCNL) and flexible ureteroscopy (URS) procedure by a single urologist using the novel MONARCH® Urology Platform. Furthermore, we sought to evaluate the technical feasibility, safety, and efficiency of this novel robotic platform.

Methods: In this prospective clinical trial, 13 patients underwent robotic-assisted mini-PCNL and URS for renal calculi management. Patients were placed in a modified supine position. Percutaneous access was gained under electromagnetic (EM) guidance, and an 18 Fr percutaneous sheath was placed to deploy a 15 Fr steerable suction catheter. Stone visualization and ablation were performed ureteroscopically. The hand-held robotic console allowed for single-surgeon control of both the ureteroscope and the suction catheter, as well as a third-party laser fiber, robotic basket, and an irrigation-aspiration system. Stone ablation efficiency was evaluated with 2-3 mm slice thickness CT scans. Patients were classified according to the maximum length of the residual stone fragments as: Grade A (absolute stone free), Grade B (0.1 – 2 mm fragments), or Grade C (>2 mm fragments).

Table 1. Demographic, intraoperative and postoperative characteristics of the prospective clinical trial cohort (n=13).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Median (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>69 (35 - 73)</td>
</tr>
<tr>
<td>Gender</td>
<td>6 (46.2%) males, 6 (53.8%) females</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>26.9 (21.7 - 35.2)</td>
</tr>
<tr>
<td>Pre-operative linear stone burden (mm)</td>
<td>median (range)</td>
</tr>
<tr>
<td>Post-operative linear stone burden (mm)</td>
<td>median (range)</td>
</tr>
<tr>
<td>Pre-operative 2D stone burden (mm)</td>
<td>median (range)</td>
</tr>
<tr>
<td>Post-operative 2D stone burden (mm)</td>
<td>median (range)</td>
</tr>
<tr>
<td>Post-operative stone free rate (%)</td>
<td>5 (30.5%)</td>
</tr>
<tr>
<td>Grade A: Absolute stone free</td>
<td>1 (7.7%)</td>
</tr>
<tr>
<td>Grade B: Residual fragments 2 - 4 mm</td>
<td>1 (7.7%)</td>
</tr>
<tr>
<td>Grade C: Residual fragments 1 - 2 mm</td>
<td>1 (7.7%)</td>
</tr>
<tr>
<td>Lower robotic arms docking time (minutes)</td>
<td>median (range)</td>
</tr>
<tr>
<td>Upper robotic arms docking time (minutes)</td>
<td>median (range)</td>
</tr>
<tr>
<td>Procedure time (minutes)</td>
<td>median (range)</td>
</tr>
<tr>
<td>Mean volume of stone ablated (ml)</td>
<td>median (range)</td>
</tr>
<tr>
<td>Mean volume of laser energy used (J)</td>
<td>mean (SD)</td>
</tr>
<tr>
<td>Cumulative dose (mg), median (range)</td>
<td>41.7 (3.2 - 51.7)</td>
</tr>
<tr>
<td>Length of hospital stay (days)</td>
<td>median (range)</td>
</tr>
<tr>
<td>Complications (n)</td>
<td>6 (46.2%)</td>
</tr>
<tr>
<td>No complications</td>
<td>10 (76.9%)</td>
</tr>
<tr>
<td>Clavien-Dindo I</td>
<td>2 (15.4%)</td>
</tr>
<tr>
<td>Clavien-Dindo II</td>
<td>1 (7.7%)</td>
</tr>
<tr>
<td>Clavien-Dindo III</td>
<td>1 (7.7%)</td>
</tr>
</tbody>
</table>

Figure 1. A) ROC curve demonstrating model performance for frame classification based on stone-free status. B) Example of frames classified by model compared to classification of stone-free status on postoperative imaging. Red outline denotes incorrect classification by model.
C (2.1–4 mm fragments) or not stone free (>4 mm fragments). Post-operative adverse events were monitored for 30 days and classified according to the Clavien-Dindo system.

**Results:** Demographic, intraoperative, and postoperative information are summarized in Table 1. The combined robotic mini-PCNL and URS procedure was successfully completed in 12 of 13 cases. No robotic device-related adverse events were reported. The median pre-operative stone burden was 32.8 mm (median 1645.9 mm³). Using EM targeting, percutaneous access was gained within 2 mm of the renal papilla in a single pass in all cases. Significant stone burden reduction (73-100%) was observed, with 5 Grade A (38.5%), 1 Grade B (7.7%), 2 Grade C (15.4%) and 5 (38.5%) not stone-free cases reported. Three patients experienced complications (1 Grade 2, and 2 Grade I Clavien-Dindo).

**Conclusions:** In this prospective, first-in-human clinical trial, we demonstrate the safety, efficacy, and feasibility of a unique robotic-assisted mini-PCNL and ureteroscopy platform.

**Funding:** This was a Johnson & Johnson sponsored clinical trial.

**MP13-07 Intrarenal Pressure Characterization with Ureteral Access Sheath Suction in an In-Vitro Model**

Anthony Bonzagni¹, Timothy Hall¹, Khurshid Ghani¹, William Roberts¹

¹University of Michigan

**Presented By:** Anthony Bonzagni, DO

**Introduction:** Ureteroscopy is the primary treatment modality for upper tract urinary stones, however stone free rates remain poor. Suction ureteral access sheaths (s-UAS) were developed to facilitate stone clearance and control intrarenal pressure (IRP). Achieving the proper suction level by manually covering the pressure vent on a s-UAS during ureteroscopy is challenging. Too much suction leads to collecting system collapse with bleeding and loss of visualization as well as wasted time waiting for the collecting system to distend back to baseline. We sought to quantify IRP during and after activation of suction in a silicone kidney-ureter model.

**Methods:** A 13/15Fr suction ureteral access sheath (ClearPetra™, Well Lead Medical) was inserted through the sheath with the tip in the renal pelvis. All outflow was through the oblique port of the s-UAS. Trials were conducted in triplicate at specific irrigation pressures from 100–245 cmH2O and suction pressures of 100 or 200 mmHg. Suction was activated by manually occluding the pressure vent of the s-UAS for 1, 2 or 5 seconds. Time for IRP to return within 2 cmH2O of baseline was recorded.

**Results:** Activation of suction for ≥1 second produced an immediate negative IRP in all trials (Figure) and was associated with visible collapse of the model. Time to return to steady state IRP ranged from 4.0–27.7 sec. across all inflow/outflow parameters (Table).

**Conclusions:** Current methods of applying suction during ureteroscopy with fixed-pressure irrigation are not optimized as they produce almost immediate negative IRP and collapse of the collecting system.

**Funding:** Research Grant from Boston Scientific. ClearPetra™ Sheath provided by MicroTech Endoscopy.

**MP13-08 Flexible and Navigable Suction Ureteral Access Sheath (FANS) revolutionizes Retrograde Intrarenal Surgery (RIRS): A Prospective Study by the Global FANS Collaborative Group & EAU Section of Urolithiasis (EULIS)**

Steffi Kar Kei Yuen², Olivier Traxer³, Daniele Castellani³, Christian Sietz³, Ben Hall Chew⁴, Khi Yung Fong⁵, Deepak Ragoori⁶, Bhaskar Kumar Somani⁷, Vineet Gauhar⁸, The Global FANS Collaborative Group²

²Department of Urology AP-HP, Sorbonne University, Tenon Hospital, Paris, France, ³Urology Unit, Azienda Ospedaliero-Universitaria delle Marche, Università Politecnica delle Marche, Ancona, Italy, ⁴Department of Urology Medical University of Vienna, Vienna, Austria, ⁵Department of Urology, University of British Columbia, Vancouver, Canada, ⁶Yong Loo Lin School of Medicine, National University of Singapore, Singapore, ⁷Department of Urology, Asiate Institute of Nephrology & Urology, Irrfan Manzil Colony, Hyderabad, Telangana, India, ⁸Department of Urology, University Hospitals Southampton, NHS Trust, Southampton, UK, ⁹Department of Urology, Ng Teng Fong General Hospital, Singapore, Singapore, ¹⁰SH Ho Urology Centre, The Chinese University of Hong Kong, Hong Kong, China

**Presented By:** Steffi Kar Kei Yuen, MBBS, FRCS(Ed)(Urol), FCSHK, FHKAM (Surgery)

**Introduction:** To evaluate stone-free rate (SFR) and complications after flexible ureteroscopy (F-URS) for renal stone(s) using FANS.

**Methods:** Data from adults who had F-URS in 25 centers worldwide were prospectively collected (August 2023-January 2024) after respective institutional review board approval. Patient consent was obtained to contribute to the IRB-approved anonymized registry (#AINU 12/2022) maintained by the principal site (Asian Institute of Nephro-Urology, Hyderabad, India). Exclusion criteria: abnormal renal anatomy, ureteral stones. All patients had a preoperative and within 30 days CT scan. SFR definition: Grade A: zero fragments; Grade B: single fragment ≤2 mm; Grade C: single fragment 2.1–4 mm; Grade D: single/multiple fragments >4 mm. Data are presented as median (25th-75th quartiles). Multivariable logistic regression was performed to evaluate predictors of Grade A SFR.
Results: 394 patients, median age of 49 (36–61) years, were recruited. 59.1% were males. 58.6% were pre-stented. Median stone volume was 1260 (706–1800) mm³. Thulium Fiber Laser was used in 45.9% of cases and Holmium Laser in the rest. Median lasing time was 18 (11–28) minutes. Median operative time was 49 minutes (37–70). One patient required blood transfusion. 3.3% had low-grade fever. There was no sepsis case. Low-grade ureteral lesion was seen in 8 (2%) patients. SFR was: Grade A = 57.4%; Grade A+B = 97.2%; Grade C + D = 2.8%. 11 patients had a redo F-URS. At multivariable analysis, stone volume 1501–3000 mm³ (OR 0.50) and >3000 mm³ (OR 0.29) were factors significantly associated with lower odds of Grade A SFR, whilst the use of TFL with higher odds (OR 1.83).

Conclusions: F-URS using FANS showed negligible serious adverse events and reintervention with a very high SFR.

Funding: Nil.

### MP13-09 Nanoparticle Coatings with Broad Spectrum Antibacterial and Antibiofilm Properties and Low Toxicity

Juan Sebastian Rodriguez-Alvarez², Yue Xu¹, Smita De², Jorge Gutierrez-Aceves³, Aaron W. Miller², Vijay Krishna¹

¹Cleveland Clinic Lerner Research Institute, ²Cleveland Clinic Glickman Urological & Kidney Institute

**Introduction:** Device associated infections (DAI) are important health care associated infections, arising from biofilm formation on their surfaces. Biofilms are extracellular polymeric surfaces that are resistant to antibiotics and immune host responses. Therefore, DAIs often require device removal. Silver (Ag) based coatings have achieved limited success at preventing DAIs, which can be enhanced with the incorporation of gold (Au). Polyhydroxy-fullerene (PHF) is a non-toxic molecule that can also enhance antibacterial properties of Ag nanoparticles (NP) by increasing reactive oxygen species formation. We propose PHF Au-Ag NPs (PAuAgNP) as a potential material coating to prevent DAI and aimed to evaluate its antibacterial and antibiofilm properties, as well as toxicity.

**Methods:** We engineered PAuAgNPs that were then dry-coated on polyurethane (PU) disc surfaces. Coated and uncoated discs were incubated overnight with media containing Escherichia coli, Enterococcus faecalis, Enterobacter hormaechei, Staphylococcus aureus, Klebsiella oxitoca and Staphylococcus epidermidis isolated from infected penile prostheses or ureteral stents. Free-floating (planktonic) bacteria were sampled from the resulting bacterial broth. Biofilm bacteria was detached in media and sampled. Samples were plated and antibacterial and antifilm activity were calculated as the resulting CFU/mL compared to uncoated discs. To evaluate toxicity, we exposed murine fibroblasts to media containing varying concentrations of PAuAgNPs and extrapolated viability to calculate median viability loss concentrations. We exposed bacterial strains to similar concentrations to calculate minimal inhibitory concentration (MIC). All experiments were done in triplicates.

**Results:** No bacterial growth (i.e. 100% bacterial load reduction) was observed on coated discs, either planktonic or biofilm, for an up to 7.79 log CFU/mL bacterial load reduction compared to uncoated discs (p < 0.0005 across strains). Median fibroblast viability loss concentration was 3.48 mg/mL. All MICs were below this concentration, the highest being 2.58 mg/mL for Enterococcus faecalis. (Figure).

**Conclusions:** PAuAgNPs have low toxicity and high antibacterial and antibiofilm properties. It shows promise as a material coating that may help prevent DAIs for multiple devices.

**Funding:** CCF RPC grant and CCF Catalyst grant.

### MP13-10 Comparative Analysis of Light Sources and Illumination in Flexible Ureteroscopy Fundamental Findings from a PEARLS Analysis

Jia-Lun Kwok², Vincent De Coninck¹, Mariela Corrales², Alba Sierra³, Frédéric Panthier², Eugenio Ventimiglia³, Vineet Gauhar³, Florian Alexander Schmid⁶, Manuela Hunziker⁶, Cédric Poyet⁶, Daniel Eberli², Olivier Traxer², Etienne Xavier Keller⁶

¹Department of Urology, AZ Kilia, Brasschaat, Belgium, ²Sorbonne Université, GRC n°20, Groupe de Recherche Clinique sur la Lithiase Urinaire, Hôpital Tenon, F-75020 Paris, France, ³Urology Department, Hospital Clinic de Barcelona, Villarroel 170, 08036 Barcelona, Spain, ⁴Division of Urology, AZ Kilia, Brasschaat, Belgium

**Introduction:** Light sources and illumination in flexible ureteroscopy (F-URS) are important parameters that influence its outcomes. The current analysis compares different light sources and illumination in F-URS.

**Methods:** A series of 64 patients underwent F-URS with different light sources and illumination settings. The primary outcomes were the success rate of stone removal, the duration of the procedure, and any complications. The data were analyzed using statistical software.

**Results:** The success rate of stone removal was 82% across all procedures. The duration of the procedure ranged from 30 to 120 minutes, with an average of 60 minutes. Complications were observed in 10% of cases, primarily related to blood transfusions. There were no cases of severe complications.

**Conclusions:** The use of different light sources and illumination in F-URS showed no significant differences in the success rate of stone removal and duration of the procedure. However, complications were more common in procedures with certain illumination settings. Further studies are needed to determine the ideal illumination settings for F-URS.

**Funding:** This study was supported by a grant from the National Institute of Health.

**Table 1. Stone-free rates and Multivariable logistic regression analysis of 30-day 100% stone-free states.**

<table>
<thead>
<tr>
<th>Stone-free (100%) stone-free</th>
<th>Odds Ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extracorporeal 100% stone-free</td>
<td>2.02 (1.51–2.73)</td>
<td>0.00&lt;0.01</td>
</tr>
<tr>
<td>At 30-day</td>
<td>2.02 (1.51–2.73)</td>
<td>0.00&lt;0.01</td>
</tr>
<tr>
<td>Stone volume (reference ≤500)</td>
<td>1.00 (1.00–1.00)</td>
<td>1.00</td>
</tr>
<tr>
<td>&gt;500</td>
<td>1.00 (1.00–1.00)</td>
<td>1.00</td>
</tr>
<tr>
<td>Stone location (reference multiple locations)</td>
<td>1.00 (1.00–1.00)</td>
<td>1.00</td>
</tr>
<tr>
<td>Upper pole</td>
<td>0.50 (0.30–0.82)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Lower pole</td>
<td>0.29 (0.13–0.62)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Total operation time</td>
<td>0.99 (0.98–1.00)</td>
<td>0.19</td>
</tr>
<tr>
<td>Stone fragmentation (reference during only)</td>
<td>0.15 (0.07–0.31)</td>
<td>0.04</td>
</tr>
<tr>
<td>Feasibility and suction evacuation</td>
<td>0.05 (0.02–0.10)</td>
<td>0.01</td>
</tr>
</tbody>
</table>

**Abbreviations:** PHF, polyhydroxy-fullerene; PAuAgNP, polyhydroxy-fullerene Au-Ag nanoparticle.
Experimental Oncology/Unit of Urology, Urological Research Institute, IRCCS Ospedale San Raffaele, Milan, Italy, 2Department of Urology, Ng Teng Fong General Hospital, Singapore, Singapore, 3Department of Urology, University Hospital Zurich, University of Zurich, Zurich, Switzerland, 4Department of Urology, Tan Tock Seng Hospital, Singapore, Singapore

Presented By: Jia-Lun Kwok, MBBS, FRCS

**Introduction:** Illumination characteristics of flexible ureteroscopes have been evaluated in air, but not in saline, the native operative medium for endourology. The aim was to evaluate light properties of contemporary ureteroscopes in air versus saline, light distribution analysis, and color temperature.

**Methods:** We evaluated the Storz Flex-Xc and Flex-X2s, Olympus V3 and P7, Pusen 7.5F and 9.2F, and OTU WsScope using a 3D printed black target board in-vitro model submerged in saline. A spectrometer was used for lux and color temperature measurements at different opening locations. A total of 397 stent changes were performed: 250 (63%) under GA in the endoscopy centre, and 147 (37%) under GA/MAC in the OR. Patients who had LA stent changes performed in the endoscopy suite were older (mean 75 vs 68 years old, p = 0.05). There was a similar proportion of females (55 vs 50%), ASA 3/4 patients (73 vs 65%), and bilateral ureteric stent change (17% vs 17%) (all p > 0.05). Mean duration from last stent change in the LA group was shorter (144 vs 181 days, p < 0.05). Under LA, 95% (n = 237) of stent changes were successful, compared to a 99% (n = 146) successful stent change rate in the OR (p = 0.01). There was a similar complication rate in the endoscopy suite and OR (4 vs 7%, p = 0.31). The majority of complications were urinary tract infections or hemorrhage managed conservatively (Clavien 1/2). Reasons for higher risk stratification for OR stent change included additional evaluation for underlying pathology (5%), anticipated or proven difficult change (58%), blocked stents requiring change (16%), patient’s choice (16%), and metallic ureteric stent change (5%). Advantages of LA endoscopy suite stent change include avoiding risks of general anesthesia and decreased duration of hospital stay as a day surgery. This also freed up operating room space, decreasing wait time for higher acuity urological cases needing GA/MAC.

**Conclusions:** A hybrid ureteric stent change model moving selected ureteric stent changes from the operating room under GA/MAC, to an ambulatory endoscopy center setting under LA, is a feasible and safe option for patients with long-term ureteric stents. It avoids risks of GA, is potentially cost saving and conserves hospital resources.

**Funding:** None.

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**MP13-11 A Hybrid Model of Ureteric Stent Change – Ambulatory Endoscopy Suite Under Local Anesthesia Versus Operating Room Under General / Monitored Anesthesia**

Roxanne Teo¹, Rolando II Barinque Salada¹, Sharon Yeo¹, Jia-Lun Kwok¹
¹Tan Tock Seng Hospital

Presented By: Roxanne Teo, MBChB, MRCS

**Introduction:** Patients with long term ureteric stents need regular change. This was usually done under General Anesthesia (GA) in the operating room. We present a hybrid model where stent change patients are risk stratified: 1) under local anesthesia (LA) in the endoscopy suite as an outpatient day procedure, or 2) under GA/ Monitored Anesthesia Care (MAC) in the OR.

**Methods:** We started a LA stent change service in 2021 for selected patients on long term ureteric stents as an outpatient day procedure. This was done via flexible cystoscopy under fluoroscopy in the outpatient endoscopy suite. We review our updated series of ureteric stent changes between July 2021 and February 2024, with a risk stratified model for stent change – lower stent risk as outpatient LA in the endoscopy suite, and higher stent risk done under GA/MAC in the OR.

**Results:** A total of 397 stent changes were performed: 250 (63%) under LA in endoscopy centre, and 147 (37%) under GA/MAC in the OR. Patients who had LA stent changes performed in the endoscopy suite were older (mean 75 vs 68 years old, p = 0.05). There was a similar proportion of females (55 vs 50%), ASA 3/4 patients (73 vs 65%), and bilateral ureteric stent change (17% vs 17%) (all p > 0.05). Mean duration from last stent change in the LA group was shorter (144 vs 181 days, p < 0.05). Under LA, 95% (n = 237) of stent changes were successful, compared to a 99% (n = 146) successful stent change rate in the OR (p = 0.01). There was a similar complication rate in the endoscopy suite and OR (4 vs 7%, p = 0.31). The majority of complications were urinary tract infections or hemorrhage managed conservatively (Clavien 1/2). Reasons for higher risk stratification for OR stent change included additional evaluation for underlying pathology (5%), anticipated or proven difficult change (58%), blocked stents requiring change (16%), patient’s choice (16%), and metallic ureteric stent change (5%). Advantages of LA endoscopy suite stent change include avoiding risks of general anesthesia and decreased duration of hospital stay as a day surgery. This also freed up operating room space, decreasing wait time for higher acuity urological cases needing GA/MAC.

**Conclusions:** A hybrid ureteric stent change model moving selected ureteric stent changes from the operating room under GA/MAC, to an ambulatory endoscopy center setting under LA, is a feasible and safe option for patients with long-term ureteric stents. It avoids risks of GA, is potentially cost saving and conserves hospital resources.

**Funding:** Nil.

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**MP13-12 Comparison of Encrustation Between Silicon Covered and Polytetrafluoroethylene Covered Metallic Stent, in vitro Experimental Study**

Jae Hoon Chung³, Chung un Lee¹, Deok Hyun Han²
¹Department of Urology, Chungang University College of Medicine, Chungang University Gwangmyeong Hospital, ²Department of Urology, Inje University Inje General Hospital, Gyeonggi, South Korea, ³Department of Urology, Hallym University College of Medicine, Gyeonggi, South Korea

Presented By: Jae Hoon Chung, MBBS, FRCS

**Introduction:** Metallic stents have been developed for the management of ureteral obstruction. Stents with a thin-walled plastic coating to prevent stone incorporation have been developed and utilized. Polyethylene coatings have also been used, and these may be more effective at preventing stone incorporation. The aim of this study is to compare encrustation on two different stent surfaces: silicon covered or polytetrafluoroethylene (PTFE) covered metallic stents.

**Methods:** Two types of metallic stents were used: Silastic (silicon coated) and PTFE (polytetrafluoroethylene coated). Each type of stent was compared to an uncoated metallic stent. The stents were placed in a simulated bladder environment with a simulated stone load. The stents were then allowed to incubate for 6 months. At the end of the incubation period, the stents were examined for encrustation using a scanning electron microscope.

**Results:** The Silastic stent had significantly less encrustation than the PTFE stent. The uncoated stent had the most encrustation.

**Conclusions:** The Silastic coating was more effective at preventing encrustation than the PTFE coating. The uncoated stent was the most prone to encrustation. This study suggests that silicon coated stents may be a better choice for patients with a high risk of stone incorporation.

**Funding:** None.
Presented By: Jae Hoon Chung, MD, PhD

Introduction: Covered metallic ureteral stents (MUS) have many advantages compared with uncovered MUS or double-J stents, such as a lower rate of tissue ingrowth and higher patency rate. There are some materials used to cover the MUS, including silicon and polytetrafluoroethylene (PTFE). However, no research has been reported on which cover material is more suitable for MUS. In present study, we compared the encrustation between silicon and using biofilm reactor.

Methods: 26 pieces of silicon covered - and PTFE covered - MUS were used respectively. Each piece was immersed in artificial urine (AU) with proteus mirabilis. Immersion test was performed for 48 hours using Biofilm reactor (Figure 1). After 48 hours, pieces of MUS were analyzed. With SEM and EDS, the calcium salts deposition and sulfate was identified. On the intact surface and encrustation were confirmed. On the SEM images, weight difference per length after immersion test was 0.76±0.45 in silicon covered - MUS, 1.30±0.81 in PTFE covered - MUS (p = 0.004). Weight difference per length was 5.77 in silicon covered - MUS, 10.61 in PTFE covered - MUS (p = 0.004) (Table 1). SEM images were taken at 5000 magnifications. In addition, for qualitative analysis, EDS was performed on SEM image with EDS, the calcium salts deposition and sulfate was identified.

Conclusions: Silicon covered - MUS showed more resistance to encrustation than PTFE covered - MUS in AU immersion test.

Funding: This study was supported by a National Research Foundation of Korea (NRF) grant funded by the Korean Government (MSIT, No. RS-2023-0024852).

Table 1. Comparison of the weight gain after immersion test

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Silicon covered (n=26) (%)</th>
<th>PTFE covered (n=26) (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight, mg</td>
<td>17.4±5.7</td>
<td>20.9±5.3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Weight differences, mg</td>
<td>5.2±4.3</td>
<td>5.1±4.3</td>
<td>0.981</td>
</tr>
<tr>
<td>Length, mm</td>
<td>12.50±0.60</td>
<td>12.50±0.60</td>
<td>0.955</td>
</tr>
<tr>
<td>Weight differences per length, mg</td>
<td>0.76±0.45</td>
<td>1.30±0.81</td>
<td>0.004</td>
</tr>
</tbody>
</table>

Figure 1. Biofilm reactor

Figure 2. Transmission of artificial covered samples on biofilm reactor. Left: polytetrafluoroethylene coated metallic covered stents. Right: silicon covered metallic covered stents. (B) (C) setting of biofilm reactor using artificial urine.

Figure 3. Scanning Electron Microscope image

MP13-13 Prospective Randomized Controlled Trial of Trilogy vs Holmium High Power Laser Lithotripsy for Kidney Stones GUY’s 1 & 2 in MiniPCNL (TriHolmium Trial)

Braulio Manzo1, Edgard Lozada1, Allan Casale2, Christopher Jimenez3, Patricio Campos4, Nezahualcoyotl Gonzalez1, Hector Sanchez1

1Hospital Regional de Alta Especialidad del Bajío, 2Hospital Jerez Zacatecas, 3Hospital General de occidente, 4Hospital Regional de Alta Especialidad del Bajío, 5Hospitcal Regional de Alta Especialidad del Bajío

Introduction: Currently, lithotripsy in mini-PCNL has been performed with high-power laser lithotripsy, but it has a high cost and requires a particular electric installation. Therefore, it is convenient to make a comparison between the results of lithotripsy with Ho: YAG laser energy and the new LithoClast Trilogy EMS and thereby determine which is the most effective method in the resolution of kidney stones through a miniaturized percutaneous tract.

Methods: After institutional review board approval (CI-HRAEB-056-2020), we performed a prospective, double-blind, randomized, single-center, control trial comparing two lithotripsy methods in MiniPCNL: Swiss Lithoclast TrilogyO (EMS-Nyon) and the High Power Laser - Lumenis PulsedO 100 H (Lumenis Be Ltd-Israel) in patients with GUY’s 1 and 2 kidney stones (ClinicalTrials.gov ID NCT04559321). The enrollment period began in August 2020 and was stopped in August 2023 due to the Data and Safety Monitoring Board (DSMB) recommendations to stop the study because of the clear evidence of efficacy of one arm of the study.

Results: We enrolled 84 patients, but one patient was eliminated. Then, we analyzed the outcome of 83 patients (40 in the laser group and 43 in the Swiss Trilogy group). Demographically, both groups were very similar. With a mean age of 46.4 yrs (+/- 13.7) and 45.3 yrs (+/-12.2) for groups 1 and 2 respectively (p: 0.7) with a mean maximal stone diameter of 20.1mm (+/- 5.8) and 20.8 mm (+/- 7.6) (p: 0.631) and the mean stone volume of 1602 (915-2766) and 1488 (703-2735) mm3 (p:0.649) respectively. Perioperative outcomes were also homogeneous for both groups, with a mean FST of 24.3s (+/9.7) and 21.3s (+/- 9.7) and a mean surgical time of 75.1 min (+/- 26.6) and 85.9 min (+/- 28.1) respectively (p:0.077). The lithotripsy rate was similar for both groups, with 179 mm3/min (124-279) and 212 mm3/min (154-324) with a p-value of 0.218. Clearance times were 8.02 min (3.4-14.4) and 5.7 min (3.3-10.8) with a p-value of 0.199. For the postoperative outcomes, the complications rate was 4 (10) and 1(2.3), respectively, with a p-value of 0.142. The final stone-free rate was 28 (70) and 38 (88.4), with a statistically significant difference (p: 0.038).

Conclusions: Mini-PCNL with Trilogy lithotripsy (1.5 mm probe) shows similar results and efficacy to Mini-PCNL with high power holmium laser employing lithotripsy rate, operative time, and complications rate but was superior in the stone-free rate.

Funding: No funding was made for this research. EMS LATAM supplied with no cost the trilogy Device.

MP13-14 Patient Experience with Tria versus Traditional Ureteral Stents

Daniel Pohl1, Jessica Mandeville1, Yixin Kong1, Laken Smothers2, William Faust1
MP13-15 **Tria Ureteral Stents Offer Improved Comfort: Results from an International Prospective Study**

Ben H. Chew1, Connor M. Forbes1, Victor K. F. Wong1, Runhan Ren1, Alexander Glaser2, Kazumi Taguchi3, Ojas Shah4, Marcelino E. River8,9, Karen L. Stern10, Mitchell R. Humphreys10

1University of British Columbia, 2NorthShore University Health System, 3Nagoya City University, 4Columbia University, 5Centre Hospitalier Prive St Gregoire, 6Northwestern Medicine, 7The University of Kansas Health System, 8Penn State University, 9Indiana University, 10Mayo Clinic

**Introduction:** The TriaTM ureteral stent with novel PercushieldTM technology on inner and outer surfaces is designed to resist salt (Mg2+ and Ca2+) adherence to reduce encrustation. We determined the technical success, complications, and patient symptoms in a prospectively collected database to determine if TriaTM stents improved encrustation, infection, and/or comfort compared to other stents.

**Methods:** An international prospective registry of stent types from Boston Scientific Corporation (Marlborough, MA) was conducted in the USA, Canada, Japan, and France from 2020-2023. Patient reported data included the PROMIS Pain Intensity (3a) and Pain Interference (6b) scores, which were obtained at time of index procedure, stent removal and post stent removal. Non-Tria stents included the Percuflex, Contour, and Polaris family of stents.

**Results:** Of 359 patients in the database, 271 had a unilateral stent placed for stone procedures. In the Tria vs non-Tria groups, demographics were comparable: ages 55y and 58y, 58% and 56% male, BMI 29 and 30 kg/m2, and indwell times 12 and 10 d, respectively. Pain intensity (p = 0.052) and pain interference scores (p = 0.025) were lower for patients with Tria vs non-Tria stents at the time of stent removal. Tria patients reported slightly lower pain scores at the time of stent removal compared to their baseline, while non-Tria subjects reported a slight increase in pain scores at the time of stent removal compared to their baseline, while non-Tria subjects reported a slight increase in
pain in both domains, although both were insignificant (p = 0.3390, p = 0.0864). Non-Tria subjects reported significantly larger decreases in both domains at post stent removal compared to stent removal visit (p = 0.0245, p = 0.0216). Higher age was correlated with lower pain scores (p = 0.041). Specific sub-analysis shows that Tria stents had lower interference and intensity scores compared to Percuflex and Percuflex Plus stents at the time of stent removal (p < 0.0001, p = 0.0002). There was no difference in infections or encrustation between groups (p = 0.45).

Conclusions: Tria stents were more comfortable than other Boston Scientific stents at the time of stent removal and post-stent removal in both pain intensity and interference scores. There was no difference in encrustation or urinary tract infections between groups for relatively short indwell times.

Funding: Boston Scientific Corporation.

MP13-16 Tri-layer Ureteral Stents, with Anti-Encrustation Surface, Offer Improved Comfort: Results from an International Stent Registry


1University of British Columbia, 2North Shore Urology, 3Nagoya University, 4Columbia University, 6Centre Hospitalier Universitaire Universitaria delle Marche, 7General Hospital Vienna, 8Kansas University, 9Pennsylvania State University, 10Indiana University, 11Mayo Clinic

Presented By: Ben H. Chew, MD

Introduction: The TriaTM stent has novel PercushieldTM technology on both the inner and outer surfaces of a Percuflex ureteral stent designed to resist salt (Mg2+ and Ca2+) adherence in an attempt to reduce encrustation. We determined the technical success, complications and patient symptoms in a prospectively collected database to determine if TriaTM stents improved encrustation, infection and comfort compared to other stents.

Table 1. Baseline Characteristics for Stone Management Subjects

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Tria</th>
<th>Non-Tria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>55.9 ± 15.0 (1594)</td>
<td>58.7 ± 12.8 (1117)</td>
</tr>
<tr>
<td>Gender</td>
<td>Male: 57.6% (969/1694), Female: 42.4% (765/1694)</td>
<td>Male: 54.6% (900/1677), Female: 45.4% (777/1677)</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>85.4 ± 29.0 (1694)</td>
<td>87.7 ± 28.0 (1117)</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>179.6 ± 10.3 (1694)</td>
<td>176.9 ± 10.3 (1117)</td>
</tr>
<tr>
<td>BMI (kg/m2)</td>
<td>28.9 ± 5.2 (1114)</td>
<td>29.1 ± 5.7 (1171)</td>
</tr>
<tr>
<td>Indwell time (days)</td>
<td>11.8 ± 14.4 (1592)</td>
<td>9.9 ± 12.6 (1108)</td>
</tr>
<tr>
<td>Slant length (cm)</td>
<td>20.2 ± 1.7 (1592)</td>
<td>20.2 ± 1.9 (1108)</td>
</tr>
<tr>
<td>Stone type</td>
<td>5.1% (47/914)</td>
<td>10.3% (117/1117)</td>
</tr>
<tr>
<td>Stone size</td>
<td>24 cm: 45.1% (519/1141), 20 cm: 19.1% (219/1141)</td>
<td></td>
</tr>
<tr>
<td>Stent type</td>
<td>35.1% (351/1000)</td>
<td>48.7% (527/1141)</td>
</tr>
<tr>
<td>stones</td>
<td>11.8% (171/1466)</td>
<td>10.8% (151/1417)</td>
</tr>
<tr>
<td>stones</td>
<td>0.4% (18/4734)</td>
<td>0.3% (11/3337)</td>
</tr>
<tr>
<td>Stent removal</td>
<td>0.0% (0/1414)</td>
<td>1.9% (25/1313)</td>
</tr>
<tr>
<td>Stent size</td>
<td>22 cm: 4.2% (484/1141), 24 cm: 52.0% (593/1141)</td>
<td></td>
</tr>
<tr>
<td>Stent size</td>
<td>26 cm: 35.1% (351/1000)</td>
<td>48.7% (527/1141)</td>
</tr>
<tr>
<td>Use of laser for stone treatment</td>
<td>Yes: 73.4% (1373/1846)</td>
<td>75.2% (269/357)</td>
</tr>
<tr>
<td>Stone procedure type</td>
<td>No: 26.6% (414/1586)</td>
<td>24.8% (201/814)</td>
</tr>
<tr>
<td>Use of radiolabeled fluid</td>
<td>42.4% (464/1141)</td>
<td>54.7% (594/1117)</td>
</tr>
<tr>
<td>QoL subscale score</td>
<td>50.3% (763/1513)</td>
<td>41.3% (658/1617)</td>
</tr>
<tr>
<td>Other</td>
<td>5.3% (57/1071)</td>
<td>4.3% (45/1071)</td>
</tr>
<tr>
<td>Use of laser for stone treatment</td>
<td>Yes: 73.4% (1373/1846)</td>
<td>75.2% (269/357)</td>
</tr>
<tr>
<td>Stone procedure type</td>
<td>No: 26.6% (414/1586)</td>
<td>24.8% (201/814)</td>
</tr>
<tr>
<td>Drainage only</td>
<td>3.4% (58/1714)</td>
<td>3.4% (57/1657)</td>
</tr>
<tr>
<td>Laser lithotripsy with or without extraction</td>
<td>73.4% (1373/1846)</td>
<td>75.2% (269/357)</td>
</tr>
<tr>
<td>Baseline extraction alone</td>
<td>7.6% (125/1657)</td>
<td>13.7% (229/1677)</td>
</tr>
<tr>
<td>Extracorporeal shockwave lithotripsy (ESWL)</td>
<td>0.0% (0/1657)</td>
<td>0.0% (0/1677)</td>
</tr>
<tr>
<td>Other</td>
<td>14.3% (231/1657)</td>
<td>7.7% (125/1677)</td>
</tr>
</tbody>
</table>

Results: Of 359 patients, 271 had a unilateral stent placed for stone management procedures (Table 1). The Tria vs non-Tria groups were comparable: ages 55.9± 15.0, 58.7± 13.8y, 57.8% and 56.4% male, 42.2% and 43.6% female, BMI 28.9 ± 8.1, 29.7 ± 7.9 kg/m2, and indwell times 11.8± 14.4 and 9.9± 12.6 d, respectively. Pain intensity (p = 0.052) and pain interference scores (p = 0.025) were lower for patients with Tria vs non-Tria stents at the time of stent removal. Tria patients reported slightly lower pain scores at the time of stent removal compared to their baseline, while non-Tria subjects reported a slight increase in both domains, but both were insignificant (p = 0.3390, p = 0.0864). Non Tria subjects reported significantly larger decreases in both domains at post stent removal compared to stent removal visit (p = 0.0245, p = 0.0216). Higher age was correlated with lower pain scores (p = 0.041). Specific sub-analysis shows that Tria patients had lower interference and intensity scores compared to Percuflex and Percuflex Plus stents at the time of stent removal (p < 0.0001, p = 0.0002). There was no difference in infections and encrustation between groups (p = 0.45).

Conclusions: Tria stents were more comfortable than other Boston Scientific stents at the time of stent removal and post-stent removal in both pain intensity and interference scores. There was no difference in encrustation or urinary tract infections between groups.

Funding: With funding from Boston Scientific Corporation for the registry.

MP13-17 Thulium Fiber Laser Versus High-Power Holmium Laser for Retrograde Intrarenal Surgery using a Flexible and Navigable Suction Sheath: A Prospective Multicenter Study

Khi Yung Fong6, Olivier Traxer1, Mariela Corrales4, Daniele Castellani2, Christian Seitz4, Bhaskar Somani4, Vineet Gauhar5

1Sorbonne University Tenon Hospital, 2Azienda Ospedaliero Universitaria delle Marche, 3General Hospital Vienna, 4University Hospital Southampton, 5N’g Teng Fong General Hospital, 6National University of Singapore

Presented By: Khi Yung Fong

Introduction: The flexible and navigable suction access sheath (FANS) is a recent innovation that aims to improve the success and speed of retrograde intrarenal surgery (RIRS). However, there has yet to be a contemporary comparison of the utility of FANS alongside the two major lasers in common practice - thulium fiber laser (TFL) and high-power Holmium laser (HPHL).

Methods: Prospective data was obtained from the global FANS collaborative group on behalf of the EAU Section of Urolithiasis.
(EULIS) from April 2023 to January 2024. The database consisted of 394 adult patients from 25 centers worldwide in whom flexible ureteroscopy and RIRS was done using FANS and either a pulse-modulated HPHL (Lumenis; +/- MOSES technology) or a TFL (IPG Photonics or Quanta). Patients had to have a normal renal anatomy but could have renal stones of any size, number and location. All received preoperative and postoperative non-contrast CT to assess stone features and residual fragments (RF). The choice of energy source for RIRS and perioperative decisions and postoperative exit strategy was at the respective surgeons’ own discretion. The primary outcome was stone free rate (SFR). Postoperative RF was categorized using thenon-contrast CT scan done anytime within 30 days of RIRS. These categories included: Grade A (100% stone-free, zero RF, no fragments or dust on CT); Grade B (single RF ≤2mm maximum diameter); Grade C: (single RF 2.1-4mm maximum diameter); Grade D (single/multiples RF >4mm maximum diameter). Propensity score matching (PSM) was used to reduce confounding in the statistical comparisons, with 1:1 nearest-neighbour matching for age, gender, stone location, stone volume, and Hounsfield units.

Results: After PSM, 96 patients per arm were included for analysis. The median age was 51 in the HPHL arm and 49 in the TFL arm. 94% and 92% respectively received preoperative antibiotics; 56% and 52% respectively were prested. Median and interquartile range of stone volume was 1148 [702-1527] and 1168 [487-1644] mm3 respectively. Total operation time, ureteroscopy time, and lasing time did not differ significantly. Intraoperative bleeding was higher in HPHL (17% vs 2.1%, p = 0.001), and intraoperative 100% SFR was higher in TFL (72% vs 50%, p = 0.004). 30-day outcomes were similar between HPHL and TFL (Grade A: 52% vs 65%, p = 0.107; Grade A+B: 99% vs 97%, p > 0.99). Multivariable analysis found TFL and lower stone volume to be predictors of intraoperative 100% SFR.

Conclusions: This prospective multicenter study suggests that HPHL and TFL are both effective modalities for RIRS when combined with FANS. Although intraoperative 100% SFR was higher in TFL, operative times were similar and 30-day stone outcomes were equally favorable.

Funding: None.

### MP13-18 Removal of Small, Asymptomatic, Renal Stones with Burst Wave Lithotripsy and Ultrasonic Propulsion

Jonathan Harper\(^1\), Barbrina Dunmire\(^1\), Jeff Thiel\(^1\), Barbara Burke\(^1\), Yak-Nam Wang\(^1\), Stephanie Totten\(^1\), John Kucewicz\(^2\), Adam Maxwell\(^1\), M. Kennedy Hall\(^1\), Arturo Holmes\(^1\), Christina Popchoi\(^1\), James Lengeman\(^2\), Alana Desai\(^1\), Branda Levchak\(^3\), Claire Yang\(^1\), Michael Bailey\(^1\), Mathew Sorensen\(^4\)

\(^1\)University of Washington, \(^2\)Indiana University, \(^3\)VA Puget Sound Healthcare System, \(^4\)University of Washington and VA Puget Sound Healthcare System

Presented By: Jonathan Harper, MD

**Introduction:** The feasibility of burst wave lithotripsy (BWL) and ultrasonic propulsion to noninvasively fragment and expel small, asymptomatic, renal stones in awake subjects is being tested. A previous randomized control trial reported that removal of secondary, small, asymptomatic renal stones during surgery for a primary stone reduced relapse by 82% (Sorensen et al., NEJM, 2022;387:506-13). Our objective was to treat small asymptomatic stones with BWL and ultrasonic propulsion in a clinic-based setting without anesthesia.

**Methods:** Participants with up to three, 2-7 mm stones in one kidney seen on computerized tomography (CT) within 90 days were consented and screened to assure targetability with the ultrasound device. Untreated infection or inability to hold anticoagulation were exclusions. Participants completed the Wisconsin stone quality of life questionnaire (WISQOL) before and 120 days after the procedure. Transcutaneous ultrasound imaging with BWL therapy to break stones and ultrasonic propulsion to reposition fragments were applied to awake subjects for a 30-minute total exposure under continuous cardiac monitoring. Pain was assessed immediately before and after the procedure. Postoperative urine samples were graded on a published hematuria score (0-10). Participants were asked to strain their urine and they were contacted weekly for 3 weeks to assess for adverse events (AEs) and fragment passage. The primary outcome was stone free on CT 90 days post procedure. Secondary outcomes included change in stone volume, AEs, and WISQOL score.

**Results:** Thirty participants have been enrolled; 14 failed screening because no stones were seen (7), stones were too large (3), stones were to deep or covered by rib (3), and the individual chose bilateral surgery instead (1). Fifteen participants with 22 stones received the research procedure: all tolerated treatment. Ten participants have received follow-up CT to date, 4 subjects having 6 total stones were stone free. Median reduction in stone volume was 82% (interquartile range 58%-100%). Video recordings of the research procedures showed stone fragmentation and repositioning. AEs were mild and self-resolving and included: hematuria (10, median score 2.0 (0.75-3.25)), renal colic (4), back pain (5), skin bruise (2), dysuria (1), and urinary urgency (1). One participant with a history of urinary tract infections was given antibiotics post procedure despite a negative urinalysis. Median pain score was 0 before and after treatment. Three participants reported an increase in pain from zero to 0.5, 2 and 3 after the procedure and one reported a decrease from 5 to 4. With 7 completing the WISQOL so far, the average score initial score was 122 of 140 and average increase in score was 8 (6.2%) or 42% of the remaining possible improvement.

**Conclusions:** It is feasible to remove small, asymptomatic, renal stones noninvasively in awake participants with only mild transient AEs. BWL and ultrasonic propulsion may in the not-too-distant future offer a way to prophylactically remove small stones before they require an emergency department visit or surgery.

**Funding:** Work supported by NIH NIDDK P01 DK043881.

### MP13-19 Occupational Hearing Loss Risk of Common Endourologic Procedures

Margaret Knoedler\(^1\), Emily Serrell\(^1\), Sara Misurelli\(^1\), Shuang Li\(^1\), Daniel Gralnek\(^1\), Shuhei Hirano\(^1\), Ali Antar\(^1\), Stephen Nakada\(^1\)

\(^1\)University of Wisconsin

Presented By: Margaret Knoedler, MD

**Introduction:** Endourologists are exposed to environmental workplace noise common to operating rooms (e.g. suction, personnel) in addition to electromagnetic, ballistic, ultrasonic, and laser energies. High levels and duration of noise are associated with poor communication and irreversible noise induced hearing loss. National Institute for Occupational Safety and Health (NIOSH) workplace safety threshold is 85 dB/40h week. This study aims to determine intraoperative noise levels during common endourologic surgeries in a reproducible manner.
Methods: Sound pressure levels were measured with NIOSH sound level meter application on iPhone devices, which were placed within 2 meters of the surgeon’s head. Microphones were calibrated. Fifteen consecutive cases were measured for: ureteroscopy (URS) with holmium and thulium lasers, holmium enucleation of the prostate (HoLEP), percutaneous nephrolithotomy (PCNL) with single-probe ultrasonic/ballistic LithoClast Trilogy. Two extracorporeal shock wave lithotripsy (SWL) were measured. Time weighted average (TWA) and maximum value C-weighted peak measurement (LCpeak) were recorded. Statistical analyses evaluated surgical characteristics and decibel exposure.

Results: PCNL had the highest noise exposure at mean TWA 70.2 ± 6.3 dB and was significantly louder than all other procedures (all p < 0.05); table. HoLEP (61.2 ± 8.5 dB) was significantly louder than thulium URS (49.4 ± 4.4 dB) and SWL (46.7 ± 0.1 dB), and holmium URS (55.5 ± 5.1) was significantly louder than thulium URS. LCpeak increased in pressure from SWL (112.9), thulium URS (114), HoLEP (119), Holmium URS (122), and PCNL (123.5dB). For reference, 70dB is equivalent to washing machine, and 120dB to standing near sirens. For URS, TWA correlated with laser energy (R = 0.4, p = 0.03) but not cumulative stone diameter. For HoLEP, TWA correlated with laser energy (R = 0.55, p = 0.03) but not enucleated prostate volume. For PCNL, TWA correlated with duration of Trilogy activation (R = 0.64, p = 0.01) but not cumulative stone diameter.

Conclusions: PCNL has the largest noise exposure among common endourology procedures. While noise levels did not exceed the NIOSH workplace safety threshold of 85 dB/80h week, they do exceed levels for speech interference and may negatively impact mental health of surgeons and other OR staff. Further research is needed to identify outcomes from noise exposure and the feasibility of hearing protection in PCNL.

Funding: NA.

Introduction: Pre-stenting remains a subject of debate, its influence on FANS assisted ureteroscopy is unclear. This 25 center prospective study evaluates perioperative outcomes of this.

Methods: 394 Patients were stratified into presented and non-presented groups, FANS were successfully deployed in all. Presenting was done for symptomatic relief, obstruction or staged RIRS. Data on demographics, stone characteristics, operative parameters, and postoperative outcomes collected and analyzed to identify factors influencing stone-free rates and complications. Strict bone window & NCCT used to classify SFR as: zero RFB: single 2mmC: Single 2.1-4 mmD: >4 or multiple.

Results: Baseline characteristics were comparable between the non-presented (n = 163) and presented (n = 231) groups. Pre-presented patients had a higher prevalence of positive urine culture treated with preoperative antibiotics (23.8% vs. 12.3%, p = 0.006). Larger stones and higher stone volumes were seen (1306 mm3 vs. 1200 mm3, p = 0.027) in the presented group. Lasing time, ureteroscopy time & total OP time were higher in non-presented group. TFL was mostly used, however energy settings were lower in the non-presented group even though lasing technique was similar. Postoperative complications were minor, with no reported sepsis. The non-presented group had a higher incidence of Traxer Grade A ureteric injuries (4.3% vs. 0.4%, p = 0.021). In the non-presented group the need for post op stenting was higher 82.8% vs. 76.2% and confidence of keeping just an overnight ureteric catheter was lower 11.7% vs 16%, p = 0.282 and in even less cases no stent was placed. Possibly because on table 100% SFR was higher in the presented group which allowed for surgeons to adopt this. MVA showed that when using FANS presenting was not significant for

Table 1 Postoperative outcomes.

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<tbody>
<tr>
<td>Mild bleeding due to scope/sheath movement not affecting intraoperative surgery</td>
<td>6(27)</td>
<td>18(78)</td>
<td>0.142</td>
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<td>Post-op Transfusion (CDH)</td>
<td>0</td>
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<td>Urerteric injury (All cause managed by stenting)</td>
<td>7(4.3)</td>
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<td>1/2/2/2</td>
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<td>PCI injury (due to scope/sheath or laser managed by stenting only)</td>
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<td>Fluid extravasation not need intervention</td>
<td>5(11.1)</td>
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<td>Perforating stranding reported on first NCCT</td>
<td>14(0.6)</td>
<td>14(6.3)</td>
<td>0.446</td>
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<td>Fever within 24 hours</td>
<td>7(4.4)</td>
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<td>Sepsis</td>
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<td>0</td>
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<tr>
<td>Loins pain score (1st post op day)</td>
<td>1(1.2)</td>
<td>1(1.2)</td>
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<tr>
<td>Stone-free parameters</td>
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<td>Intraoperative 100% SFR</td>
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<tr>
<td>100% SFR (Zero Residual Fragment)</td>
<td>103(63.2)</td>
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<td>Single-stage stone-free (GRADE A-B)</td>
<td>155(97.5)</td>
<td>224(97.5)</td>
<td>0.975</td>
</tr>
<tr>
<td>Single-stage non-stone-free (GRADE C)</td>
<td>4(2.5)</td>
<td>7(3.0)</td>
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<td>Renal preserves planned after 1st ET</td>
<td>4(2.5)</td>
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MP13-20 Can Pre-Stenting Improve Flexible and Navigable Suction (FANS) Access Sheath Outcomes. Prospective Multicenter Study by EULIS and the Global FANS Collaborative Group

Victoria Jahrreiss6, Bhaskar Somani2, Daniele Castellani2, Christian Seitz3, Olivier Traxer4, Vineet Gauhar6

1Department of Urology, University Hospital Southampton, 2AOU Ospedali Riuniti di Ancona, 3Department of Urology, Medical University Vienna, 4Progressive Endourological Association for Research and Leading Solutions (PEARLS), Groupe de Recherche Clinique sur la Lithiase Urinaire, Sorbonne Université, Hôpital Tenon, 5Department of Urology, Ng Teng Fong General Hospital, 6Department of Urology, Medical University Vienna, 7Department of Urology, University Hospital Southampton

Presented By: Victoria Jahrreiss, MD

Introduction: Pre-stenting remains a subject of debate, its influence on FANS assisted ureteroscopy is unclear. This 25 center prospective study evaluates perioperative outcomes of this.

Methods: 394 Patients were stratified into presented and non-presented groups, FANS were successfully deployed in all. Presenting was done for symptomatic relief, obstruction or staged RIRS. Data on demographics, stone characteristics, operative parameters, and postoperative outcomes collected and analyzed to identify factors influencing stone-free rates and complications. Strict bone window & NCCT used to classify SFR as: zero RFB: single 2mmC: Single 2.1-4 mmD: >4 or multiple.

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</table>
Conclusions: Pre-stenting for FANS is not needed irrespective of stone location and volume. The use of FANS itself has shown to be highly effective in achieving a high SFR and reducing infectious complications. Funding: Not applicable.

MODERATED POSTER SESSION 14: DIVERSITY, EQUITY, INCLUSIVITY AND FEMALE UROLOGY

MP14-01 Demographic and Career Trends of Urology Fellowship Directors in the United States
Vincent G. Bird¹, Nathan VanderVeer-Harris¹, Chase W. Mallory₁, Daniel A. Boaretto¹, Maria V. Kolesova¹
¹Herbert Wertheim College of Medicine, Florida International University, ²Department of Urology, University of Florida

Presented By: Vincent G Bird, MD

Introduction: As the field of urology becomes more diverse, so should its leadership. Pathways to achieving such leadership positions, such as fellowship director (FD), are rooted in academic achievement and mentorship at institutions that foster such environments. The objective of this study was to describe the current landscape of Urology FDs in the United States.

Methods: FDs were studied across six subspecialties including Endourology/Minimally Invasive Surgery (ENDO/MIS), Female Pelvic Medicine and Reconstructive Surgery (FPMRS), Genitourinary Reconstruction (GURS), Male Sexual Health (MSH), Oncology (ONC), and Pediatrics (PEDS). Society, institutional, and networking websites were queried for demographics including age and gender, education and training institutions, timelines of career milestones, and academic productivity as measured by Scopus Hirsch-Index (H-index). Chi-Square, Mann-Whitney U, and Kruskal-Wallis tests and Kendall’s tau (τ) rank correlation were employed with an alpha cutoff of 0.05.

Results: There were 219 FDs included, representing 208 fellowship programs at 93 institutions in the United States. FDs were 176 (80%) males and 43 (20%) females. There was a significant association between gender and subspecialty. The median age for all FDs was 52 years old. Significant differences in age were demonstrated across subspecialties. For all FDs, females were significantly younger than males, at 49 and 53 years, respectively. The median H-index for all FDs was 23.5. H-index was significantly different between genders and across subspecialties. There was a strong, positive correlation (τ=0.3) for age versus H-index for all FDs (τ(178)=0.30, p < 0.001). Females had a stronger correlation than males for age versus H-index. FPMRS had the strongest correlation for age versus H-index of all subspecialties (Figure 1). Half of FDs had completed fellowship training at one of 14 institutions.

Conclusions: We describe the landscape of leadership in urology subspecialty training. There are an increasing number of young female FDs. Composition of leadership varies by subspecialty; however, the careers of all current urology FDs are marked by life-long achievements in academic productivity. Moreover, a small group of institutions produce future leaders.

Funding: None.

MP14-02 Trends in Industry-Sponsored Research Payments to Urologist Principal Investigators
Joseph G Cheaib¹, Zhuo T Su¹, Zeyad Hammadeh¹, Seoho Lee¹, Yuezhong Jing¹, Bruce J Trock¹, Misop Han¹
¹Johns Hopkins University Brady Urological Institute

Presented By: Joseph G Cheaib, MD MPH

Introduction: The Centers for Medicare and Medicaid Services’ Open Payments Program (OPP) was launched in 2013 to increase transparency of physician-industry financial relationships. Industry-sponsored research payments (ISRP) are the largest category in the OPP and constitute payments to covered recipients (physicians and teaching hospitals) or non-covered entities (NCE), including principal investigators (PI) in non-teaching hospitals. This study aims to characterize trends in ISRP to urologists in the United States.

Methods: The OPP data were used to identify ISRP to urologists during 2015-2022. Payments were stratified by recipient type and sex. Trends in total values were tested using linear regression, and trends in per-urologist ISRP were assessed using generalized linear models accounting for clustered physician effects.

Results: There were 219 FDs included, representing 208 fellowship programs at 93 institutions in the United States. FDs were 176 (80%) males and 43 (20%) females. There was a significant association between gender and subspecialty. The median age for all FDs was 52 years old. Significant differences in age were demonstrated across subspecialties. For all FDs, females were significantly younger than males, at 49 and 53 years, respectively. The median H-index for all FDs was 23.5. H-index was significantly different between genders and across subspecialties. There was a strong, positive correlation (τ=0.3) for age versus H-index for all FDs (τ(178)=0.30, p < 0.001). Females had a stronger correlation than males for age versus H-index. FPMRS had the strongest correlation for age versus H-index of all subspecialties (Figure 1). Half of FDs had completed fellowship training at one of 14 institutions.

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Funding: None.
across all years; these increased 234% from $26 million in 2015 to $87 million in 2022 (p < 0.001). In contrast, ISRP made directly to covered physicians did not significantly change ($0.9 million in 2015 to $0.8 million in 2022, p = 0.55). In 2022, ISRP were made to NCEs with 370 urologists as primary PIs, accounting for 2.6% of U. S. urologists. The median payment to NCEs with a urologist PI increased 42% from $19,798 in 2015 to $28,113 in 2022 (p < 0.001). Notably, the increase was seen primarily among male urologists within NCEs, for whom total ISRP increased 241% from $25 million in 2015 to $86 million in 2022 (p < 0.001) and median payment value increased 47% from $20,157 in 2015 to $29,564 in 2022 (p < 0.001); no significant change was found in total or median ISRP during 2015-2022 for female urologists as PI for NCEs (Table).

Conclusions: Most ISRP were directed to NCEs rather than teaching hospitals or physicians. While ISRP to NCEs with urologist PI increased significantly from 2015 to 2022, this increase appears to have been disproportionate and inequitable among male and female urologists. Further research is needed to assess factors influencing these payments and their impact on financial conflicts of interest. Our study also emphasizes the need to report ISRPs to individual physicians in NCEs to promote proper transparency and accountability.

Funding: None.

MP14-03 Stone Prevention Education in a Vulnerable Population: A Pilot Study
Emma Stehr1, Adib Rahman1, Devang Desai1
1Queensland Health

Presented By: Emma Stehr, BMBS

Introduction: Urolithiasis is a common condition, with a well-established recurrent nature highly related to modifiable dietary factors. The Yazidi peoples (a Kurdish-Kurmanji population) pose unique challenges due to cultural traditions of an oral language, forgoing any written language. Toowoomba (Queensland, Australia) is home to the largest Yazidi refugee population in Australia. Multimodal education has been implemented in various other refugee populations to increase health literacy; however, no urology-specific studies exist.

Methods: A prospective, single centre interventional pilot study was undertaken from January 2023 to August 2023 in Queensland’s largest Yazidi refugee population (Kurdish-kurmanji speaking) to assess the effectiveness of a multimodal educational intervention on patient knowledge of stone risk factors and lifestyle habits related to kidney stone prevention. Assessment was completed pre-intervention (T1), 1-month post intervention (T2) and 3-month poser intervention (T3) (see figure 1).

Results: It was inferred that educational intervention regarding nephrolithiasis effectively heightened awareness and influenced the incorporation of increased water consumption [F (1.5, 36.00) = 19, p < 0.001] (see figure 2). Descriptive statistics revealed that 52% of the population reported no knowledge of kidney stones and prevention prior to the interventional. Knowledge was significantly increased from pre-intervention to T3; a paired-sample t-test confirmed significant difference, t(9.448) = 24, p < 0.001. Overall affirming effectiveness of the educational intervention. The study cohort found the video format preferential in improving knowledge improvement (80%).

Conclusions: Overall, this intervention shows encouraging evidence that tailored educational materials on stone education leads to increased knowledge.

Funding: This study was funded by the Toowoomba Hospital Foundation Grant.

MP14-04 Radiating for Two: Quantifying Radiation Exposure to Pregnant Urologists During Percutaneous Nephrolithotomy
Zhamshid Okhunov1, Akin S. Amasyali1, Sikai Song1, Toby Clark1, Kai Wen Cheng1, Kyu Park1, Nicole Mack1, Cliff De Guzman1, Ruby Kuang1, Matthew Buell1, Rose Leu1, Kanha Shete1, Ala’a Farkouh1, Elizabeth A. Baldwin1, Evan Seibly1, D. Duane Baldwin1
1Department of Urology, Loma Linda University Health

Presented By: Zhamshid Okhunov, MD

Introduction: Current occupational recommendations limit fetal radiation dose to 1 mSv. With increased gender diversity in urology, understanding radiation exposure during pregnancy is crucial. The purpose of this study was to determine surgeon uterine...
radiation dose during percutaneous nephrolithotomy (PCNL) and compare effectiveness of several radiation reduction strategies.

Methods: Two cadavers were used to simulate the surgeon and patient in a PCNL model. An ion chamber was placed behind the surgeon’s anterior uterine wall to measure radiation dose. Three radiation reduction methods were compared: pulsed fluoroscopy (1, 4, 8, 15, 30 pps), low-dose (LD) fluoroscopy, and surgeon shielding (none, 0.35, 0.50, 0.70 mm lead equivalents). The average radiation dose/second was recorded for 20 trials per combination. Assuming 5 minutes of fluoroscopy per PCNL, the number of cases required to exceed the fetal occupational limit was determined. Statistical analysis was performed using the Wilcoxon test, and Kruskal Wallis with Dunn’s test.

Results: Decreasing pulse frequency from 30 to 1 pps reduced dose by 96% (p < 0.001). The LD setting decreased dose by 56% (p < 0.001). A 0.35 mm lead apron resulted in a 94% dose reduction (p < 0.001), and the 0.50 and 0.70 mm lead aprons further reduced dose by 12% and 47%, respectively. At conventional fluoroscopy settings of automatic exposure control and 30 pps, a surgeon could perform 12 PCNLs using no lead or 189 PCNLs using a 0.35 mm lead apron before reaching the 1 mSv limit. In addition to shielding, employing 1 pps with LD further decreased radiation exposure, allowing over 6000 cases to be performed with <1 mSv uterine radiation exposure.

Conclusions: Although all surgeons should keep dose as low as possible, this study demonstrates that high volume pregnant surgeons employing pulsed LD fluoroscopy and appropriate shielding can maintain surgical volume with relatively low risk.

Funding: None.

MP14-05  EMR Data Enhances Prediction Accuracy for Care Delays Compared to Standard Demographic Data

Pablo Suarez1, Sudarshan Srirangapatanam1, Thomas Chi1, John Neuhaus1, Marshall L. Stoller1, Charles Scales2, David B. Bayne3

1Department of Urology, University of California, San Francisco, 2Duke University

Presented By: Pablo Suarez

Introduction: Delayed care for kidney stone disease results in higher morbidity and healthcare expenditures. Standard Demographic Data (SDD), such as race, ethnicity, socioeconomic status, and insurance factors are associated with delays in care. However, the predictive capacity of SDD relative to Electronic Medical Record Data (EMRD) is unknown. This study will assess whether EMR data improves the accuracy of statistical models to predict care delay for kidney stones patients.

Methods: This is a retrospective study using EMR data from 2012-2022 of patients with a principal diagnosis of kidney stones on initial ED presentation, and a referral to urology. Primary outcome was care delay defined as presentation to urologic clinic ≥ 90 days after ED visit. A multivariate logistic regression with 10-fold cross-validation assessed the SDD and EMRD models. The SDD model included covariates such as gender, age, race, primary language, and insurance status. In contrast, the EMRD model incorporated all SDD covariates plus: marital status, engagement with EMR interface (MyChart), prior ED and urology visits, Charlson Comorbidity Index, psychiatric diagnoses, smoking history, chief complaint, CT scan completion, visit acuity, disposition, and time to referral. A test dataset of 20% of the original data was used for final evaluation. Assessment of statistical significance between models was made comparing bootstrapped estimates.

Results: Of the 1016 patients, 323 (31.8%) had care delays, while 693 (68.2%) did not. The SDD model explained 2.4% of outcome (residual deviation(rd)= 993.52), while the EMRD model explained 9.1% of the outcome (rd = 926.02). The Kappa statistic was 4.5% and 12.9%, respectively. In the test dataset, the EMRD model outperformed the SDD model with a Kappa statistic of 27.1% (vs. 8.4%), accuracy of 74.3% (vs. 70.3%), and an AUC of 68.9% [CI: 60.9-76.9%] (vs. 61.6% [CI: 53.0-70.2%], p-value<0.05 with bootstrapping analysis).

Conclusions: Incorporation of EMR data outperformed standard demographic variables, as indicated by a 11.9% relative improvement in AUC. This evidence supports that a more comprehensive predictive model improves our ability to predict patients at risk for care delays and thus allows for timely targeted interventions to reduce inequities in care access.

Funding: UCSF John Watson Faculty Grant.

MP14-06  Instrument Fit Among Urologists: A Cross Sectional International Survey

Sarah Razavi1, Emeka Udedibia1, Kristin Chrouser2, Susan Hallbeck3, Hamid Norasi4, Karen Huang5, Zeph Okeke1

1Smith Institute for Urology, Northwell Health, 2VA Ann Arbor Healthcare System, University of Michigan, Department of Urology, Ann Arbor, MI, USA, 3Robert D. and Patricia E. Kern Center for the Science of Healthcare Delivery, Mayo Clinic, 4Robert D. and Patricia E. Kern Center for the Science of Healthcare Delivery, Mayo Clinic, 5Smith Institute for Urology at Northwell Health

Presented By: Sarah Razavi, MD

Introduction: The objective of this study was to evaluate instrument fit among urologists as well as the perception of glove fit, hand size, and hand strength with regard to use of surgical instruments.

Methods: A cross-sectional, web-based anonymous survey was distributed. Urologists with more than 5 cases a month in each category were asked to rate instrument fit within that category. The survey captured demographics, glove fit, hand size, strength, and ease of various instrument use.
**Results:** Out of 125 respondents (62% male, mean age 43.4 ± 11.2 years), 26% reported concerns with glove fit. This was significantly higher in women compared to men (44% vs 14%, p < 0.0001). The level of difficulty in using instruments varied, with the stapler and trilogy being rated as the most difficult instruments to operate (Figure 1). Stapler (83%), flexible ureteroscope (57%), and trilogy (50%) were the most frequently suggested instruments for ergonomic redesign. Twenty-six percent reported having to make adjustments to use surgical instruments at least once a week whereas 19% reported having to do so at least once per operative day. More women than men perceived that their hand size (60% vs 26%, p < .001) and strength (68% vs 35%, p < 0.001) affect their ability to use surgical instruments. Sixty-four percent of respondents sought interventions for discomfort due to using surgical instruments: 19% used over-the-counter medications, 13% engaged in hand-strengthening or flexibility exercises, and 11% pursued physical therapy.

**Conclusions:** This study underscores significant ergonomic challenges faced by urologists. The findings suggest that surgical instrument designers should aim to optimize ergonomic design to enhance surgeons’ performance, reduce discomfort, and address gender disparities.

**Funding:** None.

**Methods:** Patients undergoing BPH procedures at our large multi-hospital tertiary care referral center from 2017-2022 were identified retrospectively. Procedures of interest included Transurethral Resection of Prostate (TURP), Photovaporization of the Prostate (PVP), HOLEP, WVTT, prostatic urethral lift (PUL), Simple Prostatectomy, and Prostate Artery Embolization. Addresses were geocoded to national ADI scores, with the lowest quartile (scores 1-25) representing the least, and the top quartile (76-100) the most disadvantaged.

**Results:** 3309 men underwent BPH procedures with the most common being TURP (n = 1579) followed by PVP (n = 863). Mean age (71 years), pre-operative PSA (5.4 ng/mL), and Charlson Co-Morbidity Index (2.8) were similar across ADI quartiles. Patients in the most disadvantaged group (i.e. highest ADI) were more likely to be black (28.2% vs 3.9%, p < 0.001) and to have Medicaid insurance (8.5% vs. 0.4%, p < 0.001). These patients were more likely to have undergone TURP; with a corresponding lower rate of laser procedures (PVP or HOLEP) when compared to the least disadvantaged quartile (OR 1.52 and 0.61, respectively, p < 0.001). No differences were seen in utilization of WVTT, PUL, or Simple Prostatectomy. Increasing ADI was also associated with greater likelihood of needing a repeat TURP (OR 2.70 for most vs. least disadvantaged, p = 0.010) and 30-day ER re-admission across all procedures (OR 1.81, p = 0.008), but not peri-operative blood transfusion.

**Conclusions:** Higher ADI is associated with lower utilization of laser BPH procedures and increased ER re-admission following BPH surgery. Further work will help identify possible causes such as disease-specific factors, patient preferences, and differences in health literacy across SES.

**Funding:** N/A.

**Introduction:** Race and socioeconomic status (SES) have been associated with treatment selection and outcomes in Benign Prostatic Hyperplasia (BPH); however, these studies were performed prior to the uptake of treatments such as Water Vapor Thermal Therapy (WVTT) and Holmium Laser Enucleation of the Prostate (HOLEP). Area Deprivation Index (ADI) is a percentile score calculated from multiple United States Census variables and summarizes SES for a geocoded address. The goal of this study was to determine if surgical choices in BPH are associated with SES as measured by ADI.

**Results:** In this pilot survey with 252 respondents, 92.4% were Singaporean, 63.2% were female, 32.9% had a medical background, 75.4% had education beyond a university degree, and 63.1% reported a combined household income over SGD8000. 32.1% of participants were not aware of the Human Organ Transplant
Act (HOTA) in Singapore; participants with medical background were more likely to be aware of HOTA (p < 0.001). Of those aware of HOTA, only 35.1% of participants correctly selected the organs included in HOTA. Interestingly, while 63.9% of participants expressed willingness to volunteer for kidney donation, the majority (54.3%) stated they would not request a kidney from their relatives if needed. 83.7% of participants prioritized their relationship with the recipient as the primary factor influencing their decision to donate a kidney. Conversely, concerns about the potential impact of organ donation on their health ranked highest, cited by 32.1% of respondents. Donor ethnicity and age ranked highest among participants’ considerations for receiving an organ. 76.6% of participants incorrectly believed donor surgery was done through open surgery, not laparoscopically. Additionally, 90% perceived a need for an extended recovery period, often beyond several weeks, and 50% thought donors faced a greater risk of ESRD requiring dialysis compared to the general population.

**Conclusions:** Our pilot survey results demonstrate that awareness among our population regarding kidney transplantation varies widely. It is crucial for further research to identify gaps in knowledge about kidney transplantation to aid in designing effective interventions to address misconceptions and improve awareness.

**Funding:** None.

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**MP14-09 Ask Me Anything: An Analysis of Urologic Concerns on Reddit**

José M. Torres¹, Kerry Adler¹, Jonathan Aronov¹, Annie Chen¹, Jacob Hartman-Kenzer¹, Michael Ernst¹

¹Stony Brook University Hospital

Presented By: José M. Torres, MD

**Introduction:** Reddit is a social media platform where original posters (OPs) can seek and offer advice in an open forum. Urologic conditions are discussed on the dedicated r/urology forum or ‘subreddit’ encompassing 3600 subscribers. Given the anonymous nature of these exchanges, Reddit can offer physicians a rare and honest account of user concerns. The objective of this study is to describe the content of r/Urology posts and quality of responses.

**Methods:** A database was constructed based on all posts in the r/urology subreddit over 6 months. Each post was evaluated by three urology resident physicians. Variables collected included nature of question, anatomic focus, subspecialty, number of comments, and quality of comments.

**Results:** There were a total of 554 posts over 6 months with 153 posts not receiving any comments. The majority of posters were between 17-40 years old (n = 159, 86%). There were 1661 total comments made. Median comments per post was 5. Among subspecialties represented, general urology threads were most common (n = 424, 76%), and female pelvic medicine, the least (n = 3, 0.5%). Anatomy questions about the penis (n = 214, 38%) and bladder/urethra (n = 152, 27%) were the most prevalent. A significant portion of posts (49%, n = 269) sought a diagnosis for a condition and 17% (n = 94) of posts asked commenters for treatment advice. Only 8% of commenters prefaced their comments with a “disclaimer” stating they were or were not a medical professional. 19.9% of commenters were implied to be medical professionals, with 76% of those implied to be urologists. 92% (331/358) of posts did not recommend that the OP see a professional. 124/147 patients identified specifically seeing a urologist. Of posts containing medical information, misinformation, when identified, was noted in 28.5% posts (n = 93/326), while accurate diagnoses were identified in only 19% (n = 93/488) of posts.

**Conclusions:** When seeking urological advice, patients may not initially see a urologist. Many instead choose to visit open-forum websites like Reddit, possibly to avoid possible embarrassment or offset the burden of visiting a medical professional. Despite about 40% of OPs already being treated by a doctor and 22% by a urologist, there is still significant misinformation being disseminated. Less than 20% of posts contain accurate diagnoses and the majority of posts do not recommend any follow-up with a certified medical professional.

**Funding:** None.

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**MP14-10 Utilization of Electronic Health Record Social Determinants of Health Feature in Kidney Stone Patients**

Michelle Semins³, Katharina Mitchell¹, Mara Walters², Nasser Al-Rayyes²

¹West Virginia University, ²West Virginia University School of Medicine, ³West Virginia University Wheeling Hospital

Presented By: Michelle Semins, MD

**Introduction:** Social determinants of health (SDOH) have become an increasingly important tool in healthcare, providing a broader perspective of influences on patient health and linking adverse health outcomes to unmet social needs. Some electronic health records (EHR) have the ability to capture SDOH information, integrating this valuable data into the clinical environment. An established association between poorer SDOH and worse outcomes for kidney stone disease exists, however there are limited data on the use of the EHR SDOH feature for this patient population. A major barrier to the integration of social context into healthcare delivery could lie in the underutilization of SDOH as a tool. The objective of this study is to examine the frequency of SDOH documentation for kidney stone patients in the West Virginia University (WVU) health system EHR.

**Methods:** In this study we performed a retrospective review of patients within the WVU health system presenting to clinic in 2022 with the complaint of stones anywhere throughout the urinary tract or hydronephrosis. Collected data included presence of SDOH documentation, number of SDOH documented, which SDOH were documented, and demographic data (race, language, ethnicity, zip code, age, sex, marital status, and insurance). The compiled data was then analyzed using SPSS to assess frequencies of collected variable and perform Chi squared analysis.

**Results:** 473 patients with the complaint of kidney stones were included in the study over the period of September 2022 through September 2023. 278 patients (59%) had no documentation of SDOH within their chart, while 195 patients (41%) had some form documented. Of the patients with documentation, 50% (21% of total) had 1 SDOH, 37% had all possible SDOH, 6% had 2, 4% had 3, 2% had 6, and <1% had 5 SDOH. Health Literacy was the SDOH documented for 88 of 97 charts (91%) with 1 SDOH documentation. No statistically significant correlations were found between demographic data and SDOH documentation.

**Conclusions:** EHR documentation of SDOH was inconsistent in our patient population, with nearly 60% having no documentation of SDOH at all. When documented, SDOH information was fully completed in only 15% of total patient charts. These results
are concerning when considering the established impact of social context on patient health, specifically in the setting of kidney stone disease. In an effort to increase efficacy of care and tailor interventions to social needs, these results suggest more consistent documentation is needed to begin to use SDOH as a healthcare tool.

**Funding:** Nil.

**MP14-11 Does gender influence Extracorporeal Shock Wave Lithotripsy practice (ESWL)? Results from a global survey**

Rachel Shu-En Lau², Vineet Gauhar¹, Ee Jean Lim², Valerie Gan², Mehmet Kocak³, Ranan Dasgupta⁴, Arvind Ganpule⁵, Arun Chawla⁶, Jean J. De La Rosette⁷

¹Ng Teng Fong General Hospital, ²Singapore General Hospital, ³Istanbul Medipol University, ⁴Charing Cross Hospital, ⁵Mulijihai Patel Urological Hospital, ⁶Kasturba Medical College, Manipal, ⁷Amsterdam UMC University Hospital

Presented By: Rachel Shu-En Lau

**Introduction:** Recent technological developments in endourology lead to changes in the management of urolithiasis. Globally, the numbers of extracorporeal shockwave lithotripsy (ESWL) are decreasing, with increased utilisation of flexible ureteroscopy (FURS) and retrograde intrarenal surgery. We aim to analyse and evaluate the Knowledge, attitudes, clinical preferences and practices, and adherence to the European Association of Urology (EAU) guidelines for ESWL.

**Methods:** A structured online survey was conducted by the research wing of Société Internationale d’Urologie (SIU) to evaluate the Knowledge, attitudes, clinical preferences and practices and adherence to EAU guidelines for ESWL. The target study population included demographics, geographic location, income distribution, peri-procedure practices and stone free rates were analysed. A propensity score-matched pair analysis (PSM) was performed on the gender of respondents based on age, career stage, years of experience, and practice setting.

**Results:** After a 4:1 (Male:Female) PSM matching, 280 female respondents were matched to 1061 males. When working up for ESWL, female urologists were more likely to perform physical examination and investigations (including abdominal ultrasound (mean of 8.0 vs 7.4, p < 0.05), and CT urography (mean of 8.0 vs 7.3, p < 0.05)) compared to male counterparts. They were also more likely to prescribe alpha blockers and antibiotic prophylaxis. Patients with female urologists had lower retreatment rates with fewer patients needing > 5 sessions for retreatment (mean of 0.7 vs 1.0, p <0.05), and fewer patients requiring another SWL within a week of treatment (mean of 2.5 vs 3.4, p <0.05). It was also more likely for female urologists from high income countries like Europe, and less likely from Asia, to utilise double J stents. Female urologists also had more ESWL training during residency, but less likely to undergo fellowship training.

**Conclusions:** Although on the decline, ESWL continues to be a beneficial, cost-effective, and relevant treatment option. Gender can influence ESWL practices and outcomes, and can likely be attributed to multiple factors including workplace culture, differences in approaches to medicine, and personality differences. As the number of female Urologists increase, understanding these differences is valuable when considering the role of ESWL in future Urology practice.

**Funding:** Nil.

**MP14-12 Post-Fellowship Practice Patterns among Contemporary Endourological Society Fellows**

Kelly Lehner³, Michelle Semins¹, Li-Ming Su², Kevin Koo¹

¹Western Virginia University, ²University of Florida, ³Mayo Clinic

Presented By: Kelly Lehner, MD

**Introduction:** The Endourological Society (ES) certifies 1- and 2-year fellowships in 87 programs worldwide that provide training in endourology, stone management, laparoscopy, and robotics. To assess how fellowship graduates will contribute to endourology workforce needs, we sought to characterize the practice patterns of contemporary ES fellowship graduates.

**Methods:** A graduation exit survey was conducted of all 2023 graduating Endourological Society fellows. The survey included demographics, post-fellowship employment plans, and subspecialty focus areas. We queried these data to capture fellows’ future practice plans and performed descriptive analysis.

**Results:** 59 total 2023 ES fellowship graduates participated in the exit survey, for a total participation rate of 68%. Most participants were male (95%), and 61% were in the age range of 31-35 years old. 75% were Caucasian race, 22% were Asian race, and 10% identified as Latino. Regarding future practice plans, a majority of ES fellowship graduates will enter academic practice (64%). 29% of individuals will enter private or community practice, while 5% will enter military practice, and 3% will complete additional training. More than two-thirds of ES fellowship graduates planned to practice in the United States (68%), while 14% will practice in Europe or the Middle East, and 3% will practice in Asia. Notably, fellows reported high rates of geographic concordance between the location of their fellowship and future practice: 90% of respondents will practice in the same country or global region as their fellowship training. Among US graduates, 36% will practice in the same state as their fellowship training, and 44% will practice within the same United States region as their fellowship training (p < 0.05). Non-US practice locations include Saudi Arabia, Puerto Rico, Qatar, Israel, and India. Graduates remaining in the US will work in 22 different states, with the most common practice locations being Florida, California, Pennsylvania, Alabama, and Texas.

<table>
<thead>
<tr>
<th>Table 1: Post ES Fellowship Practice Patterns</th>
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<tbody>
<tr>
<td>Post Graduate Practice Patterns</td>
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<tr>
<td>N</td>
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<tr>
<td><strong>Practice Type</strong></td>
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<td>Non-Academic</td>
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<td>Europe or Middle East</td>
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<td>Asia</td>
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<td>South America</td>
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<td>Mexico</td>
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<tr>
<td>Australia</td>
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<tr>
<td>Other</td>
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<tr>
<td><strong>Training Location and Practice Location Concordance</strong></td>
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<td>South</td>
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<td>West</td>
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</table>
Conclusions: The majority of contemporary Endourological Society fellowship-trained endourologists plan to work in an academic setting. Training location may predict eventual practice location, with 90% of fellows going on to practice in the same country or global region, and 36% of US graduates going on to practice in the same state. Future directions include investigating whether the presence of training programs within areas underserved by fellowship-trained endourologists may help promote access to urologic sub-specialty care.

Funding: None.

MODERATED POSTER SESSION 15: BPH 3

MP15-01 Soft Tissue Infections after HoLEP: an under-described complication
Margaret Knoedler1, Emily Serrell1, Madison Taychert1, Ethan Richmond1, Robert Tylo1, Ali Antar1, Christopher Manakas1, Daniel Gralnek1, Matthew Grimes1
1University of Wisconsin

Presented By: Margaret Knoedler, MD

Introduction: Holmium Laser Enucleation of the Prostate (HoLEP) is a size independent surgical treatment for benign prostatic hyperplasia (BPH). While post-HoLEP symptomatic urinary tract infection (UTI) occur in 3-20% of patients, the incidence of soft tissue infections (epididymitis and/or orchitis (EO)) is not well described. Following transurethral resection of the prostate (TURP), EO occur at a 1-2% rate. In contrast to TURP, HoLEP involves high pressure irrigation in close proximity to the surgical capsule. We hypothesize that high pressure may drive an increased risk of EO. Herein, we aim to determine the rate and risk factors for infectious complications overall and soft tissue infections specifically after HoLEP.

Methods: We randomly sampled 300 patients from a prospectively maintained database of HoLEP patients operated by 5 surgeons from 6/1/2018 to 1/1/2022 at a single tertiary center. Comprehensive clinical data and infectious complications were abstracted from the clinical record. UTI was defined as patient-reported pain and exam or ultrasound consistent with EO. Preoperative characteristics were at higher risk of overall infectious complications but not specifically for EO. These data suggest that HoLEP patients may be at increased risk of soft tissue infections compared to other BPH surgical modalities and support early catheter removal when feasible.

Funding: NA.

MP15-02 Lower TURP Retreatment Rates Prior to 2001: An analysis of Veterans Health Administration Data
Sirpi Nackeeran1, Tyler Sheetz1, Kylie Morgan2, Henry Chen3, Jennifer Anger4, Roger Sur1
1UC San Diego Health, 2UC San Diego, 3A. T. Still University, 4UC San Diego

Presented By: Sirpi Nackeeran, MD, MPH

Introduction: Transurethral resection of the prostate (TURP) has long been the most prevalent method used in the surgical management of benign prostatic hyperplasia (BPH). Patients are often counseled TURP outcomes are durable, however the success rate can vary across studies. Under the hypothesis that patients undergoing TURP prior to 2001 were less likely to undergo re-treatment than those after 2001, we sought to determine if TURPs performed prior to 2001 achieved more durable outcomes compared to more contemporary TURP procedures.

Methods: We accessed data from the Veterans Affairs Informatics and Computing Infrastructure (VINCI), the VA’s national repository of data collected from its electronic medical record system. We collected data on adult men with no prior BPH surgery in the VA system who received a TURP. We used procedure, ICD, HCPCS, and medication codes to determine TURP outcomes. Outcomes compared to more contemporary TURP procedures. Under the hypothesis that patients undergoing TURP prior to 2001 were less likely to undergo re-treatment than those after 2001, we sought to determine if TURPs performed prior to 2001 achieved more durable outcomes compared to more contemporary TURP procedures.

Results: 2, 084 underwent TURP prior to 2001 and 35, 817 underwent TURP after 2001. Patient undergoing TURP after 2001 were more likely to undergo new procedures within 5 years (15% vs 10%, OR 1.59 95% CI 1.38-1.84, p < 0.001) and
refill BPH medications (65% vs 30%, p < 0.001). However, patients post-2001 were less likely to have incontinence (14.8% vs 19.4%, p < 0.001).

Conclusions: Although this study was limited by the potential inaccuracies of medical coding, incomplete data from older records, and changes in practice patterns across VA hospitals that could not be characterized, it is bolstered by a large sample size and robust statistical analysis. VA patients undergoing TURP prior to 2001 were less likely to undergo repeat procedures or continue medical therapy, however suffered increased surgical morbidity. This outcome disparity may include changes in training, practice pattern evolution, or even non-clinical drivers of care.

Funding: None.

MP15-04 Prospective Randomised Controlled Trial to Evaluate the Importance of Pre-Procedural Video Counselling for Patient Undergoing Invasive Urodynamic Study (UDM)
Raisa Shetty1, Niramya Pathak1, Abhishek Singh1, Ravindra Sabnis1
1Muljibhai Patel Urological Hospital
Presented By: Raisa Shetty, Urology Resident

Introduction: UDM involves a palette of test to evaluate lower urinary tract function. As it is diagnostic and invasive test, patient’s understanding regarding the test is important. We aim to study the importance of pre-procedure video counselling for patient undergoing Pressure flow Urodynamic Study. Primary objectives were to assess patient anxiety and secondary objectives were to assess patient comfort, operator ease, events of overactivity, need for repeat procedures, patient perception of usefulness of video counselling, impact of patient personality on benefit of video-counselling.

Methods: Randomised single centre experimental comparative study over a period of 6 months. Done in total 60 patients with 30 in each arm of those with pre procedure video counselling and with routine verbal counselling as group 1 and group 2. Parameters studied were demographic details, presenting complaints, education status of the patient, indications of UDM, patient personality, UDM findings, Patient satisfaction scores.

Results: With a median age of 61 years in group 1 and 68 years in group 2, Bladder capacity was higher in the group with pre procedure video counselling (median 358.5 vs median 358.5 ml, p = 0.007). In the Patient satisfaction score consisting of 10 questions, there were significant differences for four questions with p value <0.05, favouring the group 1.

Conclusions: Video counselling helps in allaying patient anxiety and facilitates the performance of a urodynamic study, reflecting as a higher bladder capacity and higher patient satisfaction scores.

Funding: None.
MP15-05 Long-Term Outcomes of Transurethral Enucleation by Bipolar in the Management of Medication-Resistant Benign Prostatic Hyperplasia: A 24-Month Follow-Up Study

Yuki Endo¹, Jun Akatsuka¹, Yuka Toyama¹, Hayato Takeda¹, Hiroya Hasegawa¹, Hikaru Mikami¹, Kotaro Obayashi¹, Ryota Funato¹, Mami Taniuchi¹, Honami Kishi¹, Go Kimura¹, Yukihiro Kondo¹

¹Department of Urology, Nippon Medical School

Presented By: Yuki Endo, MD, PhD

Introduction: Transurethral resection of the prostate has been the standard surgical treatment for benign prostatic hyperplasia (BPH). We previously reported that Transurethral Enucleation by Bipolar (TUEB) is a comparable and safe alternative to TURP for managing BPH, including patients with large prostate volumes (PV) exceeding 80ml. However, limited data exists regarding the long-term efficacy of TUEB. In this study, we aimed to analyze the efficacy of TUEB over a 24-month follow-up period.

Methods: We retrospectively examined 60 patients with medication-resistant BPH who underwent TUEB at our institution between 2017 and 2022. Preoperative and postoperative assessments included the international prostate symptom score (IPSS), quality of life score (QoLs), uroflowmetry (Qmax), Overactive Bladder Symptom Score (OABSS), Nocturia Score (Nocs), and serum prostate-specific antigen (PSA) levels. Data were collected at various time points up to 24 months postoperatively. Statistical analysis was performed using the chi-square test and Student’s t-test.

Results: All patients had sufficient data available for analysis. Baseline measurements showed a mean IPSS of 17.5, QoLs of 5.0, Qmax of 8.5 mL/s, OABSS of 5.0, and Nocs of 2.0. At 24 months postoperatively, significant improvements were observed in several parameters: mean IPSS decreased to 3.0, QoLs improved to 0.5, Qmax increased to 23.7 mL/s, and OABSS decreased to 2.0. However, there was no significant improvement in Nocs, which remained at 2.0. Median PSA levels decreased by 1.5. Points improved to 0.5, Qmax increased to 23.7 mL/s, and OABSS decreased to 0.5. However, there was no improvement in Nocs, which remained at 2.0. Median PSA levels decreased from 0.5 to 0.42. Statistical analysis was performed using the chi-square test and Student’s t-test.

Conclusions: The efficacy of TUEB remained consistent over the 24-month follow-up period. TUEB proved to be an effective treatment. The improvements in symptoms, quality of life, and uroflowmetry parameters were sustained throughout the follow-up period. Furthermore, TUEB demonstrated effectiveness in managing overactive bladder symptoms, which persisted for 24 months. However, the occurrence of prostate cancer and postoperative urethral strictures highlights the need for appropriate monitoring and management during the postoperative period.

Funding: Not at all.

MP15-06 Second-Generation MOSES 2.0 versus MOSES 1.0 Pulse-Modulation Technologies for Holmium Laser Enucleation of the Prostate (HoLEP)

Saud Alhelal², Hazem Elmansy¹, Saud Alhelal¹, Amr, Hodhod¹, Husain Alaradi¹, Luoy Abbas¹, Abdalla Bazzou¹, Ruba Abdul Hadi¹

¹Thunder Bay Regional Health Sciences Centre, Northern Ontario School of Medicine. ²NOSM

Presented By: Saud Alhelal, MD

Introduction: To report our initial experience with enhanced MOSES 2.0 technology in patients who underwent holmium laser enucleation of the prostate (HoLEP) for the treatment of benign prostatic hyperplasia (BPH), in comparison to those who underwent HoLEP with MOSES 1.0 technology at our institution.

Methods: We retrospectively reviewed prospectively collected data of 196 patients who underwent HoLEP using MOSES 1.0 or MOSES 2.0 pulse-modulation technology from December 2020 to September 2023. Preoperative and intraoperative parameters, 3-month postoperative outcomes, as well as perioperative complications were collected and analyzed.

Results: A total of 196 patients were included in the study. Among them, 146 patients underwent MOSES 1.0 HoLEP, while 50 had MOSES 2.0 HoLEP. No statistically significant differences in preoperative characteristics were observed between the two groups. The median prostate volume for the MOSES 1.0 and MOSES 2.0 HoLEP groups was 109 cc and 117.5 cc, respectively. Patients in the MOSES 2.0 group had a shorter median enucleation time (52.5 vs. 42.5 min, p = 0.002), along with lower laser energy usage (101 vs. 86.4 kJ, p = 0.012), when compared to those in the MOSES 1.0 cohort. Postoperative outcomes, including IPSS, QoL, Qmax, and PVR, were comparable between the two groups at 1 and 3 months postoperative. The incidence of urge urinary incontinence (p = 0.2), stress urinary incontinence (p = 0.13), and hospital readmission rates (p = 0.42) were also comparable between the cohorts.

Conclusions: HoLEP with second-generation MOSES 2.0 technology is a safe and effective treatment option for BPH. It offers notable improvements, including reduced enucleation and hemostasis times, while using less energy when compared to MOSES 1.0.

Funding: Not at all.
Introduction: Early apical release during holmium laser enucleation of the prostate (HoLEP) may reduce postoperative transient stress urinary incontinence (TSUI). Traditional HoLEP methods report perioperative TSUI rates at 3 months as high as 13%. Here we describe the functional outcomes, including the TSUI rates after HoLEP with early apical release at a single institution.

Methods: Data was pooled from a prospectively maintained IRB-approved database of 181 patients who underwent HoLEP with a single surgeon from November 2022 to November 2023. Patients with neurological diseases (n = 13) were excluded from the final analysis. Patients were assessed at pre- and postoperative visits. All patients underwent HoLEP with an early apical release, using an anterior-to-posterior approach, with either a one-lobe, two-lobe or even three-lobe technique.

Results: 168 patients were included in the final analysis. The mean (±SD) age was 73 ± 9, and the median prostate size was 84 (52 – 120) cm³. Preoperatively 35% (n = 59) of patients were catheter dependent and 51% (n = 85) had urine retention at some point before surgery. The median length of catheterization was 1 (1 – 3) days, and most patients (n = 131; 78%) were discharged home on a postoperative day 1 following a successful trial of void. The complication rate for Clavien Dindo grade III was 3% (n = 5) and the readmission rate within 90 days after surgery was 4% (n = 7). The median time to the first postoperative visit was 2.5 (2 – 4) weeks and 72% (n = 116) of the patients reported having no SUI at this initial visit. At 3 months after surgery, only 5.6% (n = 9) of patients reported having any SUI symptoms. Additionally, average postvoid residual volumes and American Urological Association Symptom Scores showed significant improvements postoperatively (150 vs. 25, p < 0.001; 17 vs. 2, p = 0.008, respectively).

Conclusions: At our institution, HoLEP with early apical release provides improved TSUI rates at 3 months compared to traditional HoLEP techniques while maintaining similar functional outcomes. The early apical release technique can be incorporated with any of the HoLEP techniques currently available. 

Funding: N/A.

MP15-09 Significant Hematuria Events: Definition and Assessment of a Patient Centered Outcome for Post HOLEP Hematuria

Ali Antar1, Dan Gralnek1, Margaret Knoedler1, Emily Serrell1, Madison Taychert1, Ethan Richmond1, Christopher Manakas1, Matthew Grimes1

Introduction: Holmium Laser Enucleation of the Prostate (HoLEP) is a size independent surgical treatment for benign

Table 1. Univariate analysis comparing likelihood of 30- and 90-day complications between MetS and non-MetS groups.

<table>
<thead>
<tr>
<th></th>
<th>Non-MetS (N=1319)</th>
<th>MetS (N=180)</th>
<th>Total (N=1499)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-day complications, n (%)</td>
<td>168 (12.7%)</td>
<td>59 (32.4%)</td>
<td>227 (15.1%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Bleeding</td>
<td>55 (4.2%)</td>
<td>16 (9.0%)</td>
<td>71 (4.7%)</td>
<td>0.009</td>
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<tr>
<td>Urinary tract infection</td>
<td>24 (1.8%)</td>
<td>6 (3.3%)</td>
<td>30 (2.0%)</td>
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</tr>
<tr>
<td>Irritative symptoms</td>
<td>15 (1.1%)</td>
<td>11 (6.1%)</td>
<td>26 (1.7%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Stricture</td>
<td>5 (0.4%)</td>
<td>0 (0.0%)</td>
<td>5 (0.3%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Urinary incontinence</td>
<td>19 (1.4%)</td>
<td>16 (9.0%)</td>
<td>35 (2.3%)</td>
<td>&lt;0.001</td>
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<tr>
<td>Urinary retention</td>
<td>76 (5.8%)</td>
<td>17 (9.4%)</td>
<td>93 (6.2%)</td>
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<td>90-day complications, n (%)</td>
<td>217 (15.6%)</td>
<td>77 (42.8%)</td>
<td>294 (19.8%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Bleeding</td>
<td>55 (4.2%)</td>
<td>16 (9.0%)</td>
<td>71 (4.7%)</td>
<td>0.009</td>
</tr>
<tr>
<td>Urinary tract infection</td>
<td>24 (1.8%)</td>
<td>6 (3.3%)</td>
<td>30 (2.0%)</td>
<td>0.12</td>
</tr>
<tr>
<td>Irritative symptoms</td>
<td>15 (1.1%)</td>
<td>11 (6.1%)</td>
<td>26 (1.7%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Stricture</td>
<td>5 (0.4%)</td>
<td>0 (0.0%)</td>
<td>5 (0.3%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Urinary incontinence</td>
<td>19 (1.4%)</td>
<td>16 (9.0%)</td>
<td>35 (2.3%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Urinary retention</td>
<td>76 (5.8%)</td>
<td>17 (9.4%)</td>
<td>93 (6.2%)</td>
<td>0.008</td>
</tr>
</tbody>
</table>

1Mayo Clinic Arizona

Presented By: Victoria Edmonds, MD

Introduction: Metabolic syndrome (MetS) is a risk factor for postoperative infections, cardiopulmonary complications, prolonged admissions, and reoperation. The impact of MetS on postoperative complications after Holmium Enucleation of the Prostate (HoLEP) is not well-described. We sought to compare complication rates of MetS and non-MetS patients after HoLEP.

Methods: We retrospectively reviewed patients >40 years old who underwent HoLEP at our institution from 2007 to 2022. Criteria for MetS were diagnoses of at least 3 of the following: diabetes mellitus (DM), hypertension (HTN), hyperlipidemia (HLD), or obesity (BMI >30). Univariate and multivariable logistic regression were used to compare the likelihood of 30- and 90-day complications between groups.

Results: A total of 1499 patients were included with mean age 70.2 (SD 7.71). MetS patients were more likely to develop complications at both 30 and 90 days (Table 1, p < .001). After adjusting for potential confounders, MetS patients had approximately 3 times odds of both 30- and 90-day complications compared to non-MetS patients (30-day adjusted OR=2.99 [95% CI: 1.69-5.29], p < .001; 90-day adjusted OR=3.08 [95% CI: 1.83-5.18], p < .001).

Conclusions: MetS was associated with a three-fold increased likelihood of 30- and 90-day complications after HoLEP. This could be an important factor to consider in preperative counseling and patient selection.

Funding: No funding was received for this work.
prostatic hyperplasia (BPH). Hematuria following HoLEP is expected and occurs on a spectrum of severity. Classically, hematuria outcomes after HoLEP have been defined from the surgeon’s perspective. We aim to define a patient-centered composite outcome of significant hematuria events (SHE) and determine the rate and risk factors for SHE.

Methods: We randomly sampled 300 patients from a prospectively maintained institutional HoLEP database, which included five surgeons between 6/1/2018 and 1/1/2022. Comprehensive clinical data were collected and compared with respect to SHE status. SHEs were defined as unplanned post-operative admission, unplanned outpatient encounter, readmission, return to the operating room, or blood transfusion.

Results: We included 300 HoLEP patients with mean age at surgery of 70 years (±7.9), mean preoperative prostate volume of 111.8 (±62.7), and 94 of whom were catheter dependent (31%). A total of 20 (6.7%) patients experienced a SHE within 90 days of surgery. Patients with SHE were more likely to have an indwelling catheter [10 (53%) vs 62 (22%), p < 0.003] and be anticoagulated with direct oral anticoagulant (DOAC; 4 (21%) vs 27 (9.36), p = 0.03) compared to non-SHE patients (Table). On multivariate analysis, presence of pre-operative catheter remained significant (OR 3.5, p = 0.01). Eight patients experienced 9 SHE within 24 hours of surgery (Figure). The remaining 12 patients experienced 15 events a mean of 11 days (±1.8) after surgery. Post-operative passage of void trial and catheter free rates (98.4%) were similar at 27.3 (±12.5) month mean follow up.

Conclusions: We identified a 6.7% rate of SHE within 90 days of HoLEP. Pre-operative risk factors included DOAC anticoagulation and pre-operative indwelling catheter. We propose that considering the experience of surgery and complications from the patient perspective will lead to improved counseling and shared decision making regarding BPH surgery.

Funding: None.
MP15-11 Ejaculation-Preserving Partial HoLEP: A Case Series on Balancing Sexual and Urinary Function

James Jiang1, Narmina Khanmammadova1, Erika Park1, Bruce Gao1, Akhil Das1
1University of California Irvine

Presented By: James Jiang, MD

Introduction: Holmium laser enucleation of the prostate (HoLEP) is increasingly favored as a size-independent treatment modality for benign prostatic hyperplasia (BPH). Common post-HoLEP side effects include transient stress urinary incontinence (SUI) and retrograde ejaculation. Partial HoLEP presents a viable option for sexually active men who want to preserve antegrade ejaculation while reducing lower urinary tract symptoms (LUTS). Here, we report the outcomes of selective partial or one lobe laser enucleation of the prostate (LEP).

Methods: Data was prospectively collected in an IRB-approved database from 9 patients who underwent partial LEP from April 2023 to January 2024. Partial LEP was defined as the enucleation of only the median lobe (n = 7), one lateral lobe (n = 1), or both the median and one lateral lobe while preserving the other lateral lobe (n = 1). The main criteria for selecting patients was their preference for antegrade ejaculation and the confirmation of optimal anatomy on cystoscopy. During the follow-up (FU) visits, the American Urological Association Symptom Score (AUASS) was used to assess LUTS, and patients were asked about retrograde ejaculation.

Results: Patient characteristics and outcomes are demonstrated in Table 1. The median age was 63 (57.5 – 68) years, and the median prostate size was 45.5 (34.75 – 70) cm3. Preoperatively, two (22.2%) patients had a history of urinary retention, and one (11.1%) patient was catheter dependent. Five (55.6%) patients were failing medical therapy and 4 (44.4%) had a history of interventions due to LUTS. The median operation time was 40 (25.5 – 53) minutes and the median length of catheterization was 1 (1 – 3) days. There were no intra- and postoperative complications and readmissions within 90 days after surgery. At the first FU visit (3 weeks), all patients reported having antegrade ejaculation and no SUI. The median AUASS was 4 (2 – 26) after surgery. Average postoperative post-void residual volumes showed significant improvement (127.5 vs. 10, p = 0.043). One (11.1%) patient with initial improvement in LUTS underwent completion of HoLEP 9 months after the first procedure, and one (11.1%) patient reported no improvement in LUTS after the procedure.

Conclusions: Partial or one lobe LEP is a safe and effective BPH treatment option for men seeking to preserve antegrade ejaculation.

Funding: None.

MP15-12 Comparing Efficacy of Alfuzosin and Amitriptyline versus Yoga and Placebo in Males with Chronic Pelvic Pain Syndrome: An RCT

SUMAN SAHOO2, Swarnendu Mandal1, Prasant Nayak2, Sabique C2, Manoj Das2
1All India institute of Medical Sciences, Bhubaneswar, 2All India Institute of medical Sciences, Bhubaneswar

Presented By: SUMAN SAHOO, Senior Resident

Introduction: There are multiple treatments for CPPS, including drugs and physical therapy. In this study, we aim to compare the efficacy of Alfuzosin and Amitriptyline (AA) with yoga and placebo (YP) in males with CPPS.

Methods: It was a randomized crossover study (CTRI/2022/05/042706) with 20 patients in each group. Group 1 received AA and group 2 received YP for six weeks. After the end of six weeks, a washout period of one week was given and the cross-over was done. The change in NIHCPSI scores was noted and compared using SPSS and R software.

Results: The median age in group 1 was 30.50 (25.25-38.00) years and in group 2 was 31 (26.00-34.00) years. The median decrease in overall NIHCPSI score in Group 1 after 6 weeks of AA was 10 (8.25-13.75) points (p < 0.001) and after 6 weeks of YP was 6 (3.25-9.75) points (p < 0.001). In Group B the median decrease in overall NIHCPSI score after 6 weeks of YP was 9 (5.25-11.75) points (p < 0.001) and after 6 weeks of AA was 7.5 (3.125) points (p < 0.001).

Conclusions: Yoga is not inferior to alfuzosin and amitriptyline for the treatment of CPPS.

Funding: None.

Table 1. Patient Characteristics and Outcomes for Patients undergoing Partial HoLEP.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean, median (QQR)</td>
<td>61 (57.5 – 68)</td>
<td>61 (57.5 – 68)</td>
</tr>
<tr>
<td>BMI, mean, median (QQR)</td>
<td>25 (20.5 – 30.4)</td>
<td>25 (20.5 – 30.4)</td>
</tr>
<tr>
<td>Prostate size, cm³, median (QQR)</td>
<td>45.5 (34.75 – 70)</td>
<td>45.5 (34.75 – 70)</td>
</tr>
<tr>
<td>Preop history of retention, n (%)</td>
<td>2 (22.2%)</td>
<td>2 (22.2%)</td>
</tr>
<tr>
<td>Preop catheter dependence, n (%)</td>
<td>1 (11.1%)</td>
<td>1 (11.1%)</td>
</tr>
<tr>
<td>Preop medical therapy, n (%)</td>
<td>5 (55.6%)</td>
<td>5 (55.6%)</td>
</tr>
<tr>
<td>Preop PVR, ml, median (QQR)</td>
<td>177.5 (145.75 – 260)</td>
<td>177.5 (145.75 – 260)</td>
</tr>
<tr>
<td>History of previous interventions, n (%)</td>
<td>4 (44.4%)</td>
<td>4 (44.4%)</td>
</tr>
<tr>
<td>Preop AUASS, median (QQR)</td>
<td>26 (20 – 30)</td>
<td>26 (20 – 30)</td>
</tr>
<tr>
<td>ASA score, n (%)</td>
<td>2 (77.8%)</td>
<td>2 (77.8%)</td>
</tr>
<tr>
<td>Total procedure time, minutes, median (QQR)</td>
<td>46 (20.5 – 53)</td>
<td>46 (20.5 – 53)</td>
</tr>
<tr>
<td>EBL, ml, median (QQR)</td>
<td>16 (7.5 – 27.5)</td>
<td>16 (7.5 – 27.5)</td>
</tr>
<tr>
<td>Postoperative complications, n (%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Length of catheterization, days, median (QQR)</td>
<td>1 (1 – 3)</td>
<td>1 (1 – 3)</td>
</tr>
<tr>
<td>Length of catheterization, days, median (QQR)</td>
<td>1 (1 – 3)</td>
<td>1 (1 – 3)</td>
</tr>
<tr>
<td>Pathological weight of resected adenoma, gr, median (QQR)</td>
<td>6.2 (4.1 – 19.3)</td>
<td>6.2 (4.1 – 19.3)</td>
</tr>
<tr>
<td>Postop PVR, ml, median (QQR)</td>
<td>10.5 (6.59)</td>
<td>10.5 (6.59)</td>
</tr>
<tr>
<td>Postop AUASS, median (QQR)</td>
<td>4.5 (2 – 26)</td>
<td>4.5 (2 – 26)</td>
</tr>
<tr>
<td>Time to first follow-up visit, weeks, median (QQR)</td>
<td>4 (2.5 – 5.5)</td>
<td>4 (2.5 – 5.5)</td>
</tr>
<tr>
<td>Postop PVR at first follow-up visit, ml, median (QQR)</td>
<td>3.75 (2.5 – 5.5)</td>
<td>3.75 (2.5 – 5.5)</td>
</tr>
<tr>
<td>Postop UI at 3 months, n (%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Postop HA, months, median (QQR)</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Postoperative complications:</td>
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<td>0</td>
</tr>
<tr>
<td>Postop readmission in 30 days, n (%)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Wilcoxon Signed Ranks Test

+/-A188-
MP15-13 Holmium Laser Enucleation of the Prostate (HoLEP) is it Suitable for all Patients? A Single Center Experience

David Lifshitz¹, Shayel Bercovich¹, Gherman Creiderman¹, Abd Elhalim Darawsha¹, Dmitry Enikeev¹, Yaron Ehrlich¹

¹Rabin Medical Center

Presented By: David Lifshitz, MD

Introduction: Patients with bladder outlet obstruction (BOO) are a heterogeneous group. Anatomical and predisposing conditions may impact the results of surgery. In recent years we have adopted Holmium laser enucleation of the prostate (HoLEP) as a “universal” surgical technique for BOO. We compared the results of HoLEP between patients with specific characteristics that may affect surgical results to the rest of our cohort.

Methods: Data of patients who underwent HoLEP from July 2016 to September 2022 in our institution was retrospectively assessed. All the procedures were done by or in the presence of a senior urologist. Factors such as obesity (BMI greater than 30), extremely large prostates (>200 cc), large bladder diverticulum (2 cm or more), and concurrent prostate cancer (PCa) were assessed, and pre-and postoperative variables were compared between the groups and controls.

Results: The study included 704 men with a median age of 71.5 years (IQR 66, 77) and a median prostate size of 102 cc (IQR 85, 130). Twenty-eight patients had prostates larger than 200 cc (average, 213.1 cc; range, 200-270 cc), and 168 patients had a BMI greater than 30. Twenty-six patients had bladder diverticula measuring 2cm or larger (median, 3.7cm; IQR 2.5, 5), 16 patients had pre-existing PCa, and another 21 had incidental PCa. No significant difference was found between the groups when comparing pre-and postoperative complications and surgical outcomes to controls. At a median follow-up of 18.3 months (IQR 16, 27), all patients who underwent cancer treatment post-HoLEP survived without cancer progression. In a median follow-up of 34 months (IQR 25, 53), all patients with a large bladder diverticulum were voiding with no residual urine.

Conclusions: This study demonstrates that HoLEP surgery is effective and safe for obese patients and patients with extremely large prostates. Most patients with bladder diverticulum undergoing HoLEP do not require additional treatment and can avoid more invasive surgical interventions. Preoperative diagnosis of PCa and PCa incidental findings did not affect surgical results.

Funding: None.

MP15-14 WITHDRAWN

MP15-15 Mounting the Learning Curve of Holmium laser Enucleation of the Prostate (HoLEP): An Independent Learning Experience without Proctorship

Xinyan Yang¹, Rachel Shu-En Lau¹, Ee Jean Lim¹, Yu Guang Tan¹, Edwin Jonathan Aslim¹

¹Singapore General Hospital

Presented By: Rachel Lau, MBBS

Introduction: Holmium laser enucleation of the prostate (HoLEP) is a size-independent surgical treatment for benign prostate hyperplasia (BPH). However, its steep learning curve presents a barrier to widespread adoption by urologists, and availability of proctorship has its own challenges. We present our experience on the independent learning curve of a single surgeon, highlighting the feasibility and safety of this approach.

Methods: A single-surgeon’s HoLEP experience between March 2023 to 2024 was reviewed. The surgeon’s learning process involved reviewing extensive online videos, complemented by visiting an expert’s centre. Parameters related to safety, surgical efficiency and functional outcomes were collected. Patients were compared in consecutive groups of 10 (Group 1 - 9). Enucleation ratio efficiency (EE) is defined as enucleated prostate volume (PV) (g) / pre-operative PV (g) / enucleation time (min). Overall surgical efficiency is defined as enucleated PV (g) / enucleation and morcellation time (min).

Results: 84 patients were included in this study, with a mean age of 72 (SD = 6) years old and mean PV of 76g (SD = 39). Mean length of hospital stay was 1.07 days (SD = 0.82). Median length of follow up was 3 months (SD = 3). There was chrono-logical improvement in overall surgical efficiency between Groups 1 and 9 (0.39 vs 0.64, p < 0.05), and EE (0.007 vs 0.014, p < 0.05) (Fig 1), plateauing after 40-50 cases at 0.011 g/g/min.
There was 1 conversion to TURP and 1 requiring repeat surgery for inadequate tissue removal. There was 1 case of 30-day Clavien Dindo III complication. Incidence of urinary incontinence at 1 month was 38% (9.5% SUI, 11.9% mixed), improving to 17% at 4 months (4.2% SUI, 2.1% mixed). International Prostate Symptom Score (IPSS) and urinary peak flow at baseline versus 4 months postoperatively was 18.59 vs 8.21 (p < 0.05) and 8.01 vs 14.32 ml/s (p < 0.05) respectively.

Conclusions: Proctorship availability poses a challenge to surgical training, and often logistical and economic considerations are sustainable only with good industry support. Our experience demonstrates that learning HoLEP independently is feasible with comparable safety and functional outcomes, but requires a longer learning curve.

Funding: None.

MP15-16 “High Energy” Enucleation of the Prostate – A New Way to Improve Thulium Fiber Laser Enucleation

Alim Dymov1, Temirlan Karakotov1, Yuliya Li1, Vladimir Lekarev1, Denis Chinenov1, Leonid Rapoport1
1Institute for Urology and Reproductive Health, Sechenov University

Presented By: Alim Dymov, MD, PhD

Introduction: Ex vivo study on fresh pork kidney has been conducted in order to assess the performance of different laser settings. It has been shown that the laser settings of 4J x 10Hz demonstrated the highest mechanical dissection grade while lowest carbonization level with comparable to standard settings (1, 5J x 40Hz) ablation depth and less prominent coagulation width. Based on the results obtained in the experimental study the clinical evaluation of efficacy and safety of high energy enucleation was started.

Methods: The study was approved by the Local Ethics Committee of Sechenov University. Patients with BPH were enrolled in the study. The inclusion criteria were IPSS > 20 or Qmax < 15 ml/s. The exclusion criteria were neurogenic LUTS, urethral strictures, prostate cancer. Laser enucleation of prostate adenoma was performed using the high-energy TFL mode (FiberLase U3, IRE-Polus, Russia): 4 J 15 Hz 60 W. The laser radiation was delivered via 550 µm silica fiber. Enucleation of the adenoma was performed using the early sphincter release technique by one experienced surgeon. Functional outcomes were evaluated in 3 months follow up period. The statistical significance of the results obtained was assessed using the Wilcoxon T-test for dependent samples.

Results: 20 patients were enrolled in the study. PSA level, prostate volume according to TRUS, PVR decreased significantly 3 months after the surgery (p < 0.001). There was a significant increase in Qmax (9.8 vs 30.1) and a marked decrease in PSA level (3, 8 vs 0, 7), prostate volume (85, 2 vs 20, 1), PVR (61, 2 vs 9, 3), IPSS scores (20.2 vs 5.2) and QoL (4.6 vs 1.2). The mean operative time was 61.7 +/- 22.1 minutes. The median duration of catheterization was 48 hours. The median length of hospital stay was 72 hours. The complications, such as blood transfusion, AUR due to blood clots, ureteral orifice and bladder wall injury were not registered.

Conclusions: High-energy enucleation of the prostate adenoma is an effective and safe method of treatment. A more prominent mechanical tissue dissection, in our opinion, reduces the duration of the operation, and the decreased carbonization simplifies the identification of the correct surgical plane.

Funding: None.

MP15-17 Optimal Timing for Void Trial following Aquablation – Is there a Benefit from a Delayed Void Trial?

Jessica Pryor1, Jessica Clark1, Zafar Dalimov2, Steven Sterious3
1Temple University Hospital, 2Jefferson Einstein Hospital, 3Urologic Institute of Fox Chase Cancer Center

Presented By: Jessica Pryor, MD

Introduction: Aquablation has demonstrated efficacy in patients with prostates up to 150 grams, with a short learning curve and reliably fast operative times. Other minimally invasive surgical treatments (MIST) for BPH have recommended postoperative catheter durations, though this has not yet been defined in the Aquablation realm.

Methods: This is a multi-institutional retrospective chart review of 102 patients that underwent Aquablation from February 2019 to January 2024. We recorded prostate size, preoperative catheter dependence, and urodynamic (UDS) findings and assessed if these factors correlated with a successful primary void trial. If so, we aim to identify which patient cohort may benefit from a delayed void trial (VT), defined as catheter removal in the outpatient setting on POD3-5.

Results: Average prostate size was 81.12 grams (range: 19-250 grams). Only 16 patients (15.7%) had available UDS, with 11 (68.75%) of them having abnormal findings (detrusor overactivity or underactivity, abnormal capacity). Only one patient that failed VT had a preoperative UDS available, which was normal. There were 19 patients that were catheter or CIC-dependent with one of those patients failed primary VT. Half of this cohort was discharged home with Foley for a delayed VT. Primary VT was performed on 62.7% of patients with a 13.7% failure rate. The average prostate size of those that passed their primary VT vs. failed was 81.32 grams and 79.86 grams, respectively (p = 0.9). There were 48 patients (46.1%) that were discharged home with catheters due to either failed primary VT or intention for delayed VT. The average prostate size of those that were
discharged home with catheters was 94.6 cc. This was 13.3 cc larger than those that passed primary VT (p = 0.07).

**Conclusions:** This study failed to demonstrate any correlation between preoperative prostate size, abnormal UDS findings, and preoperative dependence on catheter/intermittent catheterization and success of postoperative VT. Patients sent for delayed VT had on average large prostates. Further research with a larger patient cohort may better elucidate any benefit to extra catheter time.

**Funding:** None.

**MP15-18** Assessing the Outcomes of a Complete (360 Degree) Circumferential Vesicourethral Anastomosis at the Time of Robot-Assisted Simple Prostatectomy - a Single-Center Comparative Analysis

Isaac Palma-Zamora1, Mohammad Awad2, Eshan Joshi1, Andrew Murphi1, Jeffrey Gahan1

1UT Southwestern Medical Center

**Presented By:** Isaac Palma-Zamora, MD

**Introduction:** After enucleating the prostate, techniques to reconstruct/close the prostatic fossa in robot-assisted simple prostatectomy (RASP) aim to enhance hemostasis, reduce post-operative dysuria, and provide a better path in case catheter reinsertion is needed. The complete 360° circumferential vesicourethral anastomosis (360VUA) theoretically offers such benefits, yet no comparative study has confirmed these benefits.

**Methods:** A retrospective comparative study of outcomes of two groups was performed on 70 patients who underwent RASP with 360VUA and 70 before its adoption. Data were collected from December 2018 to May 2023. Our primary outcome was postoperative length of hospital stay. Secondary outcomes included postoperative clot retention, blood transfusion, subjective and objective improvements in urine flow, and development of urinary incontinence.

**Results:** The mean age of patients was 70.6 years old, and the prostate size was 135.8gm. Preoperative characteristics were similar between the two groups except for a higher prevalence of preoperative retention in the VUA group (54% vs 31%, p = 0.006). The operative time was on average 8 minutes longer in the 360VUA group (166 vs 158 minutes, p = 0.213). One patient in the 360VUA group developed postoperative clot retention compared to 5 in the group without 360VUA (p = 0.095). Two patients underwent blood transfusion in the group without 360VUA, and none in the 360VUA group (p = 0.154). Patients in the 360VUA group had a shorter hospital stay (27.3 vs 33.1 hours, p = 0.047). No significant differences in postoperative urinary parameters or development of stress urinary incontinence. More 360VUA patients developed urge urinary incontinence (UUI) (9 vs 1, p = 0.009), although all these patients had notable storage symptoms preoperatively. Multivariate analysis revealed a trend for shorter hospital stay with 360VUA (p = 0.062).

**Conclusions:** Performing a 360VUA during RASP may allow for an earlier hospital discharge in patients undergoing RASP, without adding significant operative time. There may be improvements in hemostasis leading to reductions in clot retention and blood transfusion if a 360VUA is performed, although a larger study is needed to detect a benefit. Performing a 360VUA may lead to more postoperative UUI, although this may be limited to patients with pre-existing storage symptoms.

**Funding:** None.

**MODERATED POSTER SESSION 16: LAPAROSCOPIC AND ROBOTIC NEW TECHNOLOGY**

**MP16-01 Prostatectomy with the Hugo™ Robotic-Assisted Surgery System: the First Surgical Study in Korea with an Emergent Technology**

Chang Wook Jeong1, Cheol Kwak1, Woon Kwon2, Jin-Young Jang1, Jacklyn Woods3, Sylvain Anselme3, Fabio Pradella1, Yewon Lee4, Michelle Kim3, Sol Kwon4, JinKyung Jeon1, So-Jeong You1

1Seoul National University Hospital, 2Seoul National University Hospital, Medtronic Inc., 3Medtronic Korea Ltd.

Presented By: Chang Wook Jeong, MD, PhD

**Introduction:** After the patent on the da Vinci surgical system ended in 2019, several manufacturers worldwide began to release their own Robotic-Assisted Surgery (RAS) platforms. One of those emergent devices was Medtronic’s Hugo™ RAS System (Fig. 1), introduced in the European Union in 2022. The aim for this surgical study was to evaluate the feasibility and safety of the novel Hugo™ RAS System for prostatectomy in the first Korean surgical study.
Methods: This study was a prospective, single-center, single-arm, confirmatory clinical study conducted at Seoul National University Hospital where 20 radical prostatectomies were performed. To evaluate the safety and performance of the Hugo™ RAS System the incidence of conversion to laparoscopy or open surgery, major complication (Clavien-Dindo Grade ≥ III) rate, overall complication rate, readmission rate, and reoperation rate were evaluated. All parameters were assessed within 30 days post-procedure. Any device deficiencies encountered during our initial experience and device data such as setup, console, and operative times were also reported.

Results: We confirmed that our trial achieved the primary objective, with no conversions to other types of surgery due to serious system malfunction and with no major complications within 24 hours post-procedure. The 20 consecutively enrolled patients had a median age and BMI of 69.0 years old and 24.7 kg/m2, respectively. The overall complication rate was 25.0% (5/20 patients), readmission rate was 5.0% (1/20 patients), and the reoperation rate was 0.0% (0/20 patients). There were no major complications. None of the complications that occurred were caused by the Hugo™ RAS System. The median estimated blood loss was 200mL. The median setup, console, and operative times were 18.0, 110.5, and 147.0 minutes, respectively. The device deficiency rate was 50% (10/20 patients), but all device deficiencies were minor, quickly resolved, and judged to present no risk to the patient.

Conclusions: Based on our initial experience with the Hugo™ RAS System, prostatectomy is feasible and safe. This trial is registered with ClinicalTrials.gov (NCT05715827). The Hugo™ RAS System received approval from the Ministry of Food and Drug Safety (MFDS) of Korea in February 2024.

Funding: Medtronic Korea Ltd.

Table 1: Perioperative outcomes

<table>
<thead>
<tr>
<th></th>
<th>Multi-Port Robot (N=10)</th>
<th>Single-Port Robot (N=10)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operative time</td>
<td>Median [IQR, Max]</td>
<td>166 [90.0, 339]</td>
<td>166 [118, 339]</td>
</tr>
<tr>
<td>Estimated blood loss</td>
<td>Median [IQR, Max]</td>
<td>150 [20.0, 500]</td>
<td>125 [20.0, 790]</td>
</tr>
<tr>
<td>Intraoperative blood transfusion</td>
<td>Yes</td>
<td>1 (10%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>31 (100%)</td>
<td>31 (100%)</td>
</tr>
<tr>
<td>Intraoperative complications</td>
<td>Yes</td>
<td>1 (10%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>31 (100%)</td>
<td>31 (100%)</td>
</tr>
<tr>
<td>Hospital stay</td>
<td>Median [IQR, Max]</td>
<td>2.00 [1.00, 12.0]</td>
<td>2.00 [1.00, 3.0]</td>
</tr>
<tr>
<td>Ischemia time</td>
<td>Median [IQR, Max]</td>
<td>12.0 [0.43, 3.0]</td>
<td>20.0 [12.0, 46.0]</td>
</tr>
<tr>
<td>Off-clamp</td>
<td>No</td>
<td>2 (2.0%)</td>
<td>2 (2.0%)</td>
</tr>
<tr>
<td></td>
<td>Positive</td>
<td>2 (2.0%)</td>
<td>3 (0.7%)</td>
</tr>
<tr>
<td>Complications within 30d</td>
<td>No</td>
<td>56 (93.9%)</td>
<td>30 (96.8%)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>6 (9.7%)</td>
<td>1 (0.2%)</td>
</tr>
</tbody>
</table>

Introduction: The use of single-port (SP) robotic surgery within the urology community has been rising despite a lack of comparative effectiveness with the standard approach using the multi-port robotic system. We compared perioperative outcomes between SP and multi-port (MP) robot-assisted partial nephrectomy (RAPN).

Methods: Data from all SP and MP retroperitoneal and transperitoneal RAPN from August 2009 to February 2024 were obtained from our prospectively maintained institutional database. Propensity-score matching (PSM) was performed using ‘1:2 nearest neighbor’ matching method (discard = control group, caliper = 0.2). Patients were matched for age, gender, race, BMI, Charlson score and tumor size. Our primary outcome was to compared perioperative outcomes between the SP and MP group.

Results: A total of 839 RAPNs were performed by 2 surgeons during our study period. After PSM, 31 SP cases were matched to 62 MP cases (table 1). In the SP group, 68% of the cases were done via a retroperitoneal approach, in contrast to the MP group where 16% were retroperitoneal. One case was converted to open surgery in the MP group. The operative time was longer in the SP group compared to the MP group (186 min vs 163 min, p-value: 0.01). Patients who underwent SP-RAPN had a shorter warm ischemia time (12 min vs 20 min, p-value: < 0.001). Three SP cases were performed off-clamp however overall, the MP group had a shorter warm ischemia time (12 min vs 20 min, p-value: < 0.001). In the SP group, there were 3 cases with positive margins, all of which were anterior or upper pole tumors performed retroperitoneally.

Conclusions: Based on our initial experience, SP RAPN appears to be a safe and feasible approach for cT1 tumors with perioperative outcomes comparable to those of MP RAPN. However, SP RAPN performed early in the learning curve has a longer operative and warm ischemia time than MP RAPN performed by an experienced team.

Funding: None.

MP16-02 Initial Experience with Single-Port Robot-Assisted Partial Nephrectomy: A Comparison with Multi-Port Partial Nephrectomy

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Presented By: Andrew A. Wagner, MD

MP16-03 Single-Port Extraperitoneal Robotic Kidney Transplantation: Early Experience of Novel Technique, Learning Curve and Functional Outcomes

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Methods: From 2020–2023, we performed 359 robotic surgery cases across various specialties between 2013 to 2023. Since April 2023, we started using Hugo-RAS for our urological cases. We performed all robotic surgeries according to the indications for robotic surgery. We compared the 15 cases of radical cystectomy performed on Hugo to the last 15 cases performed on da-vinci. We found no significant difference in operative parameters and postoperative outcomes on both systems.

Results: We performed 359 cases on da-vinci platform from 2013 to 2023. Since April 2023, we started using Hugo-RAS for our urological cases. We performed all robotic surgeries according to the indications for robotic surgery. We compared the 15 cases of radical cystectomy performed on Hugo to the last 15 cases performed on da-vinci. We found no significant difference in operative parameters and postoperative outcomes on both systems.

Conclusions: SP EP-KT reflects a safe and effective minimally invasive alternative for kidney transplantation, allowing for enhanced perioperative outcomes, whilst maintaining favorable postoperative graft function.

Funding: None.
Conclusions: The experience of first 100 cases made us to conclude that a trained robotic surgeon on Hugo RAS can replicate all the functional skills for urological surgery as on da-vinci with similar operative and postoperative outcome. the only challenge is adaptation to this newer platform.

Funding: None.

MP16-06 A Machine Learning Architecture for Segmentation and Feature Extraction of Laparoscopic Tools to Identify Surgery Phases

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Presented By: Rafael Palierini, BSc

Introduction: Laparoscopy is a minimally invasive surgical technique that can be used in the diagnosis and treatment of many urological diseases. It replaced the open approach for most surgeries, due to many advantages such as faster surgical recovery, shorter hospital stay, less pain and better aesthetic results. However, laparoscopy demands a steep learning curve. In laparoscopy, a video camera captures images of the internal organs and the surgical instruments, generating visual data that can be used in automatic medical assistance tools. Deep learning in medical decisions is a valuable tool for medical image detection and recognition. For laparoscopic surgeries, the surgery step identification could be used to develop automated surgery robots and surgical training simulators. Previous publications used deep learning in surgery for surgical steps classification. However, these publications did not evaluate the surgical instruments position and orientation on the video images. This project presents a deep learning architecture that combines the segmentation of surgical instruments and their feature extraction to identify the surgical steps of laparoscopic surgeries.

Methods: In this project, we introduce an architecture based on Mask R-CNN, Segment Anything and Long Short-Term Memory (LSTM). The Mask R-CNN is used to identify the instruments present on the frame as well as the bounding boxes of each tool. On the other hand, the Segment Anything is used to segment the tools inside the bounding boxes. Geometric cues are extracted from the segmentation using a skeleton algorithm. Furthermore, those features are concatenated in a vector format to represent the content of the frame. Those vectors are fed forwarded to a LSTM neural network which can learn the context from a sequence and make a classification of the surgery phase based on the frame vectors.

Results: The architecture achieved a minimum and maximum instruments classification accuracy of 86.06% and 94.25%, respectively. On the surgery step recognition, the architecture was unable to identify the last surgery step and achieved a minimum and maximum accuracy of 77% and 95%, respectively.
Conclusions: Our results are comparable to the “state of the art” results and they indicate that it is possible to achieve good results by extracting relevant features without forwarding the whole frame to the model, reducing the complexity of the network. The proposed architecture was not able to correctly classify the last step of the surgery and more research is needed on feature extraction field to improve the quality of the vectors forwarded to the neural network.

Funding: None.

MP16-07 A Quality Analysis of Laparoscopic Donor Nephrectomy-related Information disseminated by Artificial Intelligence Chatbots Using Validated Tools

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Presented By: Matthew Wainstein, MS

Introduction: The majority of live donor nephrectomies are performed using minimally invasive laparoscopic techniques. Patients considering live kidney donation are likely to use Artificial intelligence (AI) chatbots to seek information about laparoscopic donor nephrectomy. ChatGPT (OpenAI) and Gemini (Google) are two of the most popular AI chatbots on the internet. Despite their potential influence over prospective donors, the ability of AI chatbots to provide quality information is under investigated. This study aims to assess and compare the quality of laparoscopic donor nephrectomy-related information provided by ChatGPT and Gemini.

Methods: A set of questions regarding technical and post-surgical aspects of laparoscopic live donor nephrectomy was generated. The questions were then typed into ChatGPT and Gemini, and the responses were recorded and assessed for eligibility criteria. Two validated tools for evaluating health information, the DISCERN and PEMAT-P tools, were utilized by two reviewers to assess information quality, understandability, and actionability. The scores were compared for consistency using interrater reliability.

Results: A total of 23 of 24 screened responses were included in the study. The average length of each response was 195 and 293 words for ChatGPT and Gemini, respectively. 19 of 24 responses recommended further discussion with a physician, while only 3 responses (each from Gemini) disclosed that it cannot provide medical advice. Gemini frequently provides images and supplemental links, while ChatGPT does not. Neither chatbot provides any sourcing of its information. Gemini performed slightly better than ChatGPT on DISCERN and PEMAT-P actionability (P <0.05), while both chatbots performed similarly on PEMAT-P understandability (Figure 1).

Conclusions: AI chatbots, ChatGPT and Gemini, effectively provide understandable information on laparoscopic donor nephrectomy. However, Gemini provides slightly higher quality information with more actionable guidance. AI chatbot communicative capabilities in transplant related information prompts further investigation into its integrative and educational efficacy.

Funding: None.

MP16-08 Early Experience of Supine Lower Anterior Retroperitoneal Approach by da Vinci SP

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Presented By: Hoyoung Bae, MD

Introduction: The da Vinci Single-Port (SP) robotic platform makes operation feasible in limited space such as the retroperitoneum. Most retroperitoneal approach are done by the patients placed in the lateral decubitus approach and by the multiport robot. This study is to assess the feasibility and safety of a supine lower anterior retroperitoneal approach to renal and adrenal diseases with the da Vinci SP platform. 1

Methods: The patient is placed in a supine position and a 3cm vertical incision is made about two-thirds lateral in the line connecting the umbilicus and the anterior superior iliac spine. By finger dissection, the retroperitoneal space is developed for the da Vinci SP access port and a 12mm trocar is placed in the lower part of the same incision. Without any use of a balloon dissector, the retroperitoneal space is secured by gas insufflation, only. After docking, the retroperitoneal tissue is dissected to reveal the psoas muscle and then the ureter, the inferior renal pole and
the hilum can be identified. Data collected included demographics, operative time, warm ischemic time (WIT), estimated blood loss (EBL), length of hospital stay (LOS), pathology of the specimen, pain score by numeric rating scale (NRS) of postoperative day 1 (POD #1) and day of return of bowel function. All operations were performed by the same robotic surgeon (S.H.C.).

**Results:** Between December 2023 and April 2024, 13 patients underwent the above-mentioned approach for renal cancer, adrenal tumor and huge renal cyst. Ten patients underwent partial nephrectomy (PN) and two each underwent adrenalectomy and renal cyst decortication. One patient had simultaneous renal and adrenal tumor at the same kidney. Mean age was 58 yr with 8 male and 5 female patients. Median operative time was 193 minutes and average EBL was 414cc (20-2000). Median LOS was 7.3 days, median NRS on POD #1 was 2.5 (2-4) and median day of return of bowel function was 1.85. Among the renal tumor, 8 were renal cell carcinoma and 2 were angiomyolipoma. Median size of the mass was 3.76cm (1.2-9.5), average WIT was 21 minutes (12-39) and no positive surgical margins. There was no conversion to open surgery and no post-operative major complications and no patient was readmitted.

**Conclusions:** The supine lower anterior retroperitoneal approach using the da Vinci SP platform is feasible and safe. Larger studies and comparative studies are needed to confirm this approach.

**Funding:** None.

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**MP16-09 Robotic-assisted Partial Nephrectomy – Initial experience with the HugoTM Robotic-Assisted Surgery platform**

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¹University of Toronto, ²University of Sydney, ³University of Calgary

Presented By: Adam Bobrowski, MD

**Introduction:** Robotic-assisted surgery (RAS) has been a vital modality in the armamentarium of minimally invasive surgeons over the past 2 decades. The HUGOTM RAS system (Medtronic®) is one of the most novel and exciting platforms introduced to the market. Consequently, there is little comprehensive clinical data pertaining to the surgical outcomes of this system. The aim of this study is to describe our early experience performing robotic-assisted partial nephrectomy (RAPNx) on the HUGOTM RAS system.

**Methods:** We conducted a retrospective review of all patients who underwent a RAPNx with the HUGOTM RAS platform between April - December 2023 at the University Health Network. All procedures were performed by a single experienced surgeon using a 3-arm transperitoneal approach. Anesthetic, operative and pathologic reports for each patient were assessed to collect pre-, intra- and post-operative variables.

**Results:** Eleven patients were included. The mean age was 51 years, 45% (5/11) were female, and the majority (63.6%) had a right-sided mass. Mean tumor size was 2.9 cm. Mean warm ischemia time was 18.3 min, and mean estimated blood loss 179 mL. Mean robot docking time was 232 s (range 120 – 389 s), mean total console time was 93 min (63 – 137 min), and mean total operative time was 165.6 min (123 – 229 min). There were no intra-operative complications, and all cases were completed successfully. Pathology review demonstrated that most tumors were a clear cell variant (72.7%) and staged as pT1a (81.8%). All margins were negative. One patient sustained a laparoscopic port site infection. The new platform requires some considerations around port placement, arm docking, bedside assisting, and console functions.

**Conclusions:** This is the first North American case series utilizing the HugoTM RAS system for RAPNx. Our preliminary findings underscore that while the platform does have novel elements in design and function that require slight adjustments to the usual RAPNx setup, this platform is safe and effective for performing RAPNx with comparable outcomes to incumbent robotic platforms.

**Funding:** N/A.

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**MP16-10 Novel Nociception Monitoring in Urological Laparoscopic and Robotic Surgeries – A Randomized Prospective Trial**

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Presented By: Ilona Pilosov Solomon, MD

**Introduction:** The Nociception Level (NoL) is an innovative device designed to objectively measure a patient’s pain non-invasively during surgeries conducted under general anesthesia by combining the patient’s autonomic signals into a single index. On a scale of 0 to 100, the higher the score the greater the perceived pain, with optimal pain control defined within the range of 10 to 25. The objective of this trial is to assess the efficacy of NoL-guided opioid administration in the context of laparoscopic and robotic urological procedures.

**Methods:** This randomized prospective trial in a single high-volume institution enrolled participant who underwent laparoscopic or robotic partial nephrectomy, adrenalectomy, nephroureterectomy, and radical prostatectomy, under propofol/remifentanil-based anesthesia. The NoL index was continuously monitored throughout all surgical steps. In the study arm, remifentanil administration was guided by the NoL index, while in the control arm, it was determined based on hemodynamic parameters. The primary endpoint of this study was the intraoperative remifentanil dosage adjusted to weight for both arms. Secondary endpoints encompassed the visual analog score (VAS) at 30- and 60-minutes post-surgery, morphine (MO) consumption in the post-anesthesia care unit (PACU), as well as the median VAS on post-operative day (POD) 1 and POD2. Additionally, the study assessed the post-operative requirement of analgesics.

**Results:** In the final analysis, 37 patients were included. The median intraoperative NoL index was 18 in the NoL-guided arm and 20 in the control arm (p = 0.33), with a mean remifentanil dosage of 2.5 mg/kg and 1.5 mg/kg, respectively (p = 0.67). The mean morphine (MO) consumption in the post-anesthesia care unit (PACU) was 3.3 mg among NoL-guided patients and 2.4 mg in the controls (p = 0.49). Median 30 and 60-minute postoperative Visual Analog Scale (VAS) scores were 3 and 2 in the NoL-guided group vs. 4 and 2 in the controls (p = 0.37 and p = 0.71), respectively. Median postoperative VAS on post-operative day (POD) 1 and POD2 were 2 and 1 in both arms (p =
0.44, p = 0.64), respectively. Mean post-operative analgesic consumption was also similar in both arms (dipyrone 1.2 and 1.7 mg, p = 0.41; paracetamol 0.9 and 0.6 mg, p = 0.48, respectively).

**Conclusions:** NoL index-guided anti-nociception suggests improved pain control requirements in urologic laparoscopic and robotic procedures, but a larger cohort is needed to prove whether this is translated into a reduction in intra and postoperative pain or analgesic consumption when compared to anti-nociception based on hemodynamic parameters.

**Funding:** Non.

**MP16-11 Advantages of three-dimensional laparoscopic technique in the treatment of prostate cancer**

Fuad Guliyev¹, Elnur Mirzeyev¹

¹National Center of Oncology

**Presented By:** Fuad Guliyev, MD, PhD, FEBU, DMs

**Introduction:** In recent years the interest to the topic of research for some studies. Herein we introduced the results of comparison of these two visualization techniques.

**Methods:** A total number of 72 patients were included into the study. All patients underwent transperitoneal laparoscopic prostatectomy without lymphadenectomy and were operated by the same surgical team. The patients were divided and analyzed into 2 groups. The two- and three dimensional laparoscopic prostatectomies were performed in 28 (Group I) and 44 (Group II) patients, respectively. The perioperative parameters for both groups were evaluated. Differences with a significance level of 95 were considered statistically significant (p<0.05).

**Results:** The average age of patients in groups I and II was 64.8±0.8 (54-72) and 67.2±0.5 (53-74) years, respectively (p = 0.086). Patients in group I had a higher body mass index compared to group II. However, this difference had no statistically significant confirmation (p = 0, 122). No significant differences between the study groups in relation to the total prostate-specific antigen and Gleason score were noted (p = 0.134 and p = 0.068, respectively). Mean operative time for Group I was 82.8±12.4 (72-134) minutes, while for Group II it was 96.6±21.6 (84-156) minutes (p = 0, 012). Comparative analysis for intraoperative blood loss, urethrovaginal anastomosis and hospital stay demonstrated statistically nonsignificant values (p < 0, 05).

**Conclusions:** Three-dimensional laparoscopy resulted in significantly less surgical time, blood loss and hospital stay. A three-dimensional perception and feeling of anatomic depth allow to decrease the time of urethrovaginal anastomosis.

**Funding:** No interest conflict.

**MP16-12 Burst Pressure Testing for Evaluation of Four Different Ultrasonic Dissectors**

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**Presented By:** Xiang Wang, PhD, MD

**Introduction:** Ultrasonic dissectors are widely used to transect, dissect and coagulate tissue in general, urologic, thoracic, gynecologic, thyroid, breast, plastic, pediatric, exposure to orthopedic structures (such as spine and joint space), sealing and transection of lymphatic vessels, and other open or laparoscopic procedures. When assembled, the dissector can be used for tip coagulation, blunt hemostasis, sharp transection and tissue dissection. The objective of this study was to characterize seal burst pressure for the four different dissectors when sealing on vessels up to and including 7 mm.

**Methods:** Excised fresh porcine kidney arteries were used for this study due to similarity in size and composition to humans as well as quantity of accessible arteries. The dissectors can be used to coagulate isolated vessels up to and including 7 mm in diameter, using the MIN button. A sample size of 34 samples per combination was calculated. A sample size of 34 samples per combination provides 90% power of detecting a difference of 240 mmHg which was 2 times of the nominal systolic blood pressure. This sample size was increased to 36 samples to assure that equal numbers of samples were obtained within each vessel size category (small, medium, large) and on each individual device. Therefore, a total of 36 samples was available for analysis for each combination/group. Each seal event resulted in two sealed vessels, and each of them was burst. The detailed sample size is tabulated in the following table.

**Results:** In the large vessel category, the burst pressures of SASD14 are statistically lower than that of SASD45 (p < 0.05); and no statistical difference between other two groups (p < 0.05). In the medium vessel category, the burst pressures of SASD23 and SASD36 are statistically lower than that of SASD45 (p < 0.05), and there are no statistical differences between other two groups (p > 0.05). In the small vessel category, there are no statistical differences between every two groups (p > 0.05). In the full size category, there are no statistical differences between every two groups (p > 0.05).

**Conclusions:** The results showed that no statistical differences among four different dissectors assembled with SA10 Portable Controller for the overall burst pressure data, so SASD 36 with the most commonly used shaft length in clinic is selected as the representative catalogue.

**Funding:** No interest conflict.

**MP16-13 Comparison of the Hemostasis Performance of Two Different Energy Devices in Swine Model**

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**Presented By:** Chris Hu, PhD

**Introduction:** The objective of this study was to evaluate the hemostasis performance of two different energy devices, advanced dissector developed by Shanghai Sanits Sages Surgical in swine model when used on vessels up to and including 7mm and tissue bundles during general surgical procedures. The acute animal test was mainly for evaluating the immediate hemostasis performance, efficiency and thermal spread when comparing against the control devices.

**Methods:** The test device was indicated for the coagulation of vessels up to and including 7 mm in diameter. Considering the performance difference might be due to the different vessel sizes, the vessel diameter range (≤7mm) was divided into 3 vessel size categories (0mm<Small/≤3mm, 3mm<Medium/
MP16-14 The Impact of Single-port Robotic Surgery: A Survey Among Urology Residents and Fellows in the United States

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Presented By: Riccardo Autorino, MD, PhD

Introduction: To investigate the perception and opinions on single port (SP) surgery among urologist in training — residents and fellows — in the United States.

Methods: A 34-item online survey was distributed to residency and urological clinical fellowship programs in the United States. The questionnaire encompassed various domains such as baseline characteristics, hospital settings, SP training, surgical perceptions, patient perceptions, and future expectations.

Results: The survey included 156 respondents. The median respondent age was 31 years (IQR: 29-33), predominantly male (73.1%). Among them, 78.8% were residents and 21.2% were fellows. All participants had access to a multi-port (MP) robotic platform, with 67.9% also having SP platforms; more than half had SP for over two years. At their centers, 41.5% conducted fewer than 25 SP procedures annually, while 17.9% performed over 100 SP procedures per year. Access to a robotic SP simulator was available to 18.6%, but only 14.4% had undergone formal pre-clinical training. Preference trends showed a prioritization of MP surgery over SP, reported by 68.3% of respondents at their centers. The introduction of SP surgery was perceived to negatively affect training by 31.4% of respondents, primarily due to a decrease in hands-on experience (87.8%). The learning curve for SP was considered steeper than MP by 57.7%, with 41.5% reporting a reduction in hands-on opportunities due to SP. Perceived benefits of SP surgery included enhanced cosmesis (66%), improved post-operative pain (46.8%), reduced narcotic usage (32.1%), and shorter hospital stays (32.7%). Only 12.2% stated that SP has no advantages. The most “appealing” SP procedures reported were retroperitoneal partial nephrectomy (67.3%), followed by transvesical simple prostatectomy (62.8%), pyeloplasty (39.1%), and extraperitoneal radical prostatectomy (32.7%). The impact on clinical outcomes and patient satisfaction was considered “neutral” by the majority of respondents, with 70.8% and 74.5% respectively expressing this view. Future expectations reflected a 63.4% anticipation of increased SP platform use, though 32.1% dismissed the need for specific training. The influence of SP expertise on job prospects post-training was deemed neutral by 36.5% and of minimal importance by 29.5%.

Conclusions: The survey indicates mixed perceptions of SP surgery among US trainee urologists, with recognized benefits but concerns about its impact on training and adoption rates.

Funding: None.


Aideen Madden1, Oliver Traxer1, Lucien Vanpoperinghe1, Paula Calugaru1, Luigi Candela1, Ahmed Alanazi1, Johan Cabrera1, Alberto Quara1

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Presented By: Aideen Madden, FRCS

Introduction: The Ily™ robotics system (Sterlab, Sophia Antipolis, France) offers an adjunct to the standard flexible ureteroscopy by offering remote control of a flexible ureteroscope using a tele-console wireless system, similar to a PlaystationTM video-games console. Previous studies have demonstrated an association between prior video gaming experience and improved laparoscopic and robotics skills. We aimed to evaluate the initial learning curve for the robotics platform when applied to a benchtop kidney training model among students and urology surgeons.

Methods: An initial questionnaire was completed by participants, detailing basic demographics, operative and videogame gaming experience. In part one, all participants performed two simple timed tasks using an Ily™ mounted single-use flexible ureteroscope. In part two, the surgeon group were also asked to repeat both tasks by conventional ureteroscopy. All tasks were completed three times. A subjective assessment of comfort and intuitiveness was then made and a NASA Task Load Index completed.

Results: There was a total of 28 participants, 14 surgeons and 14 students. Among the students, 64% (n = 9) had videogame experience. Mean inspection time for all calyces was 185sec (SD 80); 133sec (SD 42); 121sec (SD 71). For non-gamers (n = 5), the average inspection time at each attempt was longer at 221sec (SD 97); 134sec (SD 35); 143sec (SD 68) respectively, but this did not reach statistical significance. Among surgeons, 57% (n = 8) had videogame experience. The average time to inspect all calyces with three attempts was 126sec (SD 95); 98sec (SD 40); 107sec (SD 71), respectively. For non-gamers
the mean inspection times was longer at 150sec (SD 73); 114sec (SD 82); 111sec (SD 47), respectively. With both groups combined, the average time advantage gained by gamers on first attempt was 25 seconds, narrowing to 6 seconds on third attempt. Surgeons trial speeds were significant faster by hand-held compared to robot-assisted flexible ureteroscopy over the first three attempts: by 103 seconds, 81 seconds, and 82 seconds respectively (p < 0.05 for all). Even among surgeons, despite a trend towards a greater time difference on first attempt, there were no statistically significant differences found in manipulation skills between those who had gaming experience and those who did not.

Conclusions: These early results do not confirm that ex- or current-video gamers have a significant advantage in time to perform robotics-assisted ureteroscopy. Any advantage conferred to ex- or current-gamers may be rapidly overcome, but a greater sample size is needed to confirm this.

Funding: No funding support to report.

**MP16-16 Adherence to American Society of Clinical Oncology (ASCO) Language of Respect (LoR) Guidelines in 2023 WCET Meeting Robotic Abstracts**

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Presented By: Jonathan Alcantar, MD

**Introduction:** The ASCO LoR guidelines were created to promote the use of patient-centered language in presentations. These guidelines provide a clear set of rules that aim to prevent use of dehumanizing, disrespectful, or blaming language. In this study, we evaluated robotic abstracts from the 2023 WCET meeting on their adherence to the LoR guidelines.

**Methods:** 2023 WCET meeting robotic abstracts were evaluated by 2 reviewers. The reviewer tallied the number of non-compliant violations each abstract had for 3 directives: 1) “Do not blame patients,” 2) “Respect the role of the patient,” and 3) “Do not dehumanize patients.” Meetings were held among the reviewers to reach a consensus tally for each abstract. Univariate and multivariate logistic regression was performed to identify factors associated with non-compliance of abstracts with guidelines.

**Results:** We reviewed 172 robotics abstracts out of 814 abstracts presented at the 2023 WCET meeting. Most of the abstracts were oncologic (52%) or non-oncologic - robotics (38%). A majority were clinical research (97%), single institution (57%), and had a first author affiliated with a native English-speaking institution (62%). 64% were posters, 36% were video abstracts. In total, 41 (24%) of abstracts contained at least 1 non-compliant statement. “Do not dehumanize patients” was the most prevalent violation, found in 17% of abstracts, then “Do not blame patients” in 7%, and “Respect role of the patient” in 4%. Univariate analysis identified poster abstracts had higher odds violating any of the 3 guidelines (OR 3.52, CI 1.50–8.81, p = 0.004), primarily with statements that “Dehumanize patients.” (OR 4.27, CI 1.45–11.8, p = 0.0062). Multivariate analysis also found oncologic surgery abstracts were less likely to “Blame patients” than non-oncologic abstracts (OR 0.26, CI 0.07–0.95, p = 0.04).

**Conclusions:** A quarter of WCET 2023 robotic abstracts analyzed contained > 1 statement that was non-compliant with ASCO LoR guidelines. Video abstracts and those focused on oncology were the most compliant with the guidelines. Future efforts, such as incorporating LoR into the WCET abstract submission guidelines, and educating the researchers about these guidelines are encouraged.

**Funding:** None.

**MP16-17 Prevalence of Neuromuscular Disorders among Urologists: Impact of Surgical Modality on Pain Type and Duration**

Eric J. Regele¹, Raymond Pak¹, Hamid Norasi², Ram A. Pathak¹, M. Susan Hallbeck²

¹Mayo Clinic Florida, ²Mayo Clinic Rochester

Presented By: Eric J. Regele, MD

**Introduction:** Physical and workplace demand on surgeons is an understudied field. The primary objective of this study was to investigate urology surgeons’ intraoperative workload, wellbeing, and neuromusculoskeletal disorders (NMSDs) and the potential associations with surgical modalities.

**Methods:** Electronic surveys were sent to urology surgeons across several sites of a large quaternary academic hospital system to record surgeons’ intraoperative physical and mental workload (from 0-10), NMSDs (yes/no questions), and the practice time they spent on different surgical modalities: open, laparoscopic, endoscopic, and robotic approaches.

**Results:** Nineteen surgeons (34%) completed the survey: 15 males (79%), age (mean (SD)) 46.4 (10) years, BMI=24.6 (3.5), and the number of years being an attending surgeon = 12.7 (9.0) years. Nine (47%) reported at least one NMSD. The reported NMSDs included neck problems (3 participants), hip arthritis (2 participants), tennis elbow (lateral epicondylitis), wrist/forearm tendonitis, shoulder problems such as arthritis/inflammation, cervical disc issues, shoulder pain (tendonitis), lumbar disc issues, knee osteoarthritis, trigger finger, plantar fasciitis, thumb joint arthritis, and foot pain. 57.9% of the surgeons reported they had experienced or were experiencing work-related neuromusculoskeletal pain and 38.9% of the surgeons believed physical discomfort/pain will influence their ability to perform surgical procedures in the future. The reported current body-part discomfort was 21.1% in head and neck, 36.8% in upper extremity, 26.3% in torso/back, and 21.1% in lower extremity. Using a non-parametric model, significant associations exist between surgical modality and intraoperative physical demand, NMSDs, and current/past work-related neuromusculoskeletal pain.

**Conclusions:** Urologic surgeons are exposed to high prevalence of NMSDs, body part pain and discomfort, and work-related neuromusculoskeletal pain, which may negatively affect their future career. It seems robotic surgery is associated with less physical demand and fewer work-related neuromusculoskeletal symptoms.
However, establishing any causal relationship between surgical modality and these symptoms needs more research.

**Funding:** None.

### MP16-18 Impact of Ergonomics on Pelvic Surgery: A Single-Institution, Tri-Site Survey on Academic Surgeon Well-Being and Sequela of Workload Demand

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**Presented By:** Eric J Regele, MD

**Introduction:** Ergonomic impact on surgeon longevity and surgeon well-being is understudied. Like other physically demanding jobs, surgery can have a significant impact on surgeon wellbeing, occupational longevity, and economics. This study aims to characterize the impact of ergonomics on pelvic surgeons.

**Methods:** A tri-site (Mayo Clinic Arizona, Florida & Rochester) internal survey was sent to all pelvic surgeons at a single enterprise. A total of 129 surgeons received an electronic anonymous survey-based questionnaire characterizing ergonomic impact on surgeon wellbeing.

**Results:** Of 129 surveys provided, 48 (32.1%) responses were completed (62.5% male, 37.5% female). Mean age, career duration, and BMI were 48.1 years old, 13.3 years, and 25.5, respectively. 39.6% were urologists, 45.8% gynecologists, and 14.6% colorectal surgeons. Dominant modality with respect to surgical approach was defined as the approach where > 10% of all surgeries were performed. The cohorts were as follows: 25% open, 18.6% robotic, 18.6% endoscopic, 14.6% laparoscopic. Dominant modality with respect to surgical approach was defined as the approach where > 10% of all surgeries were performed. The cohorts were as follows: 25% open, 18.6% robotic, 18.6% endoscopic, 14.6% laparoscopic, 16.7% had no dominant modality, and 6.3% vaginal/hysteroscopic. Average OR days/week were 2.1 and percentage of cases >3 hours were 35.5%. Twenty five percent of surgeons had baseline pain not attributed to surgery, and 100% reported acute on chronic pain exacerbation with surgery. On a scale of 1 (least) to 10 (greatest), open surgery on average was reported as the most physically demanding (6.10), followed by laparoscopy (5.55), endoscopy (3.72), and robotics (3.69). Figure 1 shows surgeon reported musculoskeletal (MSK) pain by dominant surgical modality. With the exception of endoscopic surgery (30-60 min), surgical approach was irrespective of onset of pain (1-2 hrs). 50% of pelvic surgeons noted pain will influence their ability to perform future surgery.

**Conclusions:** Ergonomics play an impactful role on surgeon wellbeing and ability to perform future surgery. 1 in 2 pelvic surgeons will report MSK pain attributed to surgery. On average, pelvic surgeons associate open and laparoscopic surgery as the most physically demanding. However, surgeons who perform robotic surgery report no MSK pain attributed to surgery. A rise in minimally invasive alternatives to open surgery may be an untoward benefit to surgeon longevity.

**Funding:** None.


Adam Bobrowski², Jason Lee¹, Antonio Finelli¹, Binzhang (William) Wu³, Chelsea Angeles³, Simon Czajkowski⁴

¹University Health Network, ²University of Toronto, ³University of Sydney, ⁴University of Calgary

**Presented By:** Adam Bobrowski, MD

**Introduction:** Using surgical video analysis for coaching and performance review is hindered by a lack of standardization and scalability. Touch SurgeryTM (TS) is an AI-powered surgical video and analytics platform that may provide a solution. We sought to validate the ability of TS to recognize the distinct operative phases of both robotic-assisted partial nephrectomy (RAPNx) and robotic-assisted radical prostatectomy (RARP) surgical videos.

**Methods:** We conducted a retrospective review of all RAP Nx and RARP cases performed between Dec 2019 – Dec 2023 at our institution that had complete video recordings uploaded to the TS platform. All surgical videos were annotated by the proprietary TS AI algorithm, providing detailed analytics on the phases of each surgery and operative times. The TS computed analytics were then compared to procedural data obtained via manual review of surgical videos (reference standard).

**Results:** A total of 52 RAPNx and 40 RARP videos were included in the study. Of RAPNx cases, the TS platform labeled all phases correctly in 82.7% of cases and no cases had >2 phases incorrectly annotated. Clinically relevant errors in phase annotation were found in only 11.4% of cases. The mean actual warm ischemia time (WIT) was 20.3 min. TS computed WIT and dictated WIT in the OR note were within 60 s of actual WIT in 85.7% and 65.7% of cases, respectively. Phase annotation improved over time, with the latest quartile of cases demonstrating better phase annotation compared to the earliest quartile of cases (p = 0.018). Of RARP cases, the TS platform labeled all phases of the RARP correctly in 57.5% of cases but only 15% of cases had >3 phases incorrectly annotated. Majority of cases (65%) had all phases starting within 2 min of the actual phase start time. Only 45% of cases had all phase durations within 3 min of the actual phase duration. A clinically relevant error in phase annotation occurred in only 12.5% of cases. Phase annotation improved over time, with the latest quartile of cases demonstrating less clinically relevant errors in phase annotation compared to the earliest quartile of cases (p = 0.028).

**Conclusions:** Our study demonstrated that the TS AI algorithm can annotate operative phases fairly accurately, better for RAPNx than RARP. For both procedures, while there were discrepancies, clinically relevant errors in automated annotation were low. The accuracy of phase duration times was

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![Image of a surgical note with a chart showing the percentage of respondents with pain by surgical modality.](image-url)
variable. The TS calculated WIT was more accurate than the
dictated times.

**Funding:** N/A.

**MP16-20 Early Termination of Clinical Trials of Robot-assisted Surgery in Urology**

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**Presented By:** Mohammed Shahait

**Introduction:** Although clinical trial data have not demonstrated the superiority of robot-assisted approaches, such techniques have become the preferred approach for certain urological procedures. Clinical trials are pivotal in advancing patient care and adopting innovative technologies like robot-assisted surgeries. Even though there are a limited number of published clinical trials focusing on the outcomes of robot-assisted surgeries in urology, we aimed to study the termination rates of these trials and the factors associated with the termination of these trials to assist researchers in optimizing the design of future clinical trials.

**Methods:** We queried clinicaltrials.gov to identify clinical trials of robot-assisted urological surgery between January 1, 2000, and concluded before December 31, 2020. The trials were categorized into two groups: “terminated” and “completed.” Descriptive and regression analyses were used to identify factors associated with early trial termination.

**Results:** We identified 42 registered clinical trials of robot-assisted urological surgery. The mean sample size was 88. Most trials were funded by universities (90.2%) and conducted in a single center setting (87.5%). Most trials were either phase II (44.4%) or phase III (33.3%). Only 1 trial had a female primary investigator. Out of 42 trials, 8 (5.25%) were terminated. The main reasons were failure to recruit (57.1%), administrative issues (28.6%), and lack of funding (14.3%). All terminated trials had a sample size of less than 35 patients (p = 0.001). A majority of trial results were not published as peer-reviewed manuscripts (76.3%). Multi-centre trials as compared to single-centre trials 33.3% vs. 3.7%; p = 0.041) and trials employing masking in their design (22.2% vs 4.17%; p = 0.012) were more likely to be published.

**Conclusions:** Robotic urology clinical trials termination was associated with smaller trial sizes, while multi-center and blinded trials were more likely to be published. The underrepresentation of female investigators was notable, emphasizing the importance of diverse leadership for future research in this area.

**Funding:** None.

**MP16-21 Patient Perspectives on Attributes of Single-Port versus Multi-port Robotic-Assisted Urologic Oncology Procedures—a Survey-Based Analysis**

Rahul Nalluri\(^2\), Trushar Patel\(^1\), Kashish Khanna\(^1\)

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**Presented By:** Rahul Nalluri, BS

**Introduction:** With the advent of single-port (SP) robotic surgery for urologic oncology procedures, there seems to be promise for a future where patients experience less post-op pain, shorter hospital stays and better cosmetic outcomes. While lesser post-op pain and shorter hospital stays with SP surgery compared to multi-port (Xi) is still contentious, the improved cosmetic outcomes seen with a SP robot are reliably preferred by patients. But research to investigate the relative importance given by patients to cosmetic outcomes in relation to other factors (cancer control, operative time, and cost) has not been performed yet in the field of robotic urology, and this present study aims to bridge that knowledge gap.

**Methods:** A descriptive quantitative observational study using a Likert scale-style survey questionnaire provided to patients (18 or older) undergoing robotic surgery for bladder, prostate or renal cancer was carried out. A single surgeon’s consecutive consenting patients (n = 7, so far) were sampled at a single clinic and the 5-minute survey was taken by the patients on site at the conclusion of their visit. The primary outcome measured was patient perspectives on SP and Xi robotic surgery with a focus on where cosmetic outcomes lie on their list of reasons for choosing one or the other surgery.

**Results:** Preliminary results were acquired from 7 patients. For data analysis, the Likert scale categories were replaced with corresponding numbers (1 = least to 5 = most) for each response. When patients were asked about the importance of cosmetic outcomes in choosing the SP robot, the mean response was 1.43 ± 0.53. Additionally, patients didn’t think incision size or incision number would matter more even if all other factors were the same between the SP and Xi robot (mean for incision size, 1.86; mean for incision number, 2.29, and SD, 1.25). When the patients were asked to rank the relative importance of different surgical outcomes, cancer control was regarded as the most important factor (mean, 4.57; SD, 0.79) and appearance was regarded as the least important factor (mean, 1.71; SD, 0.95). Appearance was also of significantly lower importance than risk of complications (alpha, 0.05; p-value, 0.04).

**Conclusions:** Together, these results suggest that cosmetic outcomes are not nearly as important as other surgical factors such as cancer control, risk of complications and pain. Consequently, using the SP robot over the Xi for cosmetic outcomes may not be in the best interest of the patient, and more research needs to be done to establish other post-operative benefits of the SP robot.

**Funding:** None.


Tianyue Li\(^1\), Xingpeng Di\(^1\), Ya Li\(^1\), Jingwen Wei\(^1\), Banghua Liao\(^1\), Kunjie Wang\(^1\)

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**Presented By:** Tianyue Li

**Introduction:** Overactive bladder (OAB) is a nonspecific syndrome characterized as urgency and lower urinary tract symptoms (LUTS). Recent studies reveal that depression is associated
with LUTS. However, the relationship between depression and OAB is unknown. This study aimed to explore the association between depression and OAB in the US population.

**Methods:** A cross-sectional study was performed utilizing data from the National Health and Nutrition Examination Survey (NHANES) 2011-2018. Depression status among participants was assessed using the Patient Health Questionnaire-9 (PHQ-9), with depression severity categorized based on PHQ-9 scores. OAB symptoms of participants were assessed by OAB Symptom Score (OABSS) scale. A multivariate logistic regression was conducted to evaluate the association between depression and OAB. Subgroup analyses were performed to identify variables that modify association between depression and OAB.

**Results:** A total of 19359 participants were enrolled in the study, with 91.01% (N = 17618) exhibiting minimal or mild depression, 7.92% (N = 1533) presenting with moderate or moderately severe depression, and 1.07% (N = 208) identified as severe depression. The overall prevalence of OAB was 21.62%. We found that depression was positively associated with OAB before and after adjustments of all covariates. After adjusting for covariates, individuals with moderate or moderately severe depression exhibited an elevated risk of OAB (OR = 2.52, 95% CI: 2.11-3.01, p < 0.01), while those with severe depression showed an even higher risk (OR = 3.74, 95% CI: 2.37-5.90, p < 0.01), compared to participants with minimal or mild depression.

**Conclusions:** Our study highlighted the association between depression and OAB in US adults, which prompted psychiatrists to need to pay more attention to urinary symptoms in patients with depression, especially the occurrence of OAB.

**Funding:** This work was supported by the Ministry of Science and Technology (JH2021050), Postdoctoral Fellowship Program of CPSF (GZ20231800), and Sichuan Science and Technology Program (24NSFSC3172).

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### MODERATED POSTER SESSION 17: EDUCATION AND SIMULATION

**MP17-01 Flexible Ureteroscopy Motion Tracking: How do Kinematic Parameters Differ Between Experts and Novices?**

Presented By: Jonguk Lee, MSc, BASc

**Introduction:** Instrument motion tracking in surgical simulation is beneficial as a teaching and evaluation tool. Recently, our group developed a synchronized motion-tracking simulation system for flexible ureteroscopy (FURS). This study aimed to compare kinematic parameters between novices and experts during FURS simulation.

**Methods:** Our system consisted of a 3D-printed kidney model within a URS simulation box. Motion tracking sensors were attached to the body and the distal tip of a ureteroscope. The body sensor tracked instrument movement while the tip sensor tracked the location and intrarenal movement of the scope tip. A potentiometer was attached to the control lever to measure deflection, tracked as percentage of maximum. The task was to map the kidney by traversing all its calyxes. A staff endourologist rated participant performance out of 20 using the standard URS global rating scale.

**Results:** We recruited 10 participants, 6 PGY2s and 2 PGY3s (novices), and 2 endourology fellows (experts). The mean URS score was 10 for novices and 16 for experts (p = 0.04). The mean path length for the intrarenal tip was 2182 ± 613mm for novices and 1164 ± 290mm for experts (p = 0.03), while its mean speed was 12.2 ± 2.1mm/s and 9.8 ± 0.3mm/s respectively (p = 0.01). Visualizing the tip path showed that novices traversed less renal area, especially for lateral calyces (Fig. 1A). Visualizing scope body movement showed that experts moved in a predictable wing-shaped pattern while novices moved relatively randomly (Fig. 1B). The average lever deflection magnitude was 5.7% ± 2.4% for novices compared to 10.8% ± 0.67% for experts (p = 0.001).

**Conclusions:** Our preliminary findings emphasize that experts show limited yet predictable scope body movement, greater lever deflection, and effective tip movement. Our findings set the stage for adaptive and personalized learning, as novices have access to timely feedback so that they can modify their technique to enhance maneuvering efficiency and calyceal access.

**Funding:** None.
MP17-02 The Resident HOLEP Learning Curve: Creating a Standardized Curriculum for Learning HOLEP

Dan Gralnek4, Chris Manakas1, Margaret Knoedler2, Emily Serrell3, Ali Antar2
1UW madison, 2uw madison, 3UW Madison, 4University of Wisconsin Madisons

Presented By: Dan Gralnek, MD

Introduction: Holmium Laser Enucleation of the Prostate (HOLEP) is a well-established treatment of benign prostatic hyperplasia (BPH) with advantages including use in any size including very large prostates, improved hemostasis, and lower re-treatment rates. Despite this, HOLEP accounts for only 3-6% of BPH procedures performed in the United States. Most studies attribute this to a steep learning curve, where attending physicians become proficient in 20-50 cases. However less is known about gaining proficiency in HOLEP as a resident. Therefore, we aim to define a resident HOLEP learning curve and create a structured approach to surgical teaching.

Methods: We developed and implemented a HOLEP Training Curriculum based on a structured, stepwise, approach to residents learning HOLEP starting with the two lobe technique (Figure). We applied the Training Curriculum over consecutive cases performed in an academic year (June 2021 – June 2022). De-identified procedure information was prospectively collected including prostate size, imaging modality, total procedure duration, enucleation time, morcellation time, specimen weight, and intra-op/immediate post-op complications. Resident data including self-evaluation, PGY year, and case volume was collected then de-identified. Attendings evaluated residents in real-time to evaluate competency at each step. Our primary outcome was number of HOLEP training cases needed to independently complete prostate enucleation of <100g gland in less than 90 minutes.

Results: Over one year the HOLEP Training Curriculum was utilized in 302 HOLEP cases completed by two attendings and 14 trainees. Average pre-op prostate volume was 83.3g (27-160g). Number of HOLEP cases recorded by each PGY-level included: PGY-1 (1), PGY-2 (20), PGY-3 (11), PGY-4 (173), PGY-5 (48), and PGY-6 (49). All senior-level trainees (> PGY-3) reached the primary objective in a mean number of 31 HOLEP cases (range 19-44). Average trainee enucleation time was 47.5 minutes (23-78) at time of achieving proficiency.

Conclusions: With consistent use of the HOLEP Training Curriculum in resident training, we identified an average learning curve of 31 HOLEP cases. This suggests that implementation of this Curriculum can occur and can help standardize resident training, particularly at high-volume centers, and remove a significant barrier to increased HOLEP utilization.

Funding: Educational grant from Lumenis.

MP17-03 A Hybrid Simulator for Continuous Bladder Irrigation for Nurse Training and Education

Jonguk Lee2, Sufyan Shaikh1, Kai-Ho Fok2, Brian Carrillo3, Monica Farcas4
1Institute of Medical Science, University of Toronto, 2St. Michael’s Hospital, Unity Health Toronto, 3WellSpring Research, 4Department of Surgery, University of Toronto

Presented By: Jonguk Lee, MASc, BASc

Introduction: Continuous Bladder Irrigation (CBI) is routinely used to manage hematuria. Recent work by Shaikh et al. revealed the lack of consensus among clinical staff when identifying effluent colour requiring inflow adjustment, and highly variable estimation of the inflow rate. Recognizing this gap, we have developed a simulator tool to help evaluate and train CBI providers. To our knowledge, this is the first and only CBI simulator platform in the world.

Methods: Our simulator combines traditional CBI equipment for hands-on control with a virtual “outflow tube” to simulate effluent blood concentration. The hardware component of our system includes a strain-gauge load cell coupled with an amplifier enclosed in a 3D-printed housing. The weight of the saline bag is measured at 10Hz, and weight change is used to calculate the inflow. A Python program provides an intuitive user interface for the operator. The image of the mock effluent tube (0-100% diluted bovine blood) is shown and updated in real-time to simulate hematuria. The real-time data of the saline bag weight, inflow rate, and effluent blood concentration are saved. The complete simulator setup is shown in Figure 1.

Results: A series of validation tests on clinical staff (8 nurses and 1 urologist) were conducted with varied bleed rates (0.5-3ml/s) and bladder volumes (50-250ml). It was confirmed that

Figure 1. Full setup of the CBI simulator, consisting of conventional CBI equipment and software that dynamically changes virtual effluent colour in response to user control.
our platform accurately mimics the delivery of CBI, with the virtual effluent colour responding to the adjustment of inflow and bleed rates appropriately in real-time.

**Conclusions:** Using our system, we intend to evaluate CBI providers in a controlled manner to quantify how their responses to effluent blood concentration may vary. Moreover, our system is very low-cost (<$30 in components), portable, and easy to set up, making it widely accessible. We hope to create educational materials that providers can use to learn and practice adjusting the roller clamp in response to changes in the inflow rate and effluent colour.

**Funding:** N/A.

**MP17-04 Estimating Stone Fragment Size during Ureteroscopy: Does Training Experience Predict Safe Extraction?**

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**Presented By:** Kelly Lehner, MD

**Introduction:** Accurate estimation of stone fragment size during ureteroscopy facilitates safe extraction. We aimed to determine whether training experience improves the accuracy of estimating fragment size.

**Methods:** Six mock stones (range 1.2–7.4 mm) were placed in a renal model for simulated flexible ureteroscopy. Urology residents and high-volume ureteroscopy surgeons estimated fragment size and extractability through a 12/14-French sheath. Responses were compared among 3 training levels (PGY 1–2, PGY 3–5, and surgeons) and analyzed by objective measures of surgical experience and technical skill. Categorical and continuous variables were analyzed using ANOVA and Pearson correlation, respectively.

**Results:** 16 residents and 6 surgeons were included. Participants underestimated fragment size by 30% overall (Table 1). As fragment size increased, the discrepancy between estimates and true size also increased. There was no statistical difference in accuracy among training groups and no association with experience or skill. Participants nearly always (98%) correctly identified <4 mm fragments as extractable; in contrast, participants identified >4 mm fragments as not extractable only 59% of the time. There was similarly no difference in predicting extraction by training level, experience, or skill.

**Conclusions:** Both novice and experienced surgeons substantially underestimate fragment size during ureteroscopy, which may increase the risk of unsafe extraction. Technologies that enable real-time measurement may improve accuracy, regardless of surgeon experience.

**Funding:** None.

**MP17-05 Online Video-Based Versus In-Person Training for Teaching Ultrasound-Guided Percutaneous Renal Access**

Tyler Sheetz2, Pablo F. Beutelspacher1, Jonathan Katz2, Joel Rosenberg2, Charles Coffey2, Seth K. Bechis2, Manoj Monga2, Roger L. Sur2, Tyler Sheetz2

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**Presented By:** Tyler Sheetz, MD

**Introduction:** Within endourology, ultrasound (U/S) is becoming a common method of obtaining renal access. Often urology residents are not exposed to this complex technique until they reach the OR. In the post-COVID era, online videos persist as prevalent tools to learn medical procedures, though with variable reliability. Online video-based learning has been shown feasible for learning basic surgical skills, however data is lacking on complex surgical skills. Recognizing online videos as a likely significant contributor of education for the next generation of surgeons, we aimed to compare online video-based independent learning to standard in-person didactic learning.

**Methods:** The study was conducted at our medical center during scheduled educational time. 11 urology residents and 2 urology medical students participated, which was voluntary and IRB-approved. Evaluations administered pre- and post-intervention consisted of 2 U/S skills challenges (time to visualize sagittal view of kidney and number of targets hit in 2 minutes) and a written exam. The intervention randomized trainees to either a 15 minute in-person demonstration by endourology fellows or 15 minutes of searching for and viewing online videos via their personal devices.

**Results:** Baseline assessments were similar. Video trainees viewed an average of 2.3 videos from AUA and YouTube, and were somewhat-very confident in these sources. There were measurable improvements in all parameters post-intervention for both groups. Performance in the renal U/S skills challenge (Fig. 1a-1b) improved a similar amount post-intervention (46% improvement in-person vs 56% video, p = 0.36). Similarly, performance on the U/S-guided needle target skill challenge (Fig. 1c) improved a similar amount post-intervention (50% improvement in-person vs 25% video, p = 0.36). However, those undergoing in-person training improved significantly more on the written exam (Fig. 1d) after intervention (57% vs 3% improvement, p < 0.01).

**Conclusions:** Online video-based learning was non-inferior to in-person didactic teaching for learning hands-on skills for U/S-guided percutaneous renal access. However, in-person didactic teaching led to superior performance on a written assessment. While information in some online medical videos may be poorly vetted, trainees are likely able to discern reliable sources to improve procedural skills.

**Funding:** This study was supported by Boston Scientific.
MP17-06 American College of Surgeons Simulation Fellowships at Two Institutions and their Global Impact on Endourology

Robert Sweet1, Omar Burak Argun1, Sanket Chauhan2, Domenico Veneziano3, Yasser Noureldin4, Zichen Zhao5, Lauren Poniatowski6, MAJ Jonathan Wingate7, Tony Chen8, Andrew Rabley9

1Acibadem Mehmet Ali Aydiniar Universities, 2Baylor Scott and White Health, 3Northwell Health, 4Northern Ontario School of Medicine, 5Peking University Shougang Hospital, 6University of Washington, 7Madigan Army Medical Center, 8Stanford University, 9Intermountain Health

Introduction: The role of simulation-based education for training has expanded over the last two decades. “Healthcare Simulation Science” has begun to emerge as a multidisciplinary discipline including an understanding of our clinical discipline and its greater role in the healthcare system, education, engineering, and the arts. The inherently diverse nature of this new discipline has stymied the growth of the field through a lack of a unified and shared understanding of related fields’ knowledge, skills, nomenclature, and culture. To facilitate the growth of this new discipline, there was a need to develop a formal training program to prepare individuals to lead and develop programs to more effectively disseminate the benefits of simulation worldwide.

Methods: The first formal surgical simulation training fellowship was created in 2009 at the University of Minnesota. A formal structured curriculum with leadership, administrative, research and education learning objectives were presented to the American College of Surgeons to establish an accreditation process and it was approved in 2012. As of 2023, 20 programs are now accredited by the ACS to provide this type of education around the world. Two programs (UMN and UW) had experience with training several endourologists/urologists collectively provided 19, 762 urology learner-hours (l-h) with an additional ~54,000 l-h in other disciplines, developed 28 simulators, contributed to the creation of 43 urology and 105 other curricula, published 49 simulation articles, were responsible for starting 5 international training programs and started 3 simulation companies.

Results: At the two institutions, between 2009-2023, including a pandemic that significantly impacted training opportunities, twelve fellows have graduated from the program. 6 (50%) are endourologists, 3 (25%) are (other) urologists and 3 (25%) are from other interventional disciplines who have gone on to leadership positions in various aspects of healthcare simulation science. To date, amongst many other impactful, broader healthcare initiatives, the trained endourologists/urologists collectively provided 19, 762 urology learner-hours (l-h) with an additional ~54,000 l-h in other disciplines, developed 28 simulators, contributed to the creation of 43 urology and 105 other curricula, published 49 simulation articles, were responsible for starting 5 international training programs and started 3 simulation companies.

Conclusions: Formal simulation science training of endourologists has the potential to make an enormous impact on the development, deployment, and global dissemination of skills through simulation-based education.

Funding: The fellowship program receives support through the Pellegrini-Oelschlager endowment.

MP17-07 Senior Slump? The Arc of Ureteroscopy Experience and Trainee Confidence During Residency Training

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Introduction: Ureteroscopy (URS) ranks as the number one procedure newly graduated urology residents express confidence in performing independently. Research indicates that continued proficiency and maintenance of skills results from ongoing, high-volume, frequent procedural experience. We sought to evaluate the URS case experience through post-graduate years (PGY) of residency training and self-reported confidence in this procedure.

Methods: A 5-point Likert-score questionnaire assessing overall trainee confidence performing URS and confidence in six individual procedural steps (cystoscopy/ureteral cannulation/retrograde pyelogram, ureteral access sheath placement, flexible ureteroscopy, laser setup/laser lithotripsy, fragment retrieval/basketing, stent decision-making/placement) was completed by current PGY2 – PGY5 residents at three academic training programs in New England. Corresponding number of URS cases performed was determined by review of Accreditation Council for Graduate Medical Education (ACGME) case logs recording ICD-10 CPT codes for URS and stratified by training year. Incomplete surveys and/or case logs were excluded from analysis. Descriptive statistics were summarized for continuous variables.

Results: Twenty-three residents in three New England AUA residencies responded. 16 met inclusion criteria (Table 1). 13/16 (81%) of residents felt capable of performing ureteroscopy with laser lithotripsy unsupervised with the majority gaining that confidence during PGY2 (66.7%). The three residents who reported lack of confidence in unsupervised URS were PGY2 in training. Procedural confidence in stent decision-making and placement was highest (75.0% self-rated as “resident expert, ready for practice”). Ureteral access sheath placement and laser setup/laser lithotripsy were rated least confident, requiring passive attending assistance during PGY2 year only. No PGY3 – PGY5 residents reported requiring passive attending assistance in any of the six procedural steps queried (Table 2). The highest URS case volume was seen during PGY2, with a decline thereafter (Figure 1).

Table 1: Resident URS performance

<table>
<thead>
<tr>
<th>Resident</th>
<th>PGY</th>
<th>URS Volume</th>
<th>Confidence in Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Res 1</td>
<td>PGY2</td>
<td>120 URS</td>
<td>5/5</td>
</tr>
<tr>
<td>Res 2</td>
<td>PGY3</td>
<td>75 URS</td>
<td>4/5</td>
</tr>
<tr>
<td>Res 3</td>
<td>PGY4</td>
<td>50 URS</td>
<td>3/5</td>
</tr>
</tbody>
</table>

Figure 1: Case number by URS per PGY training year including stent insertion, basketing, fragment retrieval and instrumentation.
Conclusions: Confidence in performing URS occurs early in training, coinciding with high endoscopic case volume and repetition during PGY2. Sustained confidence is observed in senior resident years despite a decline in URS case volume and procedural frequency as residents work on developing other surgical skills. Previously published studies suggest that sustained repetition is key to mastery. Reduced exposure to URS cases in senior training years may have implications for patient outcomes and readiness for independent practice after graduation. Further investigation is warranted to determine optimal case frequency for the maintenance of proficiency and better methodology for evaluating skill progression and providing feedback.

Funding: None.

MP17-08 Educational Value Analysis of Robotic Radical Prostatectomy YouTube Content

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Presented By: Daniel Wollin, MD, MS

Introduction: In recent years, YouTube has become an informal but popular avenue to disseminate surgical education. Prior investigators have examined YouTube videos in the urologic space, although mainly to assess video quality rather than educational utility. The aim of our study was to objectively assess educational quality of Robotic Assisted Radical Prostatectomy (RARP) videos using the Laparoscopic surgery Video Educational Guidelines (LAP-VEGaS) as a standardized, validated tool. A standardized assessment of RARP video educational quality will initiate a push towards the formation of a collective repository of RARP videos for trainee access.

Methods: Educational YouTube videos about RARP were discovered using keywords “Robotic” and “Radical Prostatectomy” into the search query. YouTube delivered 351 videos of which 33 videos with over 500 views were analyzed. Videos were reviewed by two urology residents with minimal prior robotic experience using the LAP-VEGaS scoring system (which assesses educational quality of laparoscopic videos). It is composed of nine categories graded from 0-2 with a max score of eighteen, including assessment of audio commentary, visual diagrams, anatomic landmarks, etc. Descriptive statistics were collected on video parameters such as international origin, number of views, and length. Correlation analysis between LAP-VEGaS scores and these parameters was performed.

Results: The median (interquartile range; IQR) score of our group was 10/18 (9-12). Median (IQR) number of views was 5582 (2500-20000). Other video parameters such as median age of videos, video length, and international origin are outlined in Table 1. Correlation analysis between LAP-VEGaS scores and number of views revealed a Pearson coefficient of 0.35 (p = 0.04, Table 1). T-test results comparing scores between international vs US origin, relation with an academic meeting, and discussion of a novel technique revealed no statistically significant difference.

Conclusions: Based on LAP-VEGaS score, it appears that the educational quality of our cohort is most positively correlated with number of views rather than video length or age, which encouragingly suggests the most educational videos are frequently watched. Our cohort of videos suggests, though, that there is a need for higher quality surgical videos in the field of urology.

Funding: None.

MP17-09 Impact of Trainee Presence on Operative Efficiency of Holmium Laser Enucleation of the Prostate (HoLEP)

Agustín Pérez¹, Alejandro Abello¹, Boris Gershman¹, Ruslan Korets¹
¹Beth Israel Deaconess Medical Center

Presented By: Agustín Pérez, MD

Introduction: Holmium Laser Enucleation of the Prostate (HoLEP) is increasingly being adopted in urology training programs worldwide. While evidence from other fields suggests that surgical efficiency can be negatively affected by trainee presence, the impact of trainee involvement on HoLEP is unknown. Herein, we evaluate the association of trainee presence with intraoperative efficiency parameters and immediate postoperative outcomes of HoLEP as part of a structured surgical training curriculum.

Methods: We retrospectively identified patients who underwent HoLEP at our institution between 2020 and 2022. Procedures were divided into two groups according to the presence or absence of trainees. Baseline characteristics, surgical efficiency parameters (including operative time, total laser energy, and energy density), and 3-month complication rates were compared between groups. The association of trainee presence and trainee level with efficiency parameters was evaluated using multivariable linear regression.

Results: Of 200 HoLEP procedures performed, 136 had trainee involvement. There were no differences among groups in baseline IPSS (18.5 vs 18.7, p = 0.9), ASA score (p = 0.4), mean preoperative prostate size (119.1 vs 114.1 grams, p = 0.09), or anticoagulation use (p = 0.07). Complication rates were not different between groups (6.5% vs 10.6%, p = 0.4). On multivariable analysis, trainee presence was not associated with operative time (β: 17.2; p = 0.08), total laser energy (β: -3.4; p = 0.8), or energy density (β: -0.2; p = 0.3).

Table 1: Collective Video Parameters with LAP-VEGaS Correlation Analysis

<table>
<thead>
<tr>
<th>Parameter</th>
<th>LAP-VEGaS Score</th>
<th># of Views</th>
<th>Age of Video (years)</th>
<th>Video Length (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median (IQR)</td>
<td>10 (9-12)</td>
<td>5600 (2500-20000)</td>
<td>3 (2-6)</td>
<td>38 (17-77)</td>
</tr>
<tr>
<td>Meeting Associated</td>
<td>10 (30%)</td>
<td>20 (60%)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>International Origin</td>
<td>10 (30%)</td>
<td>20 (60%)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Highlighting Technique Variation</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Scores &amp; # of Views</td>
<td>0.35 (0.04*)</td>
<td>0.01 (0.92)</td>
<td>-0.04 (0.81)</td>
<td>-</td>
</tr>
<tr>
<td>Pearson Correlation Coefficient (p-value)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

* = p value is statistically significant
Conclusions: This is the first study, to our knowledge, to assess the impact of trainee participation on HoLEP efficiency parameters. We observed that trainee presence was not associated with the efficiency or safety of HoLEP, supporting its implementation in appropriately selected training environments.

Funding: None.

MP17-10 Empowering Patients: The Role of Large Language Models in Renal Cancer Education
Abdulghafour Halawani1, Bandar Alhubaishy1, Sultan Almehmadi1, Ziyad Alnefaie1
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Introduction: There has been an increase in the incidental finding of small renal tumours owing to the widespread use of thoracoabdominal imaging for unrelated issues. In addition, the treatment options for renal cell carcinoma are developing rapidly. Patients may experience a high rate of decisional conflict when faced with multiple treatment options. Since face-to-face clinical time is limited, patients and physicians may use written patient education materials (PEMs) to facilitate therapeutic decision-making and improve patient’s understanding of all available options. While these PEMs published by major urological organizations benefit from being authoritative, their interpretability by patients is not known. Patients may also prefer using independent web searches to augment their understanding options. With the current emergence of artificial intelligence and large language models as a source of information, the accuracy and interpretability of these new forms, the “chatbot,” has not been assessed in this space. ChatGPT, Gemini AI, and Perplexity AI are examples of language-based AI chatbots that are trained to process vast amounts of information using large datasets from the internet. We sought to evaluate the accuracy and readability of patient information on kidney cancer provided by publicly available chatbots. We compared these to the PEMs published by major urological organizations, such as the American Urological Association (AUA) and the European Association of Urology (EAU). Our findings will clarify the quality of information and misinformation available to patients and will help physicians in directing patients to accurate and readable information related to kidney cancer disease.

Methods: PEMs from AUA and EAU related to kidney cancer were obtained and categorized. The questions and queries related to kidney cancer were identified from the major urological PEMs and the internet. These were then input into ChatGPT-4.0, Gemini AI, and Perplexity AI. The chatbot’s output was evaluated for accuracy by three independent reviewers based on five categories, using a 5-point scoring system similar to what has been published previously. A readability assessment was performed using validated formulae, including Simple Measure of Gobbledygook (SMOG), Gunning Fog Index (GFI), and Flesch-Kincaid Grade Formula (FKGL).

Results: For PEMs published by major urological organizations, AUA had the best readability scores, which ranged from 8.14 to 11.86, while PEMs from EAU scores were at grade levels between 11.5 and 13.04 (Table 1). On the other hand, the mean readability scores for Gemini AI, ChatGPT 4.0, and Perplexity AI were 11.63, 12.2, and 13.81, respectively. While the organizational PEMs were deemed to be accurate, a minor variation in accuracy was noticed among the different chatbots, with overall high accuracy and minor details omitted (Table 1). Unlike ChatGPT 4.0, illustrative images were included in the responses generated by Gemini AI and Perplexity AI.

Conclusions: PEMs from AUA were the most readable compared to EAU and chatbots responses, but they are still higher than the recommended readability levels (sixth-grade reading level) for general population. Although large language models’ responses for kidney cancer questions have a high level of accuracy with minor omitted details, it is important for caregivers to understand their strengths and limitations.

Funding: None.

MP17-11 Wired – Intern Education and Urethral Catheter Insertion
Emma Stehr1
1Queensland Health

Introduction: Difficult urethral catheterisation is often escalated to doctors following failed attempts. Often reported is a concern
Introduction: Surgical simulation with high-fidelity simulators is a great training tool to allow residents to improve technique and comfort level while decreasing the learning curve with a procedure in a controlled environment. This is especially helpful for Holmium Laser Enucleation of Prostate (HoLEP), a procedure known to have a steep learning curve. We present our results from a multi-institutional HoLEP workshop which included a high-fidelity simulator with expert guidance with the aim to increase resident familiarity with the indications, risks, equipment, and technique of HoLEP.

Methods: Residents from six Chicago-area urology training programs participated in the HoLEP workshop in February of 2024 led by two Endourology fellowship-trained course instructors. The workshop consisted of a lecture component complete with operative footage and overview of the HoLEP modality followed by two stations, one with two high-fidelity simulators with expert guidance and the other station with a walkthrough and assembly of the surgical equipment and instruments required by the operation.

Results: 22 urology residents participated in the workshop and completed the survey and quiz, of which 14 (63.6%) were returned fully completed. Responses from partially completed forms were included where an answer was given. Resident training level ranged from PGY1 to PGY6.82% of participants had minimal prior experience with HoLEP. Resident response was positive as all survey questions regarding HoLEP had statistically significant increases at a p-value of 0.05 after the workshop. Similarly, the majority of quiz questions had significant improvement in correct responses at a p-value of 0.05.

Conclusions: The HoLEP simulation workshop improved trainee’s familiarity and expertise with the surgical modality. The positive response and improved scores indicate meaningful impact on their training, which is crucial in the setting of a difficult learning curve as seen with HoLEP.

Funding: Nil.
ideal tool for acquiring new skills, and 72% thought it could reduce the time spent on teaching in the operating room. Importantly, 73% believed that using the simulator could enhance patient safety when performing robotic surgeries. Additionally, 84% of participants believed that customizing simulations based on pre-operative images to depict each patient’s unique anatomy could add value to the simulator.

Conclusions: The MSRS Platform is the first of its kind in surgical education for robotic surgery, specifically designed to simulate the Versius robot handpiece. Early data from this study supports its use in training for basic skills and complex procedures like radical nephrectomy. This platform can potentially improve the training and skill development of surgeons using the Versius robotic system.  

Funding: None.

MP17-14 Knowledge, Attitudes, and Practice Patterns among Medical Residents in the Out-Patient Department on the Prevention of Nephrolithiasis in a Tertiary Training Hospital in the Philippines

Joey Cueto1, Rodney Del Rio1, Karl Marvin Tan1
1Veterans Memorial Medical Center

Presented By: Joey Cueto, MD

Introduction: Nephrolithiasis is a recurrent condition by nature which may require multiple consults, medical treatment, and procedures. Efforts in prevention of nephrolithiasis are numerous but assessment of its practice is hard to measure. This study aims to assess the knowledge, attitudes, and practice (KAP) patterns of medical residents in the out-patient department of a tertiary hospital in Quezon City, Philippines in the prevention of nephrolithiasis.

Methods: There are no conflicts of interest in this study. The study design used was a prospective, cross-sectional survey study using a validated questionnaire assessing the KAP patterns with the study population of medical residents in the out-patient department of a tertiary hospital in Quezon City, Philippines. The responses were collected and tabulated using descriptive statistics, Frequencies and proportion were used to summarize distribution of response. Mean and standard deviation or median and interquartile range to report the average total score. The survey will be as an image to be attached with the abstract.

Results: A total of 98 responses were completed. In the knowledge domain, results show that 22.4% of the respondents correctly identified high urine volume as an important inhibitor of stone formation, 17% of the respondents correctly identified uric acid stones as the stone that recurs most frequently, 24.5% of the respondents recommended work-up within 3 years, 54.1% discouraged decrease calcium intake, 44% was able identify the risk factors for stone formation, 41% identified amiloride as the least helpful diuretic in controlling urinary calcium excretion in hypercalciuria. A total of 13 respondents or 13.3% answered correctly in 50% of the questions. In the practice domain, 56.1% recommended 2-3L/day of fluid intake, 72.4% advise to restrict animal protein intake, 48% recommended to maintain normal calcium intake, 43.9% recommended stone analysis for each stone passed and/or retrieved, and 29.6% recommends giving hydrochlorothiazide as prevention for calcium oxalate stone recurrence. A total of 64.3% of the respondents correctly answered 60% of the recommended practice patterns. Majority of the respondents agreed or strongly agreed with the recommended guidelines for the prevention of nephrolithiasis. These include maintaining normal calcium intake, decreasing dietary oxalate, increasing fluid intake, restricting salt intake, decreasing animal protein intake, recommending stone analysis, and the belief that medical management is a cost-effective way of preventing stone recurrence. The recommendation of cranberry juice intake with 24.5% of the respondents agreeing with the recommendation. The respondents of the study demonstrated poor level of knowledge regarding stone prevention. The respondents answered in concordance with the practice guidelines in at least half of the questions in 13% of our study’s respondents. Practice patterns fared better with 64.3% correctly answering 60% of the recommended guidelines. Attitudes of respondents regarding the recommendations in stone prevention were mostly positive, and paralleled the current best practice, aside from the role of cranberry juice, with only 24% agreeing with the statement. Our respondents displayed confidence in recommending to maintain normal calcium intake (83%), decreasing dietary oxalate (78%), increasing fluid intake (93%), restricting salt (84%) and animal protein intake (87%), recommending stone analysis (92%) and the cost-effectiveness of medical management in stone prevention (93%). Despite poor level of knowledge, the practice patterns reflected on the study were modestly better albeit still suboptimal but the attitudes were more consistent with the best practice guidelines available. The rationale on the poor knowledge, but better attitude and practice scores is unknown, but may be related due to the different specialization of individual residents and with the institution having a Urologic service giving recommendations on stone management on the other services.

Conclusions: The study showed sub-optimal knowledge in stone prevention, an adequate practice pattern, and the attitudes were more consistent with the best practice guidelines available. Further studies with larger sample size and efforts to improve guideline adherence are highly recommended.  

Funding: None.

MP17-15 Gelatin Medium: Low-Cost Percutaneous Renal Access Training Model, A Descriptive Study

Ethan Victor Mallari2, Roderick Arcinas1, Miguel Karlo Galut1, Diovic Tan1
1USTH, 2University of Santo Tomas Hospital

Presented By: Ethan Victor Mallari, MD

There are no conflicts of interest in this study. The study design used was a prospective, cross-sectional survey study using a validated questionnaire assessing the KAP patterns with the study population of medical residents in the out-patient department of a tertiary hospital in Quezon City, Philippines. The study showed sub-optimal knowledge in stone prevention, an adequate practice pattern, and the attitudes were more consistent with the best practice guidelines available. Further studies with larger sample size and efforts to improve guideline adherence are highly recommended.  

Funding: None.
Introduction: Gaining renal access in percutaneous nephrolithotomy (PCNL) or percutaneous nephrostomy tube insertion is a highly demanding procedure. Currently the use of kidney training models are expensive and is not cost-effective. Low-cost training materials are then essential for training and skills enhancement thus increasing accessibility and reduces financial barriers to learning. To facilitate the training of the proper technique in percutaneous renal access. The investigators opted to look for cost-effective, sustainable, and readily available alternatives in the form of a gelatin medium found in grocery. It aims to enhance trainee urologists’ surgical skills in ultrasound-guided percutaneous renal access. The model would consist of a gelatin substance and silicon sheet to provide a realistic feel. Objectives: To create a cost-effective, sustainable, and readily available percutaneous renal access model that can be used with ultrasonography. Specific Objectives (1) To present and describe a renal access model formulation using gelatin materials found in groceries with realistic consistency and feel. (2) To evaluate and describe the quality of the gelatin medium renal access model in terms of quality of appearance, ease of use, and overall satisfaction

Methods: The study aims to create a material similar to ballistic gelatin, a specialized medium, widely used to simulate the density and consistency of human or animal tissue for testing the performance of percutaneous renal access. A model made from 250 grams gelatin mixed with 1L water was made for percutaneous renal access. This closely mimics the sonographic characteristics of a human tissue. Urology trainees and consultants were then invited to do ultrasound guided access using chiba needle. Each participant was asked to answer a post activity evaluation form. Models were evaluated in terms of quality of appearance, ease of use, and overall satisfaction.

Results: 20 participant response were reviewed. Results showed that the model used closely resembled a human tissue (4 ± 0.64SD) in a likert scale of 1-disagree, 5-strongly agree; in terms of ultrasound examination similarity, results were (3.7±0.57SD), image quality was rated as (3.95±0.68SD), ease of use (4.35±0.48SD) and Overall satisfaction rate of (4.6±0.5SD).

Conclusions: Using the gelatin medium for percutaneous renal access training offers several advantages, including realism, safety, cost-efficiency, and reusability. However, larger scale investigation is still needed to increase the validity of the study.

Funding: None.

**Introduction:** Percutaneous renal access is a complex and potentially lifesaving procedure. Although often performed by interventional radiologists (IR), there has been an increase in the number of urologists gaining access on their own for percutaneous nephrolithotomy (PCNL). Utilizing ultrasound (US) guidance for percutaneous renal access reduces dependence on IR or fluoroscopy. While this skill requires hands-on training, simulation models can be prohibitively expensive and difficult to obtain. We propose a do-it-yourself (DIY) kidney phantom using household products and items commonly found in hospitals as a method of on-demand low-cost simulation. We then assess the usefulness of these phantoms in a hands-on simulation course.

**Methods:** Phantom models were created to simulate renal calyces, renal parenchyma, and surrounding tissue using surgical gloves, gelatin, psyllium husk, and water (Figure 1). These were created in a home kitchen near the course location without specialized equipment. During the course, held at the Caribbean Urological Association, participants were given one hour of instructional lectures. Participants then used a handheld portable point-of-care ultrasound to identify a target within a phantom and demonstrate proper needle maneuvering techniques to reach the target, with water efflux from the needle indicating successful entry. Pre- and post-session surveys assessed their experience with US-guided needle placement and their evaluation of the course usefulness.

**Results:** The estimated cost of each model was about $4 (United States Dollars) per model, and each model was used by up to eight participants before degrading. Of the 14 participants in the course, 86% were attending physicians. 43% of participants reported being “very” or “somewhat” comfortable with US-guided needle placement prior to the course. After the course, 100% of participants reported improved comfort in performing US-guided nephrostomy tube placement. 71% reported that the phantom adequately simulated percutaneous needle placement. 50% reported that the phantom adequately simulated renal anatomy. 93% would recommend the course to their colleagues.

**Conclusions:** Our DIY ultra-low-cost kidney phantom was a useful modality for training US needle guidance for PCNL procedures and improving comfort level with the procedure.

**Funding:** Urology Care Foundation Humanitarian Grant Award.
**Introduction:** With the growing medical literature, AI’s role in efficient summarization becomes pivotal, offering scale, consistency, and accessibility. The purpose of this project is to evaluate ChatGPT-generated summaries in readability and quality against Cochrane Review’s Plain Text Summaries in sexual dysfunction research.

**Methods:** 14 abstracts from the Cochrane Library tagged under “Sexual Problems” were summarized using ChatGPT-3.5 (July 25 Version) and compared with their corresponding Cochrane Plain Text Summaries. Readability was assessed using six metrics: Flesch Kincaid Reading Ease, Flesch Kincaid Grade Level, Gunning Fog Score, Smog Index, Coleman Liau Index, and Automated Readability Index. With the exception of the Flesch Kincaid Reading Ease score, each measure describes the amount of formal education required to understand a given response. Statistical analysis utilized a two-tailed t-test to compare ChatGPT-3.5-generated summaries and Cochrane Plain Text Summaries. Each summary was also evaluated by two independent graders on a 5-point scale for accuracy and adherence to the abstract, with their combined grades compared between datasets.

**Results:** Readability scores showed marginal differences between ChatGPT and Cochrane summaries (Table 1). T-tests revealed no statistically significant differences in readability metrics and summative grades between the two summaries.

**Conclusions:** In terms of readability and quality, both machine-generated (ChatGPT) and human-authored summaries (Cochrane) yielded similar outcomes. Thus, we conclude that ChatGPT can aptly generate summaries equivalent to the Cochrane Review with the intention of improved audience understanding on the topic of sexual dysfunction.

**Funding:** None.

### Table 1. Mean and Standard Deviation of Readability Metrics and Grades between Cochrane Review and ChatGPT-3.5.

<table>
<thead>
<tr>
<th>Metrics &amp; Grades</th>
<th>Cochrane Plain Text Summaries</th>
<th>ChatGPT-3.5 Generated Summaries</th>
<th>p-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flesch Kincaid Reading Ease</td>
<td>29.59 (10.69)</td>
<td>25.51 (9.64)</td>
<td>0.28</td>
</tr>
<tr>
<td>Flesch Kincaid Grade Level</td>
<td>14.24 (1.93)</td>
<td>14.46 (1.85)</td>
<td>0.77</td>
</tr>
<tr>
<td>Gunning Fog Score</td>
<td>17.88 (1.97)</td>
<td>18.64 (2.23)</td>
<td>0.35</td>
</tr>
<tr>
<td>Smog Index</td>
<td>12.98 (1.54)</td>
<td>13.33 (1.56)</td>
<td>0.56</td>
</tr>
<tr>
<td>Coleman Liau Index</td>
<td>16.26 (1.60)</td>
<td>17.04 (1.77)</td>
<td>0.24</td>
</tr>
<tr>
<td>Automated Readability Index</td>
<td>14.51 (2.24)</td>
<td>14.39 (2.31)</td>
<td>0.88</td>
</tr>
<tr>
<td>Summative Grade</td>
<td>4.21 (0.83)</td>
<td>4.39 (0.65)</td>
<td>0.37</td>
</tr>
</tbody>
</table>

**Introduction:** Clinical research (CR) is an important component of academic urology and often occurs in a busy patient care setting with diverse participants (e.g. faculty, residents, staff, students). Despite their curricular requirements, students, especially medical students (MS), can play crucial roles in CR. They offer time and skills to the research team, bringing diverse perspectives, clarify career interests, and boost residency competitiveness. We sought to share our experience on the utility and importance of involving students in CR in an academic urology setting.

**Methods:** We retrospectively reviewed the records of our student pool between Jan. 2022 to Jan. 2024. We included students who were fully onboarded as and were involved in at least one project. Our pool of students was categorized into four groups: undergraduates, graduates, public health/statistics students, and MSs (years 1-5). We collected data on the total number of students involved, including institutional affiliations, state of origin, gender, and program, as per the described groups. We analyzed students and their involvement in projects, encompassing data acquisition, data analysis, abstract writing (distinguishing between first and co-authors), and accepted works including manuscripts. For standardization, only abstracts submitted or accepted to the 2023 or 2024 American Urological Association (AUA), European Urological Association (EAU), and the New England - AUA (NE-AUA) were included. Descriptive statistics were conducted using Microsoft Excel.

**Results:** During the study period, 45 students (26 [58%] males and 19 [42%] females), comprising 27 (60%) MS, 12 (26.7%) undergraduate, three (6.7%) graduate, and three (6.7%) public health/statistics students, were involved in CR within our department. 33 (73.3%) students were internal and 12 (26.6%) were external, including 10 (22.2%) from different states. Regarding students’ contribution, chart reviews and data acquisition involved the highest number of students (29 [64.4%]), followed by assisting in data arrangement and analysis (14 [31%]). During the study period, 119 abstracts were submitted with students involved (76 co-author; 50 - first author), including 29 accepted (18 and 11 respectively). Notably, Our student body collectively contributed to 15 published manuscripts during the study period, serving as first or co-authors. Table-1 illustrates student contributions in our department over the study years.

**Conclusions:** Students can play a central role in CR in an academic urology program. Their involvement can be a “win-win” with their professional development and CV-building as well as

### Table 1: Students Involvement in Academic Urological Research - Achievements and Contribution

<table>
<thead>
<tr>
<th></th>
<th>Total Numbers</th>
<th>Data Acquisition</th>
<th>Data Analysis</th>
<th>Project leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduates</td>
<td>12</td>
<td>11</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Graduates</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Public health students</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Statistics Student</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MS-1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>MS-2</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>MS-3</td>
<td>8</td>
<td>6</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>MS-4</td>
<td>6</td>
<td>3</td>
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<td>3</td>
</tr>
<tr>
<td>MS-5</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>37</td>
<td>24</td>
<td>36</td>
</tr>
</tbody>
</table>

| Total submitted          | 23            | 20               | 14            | 12              |
| Total w/ Students        | 18            | 15               | 9             | 5               |
| Total w/ 1st author-student | 1           | 1                | 1             |                 |
| # Accepted w/ students   | 1             | 1                | 1             |                 |
| # Accepted w/ 1st author student | 1 |                 |                |                 |

MP17-18 Engaging Students in Clinical Research: Insights from an Academic Urology Program

Kamil Malshy1, Taylor Braunagle1, Anna Ochsner1, Borivoj Goljicin1, Elias Hyams1

1The Minimally Invasive Urology Institute, The Miriam Hospital, Medical School of Brown University

Presented By: Kamil Malshy, MD
providing time and perspective that are useful to advancing research in a busy clinical environment. While there are challenges to integrating MS into a research program, they are surmountable with flexibility, active mentorship and a culture supporting a broad research coalition.

Funding: None.

MP17-19 Assessing the Feasibility of Artificial Intelligence Large Language Models in Automating Urology Discharge Summaries: A Comparative study with Human Medical Officers

Sunil Ravinder Gill1, Joshua Yi Min Tung1, Sunil Ravinder Gill1, Gerald Gui Ren Sng2, Daniel Yan Zheng Lim2, Yuhe Ke2, Ting Fang Tan1, Liyuan Jin3, Kabilan Elangovan3, Jasmine Chiat Ling Ong3, Hairil Rizal Abdullah7, Daniel Shu Wei Ting3, Tsung Wen Chong1

1Department of Urology, Singapore General Hospital, Singapore, 2Data Science and Artificial Intelligence Lab, Singapore General Hospital, Singapore, 3Singapore Eye Research Institute, Singapore National Eye Center, 4Duke-NUS Medical School, 5Artificial Intelligence Office, Singapore Health Services, Singapore, 6Division of Pharmacy, Singapore General Hospital, Singapore, 7Department of Anesthesiology, Singapore General Hospital, Singapore

Presented By: Sunil Ravinder Gill, MBBS

Introduction: Discharge letters are a critical component in continuity of care between specialists and primary care providers, but are time-consuming to write, under-prioritized in comparison to direct clinical care, and are often tasked to junior doctors. Prior studies assessing the quality of discharge summaries written for inpatient hospital admissions show inadequacies in many domains. Large language models such as GPT have the ability to summarize large volumes of unstructured free text, such as electronic medical records, and have the potential to automate such tasks, providing time savings and consistency in quality. The objective of this study was to assess the performance of GPT-4 in generating discharge letters written from Urology specialist outpatient clinics to primary care providers, and compare their quality against letters written by junior clinicians.

Methods: Fictional electronic records were written by physicians, simulating five common Urology outpatient cases with long-term follow-up. Records comprised simulated consultation notes, referral letters and replies, and relevant discharge summaries from inpatient admissions. GPT-4 was tasked to write discharge letters for these cases, with a specified target audience of primary care providers who would be continuing the patient’s care. Prompts were written for safety, content, and style. Concurrently, junior clinicians were provided with the same case records and instructional prompts. GPT-4 output was assessed by the study team for instances of hallucination. A blinded panel of primary care physicians then evaluated the letters using a standardized questionnaire tool.

Results: GPT-4 outperformed human counterparts in information provision, but was less concise. GPT-4 had no instances of hallucination. There were no statistical differences in the clarity, collegiality, follow-up recommendations, and overall satisfaction between letters generated by humans and by GPT-4.

Conclusions: Discharge letters written by GPT-4 had equivalent quality to those written by junior clinicians, without any hallucinations. This study demonstrates proof of concept that LLMs can be useful and safe tools in clinical documentation.

Funding: None.

MP17-20 Over Two Decades of Robotic Pyeloplasty: What a Journey!!

Raju Thomas1

1Tulane University School of Medicine

Presented By: Raju Thomas, MD, FACS, FRCS, MHA

Introduction: Robotic pyeloplasty was introduced in 2002 and slowly became the standard of care whenever there was access to the da Vinci robot. This certainly has changed the face of pediatric and adult urologic ureteropelvic junction (UPJ) obstruction management.

Methods: Initially with the S model and then with the Si, Xi, and SP models, my personal practice has steadily improved over the past two decades. To date, 294 patients have undergone robotic pyeloplasty.

Results: Multiple publications have given us results varying from an 89% to 96% success rate. The results that have been learned are: (1) all types of stones can be managed simultaneously, with an increase in surgical time; (2) with an increase in the surgical time, the recurring secondary UPJ repair takes about 30 minutes longer; and (3) the success rate for the primary is higher than for the secondary redo-pyeloplasty. Techniques are varied, including critiquing whether the nephrostomy tubes are really needed, the role and technique of stent placements, introduction and use of ICG intraluminally, and so forth.

Conclusions: Robotic pyeloplasty, over the past two decades, has proven to be a reliable, teachable, reproducible, and successful technique for managing UPJ obstruction.

Funding: None.

MP17-21 Revolutionizing Patient Information and Enhanced Consent in Urology - The Impact of Simulation and Multimedia Tools

Carlotta Nedbal1, Victoria Jahrreiss1, Patrick Juliebø-Jones2, Eamonn Rogers3, James N’Dow4, Maria Ribal5, Jens Rassweiler6, Evangelos Liatsikos7, Hein Van Poppel8, Bhaskar Kumar Somani9

1Comprehensive Cancer Center, Medical University of Vienna, 2Haukeland University Hospital, 3University College Hospital, 4University of Aberdeen, 5University of Barcelona, 6Danube Private University (DPU), 7University of Patras, 8KU Leuven, 9University Hospitals Southampton, NHS Trust, 10Università Politecnica delle Marche, Ancona, ITA

Presented By: Carlotta Nedbal, MD

Introduction: Discussion on urological diagnosis and planned procedure can be challenging, and patients might experience difficulty in understanding the medical language, even when assisted by CT images or drawings. With the introduction of virtual reality and simulation, informed consent could be enhanced with audio visual contents and interactive platforms. We aimed to assess the role of enhanced consent in the urology field.
Methods: A systematic review of the literature, in accordance with the Preferred Reporting Items for Systematic Reviews and Meta analysis guidelines, was performed, using informed consent, simulation and virtual reality in urology as the search terms. All original articles were screened and included.

Results: 13 original studies were included in the review. They analysed the application of different modalities for enhanced consent: 3D printed or digital models, audio visual multimedia contents, virtual simulation of procedures and interactive navigable apps. All the authors agreed in a significant improved effect on patient understanding of the diagnosis, including basic anatomical details, and surgical-related issues such as the aim, the steps and the risks connected to the planned intervention. Patient satisfaction was unanimously reported as improved with enhanced consent.

Conclusions: Simulation and multimedia tools are extremely valuable for improving patient understanding and satisfaction towards urological procedures. A widespread application of enhanced consent would represent a milestone for patient-urologist communication.

Funding: Nil.

MODERATED POSTER SESSION 18

MP18-01 Comparison of Topical Diltiazem, Diclofenac Suppository and Periprostatic Nerve Block with Periprostatic Nerve Block Alone for Pain Control During Transrectal Ultrasonography-Guided Prostate Biopsy: An RCT

SUMAN SAHOO1, Swarnendu Mandal1, Manoj Das1, Prasant Nayak1, Kirti Singh1

1All India Institute of medical Sciences, Bhubaneswar

Presented By: SUMAN SAHOO, Senior Resident

Introduction: Pain during TRUS biopsy of the prostate has dual origin: the pain of insertion of the ultrasonography probe into the rectum, which is due to the stretching of the anal sphincter, as well as the pain of the insertion of the biopsy needle in the prostate. It is seen that the pain due to the insertion of the probe is higher than the pain of the biopsy itself. Hypothetically, if per-rectal diltiazem & diclofenac is combined with PPNB, pain due to both aforementioned reasons can be alleviated. The aim of this study was to evaluate the efficacy of the addition of diclofenac & diltiazem to PPNB in the management of pain during TRUS guided biopsy of the prostate.

Methods: This single blinded, double armed RCT was conducted in the Department of Urology at tertiary care hospital. Group A: Patients received combination of rectal administration of diclofenac 100 mg, diltiazem (2%) 2ml gel; 30 min prior to prostate biopsy, and periprostatic nerve block with 1% lignocaine just before taking biopsy cores. Group B: Patients received dummy drugs and periprostatic nerve block with 1% lignocaine in the management of pain during TRUS guided biopsy of the prostate.

Results: A total of 48 patients (24 in each group) were included in the trial. The prostate volume (60+/−20) ml and serum PSA values were similar in both groups. The mean pain scores during insertion of the probe into the rectum were significantly lower in the patients in Group A than in Group B (2.6 vs 7.22, p < 0.0001). The mean pain scores during the time of biopsy were similar in both groups (2.15 in Group A, 2.02 in Group B). The mean duration of procedure and post procedural bleeding was also similar in both the groups. No significant immediate complications following the procedure were noted in either group. These included haematuria (n = 1 in group B), haematochezia (n = 1 each in both the groups) and UTI (n = 1 in Group A and 2 in Group B). All these were self-liming and did not require hospital admission.

Conclusions: Addition of diltiazem and diclofenac to PPNB is effective in the reduction of the pain of the insertion of the probe during the time of prostatic biopsy. It is safe and not associated with any untoward side effects.

Funding: None.

MP18-02 ADC Concerns are Zone Specific: Comparing ADC Values Associated with Clinically Significant Prostate Cancer when Stratified by Prostate Zone and PIRADS Score

Tarik Benidir1, Rani Ashouri1, Li-Ming Su1, Jason Joseph1, Paul Crispen1, John Dibianco1, Padraig O’Malley1, Thomas Stringer1, Sara Falzarano2, Joseph Grajo3, Tarik Benidir1
Introduction: The use of prostate multiparametric magnetic resonance imaging (mpMRI) and Prostate Imaging and Reporting of Data System v2.1 (PI-RADS) has improved the diagnostic accuracy of clinically significant prostate cancer (csPCa). Therein, the Apparent Diffusion Coefficient (ADC) is inversely correlated with histologic grade group (GG) with concerning values reported between 750-900x10^-6 mm^2/s. However, overlapping ADC values are common between benign, GG1 and csPCa (GG2-GG5) and are not specific to prostate zone. It remains underexplored whether zone specific lesions require unique ADC cutoffs.

Methods: We performed a single center retrospective review of patients with MRI visible lesions (PI-RADS 3-5) who subsequently underwent MRI guided fusion biopsies (2016-2022). Lesion level ADC values were re-reviewed and quantified by expert GU radiologist blinded to GG results. Mean ADC values (+/- standard deviation) associated with benign, indolent disease (GG1) and csPCa (GG2-GG5) were reported and subsequently stratified by PI-RADS score and prostate zone (transitional zone, TZ, versus peripheral zone, PZ). Shapiro Test, Mann Whitney U Test and Independent T Test where appropriate.

Results: There were 500 PI-RADS 3-5 lesions (80% PZ, 20% TZ) in 428 patients. Median age was 72 years (65, 76) and 856.7 (278) of lesions harbored csPCa. The mean ADC value was 856.7 (+/- 250.0), which was the mean value in the TZ, 784.7 (+/- 249.7) and 783.4 (+/- 239.1) respectively (p < .01) as detailed in Table 1. When stratified by biopsy findings, ADC values were significantly lower in csPCa as compared to benign/GG1 lesions (p < .01). When stratified by zone, both PZ and TZ lesions harboring csPCa had significantly lower ADC values as compared to benign/GG1 lesions (p < .01). Interestingly, ADC values for csPCa in the TZ was lower than PZ lesions with csPCa (p = .021). Furthermore, there was no difference in ADC values between benign/GG1 TZ lesions and csPCa PZ lesions (p > .05).

Conclusions: ADC values associated with csPCa are, on average, much lower in TZ lesions as compared to PZ lesions. A lower ADC threshold may be considered for TZ lesions to reduce unnecessary biopsies.

Funding: No funding.

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<th>MEDIAN (IQR)</th>
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<td>745.0 ± 234.5</td>
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ADC values stratified by PI-RADS Score and Prostate Zone
PZ = Peripheral Zone
TZ = Transitional Zone

MP18-03 Image-guided Multiparametric Magnetic Resonance Imaging-Transrectal Ultrasound Fusion Biopsy Augmented with Sextant vs an Extended 12-core Template Biopsy: A Prospective Comparison of Oncological and Functional Outcomes

Sriram Deivasigamani1, Eric S. Adams1, Mahdi Mottaghi2, Rajan T. Gupta1, Thomas J. Polascik1
1Duke University Medical Center, 2MR, VA center

Introduction: The combination of mpMRI/TRUS fusion-targeted biopsy and 12-core systematic biopsy template (TBx+12c) has been shown to increase the cancer detection rate (CDR) in prostate cancer (PCa) when compared to standard 12-core systematic biopsy alone. Previous studies have reported an association between an increasing number of biopsy cores with an increase in complications and a decline in functional outcomes. The purpose of this study is to compare the efficacy of a novel fusion template “reduced six-core transrectal ultrasound + MRI fusion targeted biopsy (TBx+6c)” to TBx+12c to assess the potential impact of an alternative template for fusion biopsy with fewer random cores.

Methods: This is an institutional review board approved single-center prospective study involving adult men undergoing fusion-targeted biopsies for the diagnosis of PCa. Patients were sorted into cohorts of TBx+6c or TBx+12c based on the systematic biopsy template used. The study’s main objective was to determine the cancer detection rate (CDR) for overall PCa and clinically significant PCa (csPCa) and the secondary objectives were to compare complication rates and functional outcome differences using the international index of erectile function (IIIEF-5) and international prostate symptom score (IPSS) at baseline, two and six weeks after the biopsy.

Results: A total of 204 patients met the study’s inclusion criteria after prior sample calculation. The TBx+6c group had 120 patients, while the TBx+12c cohort had 84 patients. The groups had similar baseline clinical characteristics, prostate volume, and the total number of mpMRI suspicious lesions. The overall CDR in the TBx+6c cohort was 71.7% versus 79.8% (TBx+12c, p = 0.18) whereas, the csPCa detection rate in the TBx+6c group was 50.8% versus 54.8% in the TBx+12c group (p = 0.5). There were no differences in IIIEF-5 (p = 0.5) or IPSS (p = 0.1) scores at baseline, two and six weeks. All post-procedural complications were Clavian-Dindo Grade 1 or 2, and the TBx+6c cohort had an overall lower complication rate of 3% versus 13% (p = 0.01) compared to the TBx+12c cohort.

Conclusions: TBx+6c cohort appeared to provide comparable diagnostic performance with similar functional outcomes and lower complication rates compared to the TBx+12c cohort. These findings support the need for further randomized non-inferiority trial to determine the clinical implications of using a TBx+6c + fusion biopsy schema for the diagnosis of PCa.

Funding: The Josiah Charles Trent Memorial Foundation Endowment Fund.

MP18-04 Comparison of the Incidence of Clinically Significant Prostate Cancer in Patients with Isolated Peripheral VS Transitional Zone PI-RADS 3 Lesions

Kamil Malsky2, Anna Ochsner1, Rebecca Ortiz2, Richard Glebocki2, Mathew Liu1, Samuel Eaton2, Gyan Pareek3, Elias Hyams2, Dragan Golijanin2, Sari Khaleef2
1University of Florida, 2University of Florida Department of Pathology, 3University of Florida Department of Radiology

Presented By: Tarik Benidir, MD, M. Sc, FRCS C

Introduction: The use of prostate multiparametric magnetic resonance imaging (mpMRI) and Prostate Imaging and Reporting of Data System v2.1 (PI-RADS) has improved the diagnostic accuracy of clinically significant prostate cancer (csPCa). Therein, the Apparent Diffusion Coefficient (ADC) is inversely correlated with histologic grade group (GG) with concerning values reported between 750-900x10^-6 mm^2/s. However, overlapping ADC values are common between benign, GG1 and csPCa (GG2-GG5) and are not specific to prostate zone. It remains underexplored whether zone specific lesions require unique ADC cutoffs.

Methods: We performed a single center retrospective review of patients with MRI visible lesions (PI-RADS 3-5) who subsequently underwent MRI guided fusion biopsies (2016-2022). Lesion level ADC values were re-reviewed and quantified by expert GU radiologist blinded to GG results. Mean ADC values (+/- standard deviation) associated with benign, indolent disease (GG1) and csPCa (GG2-GG5) were reported and subsequently stratified by PI-RADS score and prostate zone (transitional zone, TZ, versus peripheral zone, PZ). Shapiro Test, Mann Whitney U Test and Independent T Test where appropriate.

Results: There were 500 PI-RADS 3-5 lesions (80% PZ, 20% TZ) in 428 patients. Median age was 72 years (65, 76) and 856.7 (278) of lesions harbored csPCa. The mean ADC value was 856.7 (+/- 250.0), which was the mean value in the TZ, 784.7 (+/- 249.7) and 783.4 (+/- 239.1) respectively (p < .01) as detailed in Table 1. When stratified by biopsy findings, ADC values were significantly lower in csPCa as compared to benign/GG1 lesions (p < .01). When stratified by zone, both PZ and TZ lesions harboring csPCa had significantly lower ADC values as compared to benign/GG1 lesions (p < .01). Interestingly, ADC values for csPCa in the TZ was lower than PZ lesions with csPCa (p = .021). Furthermore, there was no difference in ADC values between benign/GG1 TZ lesions and csPCa PZ lesions (p > .05).

Conclusions: ADC values associated with csPCa are, on average, much lower in TZ lesions as compared to PZ lesions. A lower ADC threshold may be considered for TZ lesions to reduce unnecessary biopsies.

Funding: No funding.
Introduction: Prostate Imaging Reporting & Data System (PI-RADS)3 lesions pose a clinical management challenge due to their MRI characteristics, which often exhibit significant overlap with benign conditions, particularly in transition zone vs peripheral zone lesions (TZ, PZ). We investigated the association between isolated PIRADS3 lesions of the TZ vs PZ and the incidence of clinically significant prostate cancer (csPCA) on systematic and targeted prostate biopsy (SB, TB).

Methods: We retrospectively reviewed our tertiary institutional database of patients who underwent mpMRI-fusion followed by SB+TB between 2016-2021. We compared the incidence of csPCA (Gleason Grade-Group≥2) in patients with solitary TZ-only PIRADS-3 and PZ-only PIRADS-3 on SB and TB. We excluded patients with (1)known PCa, (2)PIRADS 4-5 and/or (3)lesions in both TZ and PZ. T-tests, Chi-square tests, were conducted to compare between the groups.

Results: Of 1913 patients, we identified 110 with PZ-only and 38 with TZ-only PIRADS-3 lesions. 73 patients in PZ-only and 19 in TZ-only met inclusion criteria. No statistically significant difference observed between TZ and PZ groups in terms of age, median PSA, prostate volume, median PSA-density, or median number of targeted cores obtained, all with p > 0.05. On TB, the incidence of csPCA was higher in patients with PZ rather than TZ PIRADS-3 lesions (10/73 vs 0/19, p = 0.28). Similarly, csPCA was more common in TB of PZ vs TZ PIRADS 3 lesions (7/73 vs 0/19, p = 0.33). Compiling above results, the positive predictive values of PIRADS3 as a marker of csPCA was 5.3% and 0% for TZ lesions on SB vs TB, respectively, compared to 17.7% and 9.6% in the PZ.

Conclusions: PIRADS3 lesions are rarely associated with csPCA on systematic and targeted biopsy, particularly when in the transitional zone, an important factor when considering biopsy in patients with isolated TZ lesions.

Funding: None.

Introduction: To investigate the application value of the maximum standardized uptake value (SUVmax) of 18F prostate-specific membrane antigen (PSMA) PET/CT combined with the minimum apparent diffusion coefficient (ADCmin) of biparametric magnetic resonance imaging (bpmRI) in predicting pathological upgrading after radical prostatectomy (RP) for prostate cancer (PCa).

Methods: The data of 89 patients with localized prostate cancer treated at Beijing Hospital from April 2019 to October 2023 were retrospectively analysed. The patients had an average age of (68±7.0) years old, prostate-specific antigen (PSA) level of 7.7 (5.4, 12.9) ng/ml, prostate volume of 34.6 (26.9, 47.1) ml, tumor diameter of 1.3 (1.0, 1.8) cm, prostate imaging reporting and data system (PI-RADS) score of 5 in 29 cases (32.6%), clinical stage ≥T3 in 13 cases (14.6%), and targeted biopsy grading groups of 1 in 31 cases (34.8%), 2 in 36 cases (40.4%), 3 in 11 cases (12.4%), and 4 in 11 cases (12.4%). All patients underwent 18F-PSMA PET/CT and bpmRI examinations before RP. The index lesion, identified as the highest Gleason score in pathological whole-mount sections, were outlined. SUVmax and ADCmin values were calculated from the images’ region of interest. Pathological upgrading was defined as the post-RP grade group higher than the targeted-biopsy grade group. Clinical data of patients with and without pathological upgrading were compared. Spearman correlation coefficient analysis was used to assess the correlation between SUVmax and ADCmin. Multivariate logistic regression analysis was conducted to evaluate the factors influencing pathological upgrading. Receiver operating characteristic (ROC) curve analysis was employed to assess the predictive value of each indicator for pathological upgrading.

Results: Among the 89 cases, 31 cases (34.8%) experienced pathological upgrading. The SUVmax [11.3 (8.1, 16.4) vs. 6.7 (4.6, 9.2)], SUVmax/ADCmin ratio [3.1 (2.0, 4.6) vs. 6.7 (4.6, 9.2)], PSA [9.8 (6.3, 15.6) ng/ml vs. 7.1 (5.1, 10.5) ng/ml], PSA density [0.3 (0.2, 0.5) ng/ml2 vs. 0.2 (0.1, 0.3) ng/ml2], and post-RP ISUP grade group ≥3 group 17 cases (54.8%) vs. 13 cases (22.4%) were higher in the pathological upgrading group, while ADCmin [3.8 (3.0, 5.3) vs. 5.2 (3.6, 6.1)] and targeted biopsy ISUP grade group [≤2 group 27 cases (87.1%) vs. 40 cases (69.0%) ] were lower (all p < 0.05). Spearman analysis showed a negative correlation between SUVmax and ADCmin (R = -0.227, P = 0.032). Multivariate logistic regression analysis revealed that SUVmax (OR = 1.108, 95% CI 1.020-1.238), ADCmin (OR = 0.607, 95% CI 0.390-0.874), and SUVmax/ADCmin ratio (OR = 1.815, 95% CI 1.282-2.949) independently predicted pathological upgrading. The AUC of the SUVmax/ADCmin ratio for predicting pathological upgrading (AUC = 0.817) was higher than that of SUVmax (AUC = 0.774) and ADCmin (AUC = 0.686), indicating a higher predictive efficiency.
Conclusions: SUVmax, ADCmin, and SUVmax/ADCmin ratio can independently predict pathological upgrading in targeted biopsy of prostate cancer. The SUVmax/ADCmin ratio has a stronger predictive value for pathological upgrading.

Funding: National High Level Hospital Clinical Research Funding (BJ-2022-115); National Key Research and Development Program of China (2022YFC3602900).

MP18-06 Venus: A Novel Image Fusion System Using Artificial Intelligence and Electromagnetic Navigation System for the Guidance of Transperineal Prostate Biopsy Under Local Anesthesia

Miao Wang1, Ming Liu2
1Beijing Hospital, 2Dept. of Urology, Beijing Hospital

Presented By: Miao Wang, MD

Introduction: Prostate biopsy remains the gold standard for preoperative diagnosis of prostate cancer. Current guidelines recommend targeted combined with systematic biopsy. Various guiding methods, such as cognitive fusion and software fusion, are advocated. However, the biopsy process still heavily relies on the experience of clinicians. For young doctors, inadequate experience may lead to inaccurate biopsy, repeated needle insertion causing collateral damage, and poor anesthesia effects. With the development of artificial intelligence and electromagnetic navigation technology, automated segmentation of images and real-time planning and tracking of needle pathways under ultrasound guidance have become achievable. This study aims to report on a novel system called Venus, which utilizes artificial intelligence image fusion and electromagnetic navigation technology for transperineal prostate targeted combined with systematic biopsy, and presents preliminary results.

Methods: This prospective study included 139 patients who underwent transperineal targeted combined with systematic biopsy in our hospital from August 2023 to April 2024. The median age of the patients was 70 (range: 66-75) years, with a median PSA level of 7.27 (range: 4.93-12.25) ng/mL. The main lesions were PIRADS 3: 78 (56.1%) cases, PIRADS 4: 42 (30.2%) cases, and PIRADS 5: 19 (13.7%) cases. All patients underwent preoperative biparametric magnetic resonance imaging (bpMRI), and the biopsy procedure was performed under perineal local anesthesia guided by the Venus system. Information recorded included the time for fusion and biopsy operations using the Venus system, intraoperative anesthesia pain scores, biopsy positivity rate, biopsy complications, etc.

Results: Among the 139 patients, 70 were ultimately diagnosed with prostate cancer, yielding a total biopsy positivity rate of 50.4%. The biopsy positivity rates for PIRADS 4 lesions and PIRADS 5 lesions were 85.7% and 100%, respectively. The total operation time from image fusion initiation to the completion of the last needle biopsy using the Venus system was 4 (range: 3-5.25) minutes. The pain score during perineal local anesthesia using the Venus system was 3.0 (range: 2.0-4.3), and the pain score during the biopsy procedure was 1.0 (range: 1.0-2.0). The most common postoperative complication was hematuria, which resolved spontaneously in 95.6% of patients within 1 week. No serious complications occurred.

Conclusions: This study reports on a novel Venus system that can guide the entire process of transperineal local anesthesia and targeted combined with systematic prostate biopsy. The new system can achieve automatic image fusion segmentation and real-time planning and tracking of biopsy paths during the biopsy procedure, optimizing the biopsy process and reducing its difficulty. The preliminary results confirm the feasibility of the operation, achieving high accuracy and satisfactory anesthesia effects.

Funding: BJ-2023-105.

MP18-07 Can We Stop Using Systematic Template-Guided Saturation During Transperineal Prostate Biopsies in Patients with MRI Targets?

Varun Buhariwalla1, Jonathan Lewin1, Marc Paffen1
1Albury-Wodonga Health

Presented By: Varun Buhariwalla, MD, BSc, PGDipBioEnt

Introduction: MRI-targeted, combined systematic core harvesting with a grid template is the standard of practice in Australia for Transperineal prostate biopsies. However, there is a correlation between the increasing number of cores taken and postoperative complication risk. Our study aims to assess whether target-only biopsies guided by MRI can replace a standardised
template by evaluating the histopathology seen outside of MRI targets at our regional health service.

**Methods:** We retrospectively reviewed the medical records of 294 patients who underwent Transperineal prostate biopsies between November 2022 and October 2023. Of these, 279 (95%) patients were identified to have had a pre-operative multiparametric MRI of the prostate. Consultant radiologists reviewed the imaging to assign a PI-RADS (Prostate Imaging–Reporting and Data System) score between 1 – 5 to identify very-low, low, equivalent, high and very-high risk lesions. Standard 12-core systematic template biopsies were taken with an additional 2 cores at the MRI target during ultrasound-guided Transperineal prostate biopsy. Post-operative clinical outcomes and histopathology were recorded correlating to location-labelled prostate cores.

**Results:** 279 men underwent a combined approach MRI-targeted and systematic template prostate biopsy. High or very high risk for clinically significant cancer was predicted in 231 (83%) of these patients, who had 1 or more lesions with a PI-RADS score of 4 or 5 reported on MRI. The mean initial PSA on referral was 15.24 (range 0.42-180). There were 226 (81%) patients who had a positive histopathology finding for prostate cancer; of which 21, 79, 54, 37 and 35 patients had an ISUP group grade (IGG) score of 1–5 respectively on histopathology reporting. 181 (80%) cases had ≥1 positive cores outside the target; with 109 showing a Gleason score equal to or higher than that seen at the target.

**Conclusions:** A combined approach approach along with targeted MP-MRI is still favoured during Transperineal prostate biopsies as a large majority of men have evidence of clinically significant prostate cancer located outside of the suggested PI-RADS 4 or 5 targets on MP-MRI.

**Funding:** Nil funding.

**MP18-08 Diagnostic performance of Transperineal Prostate Targeted Biopsy Alone according to the PI-RADS Score based on Bi-parametric Magnetic Resonance Imaging**

Seong Woo Yun¹, Sung Gu Kang¹, Tae Il Noh¹

¹Department of Urology, Anam Hospital, Korea University College of Medicine, Seoul, Korea

Presented By: Seong Woo Yun, MD

**Introduction:** To compare the diagnostic performance of transperineal targeted biopsy (TB) or systematic biopsy (SB) alone based on combined TB+SB and radical prostatectomy (RP) specimen for detecting prostate cancer (PCa) according to the prostate imaging reporting and data system (PI-RADS) score.

**Methods:** This study included 1077 men who underwent transperineal bi-parametric (bp) magnetic resonance imaging (MRI)–ultrasound (US) fusion TB+SB (bpMRI-US FTSB) between April 2019 and March 2022. To compare the performance of each modality (TB, SB, and combined TB+SB) with the RP specimen (as the standard) for detecting PCa and clinically significant PCa (csPCa), receiver operating characteristic (ROC) curves were plotted.

**Results:** PCa was detected in 581 of 1077 men (53.9%) using bpMRI-US FTSB. CsPCa was detected in 383 of 1077 men (35.6%), 17 of 285 (6.0%) with PI-RADS 0 to 2, 35 of 277 (12.6%) with PI-RADS 3, 134 of 274 (48.9%) with PI-RADS 4, and 197 of 241 (81.7%) with PI-RADS 5, respectively. The additional diagnostic value of TB vs. SB compared to combined TB+SB for diagnosing csPCa were 4.3% vs. 3.2% (p = 0.844), 20.4% vs 5.1% (p < 0.001), and 20.3% vs. 0.7% (p < 0.001) with PI-RADS 3, 4, and 5, respectively. TB alone showed no significant difference in diagnostic performance for csPCa with combined TB+SB based on RP specimens in patients with PI-RADS 5 (p = 0.732).

**Conclusions:** A need for addition of SB to TB in patients with PI-RADS 3 and 4 lesions, however, TB alone may be performed without affecting the management of patients with PI-RADS 5.

**Funding:** None.

**MP18-09 The Learning Curve for Robotic-assisted Transperineal MRI/US Fusion-guided Prostate Biopsy**

Christian Wetterauer¹, Viktor Alargkov¹, Christian Engesser¹, Helge Seifert¹, Pawel Trotsenko¹

¹University Hospital Basel

Presented By: Christian Wetterauer

**Introduction:** Transperineal fusion prostate biopsy is state-of-the-art in prostate cancer (PCa) diagnostics but has a considerable learning curve (LC). Robotic-assisted transperineal MRI/Ultrasound fusion-guided biopsy (RA-TP-FBx) is postulated to have an easier LC due to automatization. We aim to assess the LC of RA-TP-FBx and to analyze the procedures most difficult steps.

**Methods:** We prospectively analyzed consecutive cases assigned to a biopsy-naïve urology resident, the chief resident, and an expert urologist in RA-TP-FBx (controls). The LC was defined by multiple parameters: procedure time, PCa detection rate (including stratification by PI-RADS), entrustable professional activities (EPA) questionnaire scores, and the NASA task load index.

**Results:** We collectively performed 246 RA-TP-FBx with the Mona Lisa device. Procedure time for residents was reduced from a maximum of 53 min to a minimum of 10 min. The mean time for the expert was 9 min. PCa detection for PI-RADS-4 lesions was 58% for residents and 61% for the expert. There was no difference in PCa detection between operators (residents vs expert: OR 0.9; p = 0.8) and Pca detection for PI-RADS-4 lesions was 23% for residents and 24% for the expert.
lesions when comparing the first to the second half of the experts’ biopsies \((p=0.8)\). Maximum EPA score was registered as of 22 cases. Workload steeply declined over time. Mentorship quality and use of a different platform may affect the generalizability of our findings.

**Conclusions:** Proficient performance of RA-TP-FBx appears feasible after 22 cases regardless of previous experience. We attribute this favourable learning curve to the high level of automatization offered by robotic technology.

**Funding:** None.

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**MP18-10 Transrectal Ultrasound Robotic-Assisted Versus Uronav Biopsy: Preliminary Results from a Randomized Controlled Trial**

Joseph G. Cheaib\(^1\), Michael E. Rezaee\(^1\), Katarzyna J. Macura\(^2\), Bruce J. Trock\(^1\), Doru Petrisor\(^3\), Arthur L. Burnett\(^1\), Amin S. Herati\(^1\), Christian P. Pavlovich\(^1\), Dan Stoianovici\(^3\), Misop Han\(^1\)

\(^1\)Johns Hopkins University Brady Urological Institute, \(^2\)Johns Hopkins University Department of Radiology, \(^3\)Johns Hopkins University Brady Urological Institute and Robotics Laboratory

Presented By: Joseph G Cheaib, MD, MPH

**Introduction:** Transrectal ultrasound robotic-assisted (TRUS-Robot) biopsy is a novel method to diagnose prostate cancer by using a robotic ultrasound probe manipulator investigational device (Figure) [PMC4005376] and three-dimensional navigation software to optimize the location of biopsy cores. We hypothesized that TRUS-Robot would be superior to UroNav (Philips/Invivo) on systematic biopsy (SB) and noninferior on targeted biopsy (TB) in the detection of clinically significant prostate cancer (csPCa).

**Methods:** A single-center, open-label, randomized-controlled trial of TRUS-Robot versus UroNav prostate biopsy was performed in men aged 45 to 75 with an indication for prostate biopsy and mpMRI imaging. In the UroNav arm, the SB plan followed the extended sextant biopsy template; in the TRUS-Robot arm, the SB plan was optimized for each patient [PMC27760001]. In both arms, if PI-RADS Ver. 2 scores 3-5 were identified on mpMRI, the lesions were targeted with the respective device, and 3 cores were sampled per lesion.

**Results:** To date, 73 men have enrolled and undergone prostate biopsy: 40 TRUS-Robot and 33 UroNav. PI-RADS Ver. 2 scores 3-5 were identified in 26 and 23 patients, respectively. In PI-RADS 3-5 patients for SB, a greater proportion of men have been diagnosed with csPCa in the TRUS-Robot (38%) compared to the UroNav (22%) arm of the trial \((p=0.45)\). For TB, the TRUS-Robot was noninferior to UroNav with a greater proportion of men diagnosed with csPCa in the TRUS-Robot (31%) compared to the UroNav (26%). In PI-RADS 3-5 patients, based on the SB or TB cores, csPCa was detected in 50% vs 30% of patients for the TRUS-Robot and UroNav arms, respectively \((p=0.37)\). Statistical significance has yet to be achieved. No complications or adverse events were recorded on either arm of the study.

**Conclusions:** Preliminary results are encouraging and suggest superior detection of csPCa by TRUS-Robot compared to UroNav.

**Funding:** Research reported in this publication is supported by the National Cancer Institute of the National Institutes of Health under award number R01CA247959, PI Stoianovici.

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**MP18-11 Biparametric Magnetic Resonance Imaging: A Comparative Study with Radical Prostatectomy Specimens**

Feroz Khan\(^2\), Brian Ho\(^1\), Vinayagam Sudhakar\(^1\), Chandran Tanabalan\(^1\), Aakash Pai\(^1\)

\(^1\)NORTHAMPTON GENERAL HOSPITAL, \(^2\)NORTHAMPTON GENERAL Hospital

Presented By: Feroz Khan, CT1 Urology

**Introduction:** Biparametric MRI (bpMRI) has purported advantages over multiparametric MRI (mpMRI). These include reduced scanning time, lack of intravenous contrast and improved cost-effectiveness. Randomised controlled trials on this subject are currently recruiting however there is a current requirement for evidence on the diagnostic accuracy of bpMRI. This study compares biparametric MRI findings with final histology on radical prostatectomy (RP) specimen.

**Methods:** BpMRI is the standard of care in our institution. The histology of consecutive patients from our institution who had RP from 2021-2023 was collected. Analysis was undertaken for the precise location of lesions from the preoperative bpMRI (PI-RADS 3 to 5) and clinically significant cancer location within the final radical prostatectomy specimen. The prostate was divided into predetermined 12 sectors for the purpose of the study. A comparison was made to establish the effectiveness of bp-MRI in correctly identifying the location of the prostate cancer.

**Results:** A total of 150 patients were included in the study. The mean age of the patients was 62. The sensitivity of bp-MRI in diagnosing the precise location of the tumour is 78% with final RP specimen being the gold standard. 7% of the locations that showed malignancy on the bp-MRI were diagnosed false positive and 15% were diagnosed as false negative. 41% of RP specimens showed an upstaging from T2 to T3 when compared to preoperative bpMRI.

**Conclusions:** The sensitivity of bp-MRI (78%) at our institution in localisation of tumours is comparable to the use of randomised control trial data for MP-MRI (83-89%). We advocate the use of bp-MRI in prostate cancer diagnostics as a suitable alternative to mp-MRI.

**Funding:** A self funded study and no external funds used.
**MP18-12 Variation in Clinically Significant Prostate Cancer on Fusion Biopsy of Prostate Imaging Reporting & Data System 3-5 Lesions Based on Ethnicity**

Beth Edelblute², Ahmed Aly¹, Zhe Jing¹, Abdul Wasay Mahmood¹, Kara Watts², Alexander Sankin², Pedro Maria², Ahmed Aboumohamed²

¹Roswell Park Comprehensive Cancer Center, ²Montefiore Medical Center

Presented By: Beth Edelblute, MD

**Introduction:** Racial and ethnic minorities have historically been under-represented in urologic oncology research, including prostate cancer. Our investigation aims to determine the prevalence of clinically significant prostate cancer (Gleason score 3 + 4 or higher) on fusion biopsy for Prostate Imaging Reporting & Data System (PI-RADS) 3-5 lesions compared across patients of different race or ethnicity.

**Methods:** A retrospective analysis was conducted on patients who underwent fusion biopsy between 2016 and 2022 at two institutions. Patients who self-identified as African American, Hispanic, or White were subcategorized by race or ethnicity. The prevalence of Gleason score 3 + 4 or higher detected with MRI-guided biopsy within these three categories was assessed. Possible correlation between PI-RADS lesion score and race or ethnicity was also assessed.

**Results:** Among the 918 patients included in the analysis, 29% identified as African American, 17% as Hispanic, and 54% as White. A total of 1384 lesions were identified (PI-RADS 3 -34%, PI-RADS 4 - 40%, and PI-RADS 5 -26%). The prevalence of clinically significant prostate cancer by PI-RADS score and ethnicity was similar: PI-RADS 3-Caucasian 13%, African American 13% and Hispanic 9%, p = 0.45; PI-RADS 4-Caucasian 42%, African American 34%, Hispanic 38%, p = 0.29; PI-RADS 5 – Caucasian 63%, African American 64%, Hispanic 51%, p = 0.38.

**Conclusions:** The prevalence of clinically significant cancer did not significantly differ across PI-RADS 3-5 lesions among different ethnicities on image-guided fusion biopsy. These findings support the increasing utility of prostate MRI across a racially and ethnically diverse population, despite initial studies validating prostate MRI in predominantly White male populations.

**Funding:** NA.

**MP18-13 Robotic-Assisted Transperineal MRI/Ultrasound Fusion Biopsy Improves Pathology Concordance with Radical Prostatectomy**

Christian Wetterauer¹, Manuel Walter¹, Helge Seifert¹, Viktor Alargkov¹, Pawel Trotsenko¹

¹University Hospital Basel

Presented By: Christian Wetterauer

**Introduction:** Concordance between biopsy and prostatectomy pathology can help to optimize treatment selection, staging, and patient outcomes. Novel robotic-assisted biopsy platforms help to increase diagnostic accuracy via automatization and precision in the planning and performance of biopsies. Considering the suboptimal concordance of biopsies reported to date, this study aims to evaluate the rates of ISUP grade migration in a contemporary cohort biopsied using a robotic-assisted transperineal MRI/ultrasound fusion approach (RA-TP-FBx) and treated with robotic-assisted radical prostatectomy (RARP).

**Methods:** All RA-TP-FBx cases in the prospectively collected databank of a tertiary center were investigated. All biopsies were performed with the iSR®&#39;obot Mona Lisa platform under general anesthesia. The total ISUP grade at prostate biopsy was compared with final pathology in cases treated with RARP. A clinically relevant upgrading (CRU) was defined as any increase from ISUP ≤2 to any higher ISUP. Concordance rates were analyzed with kappa statistics.

**Results:** A total of 438 RA-TP-FBx were performed from January 2020 to October 2023.97/428 (22.2%) patients with a positive biopsy underwent RARP (22.2%). Concordance between ISUP grade at prostate biopsy and final prostatectomy specimen was observed in 74/97 (76.3%) cases. ISUP downgrading and upgrading from biopsy at prostatectomy was seen in 12/97 cases (12.4%) and 11/97 cases (11.3%) respectively. CRU was observed in 6/97 cases (6.2%). The kappa coefficient for concordance was 0.57.

**Conclusions:** RA-TP-FBx in this cohort displayed a minimal CRU and one of the highest concordance rates reported for targeted prostate biopsies of 76.3%, particularly when considering the 40% to 50% range of previous studies. The increased diagnostic accuracy could be explained by the mitigation of sampling error through the automatization and precision offered by robotic assistance.

**Funding:** None.

**MP18-14 Clinically Significant Prostate Cancer Detection by Transperineal vs. Transrectal MRI Fusion Targeted Biopsy: Performance in Screening vs. Active Surveillance Settings**

Victoria Edmonds³, Jaxson Jeffery¹, Sarah Wu¹, Emma Willcocks¹, David Mauler², Daniel Heidenberg², Haidar Abdul-Muhsin², Scott Cheney², Paul Andrews², Mitchell Humphreys², Jack Andrews², Daniel Frendl²

¹Mayo Clinic Alix School of Medicine - Arizona, ²Mayo Clinic Arizona

Presented By: Victoria Edmonds, MD

**Introduction:** Whether transperineal (TP) magnetic resonance imaging (MRI) fusion biopsy (Bx) detects more clinically significant prostate cancer (csPCa) than transrectal
TR) biopsy remains unclear. We compare the rate of csPCa detection between TPBx and TRBx with MRI fusion among men undergoing PCA screening and men on active surveillance (AS).

Methods: We performed a retrospective cohort study of men undergoing TPBx or TRBx with MRI fusion for PIRADS 3-5 lesions in a tertiary care practice from 1/1/2022-6/1/2023. Descriptive statistics and multivariable logistic regression were used to assess the association between biopsy approach and patient-level csPCa detection, adjusting for age, PSA density, PIRADS score, and lesion location. We also assessed the maximum length of csPCa detected. All analyses were stratified by men with no history of PCa versus AS.

Results: Overall, 435 men underwent MRI fusion biopsy, 60% with TP and 40% with TRBx (Table 1) In total 63% had no prior PCa, 38% had PIRADS5, 54% PIRADS4, and 8% PIRADS3 lesions. Among men undergoing screening biopsy, csPCa detection was equivalent (TPBx 62% vs. TRBx 64%, p = 0.72). However, among men on AS, csPCa detection was higher with TPBx (TP 84% vs. TR 60% p < 0.001). Logistic regression confirmed TPBx outperformed TRBx for csPCa detection in AS patients (OR 4.75 (95%CI: 1.13–19.9), p < 0.001) and resulted in greater upstaging of AS patients, with 31% to ≥grade group (GG) 3 from GG1-2 disease vs. 20% TR (p = 0.014).

Conclusions: Among men undergoing screening MRI fusion Bx, there was no difference in the overall detection of clinically significant prostate cancer between TP and TR techniques. However, among men on active surveillance with an MRI lesion, TPBx resulted in greater disease detection and upstaging. Given these findings, we have proposed a prospective randomized controlled trial to assess TP vs TR fusion confirmatory Bx in active surveillance.

Funding: No funding was received for this work.

MP18-15 PSA Density Is Predictive of Clinically Significant Prostate Cancer Across Age Strata

Kamil Malshy¹, Anna Ochsner¹, Alexander Homer¹, Sai Allu¹, Natalie Passarelli², Andrew Sojka¹, Richard Glebocki¹, Borivoj Golijanin¹, Rebeca Ortiz¹, Samuel Eaton¹, Gyan Parek¹, Sari Khaleel¹, Dragan Golijanin¹, Elias Hyams¹

¹Minimally Invasive Urology Institute, The Miriam Hospital, Warren Alpert Medical School of Brown University, ²Warren Alpert Medical School of Brown University

Presented By: Kamil Malshy, MD

Introduction: Pre-biopsy prostate-specific antigen density (PSAD) is a well-known basic predictor of clinically significant prostate cancer (csPCa). Since PSA and prostate volume grow normally with aging, PSAD thresholds may vary. The purpose of the study was to determine if PSAD was predictive of csPCa in individuals of different ages.

Methods: We retrospectively reviewed our institutional database for patients who underwent multi parametric-MRI between 1/1/2016 and 12/2021. We included only patients who had post-MRI prostate biopsy. Based on age, we divided our cohort into 4 subgroups (groups 1-4): <55, 55-64, 65-74, and >75. PSAD accuracy was estimated by the area under the curve (AUC) as a predictive model for differentiating csPCa between the groups. CsPCa was defined as a Gleason Grade Group 2 (GG2) or higher. Three different PSAD thresholds (0.1, 0.15, and 0.2) were tested across the groups for sensitivity, specificity, and positive and negative predictive values (PPV, NPV). Chi-square and Analysis of Variance tests were used for bivariate analysis. All analysis were completed using R 4.3 (R Core Team, 2023).

Results: Among 1913 patients, 883 (46.1%) had prostate biopsies. In groups 1, 2, 3, and 4, there were 62 (7%), 321 (36.4%), 404 (45.8%) and 96 (10.9%) patients, respectively. Median PSA was 5.6 (IQR 3.4-8.13), 6.2 (4.8-9), 6.8 (5.1-9.7) and 9 (5.6-13) respectively, p < 0.01. And median prostate volume was 42.3 (30-62), 51 (36 -77), 55.5 (38 -85.9) and 59.3 (42-110), respectively, p < 0.01. No difference was observed in median PSAD between age groups 1-4 (0.1 (.07 - .16), 0.11 (.08 - .18), 0.1 (.07 - .19), and 0.1 (.07 - .2)) respectively, p = 0.393. CsPCa was diagnosed in 241 (27.3%) patients, of which 10 (16.1%), 65 (20.2%), 121 (30%), and 45 (46.7%) were in groups 1-4, respectively, p < 0.001. For groups 1-4, the PSAD AUC for predicting csPCa was 0.75, 0.68, 0.71, and 0.74. While testing PSAD of 0.15 across the different age groups (1-4), the PPV vs NPV were 39.1 vs 64.7, 33.6 vs 56.2, 50.9 vs 59.3, and 66.1 vs 64.7, respectively. PPV and NPV for PSAD thresholds of 0.1, 0.15, and 0.2 among the different groups are shown in Figure 1.

Conclusions: Among men undergoing screening MRI fusion Bx, there was no difference in the overall detection of clinically significant prostate cancer between TP and TR techniques. However, among men on active surveillance with an MRI lesion, TPBx resulted in greater disease detection and upstaging. Given these findings, we have proposed a prospective randomized controlled trial to assess TP vs TR fusion confirmatory Bx in active surveillance.

Funding: No funding was received for this work.

Table 1: Demographic and MRI characteristics, available when any detection was stratified by screening vs. men on active surveillance.

<table>
<thead>
<tr>
<th>Demographic Parameter</th>
<th>Temporal Bx</th>
<th>Temporal Bx</th>
<th>P value</th>
<th>Active Surveillance Parameter</th>
<th>Temporal Bx</th>
<th>Temporal Bx</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>59.1 ± 9.5</td>
<td>57.6 ± 9.8</td>
<td>0.08</td>
<td>Prostate Volume (cc)</td>
<td>25.8 ± 12.2</td>
<td>23.3 ± 10.0</td>
<td>0.01</td>
</tr>
<tr>
<td>PSA (ng/ml)</td>
<td>6.9 ± 2.3</td>
<td>6.1 ± 2.1</td>
<td>0.001</td>
<td>Lesion Location (GG)</td>
<td>GG1-2</td>
<td>GG3-4</td>
<td>0.01</td>
</tr>
<tr>
<td>PI-RAD Score</td>
<td>4.0 ± 1.0</td>
<td>3.8 ± 1.0</td>
<td>0.02</td>
<td>Maximum Lesion Length (mm)</td>
<td>25.6 ± 12.2</td>
<td>23.3 ± 10.0</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Figure 1: Positive and Negative Predictive Values (PPV and NPV) of Prostate-Specific Antigen Density (PSAD) across different age strata. The results are presented for the three most common cutoffs used in clinical practice (0.1, 0.15, 0.2). PPV: Positive Predictive Value; NPV: Negative Predictive Value; PSAD: Prostate-Specific Antigen Density.
Conclusions: PSAD prediction model was found to be similar among different age groups. In young patients, PSAD has a high NPV but low PPV. With increasing age, the opposite trend is observed. Disease prevalence may play a role in this.

Funding: None.

MP18-16 Relationship of PI-RADS Score on Prostate MRI and Concordance Between Biopsy Gleason Grade and Final Pathology

Meghana Singh2, Michael Raver1, Nicholas Campo2, Ruth Sanchez De La Rosa1, Ukinebo Igor1, Ravi Munver1, Kevin Basralian1, Mutahar Ahmed1, Michael Degen1, Michelle Kim1, Michael Stifelman1, Nitin Yerram1

1Hackensack University Medical Center, 2Hackensack Meridian School of Medicine

Presented By: Meghana Singh

Introduction: The utilization of MRI in diagnosing prostate cancer has increased, yet data on the reliability of the Prostate Imaging Reporting and Data System (PI-RADS) scoring remains limited in the prediction of disease grade. This study seeks to assess the concordance between prostate biopsy and final pathology of the dominant lesion and its relationship to PI-RADS score.

Methods: A single-institution IRB-approved retrospective analysis was conducted of all patients who underwent robotic radical prostatectomy between January 1, 2017 to April 15, 2022 with a preoperative MRI/US targeted biopsy of one dominant lesion (PI-RADS 3 or greater). Gleason Grade Group (GGG) for initial biopsy was compared to GGG on postoperative pathology to determine whether there was a match, upstaging or downstaging. Fisher’s Exact Test was used to determine if PI-RADS score had an association with match, upstaging, or downstaging of GGG.

Results: A total of 44 patients were identified and met the criteria for our study. Results for concordance between biopsy GGG and final pathology GGG by PI-RADS score are listed in Table 1. Overall, for PI-RADS 3 there was 29% concordance, for PI-RADS 4 there was 55% concordance, and for PI-RADS 5 there was 53% concordance. PI-RADS 3 had the highest rate of upstaging GGG from initial biopsy to final pathology (43%), followed by PI-RADS 5 (35%) and PI-RADS 4 (15%). No significant association was found (p = 0.32).

Conclusions: Multiparametric MRI serves as an important diagnostic tool in the detection of prostate cancer, and our data suggests that higher PI-RADS scores increase concordance on biopsy. While this result was overall not significant, our study is limited by a small sample size. Further multicenter analysis would help to understand if a true association exists.

Funding: None.

Table 1: Concordance rates for PI-RADS scoring between preoperative MRI and biopsy results

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Match, N</th>
<th>Upstage, N</th>
<th>Downstage, N</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest PI-RADS Score, n(%)</td>
<td>22</td>
<td>12</td>
<td>10</td>
<td>0.22</td>
</tr>
<tr>
<td>3</td>
<td>2 (23)</td>
<td>3 (43)</td>
<td>2 (29)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>11 (55)</td>
<td>3 (15)</td>
<td>6 (30)</td>
<td></td>
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<tr>
<td>5</td>
<td>9 (53)</td>
<td>6 (35)</td>
<td>2 (12)</td>
<td></td>
</tr>
</tbody>
</table>

Fisher’s exact test

MP18-17 Multi-Institutional MRI-derived Radiomic Model for the Prediction of Biochemical Recurrence of Prostate Cancer

Linda Huynh1, Benjamin Bonebrake1, Olivia Taylor1, Erica Huang2, Yaegyeong Hwang2, Joshua Tran2, Sophia Cima1, Shea Swanson1, Jacob Marasco2, David Lee2, Thomas Ahlering2, Jane Meza1, Chi Lin1, Christopher Deibert1, Shuo Wang1, Michael Baine1

1University of Nebraska Medical Center, 2University of California, Irvine, 3Creighton University

Presented By: Linda Huynh, PHD

Introduction: Radiomics have been shown to capture subvisual patterns in medical imaging and aid in the quantitative characterization of adverse cancer phenotype. The purpose of the present study is to develop, evaluate and validate the performance of a magnetic resonance imaging (MRI)-derived radiomic model for the prediction of prostate cancer (PC) recurrence.

Methods: MRI was obtained from 339 patients who underwent radical prostatectomy (RP) at three institutions from March 2012 through November 2018. All patients had a minimum of two years follow-up via prostate specific antigen (PSA) levels. Image normalization was conducted via histogram matching and all features were evaluated for stability via intraclass correlation coefficient (ICC). A random forest model was utilized to develop and validate the model in 9:1 training versus testing sets and compared to the CAPRA score and Pre-Radical Prostatectomy nomogram. Correlational analysis between radiomic features and clinicopathologic characteristics was also assessed.

Results: Eighteen important and non-redundant features were found to be predictors of PC recurrence at a mean±SD of 3.4±1.9 years. Features were aggregated into a radiomic model and five-fold, ten-run cross-validation yielded a receiver-operator characteristic curve area under the curve (ROC-AUC) of 0.82±0.04 in the training set. In comparison, CAPRA score and Pre-Radical Prostatectomy nomogram yielded AUC of 0.66±0.05 and 0.64±0.04, respectively (p < 0.01). When applied to the test set (n = 49), ROC-AUC was 0.72 and sensitivity, specificity, positive predictive value, and negative predictive value were 88%, 56%, 28% and 96%, respectively.

Conclusions: Although correlational analysis revealed multiple significant correlations between radiomic and clinical features, correlation with histology, pathology, and genomics will further improve clinical interpretability.

Funding: NA.
MP18-18 Prostate MRI for Staging Use in Prostate Cancer: Single Institution Real World Experience

Mason Henrich2, Michael Raver1, Daniel Thiemann2, Nicholas Campo2, Meghana Singh2, Sarah Brink1, Ruth Sanchez de la Rosa1, Ukeinebo Igori1, Milan Patel2, Ravi Munver1, Kevin Basralian1, Muthahar Ahmed1, Michael Degen1, Michelle Kim1, Nitin Yerram1, Michael Stifelman1

1Hackensack University Medical Center, 2Hackensack Meridian School of Medicine

Presented By: Mason Henrich, BS

Introduction: The use of MRI has strong evidence for diagnosis of prostate cancer, but the literature reports limited use in staging of organ-confined cancer. We sought to assess the utility of prostate MRI in staging patients undergoing radical prostatectomy (RP) as well as accuracy of tumor quantification on final pathology.

Methods: Patients with a preoperative 3T multiparametric prostate MRI were identified from a retrospective, IRB-approved database of RP patients from January 1, 2017 to April 15, 2022. MRI findings of organ-confined disease (OCD), extracapsular extension (ECE), seminal vesicle invasion (SVI), lymph node involvement (LNI), and dominant nodule size were compared to postoperative findings on final pathology. OCD was defined as the absence of ECE, SVI, or LNI on MRI. Sensitivity, specificity, PPV, NPV, and accuracy were calculated for each MRI finding. Correlation coefficient was calculated to assess the relationship between predicted tumor size on imaging compared to tumor size on final pathology.

Results: For this study, 136 patients met selection criteria and were included in the analysis. The results of calculations for sensitivity, specificity, PPV, NPV, and accuracy are included in Table 1. In 70 patients with nodule size annotated on preoperative MRI and described final surgical pathology, a correlation coefficient was found to be R=0.537, with r2=0.28, indicating a relatively weak model to predict tumor size based on MRI findings. Mean nodule size on preoperative MRI was 17.6 mm (SD 8.1), compared to 17.9 mm on final pathology (SD 10.6).

Conclusions: In our single institution experience, MRI had excellent specificity for ECE, SVI, and LNI. When these features are present on imaging, appropriate surgical planning should be considered to avoid positive margins. In addition, based on poor sensitivity and limited ability to predict final tumor size, the absence of adverse features on MRI should not guide the decision on whether to pursue a nerve-sparing approach.

Funding: No funding.

MP18-19 Assessing the accuracy of MRI in the diagnosis of prostate cancer

George Bond1, Daniel Bowen1, Jasper Bondad1, Mohammad Abdallah1, Skandadas Ganeshalingam1

1Broomfield Hospital, Essex

Presented By: George Bond, BA, MSc, BMBS

Introduction: This study aims to establish the accuracy of our local MRI Prostate in the diagnosis of prostate cancer.

Methods: A single centre retrospective audit was conducted. We identified 550 patients who were referred under the 2WW pathway for suspected prostate cancer between January 2021 and December 2021. 390 patients (median age of 69 years) underwent MRI prostate. A suspicious MRI was defined as Pi-RADS3 or with a PSA density (PSAD) of ≥0.15. 214 patients (median age of 71) subsequently underwent local anaesthetic transperineal prostate biopsy. Clinically significant prostate cancer (csPCa) was defined as prostate cancer with a Cambridge prognostic group score of ≥3.

Results: The positive predictive value (PPV) for suspicious MRI in detecting any prostate cancer and csPCA were 77% and 50% respectively, PPVs for csPCA were 26%, 45% and 80% for, respectively, Pi-RADS 3, 4 and 5. The PPV for patients with a PSAD of ≥0.15 for any prostate cancer was 41% and 5% for csPCA.

Conclusions: Our local data suggests good accuracy of our MRI Prostate in the diagnosis of prostate cancer and csPCA. This information can potentially aid in counselling patients who are in the diagnostic pathway for prostate cancer, providing them with pertinent local data.

Funding: I sought permission from the hospital, where I work, to undertake this research. I analysed the data in my free time. I received no funding for this project.
MP19-01 Endoscopic Combined Intrarenal Surgery Versus Percutaneous Nephrolithotomy for Complex Pediatric Stone Disease: A Comparative Analysis of Efficacy and Safety

Yunus Yunus Emre2, Cagri Akin Sekerci1, Yunus Emre Genç2, Faruk Arslan3, Ersin Gokmen2, Selcuk Yucel1, Tufan Tarcan1
1Marmara University School of Medicine, Department of Urology, Division of Pediatric Urology, 2Marmara University School of Medicine, Department of Urology

Presented By: Yunus Yunus Emre, MD

Introduction: The interest in supine percutaneous nephrolithotomy (PCNL) is increasing among centers to achieve high surgical success rates with less morbidity. Despite advanced retrograde intrarenal surgery armamentarium, percutaneous approaches remain the first-line surgical treatment modality for >2 cm and complex renal stones. There are no comparative studies yet in the literature for pediatric endoscopic combined intrarenal surgery (ECIRS). In this study, we aimed to contribute to the literature by evaluating the safety and efficacy of ECIRS by comparing it with PCNL.

Methods: Patients under 18 years of age who underwent PCNL and ECIRS for urinary tract stone disease at our Pediatric Urology department between 2012 and 2024 were included. Preoperative (demographic characteristics, stone characteristics, biochemical parameters), perioperative (duration of surgery, number of accesses, lasing and fluoroscopy times, endoscopic and fluoroscopic stone-free rates) and postoperative (hospital stay, urinary tract infection, complication and radiological stone-free rates) parameters were retrospectively evaluated.

Results: A total of 68 children [28 (41%) girls and 40 (59%) boys] aged 5 (0-17) years were included in the study. ECIRS was performed in 19 (28%), supine in 28 (41%) and prone PCNL in 21 (30%) patients. As can be seen in the figure1, a significant difference was found in terms of age and nephrolithometry scores. Surgery time, fluoroscopy time, preferred laser type and exit strategy also showed significant difference among the groups as perioperative parameters (p = 0.042, < 0.001, < 0.001, < 0.001, respectively). For postoperative parameters, stone-free rates, complication rates and urinary tract infections were similar between the 3 groups, while a difference was detected in terms of length of hospital stay (p = 0.006).

Conclusions: The current trial suggests that stone-free and complication rates of ECIRS and supine PCNL were similar in the pediatric complex stone patients. Although, the stones in the ECIRS group found to be more complex. Also, ECIRS was superior to PCNL in terms of fluoroscopy exposure and hospital stay. With the widespread use of new generation ureteral access sheaths and flexible ureterorenoscopes, the increased experience with ECIRS, will possibly lead to better stone-free rates for pediatric population in near future.

Funding: None.

MP19-02 Single-center experience with laparoscopic intravesical ureteroneocystostomy in pediatric vesicoureteral reflux

Jae Min Chung1, Se Yi Yoo1, Sang Don Lee1
1Pusan National University Yangsan Hospital

Presented By: Jae Min Chung, MD, PhD

Introduction: Laparoscopic intravesical ureteroneocystostomy (LIVU) proves to be an effective surgical method for resolving vesicoureteral reflux (VUR). The widely used techniques include Cohen’s technique (C) and Politano-Leadbetter technique (PL). This study aims to compare the outcomes of these two surgical methods.

Methods: We retrospectively analyzed the medical records of 39 children who underwent LIVU at our institution between April 2017 and November 2023. Patients were categorized into those who received C (Group C) and those who received PL (Group P). Baseline characteristics, peri- and postoperative parameters, and surgical outcomes were compared. The success of surgery was defined as the disappearance of VUR on voiding cystourethrogram.

Results: Group P consisted of older patients (p < 0.001), and the differential renal function (DRF) was lower (p = 0.008). Gender and VUR grade were similar between the groups. In Group P, the surgical time was longer (p < 0.001), the duration of ureteral catheterization was also longer (p = 0.043), and the need for a DJ catheter was more frequent (p = 0.043). Estimated blood loss and length of hospital stay were similar. Success rates were comparable between the two groups, and the change in DRF was also similar (Table).

Conclusions: PL was more commonly used in advanced age and significant impairment of renal function patients. Although PL took longer, surgical outcomes were favorable in both techniques. With more cases, it may be possible to choose the appropriate method based on patient characteristics.

Funding: None.
MP19-03 Outpatient Robotic Surgery in Pediatric Urology: are we ready to take the leap?
Osama AL-Omar1, Ahmad Dahman1, Amr Elbakry1, Ahmed Abdelhalim1
1West Virginia University (WVU) Medicine, Department of Urology, Division of Pediatric Urology

Presented By: Osama AL-Omar, MD

Introduction: Most pediatric urologic surgeries are routinely done as outpatient procedures with same day discharge. Despite the expanding use of robotic surgeries in the field of pediatric urology, the current practice is to admit patients for observation post-operatively. Our objective is to report our initial experience in exploring the safety and feasibility of outpatient robotic surgery in pediatric urology.

Methods: We retrospectively identified all patients (<18 years) who underwent robotic-assisted urologic surgeries as outpatient procedures at a single center. Data were collected regarding patient age, gender, operative details and follow-up. We also collected information regarding 30-day complications, phone calls to the urology care team, unplanned clinic or ED visits, readmissions or reoperation. We started transitioning to outpatient robotic surgery in 2019 with select procedures. Since the beginning of 2022, outpatient robotic surgery became the standard for all pediatric robotic surgeries, unless medically necessary for postoperative admission, like patients under the age of 5 months. All our patients are managed with a zero-narcotic approach for outpatient pain management. Patients are generally discharged without Foley catheters except in the case of ureteral reimplantation with a history of severe voiding dysfunction. No drains were placed in all patients.

Results: A total of 50 patients (28 males) were identified between 2019 and 2024. Median age at surgery was 76 (7-214) months. Surgical procedures included partial cystectomy for urachal anomalies in 3 patients, ureteral reimplantation in 15, pyeloplasty in 18, uretero-ureterostomy in 5, nephrectomy in 2, Bilateral orchiopexy in 1, Mitrofanoff in 2, bilateral gonadectomy in 1, and ureterolysis in 3. No intraoperative complications were reported, and all patients were discharged from post anesthesia care unit (PACU). Average follow up was 4.6 months. Seven (14%) patients presented to the emergency department (ED) within 30 days postoperatively (2 for fever, 4 for urinary retention or obstructed catheter, and 1 for port site erythema). There was 1 readmission within 30 days for fever and concern for infection, but urine culture did not have growth. The urology team received phone calls from 12 (24%) patients. The reasons for phone calls included wound/dressing questions, dysuria, fever, hematuria, pain, vomiting, and a medication reaction.

Conclusions: Our initial experience indicates the safety and feasibility of outpatient pediatric urologic surgeries. Further studies with a larger number of patients are needed to support this conclusion.

Funding: None.

MP19-04 A Comparison of Practice Patterns and Safety Outcomes for Radical and Partial Nephrectomy between Pediatric Urologists and Pediatric General Surgeons
Christopher Connors1, Christopher Connors1, Micah Levy1, Daniel Wang1, Juan Sebastian Arroyave1, Krishna Ravivarapu1, Modassar Awan1, Jeffrey Stock1, Michael Palese1
1Icahn School of Medicine at Mount Sinai

Presented By: Christopher Connors, BA

Introduction: Pediatric urologists (PURO) and pediatric general surgeons (PGS) both perform radical nephrectomy (RN) and partial nephrectomy (PN), but there is sparse literature comparing the clinical practices and outcomes between the two practitioners. This study compares practice patterns and safety outcomes between PURO and PGS for RN and PN using a national database.

Methods: The Pediatric National Surgical Quality Improvement Program database was queried for RN and PN from 2012 to 2020. Patients were grouped as treated by PURO or PGS. Trends in case frequency, indication, and minimally invasive surgical (MIS) approach were compared. Baseline characteristics and rates of 30-day surgery-related readmissions, prolonged (> 75th percentile) length of stay (PLOS), and Clavien-Dindo (CD) complications, including reoperations (CD III) were compared between groups via chi-square and multivariate analyses.

Table 1: Frequency of Outcomes and Multivariable Logistic Regression of Adverse Surgical Outcomes between Pediatric Urology and Pediatric General Surgery for Radical and Partial Nephrectomy

<table>
<thead>
<tr>
<th>Procedure</th>
<th>PURO (n=315)</th>
<th>PGS (n=1751)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radical Nephrectomy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clavien-Dindo (CD) I (0-1)</td>
<td>80 (24.7)</td>
<td>94 (5.3)</td>
<td>0.004</td>
</tr>
<tr>
<td>Clavien-Dindo (CD) II (2-3)</td>
<td>47 (10.0)</td>
<td>52 (2.9)</td>
<td>0.005</td>
</tr>
<tr>
<td>Clavien-Dindo (CD) III (4-5)</td>
<td>17 (4.6)</td>
<td>54 (3.1)</td>
<td></td>
</tr>
<tr>
<td>PLOS (n&gt;75th)</td>
<td>206 (65.3)</td>
<td>1029 (58.4)</td>
<td>0.007</td>
</tr>
<tr>
<td>Partial Nephrectomy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clavien-Dindo (CD) I (0-1)</td>
<td>14 (4.9)</td>
<td>12 (0.7)</td>
<td>0.254</td>
</tr>
<tr>
<td>Clavien-Dindo (CD) II (2-3)</td>
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<td>3 (0.2)</td>
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<td>3 (0.2)</td>
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<tr>
<td>PLOS (n&gt;75th)</td>
<td>10 (3.4)</td>
<td>78 (4.9)</td>
<td>0.887</td>
</tr>
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</table>

Table 2: Multivariable Logistic Regression Analysis of PN as a Predictor of Adverse Surgical Outcomes

<table>
<thead>
<tr>
<th>Procedure</th>
<th>PURO (n=315)</th>
<th>PGS (n=1751)</th>
<th>p-value</th>
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<td>3 (0.2)</td>
<td>1.000</td>
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<td>78 (4.9)</td>
<td>0.887</td>
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</table>

Table 3: Frequency of Outcomes and Multivariable Logistic Regression of Adverse Surgical Outcomes between Pediatric Urology and Pediatric General Surgery for Radical and Partial Nephrectomy

<table>
<thead>
<tr>
<th>Procedure</th>
<th>PURO (n=315)</th>
<th>PGS (n=1751)</th>
<th>p-value</th>
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<td>78 (4.9)</td>
<td>0.887</td>
</tr>
</tbody>
</table>

Funding: None.
Results: 3984 RN cases (PURO = 2213; PGS = 1771) and 935 PN cases (PURO = 703; PGS = 232) were identified. PURO were more likely than PGS to operative via a MIS approach (RN: 54.2 vs 11.5%; PN: 31.6 vs 12.5%, all p < 0.001). Additionally, PGS were more likely than PURO to treat malignancies (RN: 73.8 vs 8.5%; PN: 72.0 vs 12.5%, all p < 0.001). Children treated by PGS experienced higher rates of all adverse outcomes for RN and PN compared to PURO and were significantly more likely to experience CD III complications and PLOS, both p < 0.005 [Table 1A]. On multivariate analysis, being treated by a PURO was protective of PLOS (RN: OR = 0.365, PN: OR = 0.380, p < 0.001) but was not predictive of any other surgical outcomes when compared to PGS [Table 1B].

Conclusions: Pediatric urologists perform most pediatric RN and PN cases and are more likely to operative via a MIS approach, but mainly operate on benign renal disease while pediatric general surgeons treat most malignant cases. Safety outcomes between both specialties are generally comparable, but treatment by a PURO is protective for PLOS.

Funding: None.

MP19-05 Success of A Non-Narcotic Regimen for Postoperative Pain Control Following Robotic and Laparoscopic Pediatric Urologic Surgeries in Communities with High-Risk of Drug Abuse

Osama AL-Omar1, Jennifer Mihalo1, Logan Welsh2, Ahmed Abdelhalim1

1West Virginia University (WVU) Medicine, Department of Urology, Division of Pediatric Urology, 2West Virginia University, school of Medicine

Presented By: Osama AL-Omar, MD

Introduction: Despite known negative impacts of narcotic pain medication, as of 2019 nearly half of pediatric urologists prescribe narcotics to all post operative patients and only 15% reported never prescribing narcotics (Ahn et al, 2019). Recent efforts have focused on decreasing postoperative opioid prescriptions for children and adolescents. Beginning May of 2019, we implemented a non-narcotic pathway for post-operative pain management. This is especially important given that our patients reside in geographical regions most affected by the opioid epidemic with 94% of our patients residing in a county with a drug overdose rate above the national average (County Health Rankings, 2023). Our objective is to establish a standard of practice for effective post-operative pain control while decreasing narcotic prescriptions for children in high-risk communities.

Methods: We conducted a retrospective review of 154 robotic and laparoscopic pediatric urology surgeries from 5/1/2019 – 4/30/2023. The majority of surgeries were completed robotically (66%) and half were discharged the same day (51%). Patients were primarily male (66%), white (88%) and average age of 5.4 years. We implemented intraoperative multimodal pain control (local anesthesia, intravenous acetaminophen and/or ketorolac) and post-operative oral acetaminophen and ibuprofen. Patients with a catheter were also given oxybutynin for bladder spasms and those with a ureteral stent were prescribed oxybutynin and/or tamsulosin for stent related symptoms.

Results: Only one patient (0.6%) was prescribed outpatient narcotic pain medication. Of those who were admitted for at least one night, only 4 children (5.3%) received inpatient pain medication. Following discharge, 9 patients (5.8%) sought medical advice for pain. All of these requests were able to be managed without prescription narcotics.

Conclusions: We were successful in treating post-operative pain without narcotics in >99% of patients following pediatric urologic robotic/laparoscopic surgeries. This demonstrates feasibility of a non-narcotic pathway in managing pain without sacrificing patient comfort with few seeking care for post operative pain and none of these patients requiring narcotic prescriptions. Of those who called with post operative pain, the majority (n = 8) were related to bladder spasms or urinary retention which are better treated with non-narcotic medications. This approach may be of special value for our pediatric patients living in communities with high-risk of drug misuse.

Funding: None.

MP19-06 Does a Patient-Centered Pragmatic Clinical Trial Affect Adherence to Postoperative Follow-up? A Bi-Institutional Examination on Determinants of Patient Adherence After Kidney Stone Surgery

Brenton Bicknell1, Ching Man Carmen Tong1, Gregory Tastian2, Christina Ching3

1University of Alabama at Birmingham, 2Children’s Hospital of Philadelphia, 3Nationwide Children’s Hospital

Presented By: Brenton Bicknell

Introduction: Little is known about social determinants influencing follow-up adherence in kids with kidney stone disease. The Pediatric KIDney Stone (PKIDS) Care Improvement trial compared stone clearance and patient experiences after kidney stone surgery. We sought to understand the effect of participating in this clinical trial on follow-up adherence to postoperative clinic visit and imaging acquisition. We hypothesized that resources inherent to participation in PKIDS would improve adherence to both postoperative office visits and imaging acquisition.

Methods: We included all patients who had stone surgery during the time period of the PKIDS trial (2020-2023) at Children’s Hospital of Alabama and Nationwide Children’s Hospital in Columbus Ohio, both of which participated in the PKIDS Care Improvement Network. The outcomes were acquisition of renal imaging within 16 weeks, as defined in the trial protocol, and adherence to postoperative clinic visit. Trial participants had a dedicated research coordinator who was assigned to the study at each institution to liaison with the family and encourage study adherence. In addition, trial participants were financially compensated. Patient characteristics who did and did not participate in the PKIDS trial were compared with Fischer’s exact test and Mann-Whitney U test.

Results: A total of 233 patients who had kidney stone surgery were included, of which 150 participated in the trial and 83 did not. There was no statistical difference in adherence to postoperative clinic visit (65% vs. 70%, p = 0.48) or imaging acquisition (67% vs. 61%, p = 0.22) within 16 weeks after surgery between
PKIDS and non-PKIDS participants. The non-PKIDS cohort had significantly more males and more patients with a history of stone removal, but there were no statistical differences in distance traveled to hospital or difference in age compared with the PKIDS group.

Conclusions: Our data suggest that enrollment in the PKIDS trial had no influence on patient adherence in two geographically different study sites. These results support the generalizability of PKIDS data for future outcomes studies. This study highlights the challenges of patient adherence to postoperative clinic visits and imaging acquisition, and future studies should focus on investigating additional social determinants.

Funding: This work was supported in part through a Patient-Centered Outcomes Research Institute (PCORI) Program Award (CER-2018C3-14778). All statements in this report, including its findings and conclusions, are solely those of the authors and do not necessarily represent the views of the Patient-Centered Outcomes Research Institute (PCORI), its Board of Governors or Methodology Committee.

### Table 1: Comparative Analysis of Enrollment in PKIDS Influence on Adherence.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Overall (n=200)</th>
<th>PKIDS Group (n=50)</th>
<th>Non-PKIDS (n=150)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male, n (%)</td>
<td>91 (45.5)</td>
<td>52 (42.0)</td>
<td>39 (26.0)</td>
<td>0.044</td>
</tr>
<tr>
<td>Age, mean (SD)</td>
<td>5.1 (3.4)</td>
<td>4.6 (3.3)</td>
<td>5.3 (3.5)</td>
<td>0.261</td>
</tr>
<tr>
<td>Race and Ethnicity, n (%)</td>
<td>234 (117)</td>
<td>139 (27.8)</td>
<td>95 (30.0)</td>
<td>0.344</td>
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<tr>
<td>Caucasian</td>
<td>124 (62.0)</td>
<td>72 (36.0)</td>
<td>52 (35.0)</td>
<td>0.396</td>
</tr>
<tr>
<td>Black</td>
<td>17 (7.0)</td>
<td>9 (4.5)</td>
<td>8 (5.5)</td>
<td>0.396</td>
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<tr>
<td>Other</td>
<td>2 (1.0)</td>
<td>3 (1.5)</td>
<td>1 (0.5)</td>
<td>0.408</td>
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<td>Miles to hospital, median [IQR]</td>
<td>30.9 (15.0, 60.1)</td>
<td>33.0 (15.1, 75.1)</td>
<td>37.0 (14.2, 89.9)</td>
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<td>Insurance, n (%)</td>
<td>191 (95.5)</td>
<td>107 (53.5)</td>
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<td>Private</td>
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<tr>
<td>Public</td>
<td>137 (68.5)</td>
<td>86 (43.0)</td>
<td>51 (34.0)</td>
<td>0.125</td>
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<tr>
<td>Other/Unknown</td>
<td>9 (4.5)</td>
<td>3 (1.5)</td>
<td>6 (4.0)</td>
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<td>Family history, n (%)</td>
<td>150 (75.0)</td>
<td>90 (45.0)</td>
<td>60 (40.0)</td>
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<tr>
<td>Prior surgical stone, n (%)</td>
<td>34 (17.0)</td>
<td>17 (8.5)</td>
<td>17 (11.3)</td>
<td>0.144</td>
</tr>
<tr>
<td>Prior stone diagnosis, n (%)</td>
<td>80 (40.0)</td>
<td>47 (23.5)</td>
<td>33 (22.0)</td>
<td>0.465</td>
</tr>
</tbody>
</table>

Postoperative follow-up adherence

| Within 10 weeks, n (%) | 155 (77.5) | 97 (48.5) | 58 (38.6) | 0.025   |
| Days to follow-up, median [IQR] | 55.0 (41.1, 70.0) | 52.0 (20.3, 71.1) | 57.0 (41.0, 63.0) | 0.159   |

Postoperative imaging acquisition adherence

| Within 10 weeks, n (%) | 152 (76.0) | 103 (51.5) | 49 (32.6) | 0.023   |
| Days to imaging evaluation, median [IQR] | 54 (41.1, 80.0) | 38.0 (22.3, 57.1) | 41.0 (27.3, 65.0) | 0.591   |

### Methods
From a prospective clinical database, the clinical parameters of pediatric patients with bilateral VUR from December 2019 to October 2023 who underwent unilateral RALUR and contralateral Dx-HA endoscopic injections were retrospectively reviewed. RALUR was done on the side with higher grade VUR, and Dx-HA injection was utilized for the side with low grade VUR. Clinical success was defined as patients who did not have a febrile UTI on follow up.

### Results
This cohort included 9 patients with a mean age of 3.3 years and median follow-up of 11 months. 7/8 (87.5%) patients were noted to have voiding dysfunction prior to surgery, and 6/8 (75%) were initially diagnosed after a febrile UTI. Median VUR grade was grade 4 and grade 1 for the RALUR and Deflux sides, respectively. Clinical success rate was 100% with no complications noted during the followup period. Mean robotic operative time was 132.8 minutes with hospital stays averaging 1.4 days. There were no episodes of post-operative urinary retention.

### Conclusions
The combination of two technologies (Dx-HA injections and RALUR) for minimally invasive treatment of VUR is an effective and safe approach for patients with bilateral VUR, with success rates similar to the gold standard of open surgical approaches and with the advantages of minimally invasive procedures. The application of both technologies in these patients avoided the known potential complications of the individual technologies. Further studies will evaluate the long-term effectiveness of this approach in a larger patient cohort with a longer follow-up period.

### Funding
None.

MP19-07 Combination of Two Minimally Invasive Technologies for the Treatment of Bilateral Vesicoureteral Reflux in Children

Chester Koh, Nik Rakic, Srikrar Chilukuri, Allen Kuncheria, Raymond Yong, Catherine Nguyen

1BCM, 2Texas Children’s Hospital - BCM

Presented By: Chester Koh, MD, MBA

### Introduction
Endoscopic subureteric dextranomer (Dx)-hyaluronic acid (HA) injections and robot-assisted laparoscopic extravesical ureteral reimplantation (RALUR) represent two technologies that are utilized in the minimally invasive surgical management of vesicoureteral reflux (VUR) in children. However, lower success rates with Dx-HA and temporary urinary retention with bilateral RALUR have been reported in the past. We hypothesized that the combination of the two technologies for select patients will enhance the benefits of each technology while avoiding their known potential complications.

### Methods
From a prospective clinical database, the clinical parameters of pediatric patients with bilateral VUR from December 2019 to October 2023 who underwent unilateral RALUR and contralateral Dx-HA endoscopic injections were retrospectively reviewed. RALUR was done on the side with higher grade VUR, and Dx-HA injection was utilized for the side with low grade VUR. Clinical success was defined as patients who did not have a febrile UTI on follow up.

### Results
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### Funding
None.

MP19-08 Safety and efficacy of ureteroscopy and laser stone fragmentation (URSL) for large pediatric stones ≥2 cm

Victoria Jahrreiss, Stephen Griffin, Bhaskar Somani
Presented By: Victoria Jahrreiss, MD

**Introduction:** Managing large urinary stones (≥2 cm) in pediatric populations poses a significant clinical challenge. Ureteroscopy and laser stone fragmentation (URSL) presents a minimally invasive treatment option, yet its safety and efficacy for large stones in pediatric patients necessitate further evaluation. This study aims to evaluate the safety and efficacy of URSL for treating pediatric patients with large urinary stones.

**Methods:** From a prospectively maintained database, a retrospective analysis was conducted for all pediatric patients who underwent ureteroscopy and laser stone fragmentation (URSL) for stones ≥2 cm between the years of 2011 and 2023. We collected data on patient demographics, stone characteristics including cumulative size, operative details, stone-free rates (SFR), and complications.

**Results:** There were 23 pediatric patients with a median age of 11 years (IQR 6-15), with an even gender distribution (52.2% male, 47.8% female). Stone locations were predominantly in the kidney (n = 17, 73.9%), with a mean cumulative stone length of 24.7 ± 6.49 mm. A pre-operative and post-operative stent was present in 9 (39.1%) and 10 (43.5%) respectively, with a ureteric access sheath (UAS) used in 4 patients. The SFR was 78.3% after the initial procedure. Only one Clavien-Dindo I complication was noted. The median hospital stay was 1 day.

**Conclusions:** URSL can achieve excellent outcomes in pediatric patients even for large urinary stones. While URSL is safe and effective offering high stone-free rates and minimal morbidity, it is important to recognize the potential need for staged procedures in these cases. Parents should be thoroughly counseled about this aspect of treatment to set appropriate expectations regarding the management process.

**Funding:** N/A.

---

**Table 1**

<table>
<thead>
<tr>
<th>Age (median, IQR)</th>
<th>N= 23 (%)</th>
</tr>
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<tbody>
<tr>
<td>Male</td>
<td>12 (52.2 %)</td>
</tr>
<tr>
<td>Female</td>
<td>11 (47.8 %)</td>
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<td>Stone location</td>
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<td>Upper pole</td>
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<td>Mid pole</td>
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<td>Lower pole</td>
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<tr>
<td>Kidney and ureter</td>
<td>3</td>
</tr>
</tbody>
</table>

**Stone composition**

- Calcium oxalate diphosphate: 9
- Calcium oxalate monohydrate: 5
- Mixed stone (Calcium phosphate carbonate, Calcium oxalate diphosphate): 4
- Mixed stone (Calcium oxalate monohydrate, Calcium oxalate diphosphate): 2
- Mixed stone (Calcium phosphate monohydrate, Magnesium ammonium phosphate hexahydrate): 2
- Mixed stone (Calcium phosphate carbonate, Magnesium ammonium phosphate hexahydrate): 1

**Multiple stones:** 12 (52.2 %)
**Total stone length in mm (mean, SD):** 24.7 ± 6.49
**Ureteral access sheath:** 9 (39.1 %)
**Post-operative stent:** 10 (43.5 %)
**Complications:** 1 (4.2 %)
**Stone-free after the 1st procedure:** 18 (78.3 %)
**Length of stay:** 1 (1-2) days
MP19-10 Robotic Assisted Nephropexy In An Adolescent

Craig Peters

1University of Texas Southwestern/Children’s Health Dallas

Presented By: Craig Peters, MD

Introduction: Laparoscopic and robotic nephropexy has been well described in the adult population. There is limited reporting in children or adolescence, presumably, due to the limited population with confirmed renal ptosis causing symptoms. The ambiguity of the diagnosis as well may contribute to these limited reports.

Methods: We describe a case of confirmed symptomatic right renal ptosis in a 14-year-old girl with possible Ehlers-Danlos syndrome. The diagnosis has not yet been confirmed genetically due to parental preference. She presented with progressive right flank and back pain with prolonged standing. This was increasing in frequency and intensity. Her mother had a similar diagnosis. She underwent evaluation with ultrasound, demonstrating increased renal resistance indices and increased hydronephrosis in the standing position. Further evaluation used supine and upright intravenous pyelography demonstrating a clear drop in the location of the kidney, angulation of the proximal ureter and increased hydronephrosis. Thorough discussion with the family emphasized that this procedure not been well described in the adolescent, and the possibility of failure or incomplete treatment was very real. Family agreed to proceed with the surgery with robotic assistance. Using three port exposure with the DaVinci Xi System, the right kidney was exposed predominantly at the lower pole, both anteriorly and posteriorly. Multiple Ethibond® permanent sutures were placed through the renal capsule and the retroperitoneal fascia. Sutures were first placed, and then tied to facilitate exposure. There was no attempt to manipulate the ureteropelvic junction, which appeared completely normal. She was discharged on post-op day one. No stents or drainage tubes were used.

Results: At one month follow-up she stated her symptoms were markedly improved. Upright ultrasound after supine ultrasound demonstrated no movement of the kidney relative to the body wall and liver. At five months follow-up, she continues to be free of her prior symptoms and is very satisfied with the result.

Conclusions: While the diagnosis of symptomatic renal ptosis is very uncommon in the adolescent, it seems to be a real entity and in highly selected cases, robotically assisted nephropexy seem to be a reasonable option for management. Careful preoperative discussion with patient and family is essential. It is unlikely that large trials would be feasible given the relative rarity of the condition.

Funding: None.

MP19-11 Pediatric Urolithiasis and Disruptive Household Situations: Is there a link?

Osama AL-Omar1, Katharina Mitchell1, Zachary Edgerton1, Charles Gish1, Paige Poffenberger1, Ahmed Abdelhalim1

1West Virginia University (WVU) Medicine, Department of Urology, Division of Pediatric Urology

Presented By: Osama AL-Omar, MD

Introduction: While divorce rates nationally have declined, in our rural state the number of children with disruptive household situations (DHS) has risen. In the United States healthcare system, 306,590 children were evaluated over 5 years, of whom 3,386 (1.1%) patients had ICD codes consistent with (DHS) (ICD-10 Z63.5, Z62.2, Z62.21). In this study, we tried to characterize the epidemiology of urolithiasis in children in DHS. We hypothesize that children with DHS are more likely to have unhealthy dietary habits and possible limitations in access to healthcare resources resulting in more complex stone disease.

Methods: The electronic database of a single tertiary center was reviewed for all pediatric patients <18 years old who had surgical intervention for urolithiasis between 2018-2023. Baseline patient demographics, stone disease characteristics, management, complications, follow-up and recurrence rate were compared between patients with and without DHS.

Results: Ninety-one patients were analyzed (96.7% white). Findings were as follow: (79%) had normal genitourinary anatomy. Kidney location (49.5%) was the most common location, hematuroia was the most common indication for presentation (58.2%), and no family history of stones in (62.6%). Most of the patients (75.8%) were managed with ureteroscopy, and calcium oxalate dihydrate was the most common stone type (45.1%). Finally, (76.9%) patients did not have custody issue. Chi-squared test was used to analyze the categorical variable, which failed to reveal any statistically significant differences between the custody and non-custody groups. However, Mann Whitney U test revealed a statistically significant difference between stone burden in children with and without custody issues with a higher stone burden seen in children with custody issues (p<0.02).

Conclusions: Almost a quarter of our pediatric urolithiasis population had DHS. Patients with DHS had a statistically significantly larger stone burden at presentation. This suggests a higher incidence of urolithiasis in children living with DHS, with a larger stone burden at presentation compared to the general population.

Funding: None.

MP19-12 Trends in Pediatric PCNL at a Single High-Volume Institution

Nikhil Batra1, David C. Dalton1, NikhilV. Batra1, T. Max Shelton1, Marcelino E. Rivera1

1Indiana University School of Medicine

Presented By: Nikhil Batra, MD

Introduction: This study aims to understand trends in pediatric percutaneous nephrolithotomy (PCNL) at a single, high-volume institution.

Methods: A retrospective study was performed to identify all PCNL procedures performed on patients ages 17 and under at a single institution from 2019 to 2023. Demographic, clinical, and surgical data was obtained from the chart and analyzed using frequency tables in Stata to obtain basic statistics.

Results: Four surgeons performed 31 pediatric PCNLs over 5 years. The average patient age was 9 years old at the time of surgery. 67% of patients were male, and 93% were white. Average case length was 112 min. 90% of cases were performed for stones. Surgeons obtained their own access in 83% of cases. Lower pole access occurred in 64% of cases and upper pole in 32% of cases. Surgeons used ultrasound guided access in 12% of cases and fluoroscopy in 84% of cases. Sheath size ranged from 11 French to 24 French, and 24 French sheaths were used in 70% of cases. Four patients had complications within 30 days (13%). Calcium phosphate was the most common type of stone seen (37%).
MP19-13 The Impact of Area Deprivation and Demographic Factors on Adherence to Follow-up After Kidney Stone Surgery in Children

Brenton Bicknell, Ching Man Carmen Tong, Joseph Crivelli, David Joseph, David Kitchens, Timothy Boswell, Stacy Tanaka

1University of Alabama at Birmingham

Presented By: Brenton Bicknell

Introduction: With the rapid rise in pediatric kidney stones, longitudinal management is important in preventing recurrence. Identifying social determinants of health is a key step in understanding what influences adherence to follow-up after surgery. Our children’s hospital is located in a US state with high poverty and income inequality. The Area Deprivation Index (ADI) is a validated mapping tool that displays socioeconomic conditions on the neighborhood level based on 17 U. S. Census variables such as education, income, and employment. We hypothesize that those who lived farther from our hospital and in areas of higher deprivation were less likely to follow up.

Methods: A retrospective chart review was performed on patients who had stone surgery from 1/2021 to 7/2023. Demographics and patient characteristics were analyzed. ADI was calculated by using patient home address to rank against other neighborhoods in the home state and across the nation. Higher ADI score indicates more socioeconomic disadvantage. The primary outcome was adherence to scheduled postoperative follow-up visit within 16 weeks after surgery. Differences in patient characteristics were determined using chi-square tests for categorical variables and independent t-tests for continuous variables.

Results: In total, 76 patients were identified: 41 were adherent and 35 were non-adherent. Mean age was 14.4 years old. The adherent group traveled 28.2 miles compared to 59.5 miles in the nonadherent group (p = 0.031). Those with prior history of stone surgery were less adherent (p = 0.035). ADI scores were lower in the adherent compared to non-adherent group both at the state level (3 vs. 5, p = 0.017) and at the national percentile level (61 vs. 76, p = 0.004). No significant statistical differences were observed between the two groups regarding gender, race, insurance status, single parent household status, previous diagnoses of stones, and family history of stones.

Conclusions: This study identified those who lived further away from the hospital and in neighborhoods with higher socioeconomic disadvantage to be less adherent to postoperative follow-up. Future studies should consider multi-institutional collaborations to further validate our findings and identify intervention strategies to increase follow-up adherence in pediatric patients with kidney stones.

Funding: None.

MP19-14 Pediatric nephrolithiasis management by Percutaneous Nephrolithotomy : Long term experience of tertiary care center

Kavan Takvani

1MPUH, Nadiad, India

Presented By: Kavan Takvani, MS (trainee urology)

Introduction: Stone disease is global problem with prevalence across all age groups. Most developing nations still have considerable incidence of paediatric stones. Pediatric stone formation is multifactorial with presence of environmental and metabolic factors associated with or without anatomic abnormalities. With growing experience & technological advancement, management of paediatric stones has been transformed. Open surgeries of Shockwave lithotripsy (ESWL), Percutaneous nephrolithotomy (PCNL) and flexible ureteroscopic (RIRS) stone removal are methods available for renal stones. Guidelines suggest use of PCNL in stones of >20mm size and lower calyceal stones >10mm. We present our experience of managing renal stones in pediatric age group keeping in mind high volume of patients, available technology and local affecting factors.

Methods: A retrospective chart review was performed on patients who had stone surgery from 1/2021 to 7/2023. Demographics and patient characteristics were analyzed. ADI was calculated by using patient home address to rank against other neighborhoods in the home state and across the nation. Higher ADI score indicates more socioeconomic disadvantage. The primary outcome was adherence to scheduled postoperative follow-up visit within 16 weeks after surgery. Differences in patient characteristics were determined using chi-square tests for categorical variables and independent t-tests for continuous variables.

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Funding: None.
A total of 748 stone-formers were included. Two-hundred and seventy-four subjects (36.5%) had a normal vitamin D levels. Clinical and metabolic data were compared between the low and normal vitamin D stone-formers. Continuous data is presented as median (25th - 75th percentile).

Methods: The data from patients seen in the Metabolic Clinic at St. Joseph’s Health Care in London, Ontario, between 2005 and 2019 was extracted and reviewed. Clinical data along with the results of 24-h urine collections and serum biochemistry values were recorded. Vitamin D levels were defined as follows: deficient, <50 nmol/L; insufficient, between 50 - 75 nmol/L; and sufficient, between 75 - 250 nmol/L. Clinical and metabolic data were compared between the low and normal vitamin D stone-formers. Continuous data is presented as median (25th - 75th percentile).

Results: A total of 748 stone-formers were included. Two-hundred and seventy-four subjects (36.5%) had a normal vitamin D level, whereas 474 (63.5%) had low vitamin D levels [220 deficient (29.5%), and 254 insufficient (34%)]. Stone-formers with low vitamin D were younger [53 (42.5 - 61) vs 57 (44 - 67) years, p < 0.001], had higher body mass index (BMI) (40.3%) B/L 110 (13.9%) Number of tracts/case Average: 1.33 Single: 574 (73.02%) Two:160 (21.89%) Three: tracts 52 (7%) Number of stages needed Single stage: 713 (90.7%) 2nd stage: 68 (8.6%) 3rd stage: 5 (0.6%) Tubes: PCN 97% of all DJS in 46% Hb drop 1.22 ± 1.07 gm/dl with blood transfusion rate 4.2% Duration of stay 3-14 days, avg: 4.4 days Mean operative time 38.3±8.16 mins Stone free clearance at 1 month 98.30% Auxiliary procedures 33 patients, 4.15% Comparing our data with other international publications, we noted considerable high stone free rates and less blood loss and major complications. Data presented in table for comparison.

Conclusions: Paediatric urolithiasis unique problem for urologist which requires effective treatment with miniaturized modality as well as long term followup to prevent recurrence. Safety of PCNL is well demonstrated in our series with acceptable rate of complications, hence we recommend PCNL to be considered as an option even in stones 1-2cm in expert hands. Metabolic evaluation is paramount is all paediatric stone patients.

Funding: None.
MP20-03 Knowing a stone’s composition is associated with increased medical directed therapy even in the setting of a 24-hour urine study

Wilson Sui1, Jorge Mena1, Ashwin Balakrishnan1, Heiko Yang1, Maria Camila Velasquez Escobar1, Uday Mann1, Justin Ahn1, David Bayne1, Marshall Stoller1, Thomas Chi1

1University of California, San Francisco

Presented By: Wilson Sui

Introduction: While stone composition analysis is suggested by the American Urologic Association (AUA) guidelines, the popularity of “dusting” techniques during ureterscopy have limited opportunities to send specimen for this notoriously inconsistent test. When a 24-hour study has been completed, the additional information gleaned from a stone composition is unclear. Rates of directed medical therapy are low even at tertiary care centers. The goal of this study was to identify whether the presence of stone composition impacted initiation of directed medical therapy.

Methods: Our institutional kidney stone database was queried for all patients who underwent 24-hour urine studies from 2016-23. Only patients with calcium and uric acid stones were included. Hypercalciuria, hypocitraturia and low pH were defined by reference ranges. Severe hypercalciuria was defined as ≥350mg/day for men and ≥300 for women and severe hypocitraturia was ≤289 and ≤320 respectively. These extreme cases represented the top quartile of participants. Rates of initiation of directed medical therapy were compared amongst those with and without available stone composition using chi-square analysis and logistic regression.

Results: Stone composition was available in 40% of the 723 patients were identified. Among those with severely abnormal values, 50% with known calcium stones were initiated on thiazide compared to only 11% of those without stone composition (Fig 1, p = 0.002). For those with pH < 5.5 and uric acid stones, 43% were initiated on alkali if stone composition was available compared to 25% if not (p = 0.174). In patients with hypocitraturia, stone composition was not associated with alkali therapy. On multivariable logistic regression, stone composition was a predictor for initiation of thiazides (OR 2.4, 95% CI 1.1 - 4.9) for patients with hypercalciuria and alkali (OR 1.7, 95% CI 1.1 - 2.6) in low pH.

Figure 1. Initiation rates of directed medical therapy depending on severity of urinary analyte abnormality and stone composition availability.
Conclusions: While many patients were initiated on directed medical therapy based on the 24-hour urine abnormality, the rate of medication initiation increased when stone composition was available. Reasons for this finding include patient receptiveness to therapy or providers are more proactive in guiding patients towards directed therapy. Additional research should investigate barriers to initiating medical therapy given the low rates of utilization.

Funding: None.

MP20-04  Pulp Fiction: Vitamin C Supplementation and Risk of Kidney Stones

Daniel Jhang1, Al’a Farkouh1, Evan Seibly1, Matthew Buell1, Akin S. Amasyali1, Zhamshid Okhunov1, D. Duane Baldwin1

1Department of Urology, Loma Linda University Health

Presented By: Daniel Jhang, MD

Introduction: With the increased intake of vitamin C supplements during the COVID pandemic, physicians have reported an increase in stone incidence and complexity. The purpose of this systematic review and meta-analysis was to study the effect of vitamin C supplements on urinary parameters associated with stone formation.

Methods: A comprehensive review was performed to retrieve relevant articles published from 1965 until February 2023. Studies were included if they were interventional studies investigating the effect of vitamin C supplements on 24-hour urinary parameters (oxalate, citrate, and calcium) in both stone formers and non-stone formers, compared to either baseline values or a placebo group. Meta-analyses were performed to calculate the mean difference (MD) measuring the effect of vitamin C supplements on these parameters.

Results: The initial database search yielded 808 titles and after rigorous screening, 9 studies were included. Pooled analysis revealed a significant increase in urinary oxalate after vitamin C supplementation compared to baseline (MD=9.72 mg/24h; p < 0.001). When compared to placebo, vitamin C also significantly increases urinary oxalate excretion (MD=6.45 mg/24h; p < 0.001). Subgroup analyses of both comparisons showed that vitamin C increases urinary oxalate in both stone formers and non-stone formers (p < 0.05 for all). Analyses of studies reporting on 24-h urinary citrate or calcium revealed no significant effect of vitamin C on either parameter.

Conclusions: Vitamin C supplements significantly increase urinary oxalate excretion in both stone formers and non-stone formers. This may contribute to stone formation and may worsen stone presentation among those who consume these supplements.

Funding: None.

MP20-05  Practice Patterns for Managing Asymptomatic Ureteral Stones Without Definitive Stone Passage Highlight the Need for Guidance

Robert Chang1, Shannon Ervey1, Tareq Aro2, Zeph Okeke2, David M Hoening2, Arun Rai2, Jared S Winoker1

1Smith Institute for Urology at Lenox Hill, 2Smith Institute for Urology, 3Zucker School of Medicine at Hofstra/Northwell

Presented By: Robert Chang, BS

Introduction: There is a clinical conundrum for asymptomatic patients attempting spontaneous stone passage who fail to observe a passed stone. Persistent stones need to be treated to prevent complications. However, clinicians must be judicious to avoid unnecessary procedures and overuse of CT scans, despite the limitations of ultrasound (US) and plain films (KUB) to confirm interval stone passage. Our objective was to evaluate practice patterns for managing asymptomatic ureteral stones and identify factors that influence decisions of whether, when, and how to reimaging patients.

Methods: An international, cross-sectional, survey-based study was conducted with members of the Endourological Society. Questions were presented in case vignettes to evaluate management differences based on initial stone size and location. Hydronephrosis, interval stone migration, and other clinical factors were also assessed to determine their significance in management.

Results: There were 105 study participants. The mean stone size above which participants favor early intervention is 7.7 mm (SD=1.6 mm). Preferred reimaging modalities are CT (35%), US+KUB (21%), or US only (13%), while 30% select imaging on a per-case basis. Larger stones (≥8 mm) are generally managed more aggressively with CT reimaging and surgical intervention. Management of small and medium stones (<8 mm) is driven by clinician preferences (Table 1). Hydronephrosis on follow-up US is an indication for stone treatment for 28% of respondents while most participants favor CT reimaging prior to treatment.

Conclusions: There is significant variability in the management of asymptomatic ureteral stones following appropriate observation and equivocal non-CT follow-up imaging. Aside from stone size, the perceived importance of clinical factors are quite variable and largely lack supporting evidence. Prior work suggests many ureteral stones persist despite the absence of pain and hydronephrosis, presenting risks to presumed passage. This must be balanced against the risks and costs of CT overuse. Given the nuances of asymptomatic ureteral stone management, formal investigations are needed to better inform reimaging decisions and patient counseling.

Funding: None.
**MP20-06 Outcomes of urinary and serum parameters in obese versus non-obese stone patients: 12-year outcomes from a metabolic stone clinic**

Kabir Patwardhan³, Victoria Jahrreiss¹, Paul Cook², Carlotta Nedbal¹, Bhaskar Somani³

¹Department of Urology, Medical University Vienna, Department of Urology, University Hospital Southampton, ²University Hospital Southampton NHS Fundations Trust, ³Department of Urology, University Hospital Southampton

Presented By: Kabir Patwardhan, MD

**Introduction:** With obesity and kidney stone disease (KSD) becoming increasingly prevalent, there’s a noted rise in the incidence and recurrence rates of KSD among obese individuals. Therefore, understanding the impact of obesity on KSD is essential. This study aims to explore the differences in urinary and serum markers between obese and non-obese patients with kidney stones.

**Methods:** Data of all high risk stone formers undergoing metabolic stone screening between March 2012 and March 2024 was prospectively collected and retrospectively analyzed. Participants were segregated into two groups based on obesity presence dividing them into non-obese (Group-1) and obese (Group-2). Obesity was defined as BMI >25. Demographic data and urine analysis, focusing on various markers such as sodium, potassium, creatinine, chloride, calcium, magnesium, phosphate, urate, and PTH were analyzed for both groups.

**Results:** The analysis included 995 patients, with 236(23.71%) categorized as non-obese and 759(76.29%) as obese. Mean BMI in the obese group was 31.60 compared to 22.44 in the non-obese group. Among urinary parameters, differences in volume, creatinine, and calcium levels were not statistically significant. Serum analysis revealed significantly higher urea and creatinine levels in group 2 (p = 0.00471 and p = 0.00045, respectively. The estimated glomerular filtration rate(eGFR) and other serum parameters including sodium, potassium, bicarbonate, and magnesium showed no significant difference between the groups.

**Conclusions:** While most urinary parameters did not show significant differences between obese and non-obese patients, the notable disparities in serum urea and creatinine levels emphasize the renal metabolic influence of obesity. These findings suggest that obesity contributes to renal function alterations, which could affect the formation and management of kidney stones. However further studies are warranted to evaluate the clinical significance of these findings.

**Funding:** N/A.

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**MP20-07 Whole renal stone vs. fragment analysis effects final composition report**

Omri Zonenfeld¹, Yuval Freifeld¹, Gazi Fares¹, Yoram Dekel¹, Ilan Klein¹

¹Carmel Medical Center

Presented By: Omri Zonenfeld, MD

**Introduction:** Urinary stone composition has a critical role in determining stone formers follow up and treatment plans. In this study, our aim was to evaluate changes in stone composition for fragment Vs. whole stone sent for analysis.

**Methods:** A prospective single-center study. All stones obtained during ureteroscopy or PCNL were sent for standard Fourier transform infrared spectroscopy (FTIR) analysis at a single central lab. The study group comprised of patients who had whole stones and fragments extracted. Fragments and whole stones were sent for analysis separately. The control group comprised of patients who had only fragments extracted that were divided into 2 batches sent separately for analysis. Clinical and operative data was collected to determine factors affecting disparity in analysis results.

**Results:** There were 28 patients enrolled, 9 in the study group and 19 in the control group. Disparity in stone analysis was observed in 56% vs 5% (p = 0.003) in the study and control groups respectively. Calcium oxalate monohydrate was the most common stone type and disparities were noted in uric acid, struvite, and calcium phosphate components. Only the number of stones treated and procedure performed (PCNL) had a significant impact on analysis disparity (p = 0.002 & p = 0.03 respectively). No effects were found for Age, gender BMI or HU.

**Conclusions:** All stones obtained per procedure should be sent for analysis as whole stones Vs. fragments may impact the final stone analysis report.

**Funding:** none.
MP20-08  Do Cystine and Brushite stone formers comply enough with follow up and treatment?
Ilan Klein3, Alex Blinzovski1, Ilona Pilosov Solomon2, Yuval Freifeld2, Rani Zreik2, Mahran Kabaha2, Gazi Fares2, Yoram Dekel2
1The Technion - Institute of Technology, Rappaport Faculty of Medicine, 2Urology department, Carmel Medical Center, 3Carmel Medical Center
Presented By: Ilan Klein

Introduction: Cystine and Brushite (C/B) stones are notorious for high recurrency rates. Therefore, follow up of these stone formers should be strict and preventive measures should include specific diet and medications.

Methods: A large HMO database (over 10K stone patients) was used to identify patients with C/B stones between 2014 and 2019. A telephone survey was conducted evaluating patient understanding of stone composition, follow up, urine collection, treatment compliance etc. Patients’ data, emergency room (ER) visits, admissions procedures and urologist visits were compared to 100 random Calcium Oxalate patients from the same time period.

Results: Thirty three Cystine patients out of 62 and 39 Brushite patients out of 84 participated. In the Cystine group 75.7% were aware of their stone type and 27.2% had at least 3 stones passed in the last year but half of them did not see their urologist in the previous year. Medication compliance was only at 57.5%. The Brushite group had only a 28.2% stone awareness, 43.5% did not visit their urologist in the previous year and only a quarter complied with their medication. When comparing ER visits, 14% of the control group visited 3 times or more in comparison to 41% of the C/B group. 37% of C/B group were admitted to hospital more than once a year in comparison to only 14% in the control group.

Conclusions: Poor compliance of C/B patients should urge urologists to strictly follow-up these patients to increase compliance and reduce recurrent events.

Funding: None.

Table 2: Patient responses to questionnaire.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Cystine n=33</th>
<th>Brushite n=39</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know stone type</td>
<td>25 (75.7%)</td>
<td>11 (28.2%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Stone interventions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at least 3</td>
<td>28 (84.8%)</td>
<td>25 (64.1%)</td>
<td>0.13</td>
</tr>
<tr>
<td>at least 5</td>
<td>17 (51.5%)</td>
<td>16 (41.0%)</td>
<td></td>
</tr>
<tr>
<td>Urologist visit&gt;1 year</td>
<td>17 (51.5%)</td>
<td>17 (43.5%)</td>
<td>0.75</td>
</tr>
<tr>
<td>Dietery consult</td>
<td>4 (12.1%)</td>
<td>9 (23.0%)</td>
<td>0.07</td>
</tr>
<tr>
<td>Stones passage in the past year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at least 3</td>
<td>8 (24.2%)</td>
<td>5 (12.8%)</td>
<td>0.12</td>
</tr>
<tr>
<td>at least 5</td>
<td>8 (24.2%)</td>
<td>2 (5.0%)</td>
<td></td>
</tr>
<tr>
<td>Urine collection</td>
<td>31 (93.9%)</td>
<td>31 (79.4%)</td>
<td>0.07</td>
</tr>
<tr>
<td>Medication adherence</td>
<td>19 (57.5%)</td>
<td>10 (25.5%)</td>
<td>0.006</td>
</tr>
</tbody>
</table>

MP20-09  Risk factors for nephrolithiasis formation: An Umbrella Review
Chao Cheng2, Yucheng Ma1, Zhongyu Jian1, Hong Li1, Xi Jin1, Kunjie Wang1
1West China Hospital, 2West China Hospital, Sichuan University
Presented By: Chao Cheng

Introduction: Nephrolithiasis is prevalent and burdensome worldwide. At present, evidence on the risk factors for nephrolithiasis is unconsolidated and the associations remain uncertain. We systematically evaluate the robustness of the meta-analytic evidence and aid more reliable interpretations of the epidemiological relationships.

Methods: We conducted a comprehensive review of the meta-analyses, screened the included studies with the aid of the AMSTAR 2 evaluation tool, and then used R (4.1.1) software to perform data analysis to evaluate the association between candidate risk factors and kidney stones, and evaluated the credibility of the evidence of the association between risk factors and kidney stones according to the GRADE classification, and finally obtained the strength and effectiveness of the association.

Results: We finally included 17 meta-analyses regarding 46 risk factors, 34 of which (73.9%) showed statistically significant association with nephrolithiasis. Among the significant associations, we found that waist circumference, BMI, dietary intake and fructose intake were positively correlated with the occurrence and development of nephrolithiasis. Caffeine, dietary fiber and DASH-diet showed a tendency to reduce kidney stones. Interestingly, calcium supplementation, dietary calcium, and vitamin D, which are widely believed to be responsible for stone formation, made no difference or even reduced the risk of nephrolithiasis.

Conclusions: Our study demonstrates the suggestive causal (central obesity, T2D, gout, dietary sodium, fructose intake and higher temperatures) risk factors of nephrolithiasis. We also demonstrate the suggestive causal (coffee/alcohol/beef intake, dietary calcium and DASH-diet) protective factors of nephrolithiasis. To provide epidemiological basis for the treatment and prevention of nephrolithiasis.

Funding: This study was supported by the National Natural Science Foundation of China, Grant/Award Number: 81970602; and the Post-Doctor Research Project, West China Hospital, Sichuan University, Grant/Award Number: 2020HXBH016; and the 1·3·5 Project for Disciplines of Excellence, West China Hospital, Sichuan University, Grant/Award Number: ZYJC18015.

MP20-10  Evaluation of Chronic Kidney Disease and Treatment Compliance in Cystine Stone Patients
Rifat Burak Ergül1, Rifat Burak Ergül1, Mehmet Giray Sönmez2, Bağdagül Aksu3, Oğuzhan Parlakalcıç, Nagehan Zeynep Yıldırım³, Muhammed İrfan Dönmez¹, Selçuk Güven4, Alev Yılmaz5, Tayfun Oktar6, Faruk Özcan7, Orhan Ziyalı1, Tzeval Tefik1
1Department of Urology, Istanbul Faculty of Medicine, Istanbul University, Istanbul, Turkey, 2Meram School of Medicine, Necmettin Erbakan University, Department of Urology, Konya, ³Department of Medicine, 2Urology department, Carmel Medical Center, 3Carmel Medical Center

Presented By: Chao Cheng

Introduction: Nephrolithiasis is prevalent and burdensome worldwide. At present, evidence on the risk factors for nephrolithiasis is unconsolidated and the associations remain uncertain. We systematically evaluate the robustness of the meta-analytic evidence and aid more reliable interpretations of the epidemiological relationships.

Methods: We conducted a comprehensive review of the meta-analyses, screened the included studies with the aid of the AMSTAR 2 evaluation tool, and then used R (4.1.1) software to perform data analysis to evaluate the association between candidate risk factors and kidney stones, and evaluated the credibility of the evidence of the association between risk factors and kidney stones according to the GRADE classification, and finally obtained the strength and effectiveness of the association.

Results: We finally included 17 meta-analyses regarding 46 risk factors, 34 of which (73.9%) showed statistically significant association with nephrolithiasis. Among the significant associations, we found that waist circumference, BMI, dietary intake and fructose intake were positively correlated with the occurrence and development of nephrolithiasis. Caffeine, dietary fiber and DASH-diet showed a tendency to reduce kidney stones. Interestingly, calcium supplementation, dietary calcium, and vitamin D, which are widely believed to be responsible for stone formation, made no difference or even reduced the risk of nephrolithiasis.

Conclusions: Our study demonstrates the suggestive causal (central obesity, T2D, gout, dietary sodium, fructose intake and higher temperatures) risk factors of nephrolithiasis. We also demonstrate the suggestive causal (coffee/alcohol/beef intake, dietary calcium and DASH-diet) protective factors of nephrolithiasis. To provide epidemiological basis for the treatment and prevention of nephrolithiasis.

Funding: This study was supported by the National Natural Science Foundation of China, Grant/Award Number: 81970602; and the Post-Doctor Research Project, West China Hospital, Sichuan University, Grant/Award Number: 2020HXBH016; and the 1·3·5 Project for Disciplines of Excellence, West China Hospital, Sichuan University, Grant/Award Number: ZYJC18015.
Funding: None.

Results: Six of the patients were diagnosed with cystinuria due to stone recurrence and pose a high risk for chronic kidney disease (CKD). Compliance with treatment and CKD was evaluated in cystinuric patients on long-term follow-up.

Methods: Data of 44 patients diagnosed with cystinuria between February 2008 and February 2021 in 3 centers were documented retrospectively. Six patients were excluded due to missing data. Patients were had a regular follow-up with urinary pH, serum creatinine, and urinary ultrasonography. All patients were offered dietary treatment when treating renal calculi with mPCNL. The morphological characteristics of renal calculi and morphological pelvicalyceal system based on the GSS. Determine the free-stone rate according to the GSS. The complications were graded using the modified Clavien-Dindo score.

Conclusions: The morphological characteristics of renal calculi and pelvicalyceal systems that are classified by the GSS can help surgeons predict stone-free results and the risk of complications when treating renal calculi with mPCNL.

Funding: Buy 108 Military Central Hospital.

MP20-11 Results of Treatment of Renal Calculi By Mini Percutaneous Nephrolithotomy Base On The Guy’s Stone Score

Kieu Duc Vinh², Viet Hai Nguyen¹

¹108 hospital, ²108 Military Central Hospital

Presented By: Kieu Duc Vinh, MD, PhD

Introduction: To evaluate the results of treatment of renal calculi by mini Percutaneous Nephrolithotomy based on the characteristics of renal calculi and morphological pelvicalyceal system classified by the GUY’s stone score (GSS).

Methods: A prospective observational study of 470 patients, who underwent mPCNL between August 2003 and January 2023 was included in the study. All patients were studied with a computed tomography scan for characteristics of renal calculi and morphological pelvicalyceal system based on GSS. Determine the free-stone rate according to the GSS. The complications were graded using the modified Clavien-Dindo score.

Results: The mean age of patients was 54.2±10.9 (32 – 83), 330 patients (70.2%) are male, 140 patients (29.8%) are female. The average stone size is 21.3 ± 11 mm. Grade of the GSS with level I, level II, level III, and level IV are 175 patients (37.2%), 210 patients (44.7%), 55 patients (11.7%) and 30 patients (6.4), respectively. The overall stone-free rate was 91.7%(431/470). The stone-free rate in grade I was 167/175 (95.4%), grade II was 201/210 (95.7%), grade III was 46/55 (83.6%), grade III was 46/55 (83.6%), and grade IV was 17/30 (56.6%). According to the modified Clavien-Dindo classification, grade I, II, IIIa, IIIb, and IV complications were observed in 43(9.1%), 14 (2.9%), 4(1%), 1 (0.2%), and 1(0.2%) patients, respectively. The serious complication was 1 patient (0.2%) with post-operative sepsis.

Conclusions: The morphological characteristics of renal calculi and pelvicalyceal systems that are classified by the GSS can help surgeons predict stone-free results and the risk of complications when treating renal calculi with mPCNL.

Funding: None.

Presented By: Rifat Burak Ergül

Introduction: Cystine stones have a high recurrence rate and pose a high risk for chronic kidney disease (CKD). Compliance with treatment and CKD was evaluated in cystinuric patients on long-term follow-up.

Methods: Data of 44 patients diagnosed with cystinuria between February 2008 and February 2021 in 3 centers were documented retrospectively. Six patients were excluded due to missing data. Patients were had a regular follow-up with urinary pH, serum creatinine, and urinary ultrasonography. All patients were offered dietary treatment when treating renal calculi with mPCNL. The morphological characteristics of renal calculi and morphological pelvicalyceal system based on the GSS. Determine the free-stone rate according to the GSS. The complications were graded using the modified Clavien-Dindo score.

Conclusions: The morphological characteristics of renal calculi and pelvicalyceal systems that are classified by the GSS can help surgeons predict stone-free results and the risk of complications when treating renal calculi with mPCNL.

Funding: None.

Presented By: Kieu Duc Vinh, MD, PhD

Introduction: To evaluate the results of treatment of renal calculi by mini Percutaneous Nephrolithotomy based on the characteristics of renal calculi and morphological pelvicalyceal system classified by the GUY’s stone score (GSS).

Methods: A prospective observational study of 470 patients, who underwent mPCNL between August 2003 and January 2023 was included in the study. All patients were studied with a computed tomography scan for characteristics of renal calculi and morphological pelvicalyceal system based on GSS. Determine the free-stone rate according to the GSS. The complications were graded using the modified Clavien-Dindo score.

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Conclusions: The morphological characteristics of renal calculi and pelvicalyceal systems that are classified by the GSS can help surgeons predict stone-free results and the risk of complications when treating renal calculi with mPCNL.

Funding: None.

Presented By: Kieu Duc Vinh, MD, PhD

Introduction: To evaluate the results of treatment of renal calculi by mini Percutaneous Nephrolithotomy based on the characteristics of renal calculi and morphological pelvicalyceal system classified by the GUY’s stone score (GSS).

Methods: A prospective observational study of 470 patients, who underwent mPCNL between August 2003 and January 2023 was included in the study. All patients were studied with a computed tomography scan for characteristics of renal calculi and morphological pelvicalyceal system based on GSS. Determine the free-stone rate according to the GSS. The complications were graded using the modified Clavien-Dindo score.

Results: The mean age of patients was 54.2±10.9 (32 – 83), 330 patients (70.2%) are male, 140 patients (29.8%) are female. The average stone size is 21.3 ± 11 mm. Grade of the GSS with level I, level II, level III, and level IV are 175 patients (37.2%), 210 patients (44.7%), 55 patients (11.7%) and 30 patients (6.4), respectively. The overall stone-free rate was 91.7%(431/470). The stone-free rate in grade I was 167/175 (95.4%), grade II was 201/210 (95.7%), grade III was 46/55 (83.6%), grade III was 46/55 (83.6%), and grade IV was 17/30 (56.6%). According to the modified Clavien-Dindo classification, grade I, II, IIIa, IIIb, and IV complications were observed in 43(9.1%), 14 (2.9%), 4(1%), 1 (0.2%), and 1(0.2%) patients, respectively. The serious complication was 1 patient (0.2%) with post-operative sepsis.

Conclusions: The morphological characteristics of renal calculi and pelvicalyceal systems that are classified by the GSS can help surgeons predict stone-free results and the risk of complications when treating renal calculi with mPCNL.

Funding: None.
The mean number of prescriptions per urologist increased from 10 in 2013 to 15 in 2021. Two-way ANOVA revealed a significant difference in the proportion of urologists prescribing potassium citrate over time ($P < 0.001$). Each region reached its highest total number of claims and highest proportion of prescribing urologists in the year 2019 followed by a small decline. **Conclusions:** From 2013-2021, the proportion of urologists prescribing potassium citrate increased by approximately 10.1% with the mean number of prescriptions per urologist increasing by 5. This is in contrast to a previously reported estimated 2% increase in the incidence of stone disease in the U. S. over a similar time period (2011-2019) within the Medicare population. There was a statistically significant difference in the proportion of urologists prescribing potassium citrate when comparing regions over time. This correlates with prior studies showing the highest prevalence of stone disease in the South and the lowest in the West. Drug cost, provider comfort or heightened awareness of the benefits for stone disease may be driving increased prescriptions compared to the incidence of stone disease, and the COVID-19 pandemic may be associated with the decline seen after 2019. Further study of regional variation and potential causes of these trends with mixed methods analysis is planned. **Funding:** None.


Linhu Liu¹, Zhongyu Jian¹, Kunjie Wang¹

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**Presented By:** Linhu Liu

**Introduction:** Nephrolithiasis is prevalent and burdensome worldwide, but its risk factors remain unconsolidated. We aim to map risk factors of nephrolithiasis from observational studies with the validation of causation by two-sample Mendelian randomization (MR).

**Methods:** We conducted an umbrella review of meta-analyses of observational studies investigating the association of potential risk factors and nephrolithiasis to assess the strength and validity of the association between risk factor candidates and nephrolithiasis and performed the causal relationship through two-sample MR. We obtained the genome-wide association studies summary data of the risk factor candidates identified in the umbrella review from the UK Biobank (6, 536 cases and 388, 508 controls) and that of nephrolithiasis from FinnGen (4, 969 cases and 213, 445 controls), respectively.

**Results:** Our study included 17 meta-analyses regarding 46 risk factors, 34 of which (73.9%) showed statistically significant association with nephrolithiasis. Among the 46 associations, we found that only nine (19.6%) and seven (15.2%) were supported by high and moderate evidence certainty, respectively. Next, the MR analyses supported that obesity/central obesity and type 2 diabetes (T2D), higher levels of circulating calcium, urinary calcium, circulating vitamin D, and urinary sodium to be causally or suggestively causally associated with a higher risk of nephrolithiasis. Caffeine/coffee/tea and alcohol/beer consumption, and higher urinary magnesium levels were causally or suggestively causally associated with a lower nephrolithiasis risk.

**Conclusions:** People with obesity and/or type 2 diabetes should note their increasing risk of nephrolithiasis when taking external calcium and/or vitamin D supplementation. Although taking more coffee/tea and alcohol/beer may help prevent nephrolithiasis, people should balance their potential harms on other organs especially for alcohol consumption.

**Funding:** None.

**MP20-14 Genetically Predicted Phe Level and PAH Gene Expression Are Associated with Kidney Stone Risk**

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¹West China Hospital, Sichuan University

**Presented By:** Puhan Li, MD

**Introduction:** Observational study reported significant different amino acids levels between kidney stone disease (KSD) patients and controls. But the causality still remains unknown. We aimed to explore whether and which amino acid causally contribute to the KSD risk.

**Methods:** We employed mendelian randomization (MR) to investigate the relationship between amino acids and KSD, supplemented by sensitivity analyses to ensure robustness. Bidirectional MR established causality. We specifically investigated the influence of phenylalanine (Phe) mediated by the phenylalanine hydroxylase (PAH) gene, on kidney stone disease (KSD). We leveraged tissue-specific eQTL data from GTEXv8 and the eQTL-Gen Consortium to evaluate the effect of PAH gene expression on Phe levels and KSD incidence.

**Results:** Among 19 amino acids, we found that only Phe were associated with the risk of KSD in both primary (IVW: OR=1.43; 95%CI: 1.14 ~ 1.81; p = 0.002) and replication dataset (IVW: OR=1.39; 95% CI:1.14-1.69; p = 0.001 in replication dataset), which was also consistent with the results of external validation. Besides, we found that higher Phe levels mediated by PAH gene could increase the risk of KSD (IVW: OR=1.69; 95% CI: 1.24 ~ 2.31; p = 0.001). Finally, our study demonstrated that higher PAH gene, a key gene coding phenylalanine hydroxylase, expression in brain tissues could decreased the risk of KSD.

**Conclusions:** We found that higher circulating Phe levels, including PAH gene-mediated higher Phe levels and lower PAH expression in Brain tissues, could increase the risk of KSD.

**Funding:** The study was supported by the Foundation of Science &Technology Department of Sichuan Province [2022NSFSC1571].

**MP20-15 Challenges in Diagnosis and Treatment of Cystinuria Patients with Urolithiasis: Multicenter Patient Centered Study**

Wissam Kamal¹, Yasser Noureddin¹, Mohammed Abuzenada², Raed Azhar¹, Musab Alghamdi², Hassan Aljifri³, Yahya Ghazwani³, Aiman AlSolumany², Abdulaziz Alami⁵, Saeed Bin Hamri⁴, Ahmad Bugis³, Abdulaziz Almanie³

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**Funding:** None.

**Presented By:** Wissam Kamal, MSc, PhD
Introduction: This study aimed to examine the challenges of managing cystine stones.

Methods: Following ethical approval, we reviewed the medical records of cystine stone patients treated at four tertiary centers from 2016 to 2021 and surveyed them on their perceptions and fears of cystinuria. We collected data on personal traits, stone history, analysis, treatment, and recurrence and analyzed them using descriptive and inferential statistics. We assessed the associations and correlations between various variables using appropriate tests.

Results: The study included 24 adults with cystinuria nephrolithiasis, with an average age of 31.46. Of these patients, 79.2% had consanguineous parents, and the first stone episode occurred at an average of 14.82 years old. Family history of Cystinuria was encountered in 83.33%. Cystinuria was diagnosed after an average of 6.43 years, and stone analysis was performed in 20/24 after an average of 3.86 years from the first episode. Only 13 patients (54.2%) underwent metabolic evaluation for kidney stones. Regarding non-surgical treatments, 41.67% of patients started taking alkalinization medication, and only 37.50% began chelating agent therapy. Additionally, 58.33% of patients took herbal remedies.

Conclusions: Consanguinity is prominent in cystinuria patients’ parents. Most cystinuria patients with urolithiasis have affected family members; this mandates family member screening. There is a need to improve diagnosis, management, and educational activities for cystinuria patients to prevent renal damage and improve quality of life.

Funding: Non

MP20-16 Potassium citrate versus lemonade for the treatment of hypocitraturic nephrolithiasis: a systematic review of the literature and meta-analysis

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1German Hospital Oswaldo Cruz, 2University of São Paulo Medical School, 3Ninth of July University

Presented By: José Arnaldo S. da Cruz, MD, PhD

Introduction: In the realm of nephrolithiasis, hypocitraturia emerges as the second most common underlying cause. About this topic, current guidelines underscore the importance of potassium citrate as a dietary supplement is increasingly recognized as a pivotal approach in lithogenesis management. There is a hypothesis suggesting that lemonade supplementation might serve as a viable alternative to potassium citrate in treating hypocitraturia. Thus, this study aims to compare the efficacy of potassium citrate and lemonade supplementation in patients with hypocitraturic nephrolithiasis.

Methods: A systematic search was conducted in PubMed, Embase, Cochrane, LILACS, SciELO and Google Scholar. We included studies that compared urinary parameters between patients that consumed lemonade and those who received potassium citrate supplementation for the treatment of hypocitraturic nephrolithiasis. Our primary endpoint was the post-treatment urinary citrate concentration. Secondary outcomes encompassed urate levels, pH, and urinary volume.

Results: Three articles were included, encompassing 42 patients in the lemonade group and 38 patients in the potassium citrate group. Overall, our analysis revealed no significant difference in post-treatment citraturia between the two groups (MD -51.37; 95% CI -119.60, 16.85; p = 0.14; I2 = 0%). Similarly, there were no distinctions in urate levels (MD -56.01, 95% CI -150.24, 38.22; p = 0.24; I2 = 0%) and urinary volume (MD 140.53, 95% CI -151.03, 432.09; p = 0.34; I2 = 0%). The potassium citrate group exhibited higher urinary pH values (MD -0.48; 95% CI -0.70, -0.27; p < 0.0001; I2 = 40%).

Conclusions: In summary, our meta-analysis provides evidence supporting lemonade as a viable alternative to potassium citrate for patients with hypocitraturic nephrolithiasis. Lemonade stands out as an economically accessible option, making it a practical choice for a wider range of patients. Additionally, its liquid form addresses the concerns faced by individuals who find capsules problematic, enhancing overall patient compliance and satisfaction.

Funding: None.
MP21-01 Translation and validation of the Chinese version of Wisconsin Stone Quality of Life

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Presented By: Wen Zhong, PhD

**Introduction:** Wisconsin Stone Quality of Life questionnaire (WISQOL) has been designed specifically for patients with kidney stone. The present study aimed to translate the Chinese version of WISQOL and reach its validation.

**Methods:** The WISQOL was translated into Chinese following a standard procedure. Kidney stone patients admitted for surgical treatment were enrolled to furnish both the WISQOL and SF-36 forms on the admission day and at one month postoperatively. The internal consistency, inter-domain correlation and convergent validity were analysed.

**Results:** 124 men and 76 women who met the inclusion/exclusion criteria with the age ranging from 18 to 83 were included in the present study. The average preoperative total score of WISQOL was 100.43 – 26.43, and rised about 18% to 118.21 – 17.65 one month later, showing significant difference statistically. The average total score of SF-36 pre- and postoperatively were 109.67 – 16.14 and 120.26 – 12.30 respectively. The total score of WISQOL and SF-36 had significant correlation both preoperatively (r = 0.772, p < 0.01) and postoperatively (r = 0.639, p < 0.01) . The preoperative Spearman rank correlation ranged from 0.471 to 0.687. Moderate convergent validity was also observed in the postoperative questionnaires. The value of total scores evaluated by Pearson correlation coefficient were 0.766 preoperatively and 0.662 postoperatively, respectively.

**Conclusions:** The Chinese version of WISQOL questionnaire was proved to be a reliable tool to evaluate the health quality of Chinese-speaker patients with kidney stones. To evaluate its test-retest reliability, reliability and validity in a longer term, further studies are required.

**Funding:** None.

MP21-02 Association and risk of Metabolic Syndrome and Kidney Stone Disease: Outcomes from a systematic review and meta-analysis

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1King’s College London, 2University Hospital Southampton NHS Foundation Trust

Presented By: Sohani N. Dassanayake, MBBS, BSc (Hons)

**Introduction:** The prevalence of kidney stone disease (KSD) has been increasing globally, generating substantial healthcare costs. Metabolic syndrome (MetS) has emerged as a potential contributor to the development of KSD. This rise in KSD prevalence. This study aims to conduct a systematic review of the literature, and meta-analysis of the association between MetS and KSD.

**Methods:** A systematic review of the literature was undertaken using Medline, Embase and Cochrane library to assess association and prevalence of MetS and KSD, using the PRISMA framework. Inclusion criteria were exposure to MetS / MetS traits and association with KSD, from inception of databases to 2023. Statistical analyses were conducted using STATA software.

**Results:** Fifteen articles (433, 201 patients) were eligible for analysis. Meta-analysis of eleven studies (417, 004 patients) identified a statistically significant association between MetS and KSD with unadjusted odds ratio of 2.02 (95% CI 1.96-2.08, p < 0.001) (Figure 1), and pooled adjusted odds ratio of 1.22 (95% CI 1.09-1.37, p < 0.001). Patients with one or two MetS traits displayed increasing KSD odds (OR: 1.27 and 1.48, respectively). Of the different MetS traits, hypertension and impaired glucose tolerance were the most significantly associated with KSD. Prevalence data was available for fourteen studies, which revealed that out of 23, 514 patients that had KDS, 34.89% had MetS.

**Conclusions:** This study confirms a significant association between MetS and KSD, and between individual MetS traits and KSD. Despite variations in MetS definitions across different studies analysed, consistent associations were observed across studies. This may have clinical implications in that guidelines do not currently recommend routine MetS screening in KSD patients. Further research is needed to evaluate the role of screening and primary prevention of KSD patients for metabolic abnormalities.

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MP21-03 A Novel Approach to Managing Acute Nephrolithiasis Amidst a Urologist Shortage: The Stone Pathway

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Presented By: Michael Hailemariam, MD

Introduction: In the face of a 50% reduction in urologist workforce within our practice over the last five years, timely management of acute nephrolithiasis has posed a significant challenge. We present the Stone Pathway, an innovative approach to maintain consistent treatment timelines for obstructed and/or infected ureteral stones.

Methods: This retrospective single-center study compared time to intervention from stent placement before and after Stone Pathway implementation. We analyzed adult patients treated for acute stones between April 1st, 2023, to June 30th, 2023 (pathway cohort) and January 1st, 2018, to May 30th, 2018 (standard cohort). Following initial Emergency Department (ED) assessment and stenting, patients underwent ureteroscopy with laser lithotripsy. The Stone Pathway cohort was stratified into Simple, Intermediate, or Complex categories based on stone size and location, facilitating targeted scheduling and preoperative planning.

Results: Out of 236 patients, 152 were in the Stone Pathway cohort and 84 in the standard cohort. Median time to stone treatment was 25 days for the Stone Pathway cohort and 29 days for the standard cohort. Following initial Emergency Department (ED) assessment and stenting, patients underwent ureteroscopy with laser lithotripsy. The Stone Pathway cohort was stratified into Simple, Intermediate, or Complex categories based on stone size and location, facilitating targeted scheduling and preoperative planning.

Conclusions: Despite a significant decrease in the urology workforce, the Stone Pathway effectively maintained consistent treatment timelines for acute nephrolithiasis. Our preliminary results suggest that this approach could be a viable strategy to mitigate care delays in a resource-constrained environment.

Funding: None.

MP21-04 Same day discharge after holmium laser enucleation of the prostate (HoLEP) does not increase postoperative unanticipated healthcare utilization

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Presented By: Pablo Suarez

Introduction: Same day discharge (SDD) after holmium laser enucleation of the prostate (HoLEP) is increasingly performed. SDD patients have been shown to be associated with similar readmission rates and complications compared to patients who experience postoperative admission. However, prior studies have not captured all unanticipated contact with the healthcare system that drive cost and care quality, such as phone calls or unanticipated clinic visits. This study aims to evaluate whether SDD increases unanticipated healthcare utilization in the postoperative period.

Methods: A retrospective cohort study of patients who underwent HoLEP at a single academic center between 2018-2024 was performed. Patient demographics, comorbidities, and surgical outcomes were abstracted. Inclusion criteria for same day surgery were prostate size <150g, ASA class 2, and adequate family support. Primary outcomes were unanticipated healthcare utilization defined as unexpected clinic calls, ED/clinic visits or hospital readmission within the first 30 days after surgery. Secondary outcomes were postoperative complications. Student’s t-test, chi-square analysis and multivariable logistic regression models were used for analysis.

Results: A total of 500 patients were included, out of which 43.8% (219) had SDD and 56.2% were admitted for postoperative overnight hospital stay (OS). Patients in the SDD group had smaller prostate sizes (88.5 ± 45.4 vs 116.8 ± 75, p = <0.001) and lower rates of hypertension (50.7% vs 64.1%, p = 0.004) without significant differences in demographic characteristics or other comorbid conditions. Unanticipated postoperative healthcare utilization (Figure 1A) was similar between OS and SDD (13.17% vs 8.68%, p = 0.114). There were no differences in the rates of postoperative complications, including hematuria, UTI, and urinary retention (Figure 1B) or hospital readmission (1.78% vs 0.91%, p = 0.413). On multivariable logistic regression, SDD did not predict for healthcare re-engagement.

Conclusions: Same day discharge after HoLEP did not increase postoperative complications, readmissions, or unanticipated healthcare utilization in properly selected patients. This data supports that same day discharge HoLEP can be performed in a fashion that enhances quality and cost of care.

Funding: N/A.

MP21-05 Mapping Inequality: Regional Trends & Disparities in Holmium Laser Enucleation of the Prostate Adoption in the United States

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Presented By: Jennifer Robles, MD

Introduction: The utilization of Holmium Laser Enucleation of the Prostate (HoLEP) throughout the United States is not robustly monitored. Previous reports have highlighted concerns with higher adoption rates in wealthier, predominantly white populations. The diversity of the United States provides a unique opportunity to identify and study disparities in healthcare system utilization and access. This study aims to characterize the regional adoption of HoLEP and identify possible predictors for implementation.

Methods: A retrospective study was performed of patients undergoing HoLEP from 2018-2024. Patients were divided into three geographic regions: Northeast, West, and South. An examination of patient demographic factors was performed to determine predictors for HoLEP adoption. The study population was defined by patient demographics, comorbidities, and surgical outcomes. The primary outcome was the adoption rate of HoLEP within each region.

Results: The study included a total of 500 patients. The adoption rate of HoLEP was highest in the Northeast region (54.5%), followed by the West (43.5%) and South (45.4%). Significant differences were observed in patient demographics between regions, with the Northeast having higher rates of diabetes and hypertension compared to the other regions. On multivariable logistic regression analysis, the adoption rate of HoLEP was positively correlated with higher income levels (OR = 1.5, 95% CI: 1.1-2.0, p = 0.011) and higher education levels (OR = 1.4, 95% CI: 1.0-1.9, p = 0.056). No significant differences were observed in the rates of postoperative complications, including hematuria, UTI, and urinary retention, or hospital readmission (1.78% vs 0.91%, p = 0.413). On multivariable logistic regression, SDD did not predict for healthcare re-engagement.

Conclusions: Regional adoption of HoLEP is impacted by demographic factors, with higher adoption rates observed in wealthier, predominantly white populations. Further studies are needed to identify and mitigate factors that contribute to healthcare disparities.

Funding: N/A.
Presented By: Jennifer Robles, MD, MPH

Introduction: The clinical advantages of holmium laser enucleation of the prostate (HoLEP) for benign prostatic hyperplasia (BPH) are increasingly recognized. Access to the procedure remains limited in the United States (US), particularly to providers performing at least 10 HoLEPs a year, who may ensure optimal outcomes for patients and offer specialized training to providers. This study aims to describe the geographic distribution of HoLEP utilization and the presence of high-volume providers in the US from 2018 to 2022.

Methods: Medical clearinghouse claims data for 2018 to 2022 was obtained from Definitive Healthcare to identify providers who performed HoLEP. We categorized an active HoLEP surgeon as a provider who performed at least 10 annual HoLEP procedures. Regional patient concentration was calculated by dividing the number of patients with BPH by active HoLEP surgeons.

Results: From 2018 to 2022, states with at least 100 annual HoLEP procedures increased 46% from 15 to 22. States with at least 1 active HoLEP surgeon increased only from 32 to 35 (including Washington D. C.), leaving 31% of states without a single active surgeon. The South had the greatest number of active surgeons in both 2018 and 2022 (51 and 52 respectively), while the West had the fewest in 2018 with 12 surgeons and the Northeast fewest in 2022 with 23 surgeons. In 2018, the Midwest had the worst overall patient concentration of 1,036.7 patients per active surgeon and in 2022 the Northeast had the worst overall patient concentration of 830.2 patients per active surgeon.

Conclusions: The findings demonstrate a positive trend in the geographic distribution of HoLEP across the US, with increasing numbers of active HoLEP surgeons in previously underserved regions. However, almost a third of states still lack access to an active surgeon and the high patient concentration in regions like the Northeast underscores a need to address disparities in the availability of HoLEP care in the US. Enhancing training programs, promoting awareness, and facilitating the dissemination of expertise may help ensure equitable access to HoLEP.

Funding: This study was supported by Boston Scientific.

MP21-06 Nothing is certain except death, taxes, and increasing scope reprocessing costs

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Presented By: Stephen Hassig, MD, MBA

Introduction: Cystoscopy is the most common office procedure in urology practices worldwide. Given the high volume, it is a prime target for innovation, such as single-use (SU) cystoscopes. SU scopes do not need to be reprocessed, a source of significant cost. Recent inflation and supply chain disruptions have changed the economic landscape of healthcare as well. We hypothesized that due to these macroeconomic forces, reprocessing costs for RU cystoscopes have increased. Here we present an analysis of reprocessing costs for RU cystoscopes between 2019 and 2023 at a US academic medical center.

Methods: Initial inputs and costs were assessed over a two-week period in 2019. Costs incurred per reprocessed scope were collected as such, while materials that require scheduled replacement were attributed to a single scope by dividing by the number of cystoscopies during the time frame. Hands-on personnel time was held constant at about 23 minutes and cost was based on average pay for a medical technician. Costs for all materials and labor were reassessed in 2023. Scope usage volume and labor time was assumed to be the same to compare costs more directly.

Results: Adjusting for inflation, costs for materials and time involved in reprocessing increased to $27.40 in 2023 compared to $24.09 in 2019. Table 1 shows the cost changes of consumable elements in the reprocessing of cystoscopes. Personal protective equipment costs were increased and there were new items (channel check, drying cabinet) related to interval guideline changes for endoscope processing in health care facilities. Labor costs, while they increased in 2023 dollars, ultimately were lower than in 2019 when adjusted for inflation.

Conclusions: Reprocessing costs for RU cystoscopes have increased in 2023 compared to 2019, likely related to supply chain disruption, inflation, and new regulatory guidelines requiring additional equipment with per-scope costs. Of note, this does not take into account capital costs which are depreciated, or repair costs. The 13.7% increase in overall reprocessing costs is significant and follows the overall trend of rising costs associated with providing healthcare services.

Funding: N/A.

MP21-07 Evaluating the Increased Rate of Kidney Stone Operations After Bariatric Surgery

Carl Ceraolo1, David Song1, Rajat Jain1, Scott Quarrier1
1University of Rochester Medical Center, Department of Urology

Presented By: Carl Ceraolo, MD, MPH

Introduction: Kidney stone formation is known to be caused by dysfunction in nutritional absorption following surgery such as Roux-en-Y gastric bypass (RGB) or cholecystectomy (CCY). In contrast, stone formation is not known to increase with similar procedures that do not directly affect nutritional absorption, such as sleeve gastrectomy (SG). It is unclear whether these stones are severe enough to require surgical intervention. This study assesses the effect of CCY, RGB, and SG on incidence of kidney stone surgery.
Methods: This retrospective, single center study included patients who receive care from a kidney stone clinic who also underwent either CCY, RGB, or SG from May 2015 to September 2023. The primary outcome was the incidence of stone procedures, of which the number and type were recorded in each group before and after each intervention. Incidence rates were calculated in each group, using person-time at risk for kidney stone surgery in years. Baseline characteristics were also compared. Continuous variables were compared with the t-test, and categorical variables were compared with the Chi-squared test. Results were also stratified by type of stone procedure, including extracorporeal shockwave lithotripsy (ESWL), ureteroscopy (URS), and percutaneous nephrolithotripsy (PCNL). Statistical significance was pre-determined with an alpha of 0.05.

Results: Over the study period, there were 10,857 patients who underwent CCY, 2,441 who underwent GB, and 2,283 who underwent SG (Table 1). Baseline characteristics were variable (p < 0.001 for all). All three groups had an increased rate ratio for stone procedure (LC 1.45, 95% CI: 1.20-1.75; LRGB 4.13, 95% CI: 2.74-6.125; LSG 2.05, 95% CI: 1.21-3.46). There was no significant difference in distributions of type of KSS before or after surgery. (Table 2). When comparing bariatric procedures, the RGB group had 2.48 times the rate of having a kidney stone procedure after surgery compared to the SG group (95% CI: 1.76-3.49; p < 0.001), increased from before surgery (IRR 1.23; 95% CI: 0.69-2.18; p = 0.480).

Conclusions: These findings confirm that patients undergoing surgery that impacts nutritional absorption will have a more severe burden of stone disease, specifically an increased rate of stone procedures. Dietary guidance can mitigate this increased stone burden. Additional analysis adjusting for baseline covariates can further clarify these findings.

Funding: None.

Presented By: Tzevat Tefik, Assoc Dr

Introduction: Kidney stone formation is a prevalent urological condition with significant clinical implications. Dyslipidemia has been linked to an increased risk of urinary stone formation. Plasma Atherogenic Index (PAI), a marker of lipoprotein particle size, offers predictive value beyond individual lipid measurements. This study aimed to investigate the relationship between PAI and calcium oxalate stone formation.

Methods: This prospective study, conducted between August 2023 and March 2024, analyzed data from 662 patients aged 18 to 80, attending the urology outpatient clinic. Patients were classified into two groups: stone formers, with recent stone detection on imaging, and non-stone formers, lacking any history or evidence of stones in the past year. Exclusion criteria included patients using antihyperlipidemic drugs. Detailed medical histories were collected, and various biochemical parameters including serum lipids, fasting glucose, insulin, eGFR, calcium, albumin, and uric acid were assessed. The HOMA score and PAI were calculated from these parameters. Univariate analyses were conducted to compare the two groups.

Table 1: Demographic and clinical data of patients in two groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Stone Formers (n=331)</th>
<th>Non-Stone Formers (n=331)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female (%)</td>
<td>117 (35.2)</td>
<td>114 (34.8)</td>
<td>0.916</td>
</tr>
<tr>
<td>Male (%)</td>
<td>214 (64.8)</td>
<td>217 (65.2)</td>
<td>0.916</td>
</tr>
<tr>
<td>Ethnicity (%)</td>
<td>177 (53.5)</td>
<td>179 (54.2)</td>
<td>0.199</td>
</tr>
<tr>
<td>Yes (%)</td>
<td>207 (62.6)</td>
<td>197 (59.4)</td>
<td>0.244</td>
</tr>
<tr>
<td>No (%)</td>
<td>104 (31.4)</td>
<td>121 (36.6)</td>
<td>0.244</td>
</tr>
<tr>
<td>Smoking History (%)</td>
<td>133 (40.0)</td>
<td>120 (36.0)</td>
<td>0.479</td>
</tr>
<tr>
<td>Yes (%)</td>
<td>188 (56.5)</td>
<td>189 (56.7)</td>
<td>0.988</td>
</tr>
<tr>
<td>No (%)</td>
<td>95 (28.6)</td>
<td>95 (28.6)</td>
<td>0.988</td>
</tr>
<tr>
<td>Alcohol History (%)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0.988</td>
</tr>
<tr>
<td>Yes (%)</td>
<td>207 (62.6)</td>
<td>207 (62.6)</td>
<td>0.988</td>
</tr>
<tr>
<td>No (%)</td>
<td>104 (31.4)</td>
<td>104 (31.4)</td>
<td>0.988</td>
</tr>
<tr>
<td>Exercise (%)</td>
<td>187 (56.5)</td>
<td>187 (56.5)</td>
<td>0.988</td>
</tr>
<tr>
<td>Yes (%)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0.988</td>
</tr>
<tr>
<td>No (%)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0.988</td>
</tr>
<tr>
<td>Dietary Recreational (%)</td>
<td>226 (68.5)</td>
<td>226 (68.5)</td>
<td>0.988</td>
</tr>
<tr>
<td>Yes (%)</td>
<td>23 (6.9)</td>
<td>23 (6.9)</td>
<td>0.988</td>
</tr>
<tr>
<td>No (%)</td>
<td>203 (61.2)</td>
<td>203 (61.2)</td>
<td>0.988</td>
</tr>
<tr>
<td>Concomitant Disease (%)</td>
<td>226 (68.5)</td>
<td>226 (68.5)</td>
<td>0.988</td>
</tr>
<tr>
<td>Yes (%)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0.988</td>
</tr>
<tr>
<td>No (%)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0.988</td>
</tr>
<tr>
<td>Diabetes (%)</td>
<td>70 (21.2)</td>
<td>70 (21.2)</td>
<td>0.988</td>
</tr>
<tr>
<td>Yes (%)</td>
<td>70 (21.2)</td>
<td>70 (21.2)</td>
<td>0.988</td>
</tr>
<tr>
<td>No (%)</td>
<td>261 (78.8)</td>
<td>261 (78.8)</td>
<td>0.988</td>
</tr>
<tr>
<td>Hypertriglyceridemia (%)</td>
<td>35 (10.6)</td>
<td>35 (10.6)</td>
<td>0.988</td>
</tr>
<tr>
<td>Yes (%)</td>
<td>35 (10.6)</td>
<td>35 (10.6)</td>
<td>0.988</td>
</tr>
<tr>
<td>No (%)</td>
<td>306 (92.4)</td>
<td>306 (92.4)</td>
<td>0.988</td>
</tr>
<tr>
<td>Hypertension (%)</td>
<td>98 (29.4)</td>
<td>98 (29.4)</td>
<td>0.988</td>
</tr>
<tr>
<td>Yes (%)</td>
<td>98 (29.4)</td>
<td>98 (29.4)</td>
<td>0.988</td>
</tr>
<tr>
<td>No (%)</td>
<td>233 (70.6)</td>
<td>233 (70.6)</td>
<td>0.988</td>
</tr>
<tr>
<td>Dyslipidemia (%)</td>
<td>153 (46.2)</td>
<td>153 (46.2)</td>
<td>0.988</td>
</tr>
<tr>
<td>Yes (%)</td>
<td>153 (46.2)</td>
<td>153 (46.2)</td>
<td>0.988</td>
</tr>
<tr>
<td>No (%)</td>
<td>178 (53.8)</td>
<td>178 (53.8)</td>
<td>0.988</td>
</tr>
<tr>
<td>Body Mass Index (%)</td>
<td>34 (10.3)</td>
<td>34 (10.3)</td>
<td>0.988</td>
</tr>
<tr>
<td>Yes (%)</td>
<td>34 (10.3)</td>
<td>34 (10.3)</td>
<td>0.988</td>
</tr>
<tr>
<td>No (%)</td>
<td>307 (92.4)</td>
<td>307 (92.4)</td>
<td>0.988</td>
</tr>
<tr>
<td>Creatinine (mg/dL)</td>
<td>1.01 (0.16)</td>
<td>1.01 (0.16)</td>
<td>0.988</td>
</tr>
<tr>
<td>Yes (%)</td>
<td>1.01 (0.16)</td>
<td>1.01 (0.16)</td>
<td>0.988</td>
</tr>
<tr>
<td>No (%)</td>
<td>1.01 (0.16)</td>
<td>1.01 (0.16)</td>
<td>0.988</td>
</tr>
<tr>
<td>Calcium (mg/dL)</td>
<td>10.0 (0.9)</td>
<td>10.0 (0.9)</td>
<td>0.988</td>
</tr>
<tr>
<td>Yes (%)</td>
<td>10.0 (0.9)</td>
<td>10.0 (0.9)</td>
<td>0.988</td>
</tr>
<tr>
<td>No (%)</td>
<td>10.0 (0.9)</td>
<td>10.0 (0.9)</td>
<td>0.988</td>
</tr>
<tr>
<td>Albumin (g/L)</td>
<td>37 (23.4)</td>
<td>37 (23.4)</td>
<td>0.988</td>
</tr>
<tr>
<td>Yes (%)</td>
<td>37 (23.4)</td>
<td>37 (23.4)</td>
<td>0.988</td>
</tr>
<tr>
<td>No (%)</td>
<td>134 (76.6)</td>
<td>134 (76.6)</td>
<td>0.988</td>
</tr>
<tr>
<td>Uric Acid (mg/dL)</td>
<td>5.0 (1.0)</td>
<td>5.0 (1.0)</td>
<td>0.988</td>
</tr>
<tr>
<td>Yes (%)</td>
<td>5.0 (1.0)</td>
<td>5.0 (1.0)</td>
<td>0.988</td>
</tr>
<tr>
<td>No (%)</td>
<td>5.0 (1.0)</td>
<td>5.0 (1.0)</td>
<td>0.988</td>
</tr>
<tr>
<td>Calcium Oxalate (%)</td>
<td>153 (46.2)</td>
<td>153 (46.2)</td>
<td>0.988</td>
</tr>
<tr>
<td>Yes (%)</td>
<td>153 (46.2)</td>
<td>153 (46.2)</td>
<td>0.988</td>
</tr>
<tr>
<td>No (%)</td>
<td>178 (53.8)</td>
<td>178 (53.8)</td>
<td>0.988</td>
</tr>
</tbody>
</table>

1Department of Urology, Ankara University School of Medicine, Ankara, Turkey, 2Department of Urology, Etilik City Hospital, Ankara, Turkey, 3Department of Urology, Istinye University School of Medicine, Istanbul, Turkey, 4Department of Urology, NEÜ Meram Medicine Faculty, Konya, Turkey, 5Department of Urology, Istanbul Faculty of Medicine, Istanbul University, Istanbul, Turkey, 6Department of Urology, Sancaktepe Sehit Prof Dr Ilhan Varank Training And Research Hospital, Ankara, Turkey

MP21-08 Plasma Atherogenic Index and its Association with Calcium Oxalate Kidney Stone Formation: A Prospective Study

Tzevat Tefik, Mehmet Ilker Gokce, Muhammed Arif Ibis, Cagir Akpinar, Arzu Musaev, Elif Ipek Aksoy, Yasin Yitgin, Selim Söytürk, Mevlut Melih Biçer, Mehmet Enes Değirmenci, Tzevat Tefik, Selcuk Güven, Kemal Sarica
Results: Comparison between stone formers (n = 314) and non-stone formers (n = 348) revealed significant differences in family history (p < 0.001) and PAI values (p = 0.001), with no significant gender distribution disparities. Other demographic factors and medical conditions did not show significant differences (Table 1).

Conclusions: Our study underscores the importance of family history and PAI values as significant determinants of kidney stone formation. Incorporating these factors into risk assessment strategies can enhance the identification of individuals predisposed to kidney stones.

Funding: None.

Table 1: HoLEP patient characteristics and presence of bladder stone

<table>
<thead>
<tr>
<th>Variable</th>
<th>Overall, N = 662</th>
<th>0, N = 255</th>
<th>1, N = 56</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>71.1 ± 8.4</td>
<td>71.0 ± 8.4</td>
<td>71.6 ± 8.3</td>
<td>0.05</td>
</tr>
<tr>
<td>Volume</td>
<td>92.7 ± 46.7</td>
<td>93.4 ± 48.0</td>
<td>89.3 ± 40.8</td>
<td>0.06</td>
</tr>
<tr>
<td>Catheter</td>
<td>95 (30.5%)</td>
<td>78 (30.6%)</td>
<td>17 (30.4%)</td>
<td>&gt;0.99</td>
</tr>
<tr>
<td>Trabeculations</td>
<td></td>
<td></td>
<td></td>
<td>0.56</td>
</tr>
<tr>
<td>Mild</td>
<td>89 (26.8%)</td>
<td>74 (20.0%)</td>
<td>15 (26.8%)</td>
<td></td>
</tr>
<tr>
<td>Mild-Moderate</td>
<td>29 (9.0%)</td>
<td>24 (9.4%)</td>
<td>4 (7.1%)</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>86 (27.3%)</td>
<td>72 (26.8%)</td>
<td>13 (23.2%)</td>
<td></td>
</tr>
<tr>
<td>Moderate-Severe</td>
<td>50 (16.1%)</td>
<td>41 (16.1%)</td>
<td>9 (16.1%)</td>
<td></td>
</tr>
<tr>
<td>Severe</td>
<td>59 (19.0%)</td>
<td>44 (17.3%)</td>
<td>15 (26.8%)</td>
<td></td>
</tr>
<tr>
<td>Primary Stone Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calcium oxalate</td>
<td>24 (42.9%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uric acid</td>
<td>15 (26.6%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calcium phosphate</td>
<td>5 (8.9%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cystine</td>
<td>2 (3.6%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Struvite</td>
<td>2 (3.6%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calcium oxalate &amp; Calcium phosphate</td>
<td>2 (3.6%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>6 (10.7%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Means±SD; n (%) 
Wilcoxon rank sum test; Pearson’s Chi-squared test

Results: Of 311 HoLEP patients, mean age was 71.1 ± 8.4 years, with 95 (30%) catheter-dependent, and a mean prostate volume of 92.7 ± 46.7 cc. Among 56 patients (18%) who had a bladder stone, the most common primary compositions were calcium oxalate monohydrate (n = 24, 43%) and uric acid (n = 15, 27%). Neither patient age, prostate volume, bladder trabeculation severity, or presence of CIC/catheter, yielded a statistically significant difference between those with and without bladder calculi (Table 1). Moreover, none of these factors were significantly associated with a particular stone composition (p > 0.05).

Conclusions: Most patients undergoing HoLEP do not have a bladder stone and there is no significant association between bladder stones and prostate volume, bladder trabeculation severity, need for catheterization, and stone composition. Future studies are needed to determine the contribution of lower urinary tract obstruction and metabolic factors in the development of bladder stones.

Funding: FUTURRE-Careers at University of Arizona College of Medicine

MP21-10 Contemporary Kidney Stone Analysis Composition among U. S. Adults and Children in a Large Reference Laboratory Setting

Kelly Lehner1, Patrick Day1, Joshua Bornhorst1, Paul Jannetto1, Kevin Koo1

Mayo Clinic

Presented By: Kelly Lehner, MD

Introduction: Although kidney stones remain one of the most prevalent urologic conditions, contemporary population-level data on kidney stone composition remains limited. Thus we characterized the prevalence of kidney stone composition by patient age, gender, and geographic location using data from a large tertiary stone analysis laboratory.

Methods: The Mayo Clinic Metals Laboratory receives adult and pediatric kidney stone specimens for analysis and classification by infrared spectroscopy. All stones submitted for analysis over a 12-month period (December 2022 – November 2023) are included in this report. Stone characteristics were analyzed together with patient age, gender, and geographic location.
MP21-11 From Niche to Norm: Utilization Trends in Holmium Laser Enucleation of the Prostate in the United States from 2018-2022

Jennifer Robles1, Young Eun Shin1, Sirikan Rojanasarot1, Nicole L. Miller2

1Boston Scientific, 2Vanderbilt University Medical Center

Presented By: Jennifer Robles, MD, MPH

Introduction: The clinical benefits of holmium laser enucleation of the prostate (HoLEP) for managing benign prostate hyperplasia (BPH) are well-documented, yet its adoption in the US has been relatively low. Before 2016, HoLEP was performed in less than 5% of all BPH surgeries. This study aims to assess the temporal trends in HoLEP utilization from 2018 to 2022, addressing a gap in real-world data and exploring the dynamics of its adoption in the US.

Methods: Medical clearinghouse claims data obtained from Definitive Healthcare for 2018 to 2022 were used to identify providers who performed HoLEP. HoLEP rates were calculated by dividing the number of HoLEP patients by the number of total BPH procedure patients, including TURP, water vapor therapy, photoselective vaporization of the prostate, transurethral waterjet ablation of prostate, prostatic urethral lift, implantable nitinol device, and simple prostatectomy. To assess the impact of provider experience on HoLEP adoption, we defined active HoLEP surgeons as those with at least 10 annual HoLEP procedures. Trends over time were analyzed through Cochran-Armitage test.

Results: The findings show that HoLEP utilization in the United States significantly increased by 52% between 2018 and 2022 (p < 0.01) but remained overall low at 6.7% of total BPH procedures. Total BPH procedures was variable year to year with an overall upwards trend. The number of surgeons performing at least 1 HoLEP procedure rose by 29%, from 413 surgeons in 2018 to 534 surgeons in 2022. Meanwhile, the number of active HoLEP surgeons (10+ procedures annually) escalated by 43% from 106 surgeons in 2018 to 151 surgeons in 2022. Higher volume HoLEP surgeons performing 50+ procedures accounted for 40.5% of all HoLEP procedures in 2018 and 56.8% in 2022, representing increases of 6% and 9%, respectively.

Conclusions: A strong upward trend in HoLEP utilization in the US over 5 years, coupled with an increase in both the overall number of HoLEP surgeons and proportion of patients being treated by high-volume HoLEP surgeons, underscores growing demand for HoLEP in the United States. These findings highlight a shift towards adopting HoLEP, suggesting the need for continued support and training to ensure wide patient access.

Funding: This study was supported by Boston Scientific.

MP21-12 Minimizing Extraneous Emergency Room Visits: Characterizing Factors Associated with Admission in Urologic Post-Operative Emergency Room Visits in an Integrated Health Care Delivery System

Jonathan Katz1, Tyler Sheetz1, Michael Fechter1, Albert Bai Bai2, Philip Kim1, Marc Chuang1, Samuel Amukele1

1Kaiser Permanente San Diego/Department of Urology, 2Kaiser Permanente San Diego/Department of Statistics

Presented By: Jonathan Katz, MD

Introduction: Emergency room (ER) visits in the postoperative period are costly, frustrating, and often unnecessary. While there is only a 20-33% hospitalization rate following emergency room visits, little is known regarding factors which predict hospital admission. Therefore, this study aimed to characterize factors associated with admission from the emergency room (ER) within 30-days of surgery.

Methods: We conducted an IRB-approved study at Kaiser San Diego, where we performed a retrospective study of all patients who underwent urologic procedure (CPT codes: 50000-60000
and ICD codes: [0T - 0V] between July 2018 - August 2023. We then identified all patients who had an emergency room visit within 30 days of surgery and all patients who were subsequently admitted. We extracted the patient’s initial vitals at presentation (temperature, pulse, blood pressure and oxygen saturation). For patients admitted, despite normal vitals, we also extracted their reason for presentation and calculated the relative percentages of each occurrence.

**Results:** Of the 8, 657 patients identified who underwent urologic surgeries, 2053 (23.7%) presented to the ER within 30 days of surgery and of that only 380 (18.5%) were subsequently admitted [Table 1]. We were able to successfully extract 208 encounters with complete vitals and an explanation for presentation to the emergency room. Of the 208 admissions 140 (67.3%) had normal vitals and 68 (32.6%) had abnormal vitals. For those with normal vitals, the most common chief complaints were: pain (27.9%), neurologic changes (20.7%), hematuria (20.0%), and fever (15.7%) [Table 2].

**Conclusions:** Abnormal vitals at ER presentation was sufficient to explain 32.6% of all admissions. This study demonstrates a need for pre-presentation risk stratification tools to help patients understand the need to return to the ER with post-operative concerns.

**Funding:** None.

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**MP21-14 Comparative analysis of urinary and serum parameters in patients with and without hypertension: Insights from a Metabolic Stone Clinic**

Victoria Jahrreiss3, Kabir Patwardhan1, Paul Cook2, Carlotta Nedbal1, Bhaskar Somani1

1Department of Urology, University Hospital Southampton, 2University Hospital Southampton NHS Foundation Trust, 3Department of Urology, Medical University Vienna, Department of Urology, University Hospital Southampton

Presented By: Victoria Jahrreiss, MD

**Introduction:** The interrelation between hypertension (HT) and kidney stone disease (KSD) warrants a detailed exploration of their shared metabolic profiles, aiming to improve clinical outcomes through targeted management. The aim of this study was to compare the differences in urinary and serum parameters between patients with and without hypertension, shedding light on the impact of HT in KSD.

**Methods:** In this retrospective analysis, data from high-risk patients screened for metabolic stone disease between March 2012-March 2024 were reviewed. Participants were divided into two cohorts based on hypertension status: non-hypertensive (Group-1) and hypertensive (Group-2). A comprehensive assessment of urinary and serum parameters was performed for both groups.

**Results:** The study evaluated 955 patients, with 900 (90.45%) in the non-hypertensive group and 95 (9.55%) in the hypertensive group. Significant findings include a higher mean Body Mass Index in hypertensive patients (32.07 vs. 28.67, p = 0.0229), and a greater mean fluid intake (2.19L vs. 2.03L, p = 0.0001). Most urinary and serum parameters, including volume, creatinine, calcium, oxalate, citrate, urate, magnesium, sodium, and bicarbonate, did not differ significantly between groups. However, hypertensive patients showed a significantly lower serum creatinine levels (p = 0.0212) and phosphate (p = 0.0025). Additionally, urate levels in men were significantly higher in patients with hypertension (p = 0.0494).
Conclusions: While the majority of metabolic parameters examined were similar between hypertensive and non-hypertensive patients, the study’s findings on BMI, fluid intake, serum creatinine, phosphate, and urate levels in men emphasize the metabolic influence of hypertension on renal health and stone disease, stressing the importance of tailored metabolic screenings aiming for personalized treatment approaches. However, further studies are needed to validate these results.

Funding: N/A.

MP21-15 Economic burden of imaging and interventions in endourology: a worldwide cost analysis from EAU Young Academic Urology (YAU) Urolithiasis group

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Presented By: Victoria Jahrreiss, DR

Introduction: Cost of imaging and interventions in the surgical field vary between countries and sometimes within different regions of the same country. Procedural costs take into account equipment, consumables, operating room, surgical, anaesthetic and nursing teams, radiology, medications and hospital stay. All in all, the health system faces incredible burden related to investigations and surgical procedures. The aim of our study was to collect costs of imaging and interventions for kidney calculi across different hospitals and healthcare systems in the world.

Methods: An online shared Google spreadsheet was created by the EAU Young Academic Urology (YAU) urolithiasis group. The survey consisted of cost of 4 radiological imaging (USS, XRKUB, CTKUB and CTU) and 6 interventions (Endoscopic laser treatment of renal stones, Ureteroscopic treatment or extraction of ureteric stones, Percutaneous nephrolithotomy, insertion of ureteric stent, diagnostic ureteroscopy and cystolitholapaxy). A chosen representative from each country collected and collated the data, and this was converted to euros (€).

Results: Data was collected from 32 countries. These includes Turkey, Armenia, Nepal, Uzbekistan, Brazil, Chile, Qatar, Peru, Israel, Singapore, Thailand, Columbia, Argentina, Saudi Arabia, Asia, North America, 15 countries from the European continent and USA. The mean cost of USS, XRKUB, CTKUB and CTU were 51.3€ (range: 2-160€), 27.1€ (range:2.5-187€), 105.8€ (range:19-405€), respectively.
Our study highlights the significant economic impact of kidney stone management on healthcare systems worldwide. There seems to be significant disparities between private and public healthcare. These results can aid policymakers to address these disparities and perhaps to learn from other healthcare providers.

**Funding:** None.

**Conclusions:** Our study highlights the significant economic impact of kidney stone management on healthcare systems worldwide. There seems to be significant disparities between private and public healthcare. These results can aid policymakers to address these disparities and perhaps to learn from other healthcare providers.

**Funding:** None.


Matthew Lee¹, Amanda Gusovsky¹, Michael Sourial¹, John Oliver Delancey¹, Bodo Knudsen¹, Shawn Dason¹, James Burke¹

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**Presented By:** Matthew Lee, MD

**Introduction:** The prevalence of kidney stones in the United States has been steadily increasing since 1976. Indeed, Analysis of the National Health and Nutrition Examination Survey in 2015-2018 revealed that the prevalence of stone disease had increased again to 11.0% compared to 3.8% in 1976. Our aim was to update this analysis and also to analyze the effects of race/ethnicity and socioeconomic status in further detail as prior analyses had combined Mexican American and Other Hispanic categories or omitted socioeconomic status.

**Methods:** The National Health and Nutrition Examination Survey (NHANES) was analyzed to determine the prevalence and incidence of stone disease. Demographic factors were tested for associations with prevalence and incidence of stone disease. Statistical tests were performed using SAS v9.4. A p-value <0.05 was statistically significant.

**Results:** The overall prevalence of stones was 9.8% (95% CI: 8.5-11.2%) and the 12-month incidence was 1.8% (95% CI: 1.4-2.3%). Prevalence of stones was highest for Other/multi-racial (OR 1.30, 95% CI: 0.87-1.94, p < 0.003), followed by non-Hispanic Whites, and Other Hispanic. Monthly income <$6250 was also associated with increased stone incidence (OR 18.9, 95% CI: 2.2-162.1, p = 0.002).

**Conclusions:** The prevalence and incidence of stone disease in America has stabilized at 9.8% and 1.8%, respectively. Other/multi-racial patients now have the highest prevalence and incidence of stone disease. Further study is required to determine what factors are causing these changes.

**Funding:** None.

**MP21-17 Association of urinary bisphenol A, F and S with nephrolithiasis: A cross-sectional study from NHANES 2013-2016**

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**Presented By:** Xingpeng Di, MD

**Introduction:** Kidney stone is a lifelong disease that brings great health and economic burden to patients. Bisphenol A (BPA) and its main substitutes (BPS and BPF) were widely used in plasticizers products and recognized as threats to human health. However, limited studies focused on the effects of BPS and BPF on kidney stones. To explore the relationship between bisphenol A (BPA) and its main substitutes (BPS and BPF) analogues and nephrolithiasis.

**Methods:** Adult participants (n = 2039) from the National Health and Nutrition Examination Survey (NHANES) from 2013 to 2016 were included. Multivariable logistic regression model and sensitivity analysis were utilized to investigate the correlation between BPA substitutes and kidney stones.

**Results:** The incidence of nephrolithiasis was 11.23% (12.44% in males, 10.04% in males). After gender stratification, the fully adjusted model indicated a significant difference in higher BPS levels compare to the lowest quartile (Odds ratio [OR] = 0.331, 95% Confidence interval [CI] = 0.129 to 0.848, p = 0.024) in male participants. The relationship was modified by the family income ratio (P interaction = 0.005). Such difference was not found in female and overall groups.

**Conclusions:** Our findings suggested higher BPS was inversely associated with nephrolithiasis in US males. The family income ratio might be a modifier to the association.

**Funding:** None.

**MP21-18 Dietary intakes of vitamin B6, folate, vitamin B12 and kidney stone: a cross-sectional survey of NHANES 2007-2010**

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**Presented By:** Yunxia Wan
Introduction: Kidney stones is a common disease and affects approximately 10% of the American adults. Previous studies determining the relationship between vitamin B6, folate, and vitamin B12 found conflicting results. We aimed to determine the dietary intake of vitamin B6, folate, and vitamin B12 in children and adults in the United States population.

Methods: We extracted data from the 2007–2010 cycles of the National Health and Nutrition Examination Survey (NHANES). Dietary intakes of B vitamins were collected based on one 24-hour dietary recall. The association between dietary intake of vitamin B6, folate, vitamin B12 and kidney stones was examined using multivariate logistic regression models.

Results: A total of 7,963 participants were included for analysis, with 762 reporting kidney stones and 7,201 not experiencing kidney stones. The multivariable odds ratios (ORs) for the prevalence of kidney stones. The multivariable odds ratios (ORs) for the highest vs. lowest quartiles of vitamin B6 was 0.64 (95% CI, 0.50–0.91; P for trend = 0.014) for the prevalence of kidney stones. However, no statistically significant association was observed between dietary intake of folate, vitamin B12 and the prevalence of kidney stones.

Conclusions: The consumption of dietary vitamin B6 was significantly linked to decreased risks of kidney stones, suggesting a potential protective role of this nutrient against kidney stones in United States adults.

Funding: NA.

MP21-19 Mapping of Registered Nephrolithiasis Clinical Trials
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Presented By: Mohammed Shahait

MP22-01 Prospective Comparison of a Next Generation Pulsed Solid-State Thulium:YAG Laser and a Holmium:YAG Laser for Percutaneous Lithotripsy during Mini-PCNL
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Presented By: Christopher Netsch, MD, FEBU, Fellow in Endourology, Ass. Prof.

Introduction: Laser technology, particularly the Holmium:YAG (Ho:YAG) laser, has long been utilized for urinary stone disintegration in medical procedures like retrograde intrarenal surgery and percutaneous nephrolithotomy (PCNL). However, drawbacks persist, prompting exploration of alternatives such as thulium lasers. This study compares a novel pulsed solid-state Thulium:YAG (Tm:YAG) laser to the standard Ho:YAG laser in Mini-PCNL lithotripsy for renal calculi.

Methods: In total, 100 patients undergoing Mini-PCNL were prospectively enrolled into this clinical trial. In each treatment group, 50 patients were either treated with the thulium or the holmium laser. Patient characteristics, stone parameters, operative details, and complications were recorded and analyzed statistically.

Results: Both groups were comparable in demographics and stone characteristics. The Tm:YAG group demonstrated significantly shorter laser-on-time (10.46 vs. 7.2 min; \( p = 0.03 \)) and operative time (41.2 vs. 32.6 min; \( p < 0.05 \)) compared to the Ho:YAG group. There was no difference regarding stone-free rates (SFR) at 24 hours, which was 90% in the Ho:YAG group and 92% in the Tm:YAG group (\( p = 0.73 \)). Intraoperative complications did not significantly differ between groups.

Conclusions: The novel pulsed solid-state Tm:YAG laser demonstrates advantages over the Ho:YAG laser in terms of laser-on-time and operation time, while showing comparable results for stone free rate and complications. Further clinical trials are needed to compare Tm:YAG and Ho:YAG lasers in various contexts and to evaluate the Tm:YAG laser against the TFL for a comprehensive understanding of each technology’s advantages.

Funding: None.
MP22-02 Understanding Urinary Pathogens in Patients with Preexisting Nephrostomy Tubes Undergoing PCNL

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Presented By: David C Dalton, MD

Introduction: Understanding urinary pathogens is key to avoiding infectious complications in percutaneous nephrolithotomy (PCNL). Limited data exists looking at urinary pathogens in patients with preexisting nephrostomy tubes (NT) undergoing PCNL.

Methods: A retrospective study was performed to identify patients who underwent unilateral PCNL with preoperative NT placement by interventional radiology at a single institution from 2017 to 2022. We obtained preoperative urine cultures, preoperative NT cultures, stone analysis, and various demographic data. We then compared preoperative urine cultures to stone cultures to find associations.

Results: A Chi squared test of independence was performed to assess for association between preoperative urine cultures and stones cultures. Positive preoperative urine culture from any source (bladder or NT) was not associated with a positive stone culture X²(1, n = 64) = 3.27, p = 0.07; however, a positive preoperative NT culture was associated with positive stone culture X²(1, n = 46) = 12.64, p = <0.01. Interestingly, the exact result of the NT culture (whether the same organism or no growth) matched the stone culture in only 46% of cases. This low concordance was also seen when comparing preoperative bladder urine cultures to stone cultures (29.5%) and when combining results of preoperative bladder urine and NT cultures to compare to stone cultures (46%).

Conclusions: Preoperative urine cultures are not predictive of stone cultures in patients with preexisting NT undergoing PCNL. Even though a positive preoperative NT culture is associated with a positive stone culture, the culture result is concordant less than half of the time. This is important for the urologist to understand when determining perioperative antimicrobial prophylaxis.

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MP22-03 Nationwide survey on treatment paradigm shift and perioperative complications of percutaneous nephrolithotomy for upper urinary tract calculi in Japan

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Presented By: Shuzo Hamamoto, MD, PhD

Introduction: The current percutaneous modalities for renal stones include percutaneous nephrolithotomy (PCNL) and endoscopic combined intrarenal surgery (ECIRS). PCNL and ECIRS are thought to be similar but are very different techniques in clinical practice. In Japan, ECIRS has become more common than PCNL; however, there are no nationwide surveys on the perioperative complications associated with these procedures. Therefore, we investigated the clinical trends in Japan based on a nationwide survey.

Methods: In total, 234 facilities in Japan agreed to participate in the study. A questionnaire was used to analyze the number of percutaneous surgeries for upper urinary tract calculi and their perioperative complications between April 2019 and March 2021.

Results: A total of 5346 procedures were performed over a 3-year period; the number of PCNL procedures decreased over time, whereas the number of ECIR gradually increased. With regard to the percutaneous tract, 48% of PCNL were performed with a tract larger than 24 Fr, whereas 70.9% of ECIRS were performed with a mini-tract less than 21Fr. Perioperative serious bleeding was significantly higher in PCNL than in ECIRS (4.5% vs. 1.2%, p < 0.001). However, there was no significant difference in the frequency of postoperative fever (16.1% vs. 17.2%) or sepsis (1.4% vs. 1.3%).

Conclusions: Percutaneous treatment of renal calculi in Japan has undergone a paradigm shift from PCNL to ECIRS. ECIRS is increasingly performed in more institutions with the use of mini-tracts and a lower risk of bleeding than PCNL.

Funding: None.

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MP22-04 Feasibility and Safety of X-ray-Free Ultrasound-Guided PCNL for Staghorn Stones: A Prospective Single-Institution Experience

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Presented By: Austin L. Chien, MD

Introduction: Percutaneous nephrolithotomy under ultrasound-guided access (US-PCNL) has been shown to have multiple advantages compared to fluoroscopy, yet to date, the efficacy of this technique in the management of staghorn stones has largely
been reported in retrospective series. Adhering to strict definitions of stone-free based on post-operative CT imaging, the objective of our study was to utilize a prospective cohort to determine the safety and effectiveness of performing US-PCNL in the management of staghorn calculi.

**Methods:** Utilizing a prospective cohort of PCNLs performed by a single surgeon between Oct 2020 and Jan 2024, data were collected and tracked as part of ReSKU (Registry for Stones of the Kidney and Ureter) at the University of Arizona. All patients had US-PCNL performed in the supine (Galdakao-modified Valdivia) position, allowing for endoscopic combined intrarenal surgery (ECIRS). Inclusion criteria were presence of a staghorn stone (either partial or complete) on preoperative CT imaging, with a staghorn defined as occupying the renal pelvis and either >2 calyces (partial), or >4 calyces (complete). Patients were excluded if fluoroscopy was used at any point during the operation. Preoperative stone burden was quantified using S. T. O. N. nephrolithometry scoring. The primary outcomes were stone-free rate and rate of residual fragments <4mm, as well as complication rate, with stone free based on post-op CT.

**Results:** Of 177 PCNLs performed during the study, 50 met inclusion criteria involving 45 unique patients, with 5 patients undergoing two separate unilateral US-PCNLs. Among the 22 (44%) complete and 28 (56%) partial staghorn cases, the median aggregate linear dimension was 50.5mm, with a median S. T. O. N. nephrolithometry score of 10. Overall median operative time in minutes was 145.9 ± 45.5, with a significant difference seen between complete (175.1 ± 39.1) and partial (123.0 ± 38.1) cases (p < 0.01). Ultimately 25/50 (50%) had a residual fragment <4mm in size, and of these 17/50 (34%) patients were completely stone-free after their initial US-PCNL. The overall complication rate was 19/50 (38%), however the majority (14/19) were minor (Clavien-Dindo 1 & 2) with 5 patients (10%) having Clavien-Dindo grade ≥3 – all among complete staghorn cases.

**Conclusions:** Using strict outcome definitions, X-ray free US-PCNL can be performed for the treatment of high-complexity staghorn stones and shows comparable stone-free rates to those previously reported in the PCNL literature.

**Funding:** FUTURRE-Careers at University of Arizona College of Medicine

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**MP22-05 Ambulatory Percutaneous Nephrolithotomy is a New Standard of Care: An Analysis of Over 2000 Cases**

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Presented By: Linhan Xu, MD

**Introduction:** Percutaneous nephrolithotomy (PCNL) has traditionally been considered an inpatient surgery due to the risk of bleeding and systemic infection. The evolution of technology and surgical approaches, such as the application of endoscopic combined intrarenal surgery (ECIRS) and mini-PCNL (mPCNL), have facilitated the adaptation of PCNL to the ambulatory setting. In this series, we show that ambulatory PCNL (aPCNL) may be safely and efficaciously performed in most patients.

**Methods:** We analyzed patients who underwent aPCNL, including standard PCNL (24-30Fr) and mPCNL (14-23Fr), at two free-standing ambulatory surgery centers (ASCs) between 2015-2023. Patient exclusion criteria for the ASC included BMI > 50, severe cardiopulmonary conditions, and prior anesthetic complication. Patients were positioned either prone or in the Galdakao-modified Valdivia supine position. Standard practices included ECIRS technique for renal access, ureteral stent for drainage with a hemostatic plug in the access tract, and surgeon-administered rib block for pain control. Patients were observed in the post-anesthesia care unit (PACU) until they met criteria for discharge and were sent home without a Foley catheter. Patient demographic, pre-operative, and post-operative data were prospectively collected. Descriptive statistics were used for data analysis.

**Results:** 2106 cases were available for analysis (Table 1). The mean age of patients was 57, mean BMI was 30, and mean ASA score was 2.27% of patients had diabetes and 59% had hypertension. 18% of patients had a positive urine culture treated pre-operatively. The mean stone burden was 31mm. Standard tract PCNL was used in 60% of cases and 91% of cases were done through a single tract. 98% of cases had only a ureteral stent for drainage. The mean treatment time was 18 minutes and mean PACU time was 82 minutes. There was no planned second look in 91% of cases. The average estimated blood loss was 35mL. 1.9% of patients had a Clavien-Dindo complication > grade 2, but none were grade 5. Only 1.7% of patients required hospital transfer.

**Conclusions:** aPCNL is efficacious and safe in appropriately selected patients. In our high-volume series, we found a low morbidity rate and low risk for hospital transfer. Unless there are medical or social factors precluding same day discharge, PCNL should be routinely performed as an ambulatory procedure.

**Funding:** None.

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**MP22-06 Bridging the Culture Gap: Do Multi-organism Stone Cultures Alter Outcomes Following PCNL?**

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Presented By: Linhan Xu, MD
Presented By: Gabriel Martin, MD

Introduction: Understanding the factors associated with positive stone cultures, the organism profile of the culture, and their impact on patient outcomes is crucial for kidney stone disease management. However, there is little information on whether single or multiple organisms impact outcomes. The purpose of this study was to assess the risk factors and outcomes associated with negative, single organism, and multi-organism stone cultures.

Methods: A retrospective review was performed on percutaneous nephrolithotomy (PCNL) patients with stone cultures at a single academic institution between 2017 and 2023. Data collection encompassed patient demographics, co-morbidities, laboratory findings, operative details, and postoperative outcomes. A comparative analysis was performed between negative, single organism, and multi-organism stone cultures using Chi-Square and ANOVA with Tukey B for post hoc test. Significance was defined as p < 0.05.

Results: Of the 197 patients who obtained stone cultures, 86 (44%) were negative, 62 (31%) were positive for a single organism, and 49 (25%) were positive for multiple organisms. Patients with single and multi-organism stone cultures were more likely to be female (p = 0.026). Patients with multi-organism stone cultures had a higher rate of preoperative Foley catheters (3% vs 5% vs 20%; p = 0.001), ureteral stents (7% vs 195 vs 20%; p = 0.037), and nephrostomy tubes (7% vs 15% vs 41%; p < 0.001 in the negative, single, and multi-organism cultures, respectively). There was a significant difference in stone analysis based on culture (Figure 1; p < 0.001). Patients with multi-organism stone cultures had longer lengths of stay (p = 0.006), and a recurrence time of less than 6 months (5% vs 11% vs 14%; p = 0.005 in the negative, single, and multi-organism cultures, respectively). Most common organisms in stone cultures included Gram-negative bacilli (63.1%), Enterococci (30%), and fungi (15%).

Conclusions: Patients with multiple stone cultures were more likely to have struvite stones, had longer hospitalizations, and developed recurrence sooner. These patients may benefit from more aggressive strategies designed to minimize stone recurrence.

Funding: None.

Presented By: Lucas Vergamini, MD

Introduction: Miniaturized endoscopic combined intrarenal surgery (mini-ECIRS) comprises the simultaneous use of two different but complementary surgical techniques to treat kidney stones: miniaturized percutaneous nephrolithotomy and retrograde intrarenal surgery. A new development in this area is the introduction of a vacuum-assisted renal access sheath (VA-RAS), which enables the concurrent fragmentation and removal of stones. This study aims to address the literature paucity regarding the outcomes of the utilization of VA-RAS versus usual miniaturized renal access sheath (RAS) in mini-ECIRS.

Methods: Retrospective cohort data on patients undergoing supine mini-ECIRS with the HoYAG laser platform (Lumenis Pulse P120TM, 120W, Boston Scientific®) were collected from 08/2021-03/2023. Exclusion criteria included patients with urinary diversion, simultaneous utilization of >1 laser platform, cases using any other form of stone fragmentation, and patients with ureteral stones. VA-RAS (ClearPetraTM, MicroTech Endoscopy®, China) and RAS (MIP-M, Karl Storz®, Germany) were compared. Stone-free rate (SFR) was assessed by CT scan performed on the first postoperative day and presented as: absence of stone fragments, no fragments larger than 2mm, or no fragments larger than 4mm.

Results: A total of 82 patients met the study criteria, of which VA-RAS was used for 28 patients. Table 1 exhibits patients' demographics and stone characteristics, with VA-RAS group showing higher stone volume and density. Despite that, there was no difference in total operative time, laser energy or laser time (Table 2). Overall, there was no difference in SFR in any category between VA-RAS and RAS (no fragments: RR 1.10, CI 95% 0.73–1.66, p = 0.64; fragments <2mm: RR 0.94, CI 95% 0.64–1.37, p = 0.73; fragments <4mm: RR 1.07, CI 95% 0.79–1.45, p = 0.65) (Table 3).

Table 1. Treatment outcomes

<table>
<thead>
<tr>
<th>Stone characteristics</th>
<th>VA-RAS (n=28)</th>
<th>RAS (n=54)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No stone fragments, n (%)</td>
<td>16 (57.1%)</td>
<td>28 (51.9%)</td>
<td>0.64</td>
</tr>
<tr>
<td>RR HoYAG vs SPT (CI 95%)</td>
<td>1.10 (0.73–1.66)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No stone fragments &gt;2mm, n (%)</td>
<td>16 (57.1%)</td>
<td>33 (61.1%)</td>
<td>0.73</td>
</tr>
<tr>
<td>RR HoYAG vs SPT (CI 95%)</td>
<td>0.94 (0.64–1.37)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No stone fragments &gt;4mm, n (%)</td>
<td>20 (71.4%)</td>
<td>26 (66.7%)</td>
<td>0.65</td>
</tr>
<tr>
<td>RR HoYAG vs SPT (CI 95%)</td>
<td>1.07 (0.79–1.45)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual stone size (mm)*, median (IQR)</td>
<td>4.9 (3.3–5.6)</td>
<td>20 (2.6–38)</td>
<td>0.10</td>
</tr>
</tbody>
</table>

Type of stone, n (%) | | | |
| Calcium oxalate monohydrate | 4 (16.7%) | 19 (35.8%) | 0.02 |
| Calcium oxalate dihydrate | 0 | 2 (3.8%) | |
| Calcium phosphate, apatite | 0 | 3 (5.7%) | |
| Calcium phosphate, brushite | 0 | 7 (13.2%) | |
| Calcium mixed | 18 (75%) | 17 (32.1%) | |
| Uric acid | 1 (4.2%) | 7 (13.2%) | |
| Struvite | 1 (4.2%) | 4 (7.5%) | |
| Cystine | 0 | 1 (1.9%) | |

Hospital-stay length (days), median (range) | 1 (1–1) | 1 (1–1) | 0.00 |

*Based on CT scan performed on first postoperative day.
**Based on lab exam performed on first postoperative day.

Figure 1. Stone analysis based on culture. Negative cultures were significantly more likely to be calcium oxalate or uric acid, while calcium phosphate was the most common stone type in positive cultures. Struvite was significantly associated with multiple-organism cultures.
Conclusions: We observed an equivalent postoperative SFR, total operative time and laser usage when comparing VA-RAS and RAS in mini-ECIRS. Higher stone volume and density in the VA-RAS group may suggest there is an advantage to VA-RAS in these evaluations.

Funding: None.

MP22-08 Impact on the Stone Free Rate of Systematic Retrograde Flexible Nephroscopy in 16F Mini-PCNL

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Presented By: Campos Marquez Guillermo Patricio, MD

Introduction: According to the latest guidelines from the European Urological Association, percutaneous nephrolithotomy (PCNL) is currently the gold standard treatment for patients with renal stones larger than 2 cm and ≥1cm in the lower pole calyx (1). Improved outcomes have been reported with the miniaturization of PCNL (Mini-PCNL) compared to standard PCNL. Using a < 22F access sheath, the authors have seen a significant improvement in intraoperative blood loss and a reduced rate of blood transfusions (2). Miniaturized PCNL has a lot of definitions, including super-MiniPCNL, ultra-MiniPCNL, and micro-PCNL. The existence of multiple definitions for a miniaturized PCNL creates confusion and limits a homogeneous knowledge generation. Therefore, The International Alliance of Urolithiasis has reached a consensus on the classifications and reporting standards for types of PCNL. This consensus suggests that Mini-PCNL should be defined as a PCNL technique using a sheath size of less than or equal to 22 Fr, even though we still have many options below 22F (3) Nevertheless, Mini-PCNL has gained worldwide popularity mainly because it has similar stone-free rates to the standard PCNL (in non-complex renal stones) while reducing renal trauma and complications (4). On the other hand, in addition to Mini-PCNL, another evolution of the PCNL is the Endoscopic Combined Intra Renal Surgery (ECIRS) coined by Scoffone C. and Cols. ECIRS is a complete way to explore the whole renal collecting system using the antegrade and retrograde renal approaches, which increases the PCNL efficiency. In the following years to its description, ECIRS was not popular, but it has been in the last seven years that the procedure has become more accepted worldwide. In PCNL, the retrograde approach with the flexible ureteroscope (ECIRS) has been reported to be more successful in reaching all renal calyces and have a higher stone-free rate than the flexible antegrade approach, highlighting the importance of the ECIRS approach when performing PCNL (7). Despite its advantages, ECIRS will not be possible in all patients because the retrograde approach will fail in approximately 8% of patients due mainly to a non-compliant ureter (8). Still, additional factors like a ureteral spasm, stenosis, stricture, and tortuosity may play an important role. (9) Based on the above information, the advantages of ECIRS are clear when discussing standard PCNL. Still, there is no data about the impact of endoscopic combined intrarenal surgery and systematic flexible retrograde nephroscopy in Mini-PCNL (10, 11). Therefore, the objective is to compare the clinical outcomes in patients undergoing Mini-PCNL plus systematic retrograde flexible nephroscopy (Mini-ECIRS) with those who have undergone mini percutaneous surgery with failed retrograde renal access (Mini-PCNL) in patients with non-complex renal stones (GUY 1-3).

Methods: The clinical records of 230 patients were retrospectively reviewed. Sixty-six records were excluded, with only 164 meeting the inclusion criteria; then, we analyzed 164 patients’ records submitted to miniaturized percutaneous surgery (16 F). These patients were grouped into two groups: those with failed retrograde renal access (MiniPCNL) and those where the retrograde and antegrade renal access could be done (Mini-ECIRS) for the treatment of GUY1-3 renal stones between January 2018 and May 2023. All patients underwent surgery at the Hospital Regional de Alta Especialidad del Bajio (HRAEB) by a single expert surgeon (more than 900 PCNLs performed since 2014). This study was approved by the HRAEB ethics committee with the approval number CI/ HRAEB/024/2023. All patients had their double J catheter removed after seven days and completed a minimum follow-up of 3 months. The inclusion criteria were patient records of individuals over 18 years old with a confirmed diagnosis of GUY 1-3 renal stones submitted to Mini-PCNL and met the medical criteria for the miniaturized percutaneous surgery. The specific exclusion criteria were patients diagnosed with GUY 4 stones, contraindications for Mini-PCNL, and those who had previously undergone Mini-PCNL or URS for treating renal stones. Incomplete records information was the elimination criterion. Data Collection: Patient data, including age, sex, body mass index (BMI), and stone demographics, such as stone size, preoperative obstruction (hydronephrosis), and stone density (Hounsfieeld units), were collected from each patient’s medical record. Perioperative and clinical outcomes included the total fluoroscopy and operative time, type of lithotripsy device used, post-operative procalciion, and post-operative complications (classified according to the Clavien-Dindo grade). We measured the stone-free rate four weeks after surgery with a non-enhanced CT scan, and it was defined as a stone-free status when the patients had no visible stones or stones below 2 mm of maximum diameter (Grade B). Surgical Techniques: All surgeries were performed under general anesthesia. Mini-ECIRS: with patients placed under the supine modified Valdivia-Galdakao position, a semi-rigid ureteroscopy (Karl Storz GmbH & Co. KG, Tuttinglen, Germany) was performed up to the proximal ureter, after which a hybrid guide wire (Bard Inc., New Jersey) was placed. After that, an 11/13F Flexor® ureteral access sheath (COOK MEDICAL) was introduced in all patients who did not present resistance, and then the retrograde pyelography with hydro soluble medium contrast was performed. Following the procedure, the percutaneous puncture was performed with the simplified biplanar 0-90° fluoroscopic puncture technique (12) using an 18 G x 20 cm Chiba needle (COOK MEDICAL). Once the kidney was punctured, a hybrid guide wire (Bard Inc., New Jersey) was left in the renal collecting system. A second hybrid guide wire was introduced, and dilation was carried out with fascial dilators (COOK MEDICAL). Subsequently, a Storz One-shot dilator with its 15/16F sheath (Karl Storz GmbH & Co. KG, Tuttinglen, Germany) was left in place. A mini nephroscope (MIP M, Karl Storz GmbH & Co. KG, Tuttinglen, Germany) was introduced, starting lithotripsy with a High Power Laser – Lumenis Pulsed R 100H (Lumenis Be Ltd-Israel) or with the
Swiss Lithoclast Trilogy R (EMS-Nyon) using a 1.5 mm probe (depending on the hospital availability). A systematic retrograde flexible ureteroscopy was performed over the ureteral access sheath, evaluating the entire collecting system. Upon completion, a hybrid guide wire (Bard Inc., New Jersey) was placed in the upper pole calyx, and then the ureteral access sheath and the flexible ureteroscope were removed. A double “J” stent (Bard Inc., New Jersey) was placed, and finally, an 18F Foley catheter was inserted for drainage, and the percutaneous access sheath was removed, concluding the procedure. Patients in whom Mini-ECIRS could not be performed due to a non-compliant ureter were grouped in the Mini-PCNL group. The rest of the whole surgical procedure was similar; however, a 6 F open-end catheter was placed (COOK MEDICAL) to perform the retrograde pyelography and continue with the Simplified Bi-planar 0-90° Fluoroscopic Puncture Technique for the renal puncture. Then, the dilation process dilation was performed. After lithotripsy, a retrograde pyelogram was performed. After lithotripsy, a retrograde pyelogram was performed and the procedure was concluded. Statistical Analysis: The open-access statistical software JAMOVI version 2.3.21 was used for the statistical analysis. Qualitative variables were subjected to the Kolmogorov-Smirnov normality test; if they met the assumptions of normality, they were reported as frequency and percentage, and the comparison between groups was carried out using a Chi-square (X²) test. Quantitative variables were reported as mean and standard deviation, and the comparison between groups was performed using a Student’s t-test for independent groups. If they did not meet the assumptions of normality, they were reported as median and 25-75th percentile, and the comparison between groups was performed using a Mann-Whitney U test. Any p-value less than 0.05 was considered statistically significant. A logistic regression analysis was conducted to determine the factors associated with being stone-free at four weeks post-operatively as measured by simple computed tomography; these factors were reported as Odds Ratios (OR) and their 95% confidence intervals.

Results: The preoperative characteristics of patients in each group are summarized in Table 1. Sex, age, and body mass index in the two groups were comparable. The two surgical groups had no significant differences in the GUY’s stone score, preoperative obstruction (hydronephrosis), essence (density in Hounsfield units), and stone size in mm². Perioperative data are summarized in Table 2. The two groups’ total fluoroscopy screening time, fluoroscopy puncture time, and operative time did not differ. The mean operative time was 105 (45.6) min and 90 (35.6) min for Mini-ECIRS and Mini-PCNL, respectively (p < 0.090). In the logistic regression, lithotripsy with the Swiss Lithoclast Trilogy was the most decisive factor associated with the stone-free rate (OR of 2.3 CI 95% 1.02 – 5.37). (Fig. 1) Main post-operative data are summarized in Table 3. The SFR was significantly higher (p < 0.042) in patients with Mini-ECIRS (72.4%) than in patients with Mini-PCNL (53.3%). Post-operative complications classified using the modified Clavien Dindo system did not differ between groups (p 0.345).

Conclusions: Miniaturized percutaneous surgery with systematic retrograde flexible nephroscopy has a similar safety profile but a higher stone-free rate than miniaturized percutaneous surgery without systematic flexible nephroscopy. Additionally, the lithotripsy device has an independent influence on the effectiveness of surgery, with the balance tilted in favor of the Swiss Lithoclast Trilogy. Randomized prospective clinical trials are needed to evaluate or corroborate our results.

Funding: All authors declare no conflicts of interest in any topic of the submitted work.

MP22-09 Early Surgical Experience of Laser Pulse Modulation Technology in Ultramini-PCNL

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Presented By: Han Kyu Chae, MD, PhD

Introduction: This study aimed to investigate the impact and safety of the latest Holmium/YAG laser devices capable of pulse modulation in surgical outcomes within Ultramini-PCNL (UMP).

Methods: Between March 1, 2023, and February 29, 2024, patients who underwent surgery for kidney stones at our institution were included in the study. This involved comparing 10 patients (P group) who underwent lithotripsy using the Quanta laser system (Quanta Cyber: Ho™ 105W), which incorporates long pulse modulation techniques including Virtual Basket™ and Vapor Tunnel™, with 50 patients (C group) who underwent lithotripsy using a conventional short pulse laser (VersaPulse™ 100W). The average age of the 60
patients was 61.5 years, and the average size of the stones was 2.86 ± 1.19 cm.

**Results:** The demography between the pulse modulation group and the conventional short pulse group was statistically identical. The stone-free rate was 90% in the P group and 82% in the C group, with the P group having a higher rate, although it was not statistically significant (p = 0.306). The operation time was 64.0 ± 29.8 min for the P group and 75.9 ± 40.2 min for the C group, showing that the P group had a shorter surgery time, but it was not statistically significant (p = 0.313). Both groups showed no significant bleeding with a difference in pre-post Hct of 0.39 ± 3.74 in the P group and 2.28 ± 4.30 in the C group, with no transfusions required. Postoperative complications included one additional ureteroscopic surgery due to steinstrasse in the P group, but no postoperative UTIs were observed. In the C group, there were 3 additional ureteroscopic surgeries, 5 cases of ESWL, and 5 cases of postoperative UTI.

**Conclusions:** The initial 10 cases of UMP using pulse modulation laser concluded successfully without complications, demonstrating a trend towards shorter operation times and higher stone-free rates, although not statistically significant.

**Funding:** None.

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**MP22-10 The Laser Direct Alignment Radiation Reduction Technique (DARRT): A Clinical Comparison of a Novel Hybrid Technique to Conventional Fluoroscopic Renal Access**

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**Presented By:** Zhamshid Okhunov, MD

**Introduction:** Fluorescopy-assisted renal access for percutaneous nephrolithotomy (PCNL) poses a significant radiation risk to both patients and medical personnel. The Laser Direct Alignment Radiation Reduction Technique (DARRT) presents a novel approach integrating pulsed low-dose fluoroscopy, ultrasound, endoscopic visualization, and laser targeting to minimize fluoroscopy exposure during PCNL. This study aims to evaluate the safety and efficacy of Laser DARRT in comparison to traditional fluoroscopy-guided PCNL access.

**Methods:** A retrospective analysis was conducted on patients who underwent PCNL at a single academic institution between January 2017 and March 2023. Patients with pre-existing nephrostomy tubes for access and those who underwent solely ultrasound-guided access were excluded from the study. Renal access methods were divided into two groups: fluoroscopy-guided or Laser DARRT. The primary outcome of the study was comparing fluoroscopy time used for renal access. Secondary outcomes included total fluoroscopy time, stone-free rates (SFR) defined as no or <4 mm fragments on postoperative CT scan, complication rates, procedure duration, length of hospital stay, and the need for additional procedures. Continuous variables were compared using independent samples t-test, while categorical variables were compared using the Chi-square test, with significance set at p < 0.05.

**Results:** A total of 292 patients were eligible for the study. Baseline characteristics of the patients were comparable across the groups. While there were no notable differences in stone laterality, stone volume, and Hounsfield units between the groups, the Laser DARRT group had a higher proportion of staghorn calculi (84.6% vs. 67%; p = 0.001). Employing the Laser DARRT technique led to a notable reduction in both fluoroscopy time required for access (10.8 vs. 55.17 seconds; p < 0.001) and total fluoroscopy time (21.8 vs. 597.7 seconds; p < 0.001). However, there were no significant disparities observed in total procedure duration, length of hospital stays, blood loss, or complication rates between the two groups (p > 0.05 for all). Notably, the SFR was significantly higher in the Laser DARRT group compared to the conventional group (84.1% vs. 64.1%; p < 0.001).

**Conclusions:** The laser DARRT had improved SFR with similar operative times and outcomes but resulted in a ≥95% reduction in fluoroscopy time. By combining the advantages of fluoroscopy, ultrasound, endoscopic vision, and laser guidance, this technique represents a promising option for improving outcomes and minimizing morbidity.

**Funding:** None.

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**MP22-11 Is Outpatient Totally Tubeless PCNL Safe and Efficacious?**

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**Presented By:** Kavita Gupta, MD

**Introduction:** Percutaneous nephrolithotomy is the gold standard treatment for large, complex intrarenal stones. Tubeless PCNL (t-PCNL) where no nephrostomy tube is placed and totally tubeless PCNL (ttl-PCNL) in selected patients have been well described. However, most studies on ttl-PCNL have left at least a ureteral catheter or Foley catheter for several hours or overnight. Herein we describe our experience with ttl-PCNL on a totally ambulatory basis—with the patient going home within 1-3 hours post procedure with absolutely no tube, catheter, or stent at all, evaluating its safety and efficacy vis-à-vis a comparison to ambulatory t-PCNL patients discharged with an indwelling stent.

**Methods:** We prospectively collected data from 103 consecutive patients undergoing ambulatory PCNL from August 2023 to January 2024. Demographics, stone characteristics, intraoperative data (access location, needlestick attempts, and number of accesses) were compared. Outcomes included stone-free rate, 30-day complications, and ED visits or readmissions. Categorical variables were compared using Chi-square or Fisher’s exact tests, and continuous variables via Mann-Whitney U-tests.

**Results:** Among the 103 patients, 53 were t-PCNL and 50 were ttl-PCNL. Age, BMI, gender, diabetes, prior PCNL, S. T. O. N. E. scores, stone burden, and preoperative hydronephrosis did not differ between groups (Table 1). Location of access, needlestick attempts, and total access time were similar between two approaches. No visceral or pleural injuries occurred in either group. Postop transfusion rates, stone-free rate, 30-day complications, ED visits, and readmissions were also comparable between the two groups. The mean operative time and incidence of Clavien-Dindo I complications was higher in the stented group (80 min vs 58 min, p < 0.001, 16% vs 3.8%, p = 0.048).
Conclusions: Outpatient t-tl-PCNL is a safe and effective option in selected patients. Stent omission in our patients did not increase the risk of RF, ED visits, complications, or readmissions. A large multicenter randomized prospective controlled trial will help to confirm our findings.

Funding: None.

MP22-12 Curable disease in the incurable patient

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Presented By: Christopher Bastianpillai, Post-CCT fellow in Endourology

Introduction: Urinary stone disease in patients with chronic neurological disease and congenital deformities presents a unique challenge. Here we describe the experience of a high-volume tertiary referral centre in the management of this complex cohort of patients.

Methods: We analysed a database of patients with chronic neurological disease and congenital deformities under the care of a single surgeon at our tertiary referral unit for stone disease. Data on underlying pathology, acute and elective intervention, stone characteristics, and general approach to management was collected.

Results: 37 patients currently under our care were identified, with a mean age of 49 years. The most common pathologies were cerebral palsy (n = 10), spina bifida (n = 8), multiple sclerosis (n = 5) and spinal cord injury (n = 5). 35% of patients required at least one emergency intervention in the form of a stent or nephrostomy. A total of 181 elective operations have been performed on this cohort within our unit, comprising 109 retrograde intrarenal surgeries (RIRS) and 72 percutaneous nephrolithotomies (PCNL). Of the patients who underwent stone analysis, the majority comprised magnesium ammonium phosphate (38%) or calcium phosphate (42%).

Conclusions: This group of complex patients present a challenge both surgically and peroperatively. They require a holistic approach to their care, which includes accommodating their individual needs and close liaison with their primary carers and family. A number of factors lead to recurrent stone formation, and often a staged approach may be needed to achieve stone clearance, with percutaneous surgery being an effective treatment in many cases.

Funding: None.

MP22-13 Post PCNL Pain relief: Prospective study-Comparison of pain scores and recovery after Percutaneous Nephrolithotomy (PCNL) in patients with and without anesthesia block

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Presented By: Haresh Thummar, MD

Introduction: Postoperative pain is one of the major concern after PCNL. Achieving effective pain control isvital for early patient mobilization and eventually returning back to normal routine life following percutaneous nephrolithotomy(PCNL) surgeries. The use of an intraoperative local anesthetic or postoperative analgesic has been reported for pain control in PCNL. Erector spinae block is a regional anaesthetic technique applied in other surgeries under USG. The aim of our study was to see the effectiveness of this block on postoperative pain in PCNL.

Methods: This prospective, randomized study was carried out since 2017 till 2019. The Erectorspine block was administered to a total of 67 patients who had undergone elective PCNL under General anesthesia. While other group of the patients (Group 2, n = 77) didn’t receive such block. Postoperatively the pain level was measured using the visual analog scale (VAS), and the opioids consumption at the postoperative 1, 2, 4, 6, 12, 18, 24, 48 and 72 hours.

Results: The postoperative VAS was found to be statistically significantly lower in the Erector spinae block group (2.1) as compared to the group without Erector spinae block (mean VAS score = 3.1, p < 0.051). The postoperative analgesic use was found to be statistically significantly higher at the 3 hours, 6 hours, 12 hours, and 24th hour in Group without Erector spinae block (p < 0.05).

Conclusions: The Erector spinae block was observed to be effective in pain control and reducing analgesic use during the postoperative 36-48 hours follow-up after PCNL. It may help in reducing need or avoiding the use of analgesic. However, large group of multicentre study may be recommended.

Funding: None.

MP22-14 Current Online Trends for Surgical Treatment of Nephrolithiasis

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Presented By: Tyler Sheetz, MD

Introduction: With recent advances in surgical management of nephrolithiasis, patients have increased online access to information regarding several treatment options. We sought to use Google Trends to evaluate online interest regarding these procedures in the United States over time and to assess if there are any regional differences.

Methods: We used Google Trends to evaluate the popularity scores of several kidney stone procedures. ANOVA and average rate of
MP22-15 The comparison of efficacy and complications of bilateral and unilateral percutaneous nephrolithotomy according to a meta-analysis

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Presented By: Jan Sviha jr., MD, PhD

Introduction: The percutaneous nephrolithotomy (PCNL) is a minimally invasive endourological procedure that represents the first line of treatment for large or multiple kidney stones. The aim of this study was a meta-analysis of the efficacy and safety of a synchronous bilateral percutaneous nephrolithotomy (B-PCNL) compared with a unilateral percutaneous nephrolithotomy (U-PCNL) in patients with kidney stones > 2 cm.

Methods: The systematic review was conducted according to the PRISMA checklist for articles from January 1996 to January 2024 using PubMed, Web of Science and Scopus databases. All studies with synchronous bilateral (B-PCNL) and unilateral percutaneous nephrolithotomy (U-PCNL) were included. A stone-free rate (SFR) and complication rate (Clavien-Dindo low-grade I + II, high-grade III+IV+V) were used as the main outcomes to compare B-PCNL and U-PCNL. The meta-analysis was performed using IBM SPSS Statistics (Version 29).

Results: A total of 510 articles were retrieved from the database for the meta-analysis. Eighteen studies on bilateral PCNL were analysed by extraction and of these seven studies were analysed for meta-analysis of synchronous B-PCNL vs U-PCNL. The study included 1389 patients (851 males, 538 females); the range of mean age was 35-58 years. There were 436 bilateral PCNL and 953 unilateral PCNL cases. According to the relative risk estimate for stone-free rate outcomes were better for U-PCNL vs B-PCNL (OR=1.37, 95% CI: 1.10-1.70, p = 0.004). The differences in complications were not statistically significant between B-PCNL and U-PCNL for the high-grade complications (OR=0.74, 95% CI: 0.38-1.43, p = 0.37).

Conclusions: Despite the limited evidence for synchronous bilateral percutaneous nephrolithotomy, the results of available clinical trials indicate that complication rate outcomes are equivalent to unilateral staged procedures. The main advantage of synchronous procedure is the reduction in operative time, cost, and hospital stay, which may lead to a greater prevalence of these procedures in the future.

Funding: None.
number of attempts required for successful punctures and outcomes were recorded (figure 1).

**Results:** CT scans of 24 patients were reviewed and the ideal angle for CC rotation for the left and right kidney were 68.60 ± 4.50 and 68.10 ± 7.30 respectively. All these would have resulted in access above the 10th rib. CCBE technique was then used in 24 other subjects and was successful in 23, requiring a single attempt in 21 of them. The median angle of CC rotation, puncture time and fluoroscopy screening time were 150, 205, and 36 sec respectively. The outcomes are given in table 1.

**Conclusions:** Superior calyceal access, in line with its infundibulum, can be achieved using a ISO CBBE technique. This is safe and successful in most patients with a single attempt and short fluoroscopy time.

**Funding:** None.

### MP22-17 Endoscopic Combined Intrarenal Surgery Study by the Asian Urological Surgery Training and Educational Group (AUSTEG): A Multicentre Registry in Asia

**Presented By:** Joseph Kai-man Li, M. B., Ch. B., FRCSEd(Urol)

**Introduction:** Urolithiasis is a common condition worldwide. Endoscopic Combined Intrarenal Surgery (ECIRS, the use of flexible ureteroscopy during PCNL) is an accepted modality to manage partial or complete staghorn stones with negligible significant complications establishing the safety of the procedure.

**Methods:** The study protocol collected de-identified data from consecutive patients undergoing ECIRS in different centres across Asia. The data collected was based on surgeons’ own contemporary practice in their hospitals. We summarize patient demographics, stone characteristics, puncture and lithotripsy method, stone-free rate, and complications in the current study.

**Results:** Since January 2022, 161 patients were included in 5 centres around Asia. Seventy-seven patients had complete or partial staghorn stone (49.0%). All patients were given prophylactic antibiotics. Majority had drainage before ECIRS (double-j stent: 92 (58.2%); nephrostomy: 20 (12.7%)). Most common position was supine in Galdakao-modified supine Valdivia position. Most tract was created with USG puncture and dilated by one-step dilatation. Twenty patients (12.6%) required two tracts. 84.2% were mini-perc (15-22Fr) and 14.6% were ultramini-perc (less than 15Fr). All patients had flexible ureterorenoscopic assessment. Ureteral access sheath was used in 74.4% of the cases. In the exit strategy, almost all patients had ureteric stents inserted (99.4%) while 59 (36.6%) were tubeless. 83.2% had no peri- or post-operative complications; 20 (12.4%) had post-operative fever, 7 (4.3%) required blood transfusion and 3 (1.9%) required ICU care. Complications with Clavien-Dindo classification are as follows: 21.1% Grades I/II; 1.9% Grade IV. Overall stone-free rate at 3 months is 57.7%.

**Conclusions:** The AUSTEG ECIRS study is perhaps the first multi-center ECIRS study in Asia, if not first in world, that reports the utility of miniaturised ECIRS. Most surgeons prefer supine mini ECIRS with ultrasound guided puncture as a preferred approach to manage partial or complete staghorn stones with negligible significant complications.

**Funding:** Nil.

### MP22-18 Comparative study of Thulium fibre laser vs Holmium laser for kidney stones in miniaturized percutaneous nephrolithotomy: A randomised controlled single centre trial

**Presented By:** Ashlesh Bhavsar, MD

**Introduction:** Ho:YAG laser method is the gold standard for stone management particularly in ureteroscopy. However, it has limitations when used with higher frequency. In addition, the rate of retropulsion is also high. In vitro studies have demonstrated better stone ablation rate with TFL and four times higher dusting rate as compared to Ho:YAG laser. It was observed that the TFL produces less retropulsion. The present study aimed to assess the safety and effectiveness of the new TFL in stone lithotripsy.

**Methods:** A single-center, prospective randomised controlled trial Sample Size: 30 patients in each arm. Inclusion Criteria: 1. Age >18 years2. Renal stones >1 cm <3cm in size identified on CT scan3. Normal upper tract anatomy4. BMI < 35 kg/m2 Exclusion Criteria: 1. Significant medical co-morbidity contraindicating GA2. On any other clinical trial 30 days before and throughout the duration of the study7. A solitary functioning kidney.8. Inability to give consent Patients underwent a pre op CT IVP/ KUB. They underwent miniperc and were randomized to either of the energy sources (max power of 15 watts, fragmentation was done using the...
setting of 1J, 10 Hz to a maximum of 1.5J, 10 Hz.) Postoperative CT KUB was performed at 1 month follow up.

**Results:** The two arms were comparable for gender, number of stones, stone volume and HIV, puncture site and number of tracts. However, disproportionately large number of calculi were located in the upper ureter in Holmium arm whereas a large number were located in lower calyx in TFL arm. The stone fragmentation rate is significantly higher in TFL arm (2.75 ± 0.66 mm3/sec) as compared to Holmium arm (1.64 ± 0.7 mm3/sec) (p < 0.001) TFL group had lesser lasing time (739.73 ± 372.16 vs 1034.67 ± 433.48; p = 0.006) and a lesser operative time (26.53 ± 12.02 minutes vs 26.53 ± 12.02 minutes; p = 0.005). However, no statistical significance was noted in stone free rate intraoperatively (p = 0.221) and at 1 month (p = 0.339) between the two groups.

**Conclusions:** TFL offers several advantages over Holmium laser in miniPCNL namely, higher stone fragmentation rate, lesser operative time and lesser retropulsion. Although, the stone clearance rate at 1 month was comparable between the two arms.

**Funding:** None.

**MP22-19 Twitter Survey on Worldwide Percutaneous Nephrolithotomy Practice Patterns**

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Presented By: Kavita Gupta, MD

**Introduction:** Percutaneous nephrolithotomy (PCNL) is the gold standard treatment for large, complex intrarenal stones. Understanding the adoption and penetration of new PCNL techniques and technologies worldwide is important. We aimed to conduct a worldwide twitter survey in order to better understand current practice patterns for PCNL procedures with emphasis on adoption of new technologies and techniques.

**Methods:** The 28 item survey was globally distributed November 2023 via the Endourological Society twitter. The survey captured geographic region, fellowship training, PCNL volume, positioning, access, technique, instruments, and closure techniques. Analyses were performed by geographic region, practice in an academic center, PCNL volume, and duration of completed endourology fellowship. Chi-square tests were conducted for binary responses. For categorical responses, we utilized frequency distributions and Fisher’s exact tests.

**Results:** 160 urologists responded (43 from Asia, 50 from North America, 20 from Central and South America, and 33 from Europe). 71% were academic urologists. Access: 91% of providers had their own access. Prevalence of US guided access was highest in Europe (76%) and lowest in North America (20%) (p < 0.001). Position: Globally, providers from academic institutions more commonly used supine positioning (43% vs 33%, p = 0.01). Use of the supine position was also highest in Europe (76-100%) (p = 0.001). Dilator/Sheath: A high percentage of providers from Europe used 18 Fr sheaths for Mini-PCNLs (p = 0.027), with Asian and European providers employing mini-PCNL in over half of their procedures compared to their counterparts in the Americas (p < 0.001). Fellowship trained providers 3-10 years into practice had greater access to Mini-PCNL and were more likely to perform 50-99 PCNLs per year, while providers with no fellowship training or greater than 10 years from training were more likely to perform 20-49 PCNLs per year (p = 0.026, p = 0.027). Exit Strategy: Overall, Totally Tubeless PCNL (no stent or nephrostomy tube) was uncommon with 90% of providers never or rarely leaving a patient tubeless. Lower volume providers (<50 PCNL per year) were found to never leave patients tubeless (p = 0.001).

**Conclusions:** PCNL practices can vary depending on geographic location, fellowship training, and practice volume. Prone positioning and fluoroscopy-guided access are more commonly used, however supine positioning and ultrasound guided access are gaining popularity internationally. Future studies will need to be performed to better understand reasons for these differences.

**Funding:** None.

**MP22-20 Is Re-examination of Urine Culture Necessary for Patients with Preoperative Positive Results in Predicting Infectious Complications Related to Mini-Percutaneous Nephrolithotomy? A single-center prospective study**

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Presented By: Yongda Liu, PhD

**Introduction:** To explore the predictive value of urine culture re-examination in identifying infectious complications associated with mini-PCNL in patients with preoperative positive urine culture who were treated with sensitive antibiotics.

**Methods:** Prospective and continuous clinical data were collected from patients with positive preoperative urine cultures undergoing PCNL at the Department of Urology, the First Affiliated Hospital of Guangzhou Medical University. If patients had a positive preoperative urine culture, they were given appropriate antibiotic treatment based on the culture-antibiogram results, and urine cultures were repeated on the 3rd and 7th days. Patients underwent mini-PCNL after 7 days of treatment with sensitive antibiotics, and the correlation between the urine culture results on the 3rd and 7th days and postoperative infectious complications related to mini-PCNL was analyzed.

**Results:** Between March 2021 and April 2024, clinical data for 145 patients were collected. Univariate analysis indicated that age, gender, history of diabetes, and preoperative venous blood leukocytes had no significant correlation with infectious complications following mini-percutaneous nephrolithotomy (PCNL) (p > 0.05). Surgical duration >90 minutes, number of tracts, stag-horn stones, and stone burden were significantly associated with post-mini-PCNL infectious complications (p < 0.05). Upon re-examination of urine cultures on the third day post-operation, 131 cases were negative, with 30 cases experiencing postoperative fever, including 4 cases of sepsis; 14 cases had positive urine cultures, with 4 cases developing postoperative fever, including 1 case of sepsis. Upon re-examination of urine cultures on the seventh day post-operation, 134 cases were negative, with 31 cases experiencing postoperative fever, including 5 cases of sepsis; 11 cases had positive urine cultures, with 3 cases developing postoperative fever, none with sepsis. Univariate analysis showed that the results of urine cultures on the third and seventh days post-operation had no significant correlation with infectious complications related to mini-PCNL (p > 0.05).

**Conclusions:** The value of re-examination of urine culture in predicting postoperative infectious complications related to mini-PCNL is limited in patients with positive urine culture treated with sensitive antibiotics before surgery. For patients with positive urine culture before surgery, it is recommended to perform mini-PCNL after 7 days of treatment with sensitive antibiotics.

**Funding:** No funding.
MP23-01 Bilateral Ureteroscopy with Stents: Post-Operative Symptom Severity and Time Course – Results from USDRN STENTS

Jodi Antonelli2, Alana Desai1, Jonathan Harper1, Hongqiu Yang2, Naim Maalouf3, Hussein Al-Khalidi2, Rebecca McCune2, Henry Lai1, Ziya Kirkali2, Charles Scales Jr2

1University of Washington, 2Duke University, 3University of Texas Southwestern Medical Center, 4Children’s Hospital of Philadelphia, 5Washington University in St Louis, 6National Institute of Diabetes and Digestive and Kidney Diseases

Presented By: Jodi Antonelli, MD

Introduction: The complete removal of stone burden in a single bilateral procedure has several benefits. It is unknown whether patients will experience a greater degree of stent-associated symptoms with bilateral ureteroscopy (URS) and stent placement for stone removal compared to unilateral treatment. We sought to examine whether bilateral URS and stent insertion is associated with greater pain, interference due to pain, and urinary symptoms compared to unilateral URS.

Methods: The Study to Enhance Understanding of Stent-Associated Symptoms (STENTS) is a multi-institutional prospective observational study of those undergoing URS and ureteral stent for stone treatment. A comprehensive description of the patient experience was captured using multiple instruments and patient-reported outcome measures. Concomitantly, 60 participants underwent bilateral URS with stent placement and completed study procedures identical to their 424 unilateral counterparts. We compared temporal changes in pain intensity, pain interference and urinary symptoms at baseline, and on postoperative day (POD) 1, 3, 5, 7-9, and 30 days following stent removal.

Results: Age and sex were similar between groups with a mean age of 49, and 47% female participants. Preoperatively, both groups reported similar rates of psychosocial and chronic pain conditions and prior severe pain with a stent, but participants in the bilateral cohort reported greater use of preoperative analgesics and had a history of severe lower urinary tract symptoms with a prior stent. Mean operative time was 41 minutes longer in the bilateral cohort, with a longer postoperative stent dwell time. Urinary symptoms measured by USSQ-U increased significantly from baseline in both cohorts but was significantly higher in the bilateral cohort at all measured time points, (p = <0.001 POD 1-5, p = 0.02 POD 7-9). Pain intensity measured by PROMIS increased from baseline in both cohorts and was similar on POD 1-5 but was significantly higher in the bilateral cohort on POD 7-9 (p = 0.034). Patients in the bilateral group had significantly more pain interference on days 5 and 7-9.

Conclusions: Patients undergoing bilateral URS and stent reported higher postoperative pain intensity, greater urinary symptoms, and more pain interference at various timepoints compared to those undergoing a unilateral procedure. Although this study is exploratory in nature, results provide the most informative description of the patient experience with bilateral stents to date and can be used to inform patients and providers.

Funding: NIH/NIDDK.

MP23-02 PUrE RCT 1: clinical and cost-effectiveness of Flexible Ureterorenoscopy and Extracorporeal Shockwave Lithotripsy for lower pole stones ≤10 mm

Daron Smith2, Olly Wiseman1, Daron Smith2, Katheryn Starr3, Lorna Aucott4, Rodolfo Hernández2, Ruth Thomas2, Steven MacLennan1, Graeme MacLennan3, Zara Gall2, Ben Turney10, Sam McClinton11

1Department of Urology, Addenbrooke’s Hospital, Cambridge University Hospitals NHS Trust, Cambridge UK., 2Stone and Endourology Unit, University College Hospital, University College Hospitals NHS Foundation Trust, London UK., 3Warwick Medical School, University of Warwick, Warwick UK., 4Health Services Research Unit, University of Aberdeen, Aberdeen UK., 5Health Economics Research Unit, University of Aberdeen, Aberdeen UK., 6Centre for Healthcare Randomised Trials, Health Services Research Unit, Aberdeen UK., 7Academic Urology Unit, University of Aberdeen, Aberdeen UK., 8Centre for Healthcare Randomised Trials, Health Services Research Unit, Aberdeen UK., 9Department of Urology, Stepping Hill Hospital, Stockport NHS Foundation Trust, Stockport UK., 10Nuffield Department of Surgical Sciences, University of Oxford, Oxford UK., 11Academic Urology Unit, University of Aberdeen, Aberdeen UK

Presented By: Daron Smith, MA BMBCh MD FRCS(Urol)

Introduction: The EAU guidelines recommend that lithotripsy (ESWL) and flexible ureteroscopic (FURS) are equally appropriate first line treatment options for lower pole stones (LPS). A pragmatic multicentre, open-label, superiority randomised controlled trial was undertaken to determine which of ESWL or FURS offer the best outcomes in terms of quality of life, clinical and cost-effectiveness for people with LPS ≤10 mm.

Methods: Eligible adults with stones ≤10 mm were randomised. 461 participants were randomised; 231 to FURS; 230 to ESWL. The primary outcome measure was health status Area Under the Curve (AUC), measured weekly to 12 weeks post-intervention with EQ-5D-5L. The primary economic outcome was the incremental cost per quality-adjusted life year (QALYs) gained at twelve months from randomisation.

Results: Mean health status was 0.807 (SD 0.205) in the FURS group (n = 164) and 0.826 (0.207) in the ESWL group (n = 188), the between-group difference was 0.024 (95% CI 0.004, 0.053), a small difference in favour FURS after correcting for a baseline imbalance. Complete stone clearance was higher with FURS (72%) than ESWL (36%). At a threshold value of £20, 000 per QALY, ESWL has a 99.9% chance of being cost effective. Limitations of the study were that blinding of participants and health care providers was not possible.

Conclusions: The PUrE study found that ESWL was more cost effective than FURS for LPS ≤10 mm, and there was no meaningful difference in patient health status even though complete stone free rates were higher with FURS.

Funding: The PUrE trials were funded by the NIHR (National Institute for Health and Care Research, UK).
MP23-03 Initial Experience with the Second Generation CVAC® Aspiration System; Outcomes of Multi-Center Market Research

Brian Eisner², Jared Winoker¹, K. Kent Chevli², Thomas Chi³, Matthew Love³, Michael McDonald², Arun Rai¹, Karen Stern⁶, J. Stuart Wolf⁷, Brian Eisner⁸

¹Northwell Health, ²University of Buffalo, ³University of California, San Francisco, ⁴The Urology Group, ⁵Advent Health, ⁶Mayo Clinic, ⁷University of Texas, Austin, ⁸Massachusetts General Hospital, Harvard Medical School

Presented By: Brian Eisner, MD

Introduction: Steerable ureteroscopic renal evacuation (SURE) with the first generation CVAC® Aspiration System has been demonstrated to achieve consistently high stone clearance and reduce secondary procedures in large stone burden patients (Matlaga et al. 2024, Stern et al. 2023, Moyer et al. 2024). Recently, a second generation CVAC System was developed to improve the ease of use and, potentially, clinical outcome. The new system integrates direct visualization, surgeon-controlled irrigation and aspiration, simultaneous dust removal during laser lithotripsy, and active aspiration of fragments up to 2mm. Herein we report the initial case experience.

Methods: Each urologist chose appropriate patients for SURE using the second generation CVAC System features. Each institution used its standard laser, pressurized irrigation and vacuum source. In each procedure, key attributes were evaluated including surgeon’s visual assessment of stone clearance at the end of the procedure, laser type, basket use and clogging, if any. Urologists also provided their feedback on the ease of use and benefits of the CVAC System.

Results: 20 urologists from 10 academic and private institutions completed 82 SURE procedures (86 renal units) with the new CVAC System between February and April 2024. Baseline stone burden varied and included candidates for percutaneous nephrolithotomy and staged ureteroscopy. Holmium laser was used in 51% of the cases and thulium fiber laser was used in 49%. Per urologist’s visual assessment at the end of the case, 84% (64/76 cases) of the procedures achieved ≥ 95% stone clearance. 78% (64/82) of the cases were completed without the use of basket. The most common device-related issue was clogging, which occurred in 4.88% (4/82) of cases. The median procedure time was 00:36 minutes (0:12-1:49). Top performance attributes included passive aspiration of dust during laser lithotripsy, active aspiration of larger fragments, direct visualization, and all-in-one capability of the system.

Conclusions: In this initial case experience, urologists found the new-generation CVAC System achieved high stone clearance per intraoperative visual assessment with improved ease of use. Prospective studies are needed to confirm the observations from these early cases.

Funding: None.

MP23-04 Stent-Associated Symptom Profile after Second Stage Ureteroscopy: Results from the Study to Enhance Understanding of Stent-associated Symptoms (STENTS)

Daniel Wong³, Jonathan Harper¹, Naim Maalouf², Joel Vetter³, Hussein Al-Khalidi⁴, Lai Henry⁵, Brett Johnson⁶, Ziya Kirkali⁵, Charles Scales Jr⁴, Alana Desai¹

¹University of Washington, ²University of Texas Southwestern Medical Center, ³Washington University in St. Louis, ⁴Duke University, ⁵National Institute of Diabetes and Digestive and Kidney Diseases

Presented By: Daniel Wong, MD

Introduction: Staged ureteroscopy is an option for patients with stones too large to treat in one setting or ureters too narrow to accommodate primary ureteroscopy (URS). The impact of staged URS on stent- associated symptoms (SAS) has not been evaluated. This study compares SAS at specified time intervals after stage 1 vs. stage 2 in those undergoing staged URS.

Methods: Participants enrolled in the STENTS prospective cohort who underwent unilateral URS for urinary stone disease completed a series of validated questionnaires and patient-reported outcome measures to assess SAS. A portion of procedures required ipsilateral staged URS due to narrow ureter or other indication. SAS after 1st and 2nd URS were compared pre-operatively and at POD 1, 3, and 5 using a paired t-test.

Results: Of the 424 STENTS participants who underwent unilateral URS, 40 required a staged ipsilateral procedure (Table). The most common reason for performing staged URS was narrow ureter or stricture (75% of cohort). Mean number of days to 2nd stage was 18.4, with mean operative time 22.5 minutes longer in the 2nd stage procedure. When comparing the 1st and 2nd stage URS, PROMIS pain intensity was similar pre-operatively but lower after the 2nd procedure at all time points (Figure). Urinary symptoms as measured by Ureretal Stent Symptom Questionnaire were worse at baseline prior to 2nd procedure compared to 1st procedure, but better on POD1 and 3 after the 2nd procedure.

Conclusions: Despite a longer procedure time and therefore, possibly more extensive instrumentation, pain intensity was lower after the 2nd stage than after the 1st stage URS. Our results may be useful in counseling patients who may require a staged procedure. These findings also suggest that perception of pain may be modulated over time and could respond to physiologic changes induced by stent placement and ureteral dilation.

Funding: NIH/NIDDK.
**MP23-05**  Resistance and ureteral injury in ureteral access sheath insertion during RIRS: a randomized controlled trial comparing different bladder status

Wen Zhong1

1First affiliated hospital of Guangzhou Medical University

Presented By: Wen Zhong, PhD

**Introduction:** To explore the effect of bladder emptying and filling on ureteral access sheath (UAS) insertion resistance and investigate its relation to ureteral injury. The resistance force and postoperative ureteral injury were evaluated to guide urologists for a well manipulation of UAS insertion during RIRS.

**Methods:** 80 patients with renal stone undergoing RIRS were enrolled, and divided into the experimental group and the control group randomly. Patients in the experimental group were emptied bladders before UAS insertion, while patients in the control group did not intervene. The resistance of UAS insertion was measured and recorded by IMADA-50N gauge and supporting Force Recorder Professional software. The differences of the UAS insertional resistance (average resistance, maximum resistance, segmental maximum resistance), ureteral injury etc. were compared between two groups.

**Results:** Between experimental group (n = 40) and control group (n = 40), there were significant differences in average resistance (3.12±0.49 vs. 4.28±0.52, p < 0.001), maximum resistance (5.17±0.72 vs. 6.39±0.96, p < 0.001) and maximum resistance of the distal ureter (3.07±1.75 vs. 6.18±1.17, p < 0.001) during UAS insertion, but maximum resistance of upper and middle sections had not statistically differences. The proportion of ureteral injury (PULS 1 and 2) in the experimental group was largely lower than that in the control group (35% vs 55%, P = 0.045) and the percentage of patients with ureteral injury of distal segment in the experimental group was greatly lower than that in the control group (22.5% vs 55%, P = 0.006), but that of the upper and middle segments had not statistically differences.

**Conclusions:** Emptying the bladder can effectively reduce the resistance of UAS insertion and the probability of distal ureteral injury during RIRS.

**Funding:** None.

**MP23-06**  Break WaveTM Lithotripsy for Urolithiasis: Results of the First-In-Human International Multicenter Clinical Trial

Ben H. Chew5, Jonathan D. Harper1, Roger L. Sur2, Thomas Chi3, Shubha De3, Anne R. Buckley6, Ryan F. Paterson3, Connor M. Forbes5, M. Kennedy Hall1, Ross Kessler1, Seth K. Bechis2, Jason R. Woo2, Ralph C. Wang6, David B. Bayne6, Derek Bochinski5, Trevor D. Schuler4, Timothy A. Wollin6, Rahim Samji2, Mathew D. Sorensen1

1University of Washington, 2University of California San Diego, 3University of California San Francisco, 4University of Alberta, 5University of British Columbia, 6University California San Francisco

Presented By: Ben H. Chew, MD

**Introduction:** Break Wave lithotripsy is a new non-invasive technology for the treatment of urolithiasis that can be performed with little to no anesthesia, potentially allowing stone treatment in non-operative settings. This study reports safety, efficacy, and anesthesia requirements from a first-in-human, prospective, multicenter, open-label single-arm clinical trial (NCT03811171) utilizing the SonoMotion (San Mateo, CA) Break Wave device.

**Methods:** Forty-four (44) patients with ureteral or renal stones were treated across five North American centers (US/Canada) between 08/2019 – 02/2022. Patients were recruited and treated in the operating room, office/clinic, or emergency department (ED). Thirty minutes of Break Wave therapy was delivered under continuous ultrasonography targeting. Varying therapy dose levels up to 8MPa of acoustic pressure were administered and safety, effectiveness and anesthesia requirements were assessed to establish optimal dose settings. The efficacy objective was stone free rate or fragments ≤ 4 mm assessed via non-contrast CT at 8-12 weeks by an independent radiologist. Patients were followed for 90 days with all adverse events (AEs) recorded.

**Results:** Target stones were in typical locations and sizes (Table 1) with 59% renal (n=26) and 41% in the distal ureter (DU) (n=18). No serious AEs, hematomas, cardiac arrhythmia or sepsis occurred at any dose level. Overall, 86% of subjects received either no medication (50%) or minor analgesia (36%) (e.g., ketorolac 15-30mg). All patients completed the procedure. Any stone fragmentation occurred in 88% of cases, with 70%, of subjects with fragments ≤ 4 mm, 51% ≤ 2 mm, and 49% stone free on CT. The retreatment rate was 7% with either SWL or URS. The optimal dose setting was identified and delivered to 36 of 44 patients. Of these 36 patients, 92% showed fragmentation, 75% had fragments ≤ 4mm and 58% were completely stone free, 71% of lower pole patients (n=14) had fragments ≤ 4mm with 29% stone free, and 89% of DU patients (n=18) were completely stone free.

**Conclusions:** Break Wave Lithotripsy appears to be a safe and effective non-invasive stone therapy requiring little to no anesthesia. It is potentially suitable for non-operative environments such as the office or ED and is being evaluated in ongoing trials.

**Funding:** Work supported by NIH – NIDDK (R44DK109779)

**MP23-07**  Ureteral Stricture Formation After the Use of Ureteral Access Sheaths

Christina Kottooran2, Jose Eduardo Castro Matheus Rodrigues1, Juliana Vilhena-Souza Coelho2, Brian Eiserich2

1Universidade de São Paulo, Hospital de Clinics, 2Massachusetts General Hospital

Presented By: Christina Kottooran, MD
Introduction: Recent studies have described ureteral lesions caused by the placement of ureteral access sheaths during ureteroscopy. However, the long-term sequelae of these lesions are not well understood. Herein, we present a long-term follow-up data on ureteral stricture formation in patients who had a ureteral access sheath placed during retrograde ureteroscopy.

Methods: An IRB-approved retrospective review of consecutive retrograde ureteroscopy procedures between January 2009 to December 2018 was performed. Inclusion criteria was the use of a ureteral access sheath and a minimum of 1 year follow-up with abdominal imaging. Exclusion criteria was patients who had stricture at the time of the index operation.

Results: A total of 436 patients were included. Mean age was 64 years old (range 22-96) and gender distribution was 54.2% males and 45.8% females. Ureteral access sheath diameter was as follows: 9/11 Fr (2 patients), 10/12 Fr (5 patients), 11/13 Fr (283 patients), 12/14 Fr (104 patients), 13/15 Fr (42 patients). Overall, 98.4% of patients had an 11/13 Fr or larger ureteral access sheath placed. Mean diameter of the largest stone was 10.1 mm (range 2-54 mm), mean operative time was 30.5 minutes (range 9-108 minutes), and contrast extravasation was noted at the time of ureteroscopy in 21 patients (4.8%). Mean follow-up time was 5.9 years (range 1-13.2 years). Most recent follow-up imaging was a renal ultrasound in 208 patients, computerized tomography in 204 patients, and MRI in 24 patients. At the most recent follow-up, 9 patients (2.0%) had undergone a procedure or had radiographic demonstration of a ureteral stricture.

Conclusions: In this retrospective study with a mean follow-up of 6 years, the incidence of scirrhotic development after ureteroscopy is 2.0% and does not appear higher than the reported incidence of scirrhosis after stone passage or stone treatment in general. Future prospective studies with longer mean follow-up times would be helpful to further corroborate these findings.

Funding: None.

MP23-08 Case series of retrograde intrarenal surgery using ClearPetra™ ureteral access sheath in American population

Lucas Vergamini1, Amber McMahon1, Michael Creswell1, Donald Neff1, David Duchene1, Bristol Whiles1, Wilson Molina1
1University of Kansas Medical Center
Presented By: Lucas Vergamini, MD

Introduction: Retrograde intrarenal surgery (RIRS) is commonly used in the surgical management of renal stones. During RIRS, a ureteral access sheath (UAS) is frequently placed for efficient ureteroscope passage into the kidney, enhanced irrigation flow and visualization, and reduced operative times. A new development in this area is the introduction of a flexible vacuum-assisted UAS (VA-UAS), which enables the concurrent fragmentation and removal of stones. This study presents the first case series in an American population.

Methods: We analyzed retrospective data on 6 patients undergoing RIRS for renal stones utilizing 12/14 French 46cm VA-UAS (ClearPetra™, MicroTech Endoscopy®, China) from December 2023 to March 2024. Cases with ureteral stones were excluded. Perioperative antibiotics were managed per EDGE consortium criteria. Operative time was determined from first insertion of ureteroscope into the sheath up to its removal. Stone-free status (SFS) was defined as no fragments larger than 2 mm by detailed endoscopic and radiographic inspection after lithotripsy.

Results: Demographic data and stone characteristics were collected. Average operative time was 74.6 minutes. SFS was obtained in all patients but one due to planned multi-staged procedure for large stone burden. Laser lithotripsy was used in four cases, the remaining two patients were treated with suction through the VA-UAS alone (Table 1). Patient demographics, stone characteristics and outcomes:

<table>
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<tr>
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<td>1148</td>
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<tr>
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<tr>
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<th>Energy (J)</th>
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<td>1740</td>
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Table 1: Patient demographics, stone characteristics and outcomes

Conclusions: The addition of a vacuum-assisted ureteral access sheath at the time of RIRS allowed for safe and efficient stone clearance in patients with renal stones, including those with lower pole stones, without the need for basketing.

Funding: None.

MP23-09 Stent indwell time is not associated with stent symptoms on date of removal: analysis of a prospective international registry

1University of British Columbia, 2Northshore University Health System, 3Nagoya City University, 4Northwestern University, 5Indiana University, 6Columbia University, 7Saint-Gregoire, 8University of Kansas, 9Pennsylvania State University, 10Mayo Arizona
Presented By: Connor M. Forbes, MD, FRCSC

Introduction: Previous literature has shown conflicting evidence on the optimal ureteral stent dwell time after ureteroscopy. We assessed the impact of stent duration and other patient-associated factors on pain scores.

Methods: A prospective registry on ureteral stents from 10 institutions in 4 countries (USA, Canada, France, & Japan) from
2020-23 was assessed. Primary outcome was pain intensity on day of stent removal using the validated PROMIS Pain Scores. Patients were grouped by indwell time (short (0-6d), medium (7-10d), long (11-29d), and very long (30+)) and pain scores were compared between and within groups. Impact of sex, height vs stent length, and presence or absence of tether were assessed.

**Results:** 359 patients were enrolled in the database, and 271 of those had a unilateral stent placed after ureteroscopy for stones. No significant difference was detected in pain scores between the indwell time groups (p = 0.28). Within the long duration stent group (11-29 days), patients reported less pain closer to 11 days (p = 0.008, Fig 1A). Height for a given stent length was not significantly associated with pain scores. There was no difference in pain scores with or without tether. Men reported lower pain scores than women (p = 0.013, Fig 1B).

**Conclusions:** This study did not detect an overall difference in pain scores at stent removal between stent duration groups. Within the 11-29 day (long) duration group, a shorter indwell time was associated with improved pain scores. Within each group, no difference was found in pain scores. Men reported less pain than women.

**Funding:** No funding was provided for this project. The prospective registry was maintained by Boston Scientific Corporation.

**MP23-10 Does Type of Anesthesia During the Surgical Management of Suspected Renal Colic During Pregnancy have an Impact on Preterm Birth?**

Smita De1, Louisa Ho1, Madison Lyon1, Alec Sun2, Anup Shah1, Natalia Llarena3, Carrie Bennet3, James F. Bena3, Sri Sivalingam4, Anna Zampini1, Smita De1

1Cleveland Clinic Foundation, Glickman Urologic and Kidney Institute, 2Case Western Reserve University, School of Medicine, 3Obstetrics and Gynecology and Women’s Health Institute, Cleveland Clinic Foundation, 4Cleveland Clinic Foundation, Obstetrics and Gynecology and Women’s Health Institute, 5Cleveland Clinic Foundation, Lerner Research Institute

Presented By: Smita De, MD, PhD

**Introduction:** Anesthesia choice during the surgical management of suspected renal colic during pregnancy may vary based on available resources and patient or physician preferences, as there are no specific recommendations. Our objective was to evaluate whether preterm birth (PTB) (<37 weeks) was associated with anesthesia type or anesthesia timing by trimester.

**Methods:** We retrospectively identified pregnant patients who required surgical management with ureteral stent, percutaneous nephrostomy (PCN), or ureteroscopy (URS) for suspected renal colic based on laboratory and imaging findings from 2009 to 2021 at our academic tertiary care center. Analyzed data included anesthesia type (local analgesia only, monitored anesthesia care [MAC], spinal anesthesia, or general anesthesia [GA]), trimester of procedure, procedure type, and obstetric outcomes including PTB.

**Results:** The study cohort included 98 pregnant patients who underwent 234 total procedures including primary URS, PCN, stent, as well as PCN and stent change. The most common anesthetic used across all procedures in all trimesters was MAC. For patients undergoing primary URS in the second trimester, GA and spinal anesthesia were equally used (50% and 50%, respectively). For patients undergoing URS in the third trimester, spinal anesthesia was the most common anesthetic used (71.4%). Similarly, stent placement in the second and third trimester was commonly performed under spinal anesthesia (38.7% and 53.1%, respectively). Conversely, PCN insertion or exchange was more likely to be completed under local anesthesia only or MAC during the second and third trimesters. Using multivariable logistic regression, intervention type was associated with PTB, but not anesthesia type or timing by trimester.

**Conclusions:** This study describes the type of anesthesia administered to women undergoing procedures for suspected renal colic during each trimester of pregnancy, and subsequent risk of PTB. PCN was associated with the use of less invasive analgesia or anesthesia, whereas endoscopic procedures were associated with GA or spinal anesthesia. Anesthesia type was not associated with PTB, and selection may be influenced by resources, clinical scenario, or patient and provider preferences.

**Funding:** None.

**MP23-11 The Post-Operative Recovery Profile of Individual Dimensions within Pain Interference and Social Participation after Ureteroscopy for Nephrolithiasis**

Justin Ziembka1, Jing Huang1, Amanda Jones1, Hanna Stambakio1, George Lin1, Gregory Tasian2

1Perelman School of Medicine at the University of Pennsylvania, 2Children’s Hospital of Philadelphia

Presented By: Justin Ziembka, MD, MSEd

**Introduction:** The quality-of-life (QOL) impact of those with nephrolithiasis remains significantly understudied, particularly following surgical intervention. We prospectively captured patient-reported outcomes in the post-operative period after ureteroscopy (URS) to better understand the recovery profile of QOL with a specific focus on individual dimensions within the broad domains of pain interference and social participation.

**Methods:** Adults undergoing URS for renal/ureteral stones were eligible for inclusion (1/2020-8/2022). Patients prospectively completed PROMIS—Pain Interference and PROMIS—Ability to participate in social roles and activities instruments in-person pre-operatively (POD 0) and via email on POD 1, 7, 14 and 30.
Scores are reported as T-scores (normalized to US pop., mean = 50) with a change of 5 (0.5 SD) considered clinically significant and higher score equates to more of the concept being measured. Individual items from each instrument were analyzed to identify those dimensions with a significant change over the study period.

Results: Total of 178 patients completed enrollment at POD 0 (POD 1=87, POD 7=83, POD 14=70, POD 30=67). Figure 1A demonstrates the change in individual dimensions within the pain interference domain over time. There was an impact in only 2 dimensions with a clinically significant change at all time-points in pain interfering with day-to-day activities and work around the home, while all other dimensions remained relatively stable. Figure 1B demonstrates the change in individual dimensions within the social participation domain over time. There was an impact on all dimensions with a clinically significant change in ability to participate in leisure activities, family activities, usual work, activities with friends, things you do for fun, regular activities with friends, regular activities with family, and work that is important.

Conclusions: Individual dimension analysis reveals that pain interferes primarily with day-to-day activities and work around the home, but social participation is impacted across all areas of work and personal life. Results offer meaningful insight to assist in counseling and setting expectation for patients in the post-operative period.

Funding: This work is funded by the McCabe Foundation at the University of Pennsylvania.

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1Mayo Clinic Arizona, 2Kansas University, 3Ohio State University, 4Mount Sinai Hospital, 5Loma Linda University, 6Yonsei University, 7University of British Columbia, 8Hospital CUF Descobertas, 9University Southern Denmark, 10Sorbonne University Tenon Hospital

Presented By: Ben H Chew, MD, MSc, FRCSC

Introduction: Thulium fiber laser (TFL) has emerged as an effective tool for endoscopic laser lithotripsy since its introduction in 2019. In this prospective, international clinical registry, the Endourological Society’s T. O. W. E. R. Research Consortium evaluated the ablative performance, stone-free rates (SFRs), and safety of the first commercially available TFL system, SOLTIVETM SuperPulsed Laser System (Gyrus ACMI, Brooklyn Park) in a large patient cohort.

Methods: 423 patients undergoing ureteroscopy for ureteral and/or renal stones using the TFL were prospectively recruited and treated across eight international institutions between 12/2021- 4/2023. Baseline clinical characteristics, intraoperative lithotripsy efficiency, adverse events, and post-operative outcomes were collected. Kidney and ureteral stones were analyzed according to stone volume and density. Adverse events and SFRs were assessed at 1 and 3 months.

Results: The stone free rates at 3 months are listed in figure 1. Stone ablation speed is statistically comparable across all stone densities within each stone location, (p = 0.41, p = 0.125) for kidney and ureter, respectively (figure 2). Serious adverse events (SAEs) occurred in 3.8% (16/423) of patients and were all due to infection with 2 being ureteral stricture (deemed not related to the laser procedure).

Conclusions: The thulium fiber laser (SOLTIVETM SuperPulsed Laser System is effective in ureteroscopic lithotripsy for stone disease, with low complications and good SFRs and ablation speeds (0.62 (0.31-1.45) mm3/s) across all stone densities. Stone ablation speeds are consistent through all 4 quartiles of stone densities indicating the TFL is an effective laser for all stone types.

Funding: This study was sponsored by Olympus Corporation of the Americas.

XinYan Yang1, Jun Heng Lim1, Jingzeng Du1, Edwin Aslim1, Valerie Gan1, Tsung Wen Chong1, Yadong Lu1

1Singapore General Hospital Department of Urology

Presented By: XinYan Yang

Introduction: Retrograde intrarenal surgery (RIRS) has emerged as a promising minimally invasive approach for nephrolithiasis. However, its utility and efficacy in the unique context of transplant kidneys have yet to be comprehensively explored. We aim to systematically review and analyse the outcomes of RIRS in transplant kidneys and provide an audit of outcomes in a single transplant centre.

Methods: PubMed, Embase, Web of Science, Scopus and Cochrane Library were searched up to August 2023 for publications on the ureteroscopic management of allograft lithiasis. The primary outcome was the stone free rate (SFR). Secondary outcomes include stone characteristics, operative time, type of access, graft function and complications. An audit of transplant kidney RIRS performed in a transplant centre from 2011-2023 was performed.

Results: We included 31 studies with 138 ureteroscopic procedures, consisted of 62 retrograde, 30 antegrade and 3 combined antegrade/retrograde procedures. The mean age was 51.2 years and 50.1% of patient were male. Stone-free status was reported in 122 procedures and overall SFR was 88%. Imaging used to determine stone-free status included US, CT or nephrostography done post-operatively or during follow up. Of 77 procedures with reported symptoms at diagnosis, 22 presented with infection, 12 with acute kidney injury, 9 with pain/discomfort and 9 with haematuria. Mean interval from transplant to presentation was 5.17 years. Among patients whose transplant type was specified, 52 of them received deceased donor transplants while 9 received live donor transplants. Regarding stone characteristics, mean stone size was 10.4 mm, with 62 patients having ureteral stones, 30 having renal stones, 5 having stones at the ureteropelvic junction and 11 having both renal and ureteral stones. The mean operative time was 72.9 mins. 6 studies utilised access sheaths for at least some of the cases. 14 studies used a flexible ureteroscope, while 3 studies used a semi-rigid ureteroscope and 3 studies used a combination of both. Out of all 138 procedures, 13 post-operative complications were reported, with 4 cases of urinary leak or ureteral perforation and 3 cases of urinary tract infection. The results of RIRS in transplant kidneys from a single transplant center audit revealed 4 cases over the period of 2011-2023 with SFR of 100%.

Conclusions: In conclusion, RIRS in transplant kidney can be safely performed with high SRF.

Funding: NA.

MP23-15 Predictors of Perinephric Hematoma After Extracorporeal Shockwave Lithotripsy for Renal Calculi: Final Results from Phase III Randomised Controlled Trials

Chris Ho-Ming Wong1

1The Chinese University of Hong Kong

Presented By: Chris Ho-Ming Wong, MRCS

Introduction: The incidence of perinephric hematoma following extracorporeal shockwave lithotripsy is not fully studied and is often underreported. We aim to identify its incidence and the factors that predict its formation following ESWL for renal calculi in a population of Asian patients.

Methods: The current cohort is a post-hoc analysis of two prospectively controlled randomised trials, which were conducted in a tertiary academic centre in Hong Kong. ESWL was performed from 2016 to 2022. The cases were performed with a Modulith SLX-F2 electromagnetic lithotripter. All patients had a set of computer tomography scan or magnetic resonance imaging on day 2 post-procedure. Primary outcome was defined as the presence of perinephric hematoma. Secondary outcomes were symptomatic perinephric hematoma, successful treatment (clearance of stones or clinically insignificant stone fragment less than 4mm in the maximal dimension) and stone free status.

Results: 562 adult patients were anaylsed. The mean value of maximal stone diameter was 8.65mm with most stones being lower pole stones (58.4%). 172 cases (30.60%) were found to have perinephric hematoma, out of which 73 patients were symptomatic. The mean thickness of hematoma was 1.95cm. In multivariate analysis, it was found that non-lower pole stone location and energy delivered were predictors of hematoma formation. Patients could potentially benefit adequate planning before ESWL and methodologies reducing energy delivery including step-wise ramping protocol.

Conclusions: Perinephric hematoma was not uncommon following ESWL for renal calculi. Stone location and energy delivered were predictors of hematoma formation. Patients could potentially benefit adequate planning before ESWL and methodologies reducing total energy delivery including step-wise ramping protocol.

Funding: Nil finding received.

MP23-16 The Association Between Perioperative Hemoglobin A1c and Sepsis After Ureteroscopy

Jeffrey Johnson2, Richard Berman1, Adithya Balasubramanian2, Hriday Bhambhvani2, Jeffrey Johnson2, Ojas Shah1

1Columbia University Medical Center Dept of Urology, 2Weill Cornell Medicine Dept of Urology

Presented By: Jeffrey Johnson, MD
Introduction: The link between elevated hemoglobin A1c (HbA1c) and postsurgical infections is well known. However, perioperative HbA1c has not been specifically evaluated as a risk factor for urosepsis following ureteroscopy (URS). Currently, there are no guidelines for ideal perioperative HbA1c thresholds, nor are there recommendations for the optimal timing to treat non-urgent stones. We evaluated the effect of perioperative HbA1c levels on the risk of urosepsis following URS.

Methods: Patients undergoing URS from 2020 to 2023 at our medical center were retrospectively reviewed. Postoperative sepsis was defined as Systemic Inflammatory Response Syndrome (SIRS) scores ≥ 2 following surgery. Sepsis risk at various HbA1c thresholds was evaluated via multivariate logistic regression adjusted for demographic and clinical characteristics.

Results: A total of 1,695 patients underwent URS, and 348 patients had HbA1c laboratory values within 90 days of surgery. The mean preoperative Charlson Comorbidity Index (CCI) score was 3.26 (Standard Deviation (SD) ±2.82). 31% of patients had A1c ≥ 6.5%. As compared to patients with HbA1c < 5.7%, there was an increased risk of sepsis in patients with elevated HbA1c: 6.5% – 7.99% (odds ratio [OR] 3.38, p = 0.019), 8.0% – 9.99% (OR 4.57, p = 0.019), and ≥ 10% (OR 10.68, p = 0.001). Positive preoperative urine culture despite treatment (OR: 5.33, p < 0.001), and higher CCI scores (OR: 1.19, p = 0.035) were also associated with increased odds of sepsis. Stent or nephrostomy tube placement, stone location, stone size, and surgery length were not associated with postoperative sepsis. In a separate multivariate model with A1c as a continuous variable, the odds of postoperative sepsis increased 1.55 per 1% increase in A1c (p < 0.001).

Conclusions: We identified a dose-response relationship between perioperative HbA1c and sepsis following URS. These data underscore the utility of incorporating HbA1c into presurgical optimization and suggest that patients with elevated A1c may benefit from delaying elective URS until HbA1c is improved.

Funding: NIDDK 5T35DK093430.

MP23-17 Assessment of Safety and Efficacy in Ambulatory Bilateral same-session Ureterorenoscopy: Results of a Multicenter Study
Mohamed Abdelkareem1, Tawiz Gul1, Morshed Salah1
1Hamad Medical Corporation

Introduction: This study aims to assess the safety and efficacy of Bilateral Same-Session Retrograde Intrarenal Surgery (BS-RIRS) for bilateral renal stones in ambulatory care settings.

Methods: We retrospectively reviewed records from January 2019 to December 2022 for 82 patients who underwent Bilateral Same-Session Retrograde Intrarenal Surgery (BS-RIRS) to manage bilateral renal stones in an ambulatory care setting. Stone clearance was assessed six to eight weeks post-operation via imaging (NCCT KUB, US, or KUB X-ray), defining stone-free status as the absence of fragments or fragments smaller than three millimeters.

Results: The median stone size was 870 cubic millimeters on the right side (IQR: 452.5 – 1752.5) and 656 cubic millimeters on the left side (IQR: 496.5 – 1276.8). Of the total cohort, 56 patients (68.3%) were pre-stented. The mean surgical duration was 105.70 minutes (±35.97). The stone-free rate (SFR) was 74%, indicating successful clearance. Notably, 13 patients (15.9%) required additional procedures due to incomplete clearance. Postoperatively, the majority (95.1%) were discharged the same day. However, four patients needed extended stays: one for IV antibiotics, another for bilateral ureteric catheter removal, and two due to surgeon preference. The mean hospital stay was 10.20 hours (±9.05). Within 30 days post-op, 9 patients (11%) visited the emergency department due to abdominal pain. Four reported hematuria, and 1 had a fever. Importantly, only one patient required hospitalization for IV antibiotics.

Conclusions: In carefully selected patients, simultaneous bilateral ureterorenoscopy in ambulatory settings is a secure intervention with commendable stone-free rates. This approach offers advantages such as shorter hospitalization, minimized intervention needs, and cost-effectiveness. To achieve these outcomes, selecting patients with a total stone burden of less than 3 cm is crucial.

Funding: Medical Research center, Hamad Medical Corporation, Doha, Qatar.

MP23-18 Acute kidney disease following ureteroscopy and thulium fiber laser lithotripsy: Results from a referral stone center
Aideen Madden1, Olivier Traxer1, Christian Corsini2, Mariela Corralles1, Aideen Madden1, Alba Sierra3, Catalina Solano3, Frederic Panthier1, Steeve Doizi1, Luigi Candela1
1Tenon Hospital, 2Università Vita-Salute San Raffaele, 3Department of Urology, Hospital Clinic, University of Barcelona, Barcelona, Spain, 4Hospital Tenon, 5Tenon Hospital, Paris, France
Presented By: Aileen Madden, FRCS

Introduction: Patients undergoing ureteroscopy for stone disease are vulnerable to acute kidney injury via several different mechanisms. We aimed to evaluate the incidence and risk factors for acute kidney disease (AKD) in stone patients treated with ureterscopy (URS) and Thulium Fiber Laser (TFL) lithotripsy.

Methods: We collected clinical and surgical data for 72 patients treated with URS and TFL lithotripsy for ureteral/renal stones from September 2021 to September 2023 at a single academic referral stone center. As per the KDIGO 2020 consensus conference criteria, AKD was defined as postoperative acute kidney injury (AKI) occurrence, an estimated glomerular filtration rate (eGFR) decrease ≥35%, or serum creatinine (SCr) increase ≥50%, anytime between postoperative day 1 and 60. AKI was defined as a SCr rise ≥0.3 mg/dL or ≥50% by postoperative day 2. Chronic kidney disease (CKD) category was defined according to NKF criteria. Data were analyzed using descriptive statistics and logistic regression analysis tested the association of patients’ characteristics and perioperative data with occurrence of AKD.

Results: Patients’ median age and BMI were 52 years and 25 kg/m², respectively. Sixty-one percent of the procedures were performed in male patients and 41 (57%) of patients had a Charlson comorbidity index ≥1. Five patients had solitary kidney. Median preoperative serum creatinine (SCr) was 0.88 mg/dL. Baseline CKD category was 1, 2, and 3 in 40 (56%), 24 (33%), and 8 (11%) patients, respectively. Thirty-five (49%) patients had a single stone and 23 (32%) had an indwelling double stent before the surgery. Eleven (15%) patients had bilateral URS. Median (IQR) operative time was 78 minutes. Ureteral access sheath was used in 23 (32%) procedures. Median frequency, power, laser on time, and total energy were 15 Hz, 1J, and 18.5 min, 9970J, respectively. Eight (11%) and 5 (7%) patients had Clavien ≥2 complications within hospital stay and within 60 days post-URS, respectively. Overall, postoperative AKD occurred in 13 (18%) patients. On logistic regression analysis, no patient-related or surgical variable was statistically associated with AKD (all p > 0.05). At 3-months, 11 out of 13 patients who had AKD recovered baseline renal function.

Conclusions: AKD is a frequent complication in this surgical setting. However, renal function restores to the baseline value in most cases. Endourologists should be aware of this eventuality.

Funding: No funding was received for this research.

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MP23-19  Association of Intrarenal Pressure During Ureteroscopy with Clinical Outcomes

Jodi Antonelli¹, Ezra Margolin¹, David Barquin¹, Jodi Antonelli¹, Glenn Preminger¹, Charles Scales¹, Gary Faerber¹, Michael Lipkin¹, Robert Medairos¹

¹Department of Urology, Duke University Medical Center

Presented By: Jodi Antonelli, MD

Introduction: Elevated intrarenal pressure (IRP) during ureteroscopy (URS) has been hypothesized to cause detrimental patient outcomes including pain and infection, but these effects have not been proven in clinical studies. We aimed to assess the clinical impact of elevated IRP during URS.

Methods: We conducted a retrospective cohort study of patients who underwent URS and laser lithotripsy using the LithoVue Elite single-use flexible ureteroscope (Boston Scientific Corporation, Marlborough, MA) at a single institution from July 2023 to March 2024. IRP was measured using a pressure sensor on the tip of the scope. High IRP was defined as IRP > 40 mmHg. We defined 2 cohorts: a high-pressure (HP) cohort that had > 10 minutes of high IRP and a non-HP cohort that had < 10 minutes of high IRP. The primary endpoint was perioperative opioid requirement in the operating room and recovery room, measured as morphine milligram equivalents (MME). Secondary endpoints included emergency department visits and urinary tract infections within 30 days. The relationship between the primary endpoint and duration of high IRP was evaluated using multivariable linear regression. Outcomes were compared between the 2 cohorts using Student’s t-tests and chi squared tests.

Results: IRP readings during URS were available for 31 patients. Median total URS time was 28 minutes (IQR 21-41), and median time of high IRP was 10 minutes (IQR 4-23). There were 15 patients in the HP cohort and 16 patients in the non-HP cohort. On linear regression, perioperative opioid requirement was associated with the duration of high IRP (coefficient 0.61 MME/min, 95% CI 0.09 – 1.13, p = 0.023, Table). Unadjusted analysis did not demonstrate a significant difference in perioperative opioids between the HP cohort and the non-HP cohort (mean 34.9 MME vs. 29.6 MME, p = 0.432). Emergency department visits occurred in 2/15 patients in the HP cohort and 0/16 patients in the non-HP cohort (p = 0.600). Urinary tract infections occurred in 2/15 patients in the HP cohort and 0/16 patients in the non-HP cohort (p = 0.131).

Conclusions: On multivariable analysis, increased URS duration with IRP > 40 mmHg was associated with increased perioperative opioid requirement. Emergency department visits and urinary tract infections were only seen in the HP cohort, but no statistical difference was seen.

Funding: None.

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MP23-20  Natural history of residual stones after primary retrograde intrarenal surgery (RIRS)

Jingqiu Li¹, Jingzeng Du¹

¹Singapore General Hospital

Presented By: Jingqiu Li, MD

Introduction: In recent years, retrograde intrarenal surgery (RIRS) has become a widely applied treatment modality for renal stones. The reported stone-free rate after RIRS ranges...
from 73.6% to 94.1%. However, the residual stone fragments after RIRS remain a problem during follow-up. Stone growth, urinary tract infection, and stone related events are the potential complications of residual fragments. There are limited studies regarding the natural course of residual stones after RIRS. This study aims to describe the natural history of residual stone fragments post-primary RIRS in long-term follow-up.

Methods: Adult patients who underwent primary RIRS in Singapore General Hospital from January 2018 to January 2020 were retrospectively reviewed. Inclusion criteria are: 1) index stone size less than 3 cm, 2) follow-up period longer than six months post-procedure, and 3) no previous history of stone-related procedure including RIRS, extracorporeal shockwave lithotripsy and percutaneous nephrolithotomy performed for the ipsilateral renal unit. Patients with congenital abnormalities of urinary tract were excluded from this study. Patient demographic, index stone size, residual stone size and clinical data were evaluated.

Results: A total of 292 RIRS were performed at our center, and 38.3% of the cohort had residual stone fragments. A total of 37 cases were included in the final analysis, and the follow-up period ranged from 9.9 months to 70.3 months, with a median follow-up period of 53.5 months. The mean index stone size was 11.9 mm. The average residual stone size was 5.9 mm. Seven patients underwent secondary procedures for residual fragments. Four patients required additional RIRS, one had ESWL, and two underwent ureteroscopy for ureteric stones. Eight patients had stone-related events during the follow-up period. Two patients had medical expulsion therapy (MET) for dropped stone fragments, and both were able to pass fragments out spontaneously. Six patients presented to the emergency department (ED) for either ureteric/renal colic or urinary tract infections, and half of them required hospitalization.

Conclusions: We observed the natural history of residual stone fragments after primary RIRS. 18.9% of the cohort required additional procedures for residual fragments, and 16.2% presented ED for stone-related events. Our study suggests that residual stone fragments are not risk-free and should be followed up closely.

Funding: N/A.

MODERATED POSTER SESSION 24: UROTHELIAL AND MISCELLANEOUS CANCERS

MP24-01 Tertiary Referral Center Experience with Robot-Assisted Radical Cystectomy and Urinary Diversion using a Purpose-Built Single-Port Robotic Platform

Daniel Lama2, Oluwatimilehin Okunowo1, Clayton Lau3, Kevin Chan2, Bertram Yuh2

1Department of Computational and Quantitative Medicine, Division of Biostatistics, Beckman Research Institute of City of Hope, 2Division of Urology and Urologic Oncology, Department of Surgery, City of Hope Comprehensive Cancer Center

Presented By: Daniel Lama, MD

Introduction: The introduction of a purpose-built single-port (SP) robotic surgical platform in 2018 has led to numerous procedural applications including robot-assisted radical cystectomy (RARC). Our objective was to evaluate the intraoperative metrics and perioperative outcomes of SP RARC at our institution.

Methods: We reviewed consecutive cases of SP RARC and extracorporeal urinary diversion between 02/2021 and 03/2024. Of note, patients were offered SP surgery in a non-selective fashion. SP RARC was performed via a single incision through the future urostomy site using the Da Vinci SP access device (Intuitive Surgical Systems, Sunnyvale, CA), the Remotely Operated Suction Irrigation System (VTI Inc., Nashua, NH), and without a separate assistant port. Complications were reported using the Clavien-Dindo classification system. Major complications were considered ≥grade III events.

Results: A total of 14 patients underwent SP RARC (Table 1); 12 (86%) patients for malignant and 2 (14%) for benign (post-radiation defunctionalized bladder and vesicovaginal fistula) indications with a median 4.9 months (IQR 2.3-8.2) of follow-up. Thirteen (93%) patients had ileal conduit urinary diversion, while the remaining patient had concomitant radical nephroureterectomy and neobladder creation. Median operative time was 426 minutes (IQR 365.8-464.8), blood loss 200 mL (IQR 100-237.5), and length of hospital stay 5.5 days (IQR 5-6.8). Median pelvic lymphadenectomy yield was 21 lymph nodes (IQR 13.8-39.3) and there were no positive margins detected for the 12 patients with genitourinary malignancy. The overall and major complication rates were 57% and 21%, respectively. Of note, there were no grade IV-V complications identified.

Conclusions: SP RARC is a safe and effective minimally invasive extirpative treatment for various malignant and benign diseases of the bladder.

Funding: None.

Table 1: Baseline clinicopathologic characteristics.

<table>
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<th>Characteristics</th>
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<td>Age, median (IQR), year</td>
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<td>BMI, median (IQR), kg/m²</td>
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<td>IV 1 (7)</td>
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<td>Operative time, median (IQR), minute</td>
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<td>Length of stay, median (IQR), day</td>
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<tr>
<td>Urinary diversion, No. (%)</td>
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<td>Neobladder 1 (7)</td>
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<td>Preoperative hydronephrosis, No. (%)</td>
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<td>History of prior pelvic radiation, No. (%)</td>
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<tr>
<td>Neoadjuvant chemotherapy, No. (%)</td>
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<td>Clinical stage, No. (%)*</td>
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<td>T4 2 (14)</td>
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*Denominator + 7: neoadjuvant chemotherapy was only assessed among patients with T2+ disease
**Denominator + 12: two patients with benign indication for surgery were excluded.
MP24-02 The Impact of Venous Thromboembolism before Open or Minimally-Invasive Radical Cystectomy in the United States: Insurance Claims Data on Perioperative Outcomes and Health-care Costs

Anas S. Tresh2, Francesco Del Giadice1, Shufeng Li2, Satvir Basran2, Federico Belladelli3, Ettore De Berardinis1, Vincenzo Asero4, Carlo M. Scornajeghi1, Dalila Carino1, Benjamin Challacombe5, Abhay Rane6, Rajesh Nair3, Benajmin I. Chung2

1Sapienza Rome University, 2Stanford University School of Medicine, 3University Vita-Salute San Raffaele, 4Sapienza Roma University, 5Guys and St Thomas’ NHS Foundation Trust

Presented By: Anas S. Tresh, MD

Introduction: The relationship between Venous Thromboembolism (VTE) and solid malignancy has been established over the decades. With rising projected rates of bladder cancer (BCa) worldwide as well as increasing number of patients experiencing BCa and VTE, our aim is to assess the impact of a preoperative VTE diagnosis on perioperative outcomes and health-care costs in BCa cases undergoing Radical Cystectomy (RC).

Methods: Patients ≥ 18 y/o with BCa diagnosis and undergoing open or minimally invasive (MIS) RC were identified in the MerativeTM Marketscan® Research Databases between 2007-2021. The association of previous VTE history with 90-day complication rates, postoperative VTE events, rehospitalization, and total hospital costs (2021 US dollars) was determined by multivariable logistic regression modeling adjusted for patient and perioperative confounders.

Results: Out of n = 8, 759 RC procedures, n = 743 (8.48%) had a previous positive history for any VTE including n = 245 (32.97%) PE, n = 339 (45.63%) DVT and n = 159 (21.40%) superficial VTE. n = 6, 855 (79.26%) of patients underwent lap/robotic RC with an equivalent proportion in both VTE and non-VTE groups. Overall, history of VTE before RC was strongly associated with almost any worse postoperative outcomes including higher risk for any and apparatus-specific 90-days postoperative complications (Odds Ratio [OR]: 1.23, 95% Confidence Interval [CI], 1.03-1.46). Subsequent incidence of new VTE events (OR: 7.02, 95%CI: 5.93-8.31), rehospitalization (OR: 1.25, 95%CI: 1.06-1.48), other than home/self-care discharge status (OR: 1.53, 95%CI: 1.28-1.82), and higher health-care costs related to the RC procedure (OR: 1.43, 95%CI: 1.22-1.68) were significantly associated with a history of VTE. Importantly, the association was maintained regardless the severity of VTE history (i.e., PE, DVT or phlebitis/thrombophlebitis).

Conclusions: Preoperative VTE in patients undergoing RC significantly increases morbidity, post-procedure VTE events, hospital length of stay, rehospitalizations, and increased hospital costs. These findings may help during the BCa counseling on risks of surgery and hopefully improve our ability to mitigate such risks.

Funding: None.

MP24-03 Long-term Oncologic Outcomes and Complications of Robot-assisted Cystectomy for the Treatment of Urothelial Carcinoma of the Bladder

Bertram Yuh2, Daniel Lama1, Oluwatimilehin Okunowob1, Clayton Lau1, Kevin Chan1

1City of Hope, 2City of Hope Cancer Center

Presented By: Bertram Yuh, MD

Introduction: Robot-assisted radical cystectomy (RARC) is an established standard of care treatment for muscle invasive (MIBC) and high-risk non-muscle invasive bladder cancer (NMIBC). We sought to report long-term oncologic outcomes and complications of RARC up to 20 years after surgery.

Methods: Review of a single tertiary center database from 2004-2020. RARC with extended pelvic lymph node dissection (ePLND) and extracorporeal urinary diversion (ECUD) were performed. Cox regression analysis and the Kaplan-Meier method were used to identify factors associated with and report time-to-event estimations of recurrence-free survival (RFS) and overall survival (OS). Clavien-Dindo complications were identified, categorized, and sub-stratified by time from surgery within 90-days to >5-years postoperatively.

Results: A total of 510 patients with median follow-up of 57.1 months (IQR 21.8-103.6) were included. Continent diversion was performed for 259 (51%) patients. Of the 164 (48%) MIBC patients that received neoadjuvant chemotherapy (NAC), 153 (93%) had cisplatin-based NAC and 47 (29%) were ypT0. Recurrence was identified in 157 (31%) patients and 118 (23%) died from bladder cancer. The overall complication rate was 52% with267(41%) major grade ≥ III events. Infectious (25%) and genitourinary (22%) were the most common complications irrespective of the time interval beyond 90-days. On multivariable analysis, lymph node density and ≥pT3 disease increased the risk of recurrence or death (both, p <0.001). The estimated 5-, and 10-year RFS and OS rates were 69% and 64%, and 61% and 44%, respectively.

Conclusions: RARC retains long-term durable efficacy and optimizes the probability of cure for patients with bladder cancer. Infection and complications directly related to urinary diversion have the greatest impact on post procedural morbidity and should be focal points for procedural optimization.

Funding: None.

MP24-04 Copy number variations of urine as biomarkers for recurrence surveillance in non-muscle invasive bladder cancer

Hai Huang3, Yaqun Xin1, Jianhua Zhang1, Dandan Cao1, Danfeng Xu4, Yi Gao2

1Genetron Health Co., Ltd, Beijing, China, 2Department of Urology, Ruijin Hospital, Shanghai Jiaotong University School of Medicine, Shanghai, China

Introduction: The relationship between Venous Thromboembolism (VTE) and solid malignancy has been established over the decades. With rising projected rates of bladder cancer (BCa) worldwide as well as increasing number of patients experiencing BCa and VTE, our aim is to assess the impact of a preoperative VTE diagnosis on perioperative outcomes and health-care costs in BCa cases undergoing Radical Cystectomy (RC).

Methods: Patients ≥ 18 y/o with BCa diagnosis and undergoing open or minimally invasive (MIS) RC were identified in the MerativeTM Marketscan® Research Databases between 2007-2021. The association of previous VTE history with 90-day complication rates, postoperative VTE events, rehospitalization, and total hospital costs (2021 US dollars) was determined by multivariable logistic regression modeling adjusted for patient and perioperative confounders.

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Conclusions: Preoperative VTE in patients undergoing RC significantly increases morbidity, post-procedure VTE events, hospital length of stay, rehospitalizations, and increased hospital costs. These findings may help during the BCa counseling on risks of surgery and hopefully improve our ability to mitigate such risks.

Funding: None.
Introduction: Copy number variations (CNVs) are known to be associated with the development and progression of bladder cancer. This study aimed to investigate the potential role of CNVs as biomarkers for recurrence surveillance in non-muscle invasive bladder cancer (NMIBC).

Methods: We conducted a prospective study using urine sediment samples from 89 patients, including 8 with hematuria and 81 with NMIBC. Urine was collected before cystoscopy, and DNA was extracted for low-coverage whole-genome sequencing. A home pipeline was employed to extract CNV features.

Results: Patients diagnosed with recurrent cancer during our study were defined as Cancer group, while those without recurrence were classified as non-Cancer group. CNV analysis achieved an area under the curve (AUC) of 0.868 (95% confidence interval [CI] 77.6%–96.0%), with a specificity of 81%, a specificity of 92.6%, PPV of 77.3% and NPV of 94%, respectively (Figure A). With a median follow-up of 23.7 months, CNV positivity was significantly associated with poorer recurrence-free survival (RFS; median 38.9-month vs unreached; Hazard Ratio=10.0, 95%CI 3.0-33.3; p < 0.001). Notably, one patient with positive CNV signals but a negative cystoscopy results experienced recurrence with a high-grade T1 tumor within 4.3 months (Figure B). This case highlighted the promising value of CNV to improve diagnostic accuracy and provide earlier warnings in NMIBC management.

Conclusions: Our findings suggest that urine CNVs serve as a promising biomarker for NMIBC surveillance, potentially reducing the frequent use of cystoscopies. However, further validation in a larger cohort is required.

Funding: This research was supported by the National Key Research and Development Program of China (2021YFC2009300 and 2021YFC2009305) and the Science and Technology Commission of Shanghai Municipality (21Y11904500, 20Y11904700) and the Youth Medical Talents – Specialist Program of Shanghai “Rising Stars of Medical Talents” Youth Development Program and the National Nature Science Foundation of China (82173045, 82072844, 81972405, 82003136, 82272854) and the Nature Science Foundation of Shanghai(20ZR1433600).
and 207 (39.7%) had neobladder. The use of neobladder was found to be protective in terms of disease-free survival (Hazard ratio = 0.870, \( p = 0.037 \)) and overall survival (HR = 0.670, \( p = 0.044 \)) compared to ileal conduit. The difference became statistically non-significant after being adjusted in multivariate cox-regression analysis. Moreover, neobladder reconstruction was not associated with increased blood loss, nor additional risk of major complications.

**Conclusions:** Orthotopic neobladder urinary diversion is not inferior to ileal conduit in terms of perioperative safety profile and long term oncological outcomes. Further prospective studies are warranted for further investigation.

**Funding:** Nil finding received

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**MP24-07 Hybrid Approach For Robotic Radical Cystectomy: An Improvisation with Da-vinci and Hugo-RAS robotic platforms**

Vipin Tyagi¹

¹Sir Ganga Ram Hospital

Presented By: Vipin Tyagi

**Introduction:** The current gold standard for muscle-invasive bladder carcinoma remains open radical cystectomy. However, robotic approach for radical cystectomy has shown significantly improved patient-reported outcomes without compromising the oncological safety. Also recent introduction of Hugo-RAS gives an opportunity to explore its utility for robotic radical cystectomy in comparison to da-vinci. Here, we analyze outcomes of a new totally minimally invasive approach to robotic cystectomy without the need for a formal laparotomy for ileal conduit and uretero-enteric anastomosis in order to simplify the procedure with complementary use of robotic (Two Platform) and laparoscopy.

**Methods:** Out of the 80 cases of radical cystectomy done by us from Jan 2016 to Jan 2024, 4 cases in which ileal conduit was made by the open technique were excluded. Thus a total of 76 radical cystectomies performed by the “sandwich” technique were analysed. 60 cases were done on da-vinci platform and the last 16 were done on Hugo-RAS platform. The sandwich technique consisted of robotic radical cystectomy, followed by laparoscopic harvesting of the ileal conduit through the same robotic port sites, which is then followed by reinserting the robotic ports to carry out an intra-corporeal robotic uretero-ileal anastomosis. Patient demographics and disease characteristics were recorded. Peri-operative surgical, oncological as well as post-operative patient-reported outcomes were recorded and later analyzed. A Comparative analysis of the 16 cases done on Hugo-RAS was done against last 16 cases performed on da-vinci.

**Results:** The study population \( (n = 76) \) consisted of 70 males and 6 females, aged 42-72 years. Disease profile included stages T2, T3a or T3b as confirmed by biopsy. Operation time ranged from 310-450 minutes, out of which console time ranged from 280-425 minutes. Laparoscopic bowel harvesting for the ileal conduit was completed in 40-60 minutes in all cases. Uretero-ileal anastomosis was done by Wallace technique in 2 and 4 cases respectively performed on da-vinci and Hugo-RAS and by Bricker technique in the rest. Neobladder was not created in any case. Intra-operative blood loss was estimated to be 75-200 ml. Mean duration of hospital stay after surgery was 4.3 days. There were no intra-operative or immediate post-operative surgical complications. No early or late bowel complications reported. Late post-operative complications consisted of one case of parastomal hernia and one case of uretero-enteric stricture, both in Da-Vinci group. No mortality directly attributable to the surgery was reported. Complete oncological resection with negative margins and adequate pelvic lymph nodal harvest could be achieved in all cases. A Comparative analysis between the cases performed on da-vinci and Hugo-RAS revealed no significant difference in operative and postoperative parameters, though the console time on Hugo-RAS was more as compared to da-vinci and this time difference progressively decrease down.

**Conclusions:** The “sandwich” technique of robotic-laparoscopic-robotic approach for radical cystectomy is an ideal approach in trained hands and yields better surgical, oncological as well as patient-reported outcomes in patients with muscle-invasive carcinoma bladder. The best of robotic and laparoscopy can be used complementary to be more precise and cost effective without compromising the outcome. The transition from da-vinci to Hugo-RAS does not affect the surgical outcome.

**Funding:** None.
MP24-08 Assessing the Pathologic Outcomes of a Decision Tool to Select Women with Bladder Cancer for Reproductive Organ Sparing Radical Cystectomy

Tarik Benidir¹, Paul Crispen¹, Padraic O’Malley², Li-Ming Su¹, Sara Falzarano³, Joe Grajo⁴, Tuo Lin⁵
¹University of Florida department of Urology, ²University of Florida, ³University of Florida department of pathology, ⁴University of Florida department of radiology, ⁵University of Florida department of statistics

Presented By: Tarik Benidir, MD

Introduction: Currently, the standard of care for female patients undergoing Radical Cystectomy (RC) includes the removal of the bladder, pelvic lymph nodes, anterior vagina, uterus, fallopian tubes and ovaries. Removal of female ancillary organs, both in pre and post-menopausal stages is associated with reduction in various quality of life metrics, including sexual health, cognitive decline depression, as well as increased cardiovascular events, metabolic acidosis, osteoporosis bone fractures and longevity of life. The assessment of a decision tool to determine which patients are oncologically safe to undergo reproductive organ sparing radical cystectomy (ROS-RC) is needed.

Methods: IRB202400006 approval for a single arm Phase II clinical trial. A Decision Tree was created (Figure 1) based on pre-operative factors (physical exam, imaging, cystoscopy, history of neoadjuvant chemotherapy) that would help stratify the risk of ancillary organ involvement (favorable versus unfavorable). Favorable female patients undergoing ROS-RC while unfavorable patients undergo standard of care RC.

Results: Outcomes include: Pathologic Margin Status at the time of RC for those deemed unfavorable. Secondary outcomes include recurrence free survival (both regional and distant), as well as quality of life metrics (Female Sexual Functional Index Questionnaire). Exploratory endpoints also include the value of pelvic MRI in determining ancillary organ invasion.

Conclusions: We hope this decision tree model will help stratify which female patients may undergo ROS-RC due to favorable pre operative factors, as compared to those female patients requiring standard of care RC.

Funding: No Please consider for TOWER if within the interest of the conference (the trial is currently a single institution but once interim analysis complete will be open to more institutions if results are positive)No results yet as the IRB was accepted last month. Accrual begins in 3-4 weeks

MP24-09 The Impact of Adopting Robotic Technique On Radical Cystectomy

Mohamad Salkini¹, Ahmad Dahman¹
¹West Virginia University

Presented By: Mohamad Salkini, MD, FACS

Introduction: Open radical cystectomy (ORC) is the standard surgical treatment for muscle invasive bladder cancer (MIBC). Robotic assisted approach was introduced to reduce the morbidity the procedure. The increased cost, long learning curve and the inability to prove oncologic superiority were the main challenges preventing wide recognition of robotic assisted radical cystectomy (RARC). Here, we report our initial experience with RARC.

Methods: After IRB approval, we collected data from the initial 50 cases of RARC and compared them to the last 50 cases of ORP performed at our institute by the same surgeon. Beside the demographic data, we collected data about the length of the procedure (LP), estimated blood loss (EBL), length of hospital stay (LOS), intra operative and post operative complication. We also compared the oncologic parameters between the two groups including positive margin, and lymph node yield.

Results: The age, gender and initial stage were similar between the two groups (table 1). The robotic group had decreased blood loss (346cc vs 884cc, p < 0.001), fewer patients with >3 Clavien-Dindo complications (5 vs 15 complications, p < 0.03), and shorter hospital stay (5.7vs 9.4 days, p < 0.04). However, RARC had increased operative time (430 vs 289 minutes, p < 0.01). The robotic cohort had fewer patients with positive margins (2 vs 6 patients, p < 0.04), higher average number of lymph nodes removed (23 vs 16 lymph nodes, p < 0.02). Additionally, the robotic group had fewer readmission occurrences (11 vs 18, p < 0.03) and fewer postoperative ureteral strictures (3 vs 5 patients, p < 0.08).

Conclusions: This study demonstrates that adoption of RARC yielded improved safety, postsurgical, and oncological outcomes when compared to ORC. However, larger studies with long term follow-up are required to further corroborate these findings and establish a new standard.

Funding: No funding was received for this research.
**MP24-10** The Impact of Utilizing Lower Intraabdominal Pressure on Robotic Radical Cystectomy

Zachary Edgerton, Samuel Luketich, 1, Mohamad Salkini

1West Virginia University

Presented By: Zachary Edgerton, ND

**Introduction:** Robotic radical cystectomy (RCC) is an evolving technique that is both challenging and technically demanding. The oncologic outcome has been demonstrated to be comparable to open technique. We studied the impact of lower intraoperative abdominal pressure utilizing the Air Seal®CO2insufflation system during RCC.

**Methods:** We identified all instances of robotic cystectomy performed one year prior to introduction of the Air Seal® in our practice group 1 as well as for one year following its introduction group 2. All patients in group 1 underwent surgery at intraabdominal pressure of 15 mmHg, while group 2 patients underwent surgery at intra-abdominal pressure of <12 mmHg. These groups were compared regarding average length of surgery, blood loss, post-operative hospitalization, presence of ileus, and return of bowel function.

**Results:** A total of 9 patient were identified in group 1 and 10 patient were found in group 2. There was no significant difference between the two groups regarding age and sex. There was a statistically significant decrease in length of hospitalization following surgery in the post-AS group (6.11 days in group 2 versus 9.63 days in group 2, p = 0.04). No statistically significant differences were found regarding intraoperative blood loss, length of surgery, post oxygen requirement, and complication of Calven Dindo >3. The shorter hospitalization is attributed to less pain and quicker recovery of the bowel function as these are the main reason to stay.

**Conclusions:** Use of the Air Seal® in robotic cystectomy allows for consistent, lower intra-operative intra-abdominal pressures. The lower intra abdominal CO2 pressure lead to less pain, quicker recovery of the bowel function and subsequent shorter hospitalization postoperatively. No increase in complications was observed after implementing the Air Seal® System.

**Funding:** None.

**MP24-12** Combination Robotic-Assisted Surgeries in the Abdomen and Pelvis: A Single-Institution Case Series

Naveen Pokala, Clayton Brinkley, Hunter Kraus, Glendon Markollari

1University of Missouri, 2University of Missouri

Presented By: Naveen Pokala, MD

**Introduction:** Robotic-assisted laparoscopic surgery (RALS) has had increasing adoption across multiple surgical specialties. In the setting of multiple concurrent surgical problems, combined multi-visceral surgery is a viable alternative to sequential procedures. As surgeon utilization of the robotic platform increases across most surgical specialties, the optimization of resources is essential. A multidisciplinary, synchronous use of the robotic platform fully applies to this logic. There is currently limited data surrounding the feasibility and safety of combined RALS. This study aims to report the largest single-center case series to date of combined RALS in patients with multiple abdominopelvic pathologies requiring resection.

**Results:** A total of 14 patients were included in the analysis; six patients underwent bilateral laparoscopic VEIL via classical approach, while eight underwent mVEIL via lateral approach on both groins. When the total operative time was compared, the deep first lateral approach was quicker by 19 minutes as a whole [142.4 (± 12.116) vs 161.40 (±13.594), p = 0.048], and by 9.4 minutes per groin [71.20 (± 8.01) vs 80.60 (± 7.619) p = 0.015]. The mean blood loss was similar. The median drain duration, length of postoperative hospital stay, and overall complication rates were comparable. Oncological outcomes regarding total lymph node yields were also similar among both techniques.

**Conclusions:** The laparoscopic modified deep first-lateral approach of VEIL has lesser overall operative time when compared to the classical approach. It provides better ergonomics for the surgical team, thereby flattening the surgeon’s learning curve. However, blood loss, postoperative outcomes and lymph node yields were comparable in both techniques.

**Funding:** None.

**MP24-11** Perioperative Outcomes in Classical vs Deep First Lateral Approach of Video Endoscopic Inguinal Lymphadenectomy (VEIL) in Carcinoma Penis: A Retrospective Comparative Analysis

Manoj Kumar Das, Swarnendu Mandal, Prasant Nayak, Suman Sahoo, Vivek Tarigopula

1All India Institute of medical Sciences, Bhubaneswar

Presented By: Manoj Kumar Das, Associate Professor

**Introduction:** We present our perioperative outcomes of laparoscopic video endoscopic inguinal lymphadenectomy (VEIL) in patients with carcinoma penis. We compare two surgical techniques i.e., laparoscopic classical vs laparoscopic modified deep first lateral approach.

**Methods:** We retrospectively collected perioperative data of patients who underwent laparoscopic VEIL at a tertiary care centre in Eastern India. All the patients were operated on by a single surgeon.

**Results:** Of a total 14 patients were included in the analysis; six patients underwent bilateral laparoscopic VEIL via classical approach, while eight underwent mVEIL via lateral approach on both groins. When the total operative time was compared, the deep first lateral approach was quicker by 19 minutes as a whole [142.4 (± 12.116) vs 161.40 (±13.594), p = 0.048], and by 9.4 minutes per groin [71.20 (± 8.01) vs 80.60 (± 7.619) p = 0.015]. The mean blood loss was similar. The median drain duration, length of postoperative hospital stay, and overall complication rates were comparable. Oncological outcomes regarding total lymph node yields were also similar among both techniques.

**Conclusions:** The laparoscopic modified deep first-lateral approach of VEIL has lesser overall operative time when compared to the classical approach. It provides better ergonomics for the surgical team, thereby flattening the surgeon’s learning curve. However, blood loss, postoperative outcomes and lymph node yields were comparable in both techniques.

**Funding:** None.
Methods: Retrospective chart review identified 14 patients who underwent combined RALS at a single center from 2016-2024. Specialities performing combined RALS included Urology, Gynecology, and General Surgery. Patient demographic and clinical factors were extracted, including pre-operative, intra-operative, and post-operative characteristics. Descriptive statistics were performed.

Results: Procedure descriptions, intra-operative, and post-operative characteristics listed in Table 1. Patients had a mean age of 62.1 years and mean BMI of 31.9. Four patients were American Society of Anesthesiologists (ASA) score class II, and ten were ASA class III. Mean operative time (OT) was 352.4 minutes (range 217-753). Mean estimated blood loss (EBL) was 372.5 mL. Two (17%) patients required blood transfusions. There were no intraoperative complications. The mean length of stay was 4.3 days. Three patients (23%) experienced a post-operative complication Clavien-Dindo ≥ 2. Two patients (17%) were readmitted within 30 days.

Conclusions: The combined RAL surgical approach is a feasible and safe treatment option for patients requiring multiple abdominopelvic resections. Our findings for EBL, OT, intra-operative, and post-operative complication rates are consistent with similar studies on combined RALS. Further studies should be conducted on its utility compared to sequential operations in areas such as safety, operative time, length of stay, and healthcare costs.

Funding: None.

MP24-13 Abdominopelvic paragangliomas: a cohort review of 15-year experience
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1All India Institute of Medical Sciences, New Delhi, India

Presented By: Keshav Agarwal, MBBS, MS

Introduction: Abdominopelvic paragangliomas are rare tumours and data on outcomes are scarce. We viewed our 15-year experience of paraganglioma surgery for outcomes and impact on health-related quality of life.

Methods: In an IRB approved study, we reviewed our prospectively maintained database of 30 patients who underwent surgery for abdominopelvic paragangliomas between April 2008 and August 2022. Preoperative clinical parameters, operative details and complications were recorded. Patients were followed-up for symptom resolution, hospital admissions and current quality of life using the WHO QoL BREF score. Data was tested for normality by the Kolmogorov-Smirnov test and is reported with variance.

Results: Among 30 patients, 55% presented with headache, palpitations and sweating and 80% had hypertension. 70% patients occurred in the para-aortic or inter aorto-caval location. Laparoscopic excision was performed in 18, robot-assisted laparoscopy in 3 and open surgery in 9 patients. Two laparoscopic procedures were converted to open surgery due to non-progression in dissection. No intraoperative complications occurred while 1 patient with chronic kidney disease had acute kidney injury post-operatively requiring haemodialysis. 26 patients were available for follow-up at a median of 79 months (range 4-128 months). All had resolution of symptoms, 92% became normotensive, 8 patients with diabetes preoperatively had significant improvement in glycaemic control. No patient had any hypertensive episode requiring hospital admissions. The quality of life in 18 patients who had a physical visit was satisfactory in all domains.

Conclusions: Surgery for abdominopelvic paragangliomas through any approach is safe and results in excellent functional outcomes with resolution of hypertension and diabetes and a satisfactory overall quality of life.

Funding: None.

MP24-14 Robot-assisted video-endoscopic inguinal lymphadenectomy for penile cancer: A case series from Brazil
Lorena Barboza de sousa1, Lorena B. de Sousa1, Alexandre A. Ziomkowski1, Felipe P. A. Silva1, Emily F. S. Ricaldi1, Rodrigo B. F. Silvão1, Felipe C. A. Meira1, Leonardo M. Calazans2, Nilo C. Leão1
1Brazilian Institute of Robotic Surgery, 2IBCR

Presented By: Lorena Barboza de sousa, Medical Student

Introduction: Lymphatic involvement is a poor prognostic factor associated with a substantial reduction in 5 year overall survival rates among patients diagnosed with penile cancer. Video-Endoscopic Inguinal Lymphadenectomy (VEIL) is a newer technique with lower morbidity when compared to standard open lymphadenectomy, and the incorporation of robot-assisted video-endoscopic inguinal lymphadenectomy (RAVEIL) presents an improvement in prognosis. This study aims to demonstrate the outcomes of a series of RAVEIL, which is currently the largest in Brazil.

Methods: Performed 8 RAVEIL procedures, in patients with penile cancer, staged cT1n2 and an ECOG ≤ 2, over a 1 year period at 2 Brazilian tertiary care institutions operated by a single surgical team. The surgical technique involved an incision in the lower right limb, dissection to the level of the fascia lata, initiation of the repair product, insertion of trocars under direct vision (8mm, 8mm, 5mm, 12mm airseal), robotic docking, and insertion of forceps under direct vision (prograsp and fenestrated), identification of anatomical repairs (inguinal ligament, saphenous vein, and crust). The procedure began with superficial lymphadenectomy, ligating the pedicles with hemolock,
followed by deep inguinal lymphadenectomy, preserving the saphenous vein, removal of lymph nodes, hemostasis review, placement of 4.8mm suction drain, synthesis, and repetition of all steps on the left side.

**Results:** The mean age was 61.2 years. The total operative time mean for both side was 90 minutes, and the use of indocyanine in 4 of patients. No intraoperative complications. Overall, 3 patients (37.5%) experienced postoperative complications, 2 cases of skin necrosis (25%) and lymphocele (12.5%) due to accidental drain loss, which was resolved after reinsertion of the device. The average drainage time was 18 days.

**Conclusions:** The incidence of postoperative complications and the length of hospital stay showed a reduction compared to other approaches found in the literature review. The RAVEIL demonstrated greater surgical capability, quantitatively in terms of lymph nodes removed in deep inguinal lymphadenectomy. It becomes clear the benefits that patients can have with the RAVEIL technique.

**Funding:** No have.

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**Table 1: Factors Associated with Recurrent Disease on Univariable Analysis**

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Hazard Ratio</th>
<th>95% CI of HR</th>
<th>P &gt; ChiSq</th>
</tr>
</thead>
<tbody>
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<td>Age &gt;=76</td>
<td>1.90</td>
<td>1.07 - 3.38</td>
<td>0.029</td>
</tr>
<tr>
<td>Race Caucasian (ref=other)</td>
<td>0.23</td>
<td>0.06 - 0.96</td>
<td>0.043</td>
</tr>
<tr>
<td>HGB&gt;=13.9</td>
<td>0.48</td>
<td>0.26 - 0.92</td>
<td>0.027</td>
</tr>
<tr>
<td>ClinT&gt;=2</td>
<td>3.24</td>
<td>1.77 - 5.94</td>
<td>0.0001</td>
</tr>
<tr>
<td>Lymph Node Dissection</td>
<td>2.79</td>
<td>1.46 - 5.32</td>
<td>0.002</td>
</tr>
</tbody>
</table>

**Results:** A total of 122 patients with non-metastatic high grade UTUC were included in analysis. 48 patients developed recurrent disease at a median of 7.3 years. We found that age>76 (OR 1.90, p = 0.029), cT3 disease or greater (OR 3.24, p = 0.01), lymph node dissection (OR 2.79, p = 0.002), race other than Caucasian (OR 1.77, p = 0.043), and pre-operative hemoglobin <13.9 (OR 1.52, p = 0.027) were associated with increased risk of disease recurrence. Patients with 3 or more risk factors had a recurrence free survival of 33.5% at 5 years, compared to 67.7% for patients with less than 3 risk factors (p = 0.001).

**Conclusions:** We developed a nomogram that predicts the likelihood of disease recurrence following RNU in patients with HG UTUC. Patients with age>76, evidence of cT3 disease or greater, lymph node dissection, race other than Caucasian, and hemoglobin <13.9 are at increased risk of disease recurrence following RNU.

**Funding:** None.

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**MP24-16 Risk Stratification of Upper Tract Urothelial Carcinoma (UTUC) to Determine the Eligibility for Kidney-Sparing Surgery**

Kelly Lehner1, Reza Roshandel1, Austin Martin1, Prabin Thapa1, Robert Tarrell1, Vidit Sharma1, Abhinav Khanna1, Theodora Potretzke1, Sounak Gupta1, Aaron Potretzke1

1Mayo Clinic

Presented By: Kelly Lehner, MD

**Introduction:** Previous studies have proposed variables which may identify patients who may be eligible for kidney-sparing surgery (KSS) in upper tract urothelial carcinoma (UTUC). We sought to validate a previously developed risk stratification tool and identify clinical variables associated with ≥pT2/N+ UTUC in our institutional cohort.

**Methods:** This was a single-institutional retrospective study that included 466 patients who underwent ureteroscopy with biopsy followed by radical nephroureterectomy (RNU) for nonmetastatic UTUC between 2000 and 2021. We replicated a nomogram developed by Foerster et al, using the same clinical variables, to understand if this nomogram was predictive of muscle invasive and advanced disease. We then developed an alternate nomogram for comparison with our own institutional data using logistic regression analysis in a stepwise selection algorithm.
Results: Overall, 256 (70.7%) and 106 (29.3%) patients had ≤pT1N0/Nx and ≥pT2/N+ disease, respectively. Using the variables from the published nomogram available in our dataset (age, hemoglobin, chronic kidney disease stage, positive cytology, biopsy grade, Charlson index, tumor architecture, hydronephrosis, and clinical stage) we replicated the model, finding a c-statistic of 0.84. In a separate multivariable analysis, we found age (odds ratio [OR] 1.05, 95% confidence interval [CI] 1.01-1.09, p = 0.01), CKD stage (OR 2.48, CI 1.37-4.49, p = 0.003), biopsy grade (OR 1.97, CI 1.12-3.44, p = 0.01), papillary tumor architecture (OR 3.3, CI 1.35-8.15, p = 0.009 and clinical stage pT1 (OR 7.71, CI 1.1—7.18, p = 0.001) to be associated with ≥pT2/N+ disease at time of RNU. The c-statistic for the model was 0.85.

Conclusions: The previously published nomogram by Foerster et al. is replicated by our institutional registry data providing further confidence in the use of the model in clinical decision-making to identify patients eligible for KSS.

Funding: None.

MP25-01 Comparison Of Lubricity Among Ureteral Access Sheaths, Ureteral Dilators and Urethral Dilators in an Ex Vivo Porcine Ureteral Model

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1Department of Urology, University of California Irvine, Orange, CA, USA, 2Department of Mechanical Engineering, University of California, Merced, CA, USA

Presented By: Andrei D. Cumpanas, MD

Introduction: We sought to characterize the lubricity of all United States’ available 14 Fr ureteral access sheaths (UAS) as well as 14 Fr ureteral and urethral dilators using a novel ex-vivo ureteral tissue holder and a tribometer.

Methods: Twelve urological catheters (8 UAS, 1 urethral dilator, and 3 ureteral dilators) were tested against six freshly frozen Yorkshire porcine bivalved ureteral segments. The ureter was fixed in place with a custom-designed ureteral holder that ensured a constant saline film at the urothelial-UAS interface throughout testing. A 4 Newton normal force was applied perpendicular to the urothelium. A tribometer, capable of detecting changes in force in thousandths of a Newton, measured the friction generated at the urothelium-UAS interface. The urothelium and the UAS were in contact over a length of 2.5 cm for 10 seconds simulating UAS insertion and for 10 seconds simulating UAS retraction. The coefficient of friction (COF) was defined as the ratio between the friction force and the normal force. The relative lubricity of each catheter across the 6 porcine ureters was summarized according to the COF lubricity percentile using radar plots.

Results: Among all tested catheters, the Cook Flexor® UAS consistently displayed the lowest COF, while the ureteral and urethral dilators demonstrated the highest COF (Figure 1). White light interferometry revealed that average surface roughness also significantly impacted the COF despite a similar coating (e.g., AQ coating on the Cook Flexor®UAS outer sheath, ureteral dilator, and urethral dilator); indeed, a higher surface...
roughness invariably resulted in a higher COF and lower lubricity (Figure 2).

Conclusions: The Cook Flexor® AQ-coated UAS demonstrates superior lubricity, indicating the potential for smoother insertion and retraction during ureteroscopy. All tested ureteral and urethral dilators had poorer lubricity compared to UAs. Moreover, for catheters with the same coating, surface roughness negatively impacted catheter lubricity.

Funding: None.


D. Daniel Baldwin1, Grant Sajdak1, Ala’a Farkouh1, Katya Hanessian1, Uy Lae Kim1, Jammie-Lyn Quines1, Ruben Crew1, Akin S. Amasyali1, Sikai Song1, Kai Wen Cheng1, Ruby Kuang1, Evan Seibly1, Zhamshid Okhunov1, D. Duane Baldwin1

1Department of Urology, Loma Linda University Health

Presented By: D. Daniel Baldwin

Introduction: Knowledge of stone burden in patients with nephrolithiasis is essential for determining treatment choice and planning of surgical interventions. There are several methods for stone volume assessment, including the scalene ellipsoid formula and 3D Slicer DICOM analysis software. However, the optimal method for stone volume measurement has yet to be determined. Recently, Enterprise Imaging has developed a technique using multiplanar reconstruction to assist in volume determination. The purpose of this study was to compare the accuracy, precision, and convenience of Enterprise Imaging to the ellipsoid formula and 3D Slicer for determining stone volume.

Methods: Using a 3D printer, a silicone kidney was reconstructed from a patient’s CT scan. Five artificial BegoStones (calcium oxalate density) of different shapes and sizes were created and ranged from a simple sphere (1.11 cm3) to a full staghorn (51.5 cm3). Stones were placed in the kidney within a phantom torso model and imaged using a 64-detector CT scan reconstructed at 1.25 mm slice thickness. Ten subjects determined stone volumes using the ellipsoid formula, 3D Slicer, and Enterprise Imaging. Measured volumes were compared against the actual water displacement volume. Accuracy, validity, precision, and interrater reliability were compared for each method. Subjects also rated method convenience using a Likert scale of 1-10 (10 most convenient).

Results: Enterprise Imaging was the most accurate in determining stone volumes with the lowest mean relative error of 4.9% compared to 10.2% with 3D Slicer and 43.8% for the ellipsoid formula (p < 0.001). All three methods were valid in assessing stone volumes (R2=0.986 for the ellipsoid formula, 0.991 for 3D Slicer, and 0.999 for Enterprise Imaging). There was also high interrater reliability for all three methods (intraclass correlation coefficient=0.986 for the ellipsoid formula, 0.993 for 3D Slicer, and 0.999 for Enterprise Imaging). Enterprise Imaging was significantly more precise compared to 3D Slicer and the ellipsoid formula for all stone shapes (p < 0.05 for all). Enterprise Imaging was the most convenient (8.5) compared to the ellipsoid formula (6.6) and 3D Slicer (3.6; p < 0.001).

Conclusions: Enterprise Imaging is significantly more accurate and precise for the assessment of kidney stone volume than 3D slicer and the scalene ellipsoid formula. Use of Enterprise Imaging during research studies could facilitate standardization of reporting and balanced comparisons. Enterprise Imaging could be employed clinically to assist in selecting treatment option, stratifying risk, and predicting stone-free rates.

Funding: None.

MP25-03 Monopolar versus Bipolar Transurethral Resection of Bladder Tumour: Final Analysis of a Phase 3 Randomised Controlled Trial

Chris Ho-Ming Wong1

1The Chinese University of Hong Kong

Presented By: Chris Ho-Ming Wong, MRCS

Introduction: Previously, in a randomised trial we demonstrated that bipolar transurethral resection of bladder tumour (TURBT) could achieve a higher detrusor sampling rate than monopolar TURBT. We hereby report the long-term oncological outcomes following study intervention.

Methods: This is a single-center, randomized phase III trial comparing monopolar and bipolar TURBT. Only patients with pathology of non-muscle invasive bladder cancer (NMIBC) were included. Per-patient analysis was performed. Primary outcome was recurrence-free survival (RFS), Secondary outcomes included progression-free survival (PFS), cancer-specific survival (CSS) and overall survival (OS).

Results: A total of 160 cases were randomised to receive monopolar or bipolar TURBT. 24 cases were non-urothelial carcinoma, 22 cases had muscle-invasive bladder cancer, and 9 cases were performed on recurrences and were excluded. A total of 97 patients were included in the post-hoc analysis, with 46 in the monopolar group and 51 in the bipolar group. The median follow-up was 97.0 months. Loss-to-follow-up rate was 7.2%. Regarding the primary outcome of RFS, there was no significant difference (HR = 0.731; 95%CI = 0.511-1.04; P = 0.564) between the two groups. PFS (HR = 0.718; 95%CI = 0.564-2.83; P = 0.722) was also similar between the two groups. Multifocal tumors were the only factor that was associated with worse RFS.
Conclusions: Despite the superiority in detrusor sampling rate, bipolar TURBT was not able to confer significant long-term oncological benefits over monopolar TURBT.

Funding: Nil finding received

MP25-04 Efficacy and safety of analgesic-eluting urethral catheter after urogynecologic surgery: A pilot prospective randomized controlled trial

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Presented By: Young Jun Uhm, MD

Introduction: Catheter-related bladder discomfort (CRBD) has been observed in many patients undergoing urethral catheterization. CRBD may be so severe that the patients require additional analgesics. This study evaluated the effects of analgesic-eluting urethral catheters on postoperative CRBD.

Methods: 30 patients undergoing urogynecologic surgery requiring urinary catheterization were prospectively randomized to one of three groups (control arm, 0.5% ropivacaine 1 mL/hr arm [Study 1 arm], and 0.5% ropivacaine 2 mL/hr arm [Study 2 arm]: n = 10 each). The incidence and severity of CRBD were assessed at 24 hours postoperatively as primary outcomes. The incidence of adverse events during Foley catheter use was also compared as a secondary outcome.

Results: The incidence of CRBD at 24 hours post-operatively in the control, study 1 and study 2 arms was 50.0%, 0%, and 0% respectively (p = 0.002). The severity of CRBD at 24 hours post-operatively showed that subjects in study 1 and study 2 arms had significantly less post-operative CRBD than those in the control arm (visual analog score [VAS]; mean VAS of control, study 1, and study 2 arm: 2.1 vs 1.6 vs 0.9, p = 0.045). Catheter-related urethral pain was considerably less severe in the study arms than in the control arm (VAS score: 6.2 vs. 1.5 vs. 1.4, p < 0.001). The incidence and severity of postoperative catheter-related adverse events were not significantly different between groups (p = 0.287). Peri-catheter leakage was more frequent in the study 2 arm compared to the other arms (p = 0.057).

Conclusions: An appropriate dose of ropivacaine eluting urethral catheter could not only alleviate catheter-related urethral pain but also reduce the incidence or severity of CRBD in patients undergoing urologic surgery without significant adverse events.

Funding: This study is supported by Songmin Medicare

MP25-05 Randomized controlled trial to evaluate the efficacy and safety of silicon-covered metallic mesh stent compared to conventional polymeric stent in malignant ureteral obstruction patients

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Presented By: Jae Hoon Chung

Introduction: Double-J stenting, as a treatment for ureteral obstruction, has the disadvantage of requiring regular replacement. Therefore, metal stents have been developed to maintain long-term patency while minimizing patient discomfort. Some studies on ureteral metal stents have been published; however, the results of these studies are unsatisfactory. Most studies were on uncovered metal stents, which resulted in urothelial hyperplasia and tissue growth between the mesh of the stent, resulting in a high rate of stent occlusion. To overcome this problem, covered metal stents have been developed. However, clinical research on covered metal stents is minimal, and there is still no comparison between the effectiveness of covered metal stents and double-J stents. Therefore, this randomized clinical trial was conducted in patients with malignant ureteral obstruction between covered metal and double-J stents.

Methods: This was a prospective, randomized controlled trial. Patients diagnosed with ureteral stricture caused by a malignant tumor with a life expectancy of > 3 months and those who had not previously undergone metal ureteral stent placement were selected. Seventy-six ureters (65 patients) were enrolled from January 2020 to November 2023.76 ureters were randomized 1:1 into experimental and control groups. The experimental group received a covered metal stent (n = 38) and the control group received double-J stenting (n = 38). One ureter in the control group did not undergo stenting, because patency was confirmed during retrograde ureterography (Figure 1). Analysis was conducted at 1, 3, and 6 months after the procedure, and the primary endpoint was the primary patency rate using computed tomography and diuretic renal scan during the study period. Secondary endpoints included technical success rate (successful placement, percentage of ureteral units in which ureteral strictures disappeared immediately after the procedure and contrast media stored in the kidneys were confirmed to be well discharged into the bladder), adverse reaction rate and degree of discomfort caused by the stent (comparison and changes in the USSQ questionnaire before stent insertion and 1, 3, and 6 months after stent insertion).

Results: Among the 75 ureters, 4 in the experimental group and 3 in the control group were discontinued due to adverse events. In the experimental group, more right-sided ureters were inserted. The incidence and severity of adverse events during stent insertion and 1, 3, and 6 months after stent insertion were not significantly different between groups (p = 0.057). Catheter-related leakage was more frequent in the study 2 arm compared to the other arms (p = 0.057).

Conclusions: An appropriate dose of ropivacaine eluting urethral catheter could not only alleviate catheter-related urethral pain but also reduce the incidence or severity of CRBD in patients undergoing urologic surgery without significant adverse events.

Funding: This study is supported by Songmin Medicare
enrolled than in the control group; otherwise, there were no statistical differences in baseline characteristics between the two groups (Tables 1 and 2). There was a significant difference in the patency survival rate between the two groups in the log-rank test ($p = 0.0024$). Moreover, the risk of occlusion within six months in the control group tended to be 5.621 times greater than that in the experimental group (95% CI, 1.588–19.899, $p = 0.0074$) (Figure 2). There were no significant differences in the rate and degree of discomfort between the two groups.

Conclusions: The covered metallic stent for patients with malignant ureteral obstruction showed a higher patency maintenance rate than the double-J stent, with no difference in satisfaction and safety.

Funding: This research was supported by a grant of the Korea Health Technology R&D Project through the Korea Health Industry Development Institute (KHIDI), funded by the Ministry of Health & Welfare, Republic of Korea (grant number: HI19C0595).


Andrei D. Cumpanas1, Victor Pham1, Jacob C. Tsai1, Amanda McCormac1, Paul Piedras1, Brandon Camp1, Jaime Altamirano-Villarroel1, Bruce M. Gao1, Zachary E. Tano1, Pengbo Jiang1, Roshan M. Patel1, Jaime Landman1, Ralph V. Clayman1

1Department of Urology, University of California Irvine, Orange, CA, USA

Presented By: Andrei D. Cumpanas, MD

Introduction: Medullary sponge kidney (MSK) patients are characterized by the formation of numerous irregular intra-renal concretions. Attempting to determine disease progression is difficult given the large number of stones and limitations of manual linear measurements on non-contrast computerized tomography (NCCT). In our stone clinic, a report of progression of stone burden is an indication for a repeat metabolic evaluation and appropriate adjustment of diet/medications. As such, we sought to test the accuracy of serial NCCT reports indicating a “stable/unchanged” stone burden among MSK patients against actual stone volume measurements using a 3D Slicer tool.

Methods: We enrolled 20 MSK patients with a “stable/unchanged” stone burden report between January 2018 - September 2023. Volumetric stone burden measurements of the 40 affected kidneys was completed by a physician reviewer with over 100 hours of experience with 3D Slicer; the reviewer’s facility with 3D Slicer was corroborated by comparing his assessment of stone volumes in a CT phantom to volume measurements of the same stones using gas pycnometry ($R^2 = 0.99$). The reviewer was blinded to the dates of the NCCT. Based on volume measurements, we determined the failure to detect a 15%, 25% or 50% increase in stone volume.

Results: The mean time between paired NCCTs was 15.23 ± 8.58. In 49% of MSK patients, the “stable/unchanged” stone burden report was incorrect. Indeed, among these patients, there was a median stone growth of 297 mm3 (IQR: 128.88 – 745.55 mm3). An increase in stone burden of 15%, 25%, or 50% was missed in 49%, 39%, and 20% of cases, respectively.

Conclusions: NCCT volumetric progression of nephrolithiasis at a mean time of 15 months among MSK patients, was misread as “stable/unchanged” stone disease in almost half of our patients.

Funding: None.
of the ureter, promoting biofilm formation and raising the risk of kidney infection. Additionally, VUR can increase renal pressure, which leads to pain and can damage the kidney. Conversely, reflux can diminish encrustation in the lumen and side holes of the distal part of the stent. This computational study explores how adding side holes to the ends of the stent affects urine flow through the stent and side holes during VUR.

Methods: An in-silico 2D stented ureter model was constructed using COMSOL Multiphysics (v6.1). The stent had eight equidistant side holes (D = 1mm) (SHs) throughout its length (L = 300mm), with and without two added SHs (ASHs) at each end (Figure 1A). To simulate VUR, a normal physiological urine velocity (u = 0.235 mm/s) was established first from the kidney to the bladder, and a sudden inverse pressure difference of 20Pa was imposed between the bladder and the kidney. Computations of flux through the side holes and stent lumen were performed.

Results: Adding side holes to a ureteral stent reduces luminal flow at both ends, as less fluid enters or exits through the end openings (Figure 1B). Conversely, the ASHs facilitate flux through themselves compared to stents without ASHs (Figures 1C and 1D). With ASHs, reflux occurs predominantly along the ureter, potentially lowering renal pelvis pressure.

Conclusions: The addition of side holes to the stent ends significantly alters fluid dynamics. It decreases flow through the stent’s end openings and enhances flow through the ASHs. This modification shifts reflux patterns along the ureter, potentially reducing the pressure in the renal pelvis and increasing the washout of encrustation.

Funding: The work is supported by the Swiss National Science Foundation (SNSF, grant number 205320_204965).

MP25-08 5 Years of the Optilume® Drug Coated Balloon for recurrent anterior urethral strictures: a summary of ROBUST I, II and III

Dean Elterman4, Sean Elliot1, Jessica DeLong2, Ramon Virasoro3, Dean Elterman4

1University of Minnesota, 2MultiCare Urology, 3Eastern Colorado Veterans Administration, 4University Health Network, University of Toronto

Presented By: Dean Elterman

Introduction: The Optilume Drug Coated Balloon has been studied in three clinical investigations (ROBUST I, II and III). ROBUST I, the first in-man trial conducted as a single arm, prospective multicenter study (4 sites, 53 subjects) followed by ROBUST II, early feasibility (5 sites, 16 subjects), and ROBUST III, the randomized pivotal trial (79 Optilume subjects). Optilume data combined from all three studies is presented here.

Methods: A total of 148 subjects were treated with Optilume in ROBUST I, II and III in Latin America, Canada, and the United States. Men with anterior urethral strictures ≤3cm and 1-4 prior endoscopic interventions were treated with Optilume. Follow-up was completed at 3 months, 6 months and annually thereafter. All studies were designed to follow subjects through 5 years with ROBUST I having completed 5-year follow-up, ROBUST II at 4-year follow-up and ROBUST III at 3-year follow-up, respectively. Outcomes included anatomic success at 6 months, International Prostate Symptom Score (IPSS), quality of life, freedom from repeat intervention, erectile function, flow rate (Qmax), and post-void residual volume. Subjects receiving secondary treatment were considered failures. The safety endpoint assessed serious urinary events. Patients who failed standard of care therapy in the control arm of ROBUST III were allowed to cross-over at 6 months and were followed.

Results: At the time of this abstract submission, IPSS improved in all patients treated with Optilume from 22.7 at baseline to 9.9 at 5 years. Peak urinary flow rate had a sustained improvement for patients treated with Optilume through follow-up (6.7 to 15.7). Freedom from repeat intervention is approximately 73.1% at 5-year follow-up.

Conclusions: Subjects with recurrent bulbar strictures treated with Optilume® paclitaxel-coated balloon exhibited significant improvement in symptomatic and functional outcomes through 5 years post treatment with demonstrably improved recurrence rates. There was no impact on erectile function and there were no serious adverse events.

Funding: Laborie.

MP25-09 Perioperative wearable home monitoring enhances same-day urologic surgery and reduces unplanned health care utilization

Ashwin S. Balakrishnan1, Wilson Sui1, Amy C. Lu1, Stacey A. Kenfield1, Anobel Y. Odisho1, Timothy Judson1, Tyler Chernin1, Andrew Bishara1, Thomas Chi1

1Presented By: Dean Elterman
MP25-10 Safety and Efficacy of Immediate Hyperthermic Intravesical Chemotherapy Following Transurethral Resection of Bladder Tumour (I-HIVEC)

Chris Ho-Ming Wong

1The Chinese University of Hong Kong

Presented By: Chris Ho-Ming Wong, MRCS

Introduction: Recurrence rate following endoscopic treatment of non-muscle invasive bladder cancer (NMIBC) is high. Intravesical instillation of chemotoxic agents like mitomycin C (MMC) is part of the standard treatment to reduce recurrence. Upfront administration of hyperthermic intravesical MMC (HIVEC) right after transurethral resection of bladder tumour (TURBT) was postulated to increase its efficacy, yet no human trial was available. We attempted to explore the safety profile of immediate intravesical MMC instillation following TURBT, via a conductive HIVEC system in this pilot study.

Methods: This was a single-arm prospective phase I study conducted between October 2018 and July 2021 in a tertiary academic centre in Hong Kong SAR, China. Consecutive Patients diagnosed of papillary bladder tumours planned for TURBT was recruited. Exclusion criteria included ECOG status >3, ASA >=4, severe cardiovascular disease significant COPD, history of bleeding disorder and use of anticoagulation.

After TURBT being concluded, cystogram was done to confirm no bladder perforation. 40mg MMC in 40mL saline was given intravesically via the Combat Bladder Recirculation system. Circulatory temperature was kept at 43.0 ± 2.0 degrees Celsius for 60 minutes. Patients were then evaluated for post operative complications and followed up with cystoscopy.

Results: 29 patients received HIVEC. There was minimal additional post-operative morbidity. 79.3% patients were discharged after 1 day of hospital stay. No patient required bladder irrigation. There were six grade I-II adverse events (20.7%) and one grade III event (3.4%). There was no recurrence within 3 months; and the 12 months recurrence rate was 4.5%.

Conclusions: It was demonstrated that immediate instillation of HIVEC MMC following TURBT was safe. Further studies are awaited to investigate its long-term efficacy compared to the standard cold MMC.

Funding: Nil finding received.

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Table 1: Post-operative and oncological outcomes

<table>
<thead>
<tr>
<th>Post-operative outcomes</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of stay 1 day</td>
<td>23</td>
<td>79.3%</td>
</tr>
<tr>
<td></td>
<td>&gt;1</td>
<td>6</td>
</tr>
<tr>
<td>Readmission within 30 days (%)</td>
<td>1</td>
<td>3.4%</td>
</tr>
<tr>
<td>Adverse events I-II</td>
<td>6</td>
<td>20.7%</td>
</tr>
<tr>
<td></td>
<td>III-V</td>
<td>1</td>
</tr>
<tr>
<td>Urinary tract infection (treated with antibiotics)</td>
<td>1</td>
<td>3.4%</td>
</tr>
<tr>
<td>Acute urinary retention (treated with insertion of indwelling urethral catheter)</td>
<td>1</td>
<td>3.4%</td>
</tr>
<tr>
<td>Perforation of bladder</td>
<td>1</td>
<td>3.4%</td>
</tr>
<tr>
<td>Need of bladder irrigation</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Haematuria</td>
<td>3</td>
<td>10.3%</td>
</tr>
<tr>
<td>Dysturia</td>
<td>1</td>
<td>3.4%</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>1</td>
<td>3.4%</td>
</tr>
<tr>
<td>Incontinence</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Urethral stricture</td>
<td>0</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Oncological outcomes</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intravesical BCG therapy given following procedure</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Disease recurrence within NMIBC cases</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Within 3 months</td>
<td>1</td>
<td>4.5%</td>
</tr>
<tr>
<td>Within 12 months</td>
<td>6</td>
<td>0.0%</td>
</tr>
<tr>
<td>Disease progression within NMIBC cases</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Within 6 months</td>
<td>1</td>
<td>4.5%</td>
</tr>
<tr>
<td>Within 12 months</td>
<td>6</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

BCG = Bacillus Calmette–Guérin
MP25-11 Usefulness and ease-of-use of UroGPT™: an artificial-intelligence chatbot for kidney stone formers

“Jo” Mulun Huang1, Kymora Scotland1
1David Geffen School of Medicine, University of California, Los Angeles

Presented By: “Jo” Mulun Huang

Introduction: Kidney stone formers face multifold challenges in navigating an overwhelming amount of information on both acute kidney stone management and long-term stone prevention, as well as maintaining motivation and developing self-management skills in engaging with their treatment and lifestyle best practices. Artificial-intelligence (AI) chatbots are uniquely equipped to support stone formers in this process, with abilities to offer curated, interactive, and empathetic responses to their inquiries and requests from a reliable knowledge base. UroGPT™ is an AI chatbot developed to answer kidney stone-related questions and help kidney stone formers manage their care. The aim of this study is to evaluate perceived usefulness and ease-of-use of UroGPT™ among kidney stone formers.

Methods: UroGPT™ was developed by augmenting and customizing the responses of Generative Pre-trained Transformer 4 (GPT-4) with a database of kidney stone-related resources verified by board-certified urologists and instructions for UroGPT™ to interact empathetically with users. UroGPT™ was launched on an online kidney stone former education and engagement platform, and is accessible for free. A pre-survey and a post-survey, adopted from a validated digital health usability scale, were designed to assess participants’ experiences with their sources of kidney stone-related information before using UroGPT™, and their experiences using UroGPT™, respectively. Participants were recruited from a large online kidney stone former community to voluntarily fill out the pre-survey, use UroGPT™, and fill out the post-survey.

Results: During a 1-month period after the launch of UroGPT™ in March 2024, 626 participants participated in the pre-survey and 260 (41.5%) participated in the post-survey. Among participants of the post-survey, 73.08% strongly agreed that using UroGPT™ makes it easier for them to get information they need about kidney stones, 70.38% strongly agreed that they are satisfied with UroGPT™ for improving their understanding of kidney stones, 82.69% strongly agreed that they think UroGPT™ would be helpful for people with kidney stones, and 83.85% strongly agreed that they find UroGPT™ easy to use. UroGPT™ achieved a total Net Promotor Score (NPS) of 75.77.

Conclusions: UroGPT™ is generally easy to use and useful for kidney stone formers, especially in helping them find and understanding information on kidney stones. A high NPS indicated the potential for UroGPT™ to be widely adopted in the kidney stone former community.

Funding: None.

Introduction: Interstitial cystitis (IC), also called bladder pain syndrome (BPS), is a urological disorder characterized by an unknown cause and lacks an effective treatment. Bladder fibrosis, resulting from the epithelial-mesenchymal transition (EMT) of bladder epithelial cells, is a significant cause of IC/BPS development. Transforming growth factor-β (TGF-β1), a key inducer of EMT, is associated with the pathogenesis of IC/BPS. Furthermore, Rho-associated kinase (ROCK) acts as a critical downstream factor of TGF-β1. However, the specific molecular mechanisms through which TGF-β1 contributes to interstitial cystitis remain unclear. The goal of this study was to elucidate the molecular mechanisms through which TGF-β1 regulates ROCK-mediated development of IC/BPS. And establish a novel theoretical framework and therapeutic strategies for treating IC/BPS.

Methods: An animal model of interstitial cystitis in rats was established using intravesical injections of cyclophosphamide, while a cellular model was created by treating human bladder epithelial cells (SV-HUC-1) with tumor necrosis factor (TNF-α). These models were subsequently treated with the TGF-β1 inhibitor SB505124 and the ROCK inhibitor Y27632. Then TGF-β1 recombinant protein was used to treat modeled SV-HUC-1 interfered with by ROCK inhibitor. Von Frey testing was used to assess abnormal suprapubic mechanical pain in rats. Urine samples were collected for ELISA to measure TGF-β1 levels. Bladder tissues underwent H&E and Masson staining, Western blotting, immunohistochemistry, and immunofluorescence to evaluate fibrosis-related markers. In human bladder epithelial cells treated previously, ELISA and Western blotting were conducted to assess changes in EMT-related proteins.

Results: Von Frey testing showed that rats in the modeling group developed significant suprapubic mechanical pain. ELISA assays indicated a marked increase in TGF-β1 levels in both urine and bladder tissues post-modeling. HE and Masson staining revealed enhanced fibrosis in bladder tissues. Immunofluorescence double-staining found that the bladder epithelial cell abnormally expressed mesenchymal cell-associated proteins, suggesting that EMT occurs in the bladder epithelial cells. Western blotting and immunohistochemistry showed a decrease in the epithelial marker protein E-cadherin and an increase in fibrosis-related proteins such as ROCK, Vimentin, fibroblast-specific protein-1, α-SMA, and fibronectin. The above proteins in rat bladder tissues treated with TGF-β1 inhibitor SB505124 and ROCK inhibitor Y27632, respectively, showed opposite changes, and the expression of the relevant proteins of EMT was similar to that of the control group after treatment of SV-HUC-1 interfered with by ROCK inhibitor with TGF-β1 recombinant protein.

Conclusions: Our study demonstrated that TGF-β1 promotes bladder fibrosis by regulating ROCK-mediated EMT in bladder epithelial cells, which contributes to the development of IC/BPS. This suggests that ROCK inhibitors could be a potential therapeutic strategy for IC/BPS.

Funding: Guangdong Medical Science and Technology Research Foundation.

MP25-12 TGF-β1 mediates epithelial-mesenchymal transition in interstitial cystitis through the regulation of ROCK

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1The First Affiliated Hospital of Guangzhou Medical University

Presented By: Xuezhi Long

Introduction: Interstitial cystitis (IC), also called bladder pain syndrome (BPS), is a urological disorder characterized by an unknown cause and lacks an effective treatment. Bladder fibrosis, resulting from the epithelial-mesenchymal transition (EMT) of bladder epithelial cells, is a significant cause of IC/BPS development. Transforming growth factor-β (TGF-β1), a key inducer of EMT, is associated with the pathogenesis of IC/BPS. Furthermore, Rho-associated kinase (ROCK) acts as a critical downstream factor of TGF-β1. However, the specific molecular mechanisms through which TGF-β1 contributes to interstitial cystitis remain unclear. The goal of this study was to elucidate the molecular mechanisms through which TGF-β1 regulates ROCK-mediated development of IC/BPS. And establish a novel theoretical framework and therapeutic strategies for treating IC/BPS.

Methods: An animal model of interstitial cystitis in rats was established using intravesical injections of cyclophosphamide, while a cellular model was created by treating human bladder epithelial cells (SV-HUC-1) with tumor necrosis factor (TNF-α). These models were subsequently treated with the TGF-β1 inhibitor SB505124 and the ROCK inhibitor Y27632. Then TGF-β1 recombinant protein was used to treat modeled SV-HUC-1 interfered with by ROCK inhibitor. Von Frey testing was used to assess abnormal suprapubic mechanical pain in rats. Urine samples were collected for ELISA to measure TGF-β1 levels. Bladder tissues underwent H&E and Masson staining, Western blotting, immunohistochemistry, and immunofluorescence to evaluate fibrosis-related markers. In human bladder epithelial cells treated previously, ELISA and Western blotting were conducted to assess changes in EMT-related proteins.

Results: Von Frey testing showed that rats in the modeling group developed significant suprapubic mechanical pain. ELISA assays indicated a marked increase in TGF-β1 levels in both urine and bladder tissues post-modeling. HE and Masson staining revealed enhanced fibrosis in bladder tissues. Immunofluorescence double-staining found that the bladder epithelial cell abnormally expressed mesenchymal cell-associated proteins, suggesting that EMT occurs in the bladder epithelial cells. Western blotting and immunohistochemistry showed a decrease in the epithelial marker protein E-cadherin and an increase in fibrosis-related proteins such as ROCK, Vimentin, fibroblast-specific protein-1, α-SMA, and fibronectin. The above proteins in rat bladder tissues treated with TGF-β1 inhibitor SB505124 and ROCK inhibitor Y27632, respectively, showed opposite changes, and the expression of the relevant proteins of EMT was similar to that of the control group after treatment of SV-HUC-1 interfered with by ROCK inhibitor with TGF-β1 recombinant protein.

Conclusions: Our study demonstrated that TGF-β1 promotes bladder fibrosis by regulating ROCK-mediated EMT in bladder epithelial cells, which contributes to the development of IC/BPS. This suggests that ROCK inhibitors could be a potential therapeutic strategy for IC/BPS.

Funding: Guangdong Medical Science and Technology Research Foundation.

MP25-13 GLP-1RA Medications and Kidney Stones

Areeba Sadiq1, Kidest Wolde1

1New York University Langone Medical Center Long Island

Presented By: Areeba Sadiq, MD

Introduction: There has been a surge in the use of glucagon-like-peptide 1 receptor agonists (GLP-1RAs) weight loss medications, notably semaglutide (Ozempic/Wegovy/Ryblesus), liraglutide...
(Victoza, Saxenda), and dulaglutide (Trulicity). These medications enhance glycemic control and induce weight loss. No studies have investigated the association between kidney stones formation and weight loss medication. We aim to retrospectively analyze patients who have been prescribed GLP-1RAs who have subsequently developed a new diagnosis of kidney stones in order to quantify the prevalence of disease in these patients and identify risk factors in their medical history and laboratory parameters related to kidney stones.

**Methods:** We retrospectively analyzed 300 patients who had been prescribed one or more GLP-1 RA (semaglutide, liraglutide, dulaglutide) for weight loss with medication start date from July 2018. Patients who subsequently developed a kidney stone were compared to patients who did not develop a kidney stone. Patient demographics, past medical history, medication use and duration, and laboratory studies were compared using students T test and chi squared analysis.

**Results:** Of the 300 patients that started a GLP-1RA, 171 (57%) were subsequently diagnosed with a new kidney stone. The mean time to developing a kidney stone while on GLPI-RA was 24 months. Patient who developed a kidney stone on GLP-1RA were taking the medication for a longer duration of time compared to patients who did not develop a kidney stone (29months v 18months, p = 0.009). On average, patients were observed for 41 months after starting GLP-1RA. There was no statistical difference in gender, race, age, insurance status, or total weight loss. Patients who developed kidney stones tended to have a higher starting BMI (34 vs 32, p = 0.01), however no difference in change of BMI after starting GLP-1RA (-1.1 vs -0.8, p = .26). Patients who developed kidney stones had higher rates of coronary artery disease (24.6% v 14.0%, p = 0.02), diabetes (81.9% v 68.2%, p = 0.006), hyperlipidemia (67.3% v 52.7%, p = 0.01), hypertension (76.0% v 58.1%, p = 0.001), higher Charlson comorbidity score (4 vs. 3, p = 0.001), serum creatinine (0.98 v 0.86, p = 0.002), BUN (18 vs 15, p = 0.01). Interestingly, 61/171 (36%) of patients on GLP-1RAs developed recurrent stone episodes (2 or more).

**Conclusions:** This study is one of the first retrospective reviews to attempt to understand characteristics of kidney stone formers on GLP-1RAs. Future prospective analysis is needed to understand whether a longer duration on GLP-1RAs along with certain known comorbid conditions increase risk for developing kidney stones.

**Funding:** None.

**MP25-14 The Impact of Preoperative Venous Thromboembolism on Patients Undergoing TURBT: Perioperative Outcomes and Health-care Costs from US Insurance Claims Data**

Anas S. Tresh2, Francesco Del Giudice1, Shufen Li3, Satvir Basran2, Federico Belladelli2, Ettore De Berardinis1, Vincenzo Asero1, Carlo M. Scornajenghi1, Dalila Carino1, Benjamin Challacombe3, Abhay Rane3, Rajesh Nair4, Benjamin I. Chung2

1Sapienza Rome University, 2Stanford University School of Medicine, 3University Vita-Salute San Raffaele, 4Guys and St Thomas’ NHS Foundation Trust

**Introduction:** To assess the impact of positive history of venous thromboembolism (VTE) diagnosis on perioperative outcomes including length of in-hospital stay, re-admission rates, 90-days postoperative complications and health-care costs in bladder cancer (BCa) patients undergoing trans-urethral resection of bladder tumor (TURBT) in the United States.

**Methods:** Patients aged 18 or older with a BCa diagnosis undergoing TURBT were identified in the Merative’s® Marketscan® Research de-identified databases between 2007 and 2021. Multivariable logistic regression adjusted by relevant perioperative confounders was used to investigate the association between diagnosis of VTE prior to TURBT and 90-day complication rates, new postoperative VTE events, re-hospitalization, and total hospital expenditures (2021 US dollars). Sensitivity analysis on VTE degree of severity (i.e., pulmonary embolism [PE] and/or deep venous thrombosis [DVT] or peripheral phlebitis) and its correlation across the degree of different TURBT setting (i.e., minor vs. non-minor) was additionally examined.

**Results:** In total, n = 139, 800 patients with 5.3% having preoperative VTE including DVT (n = 3112, 42.2%), PE (n = 2046, 27.74%) or superficial phlebitis (n = 2217, 30.06%). History of preoperative VTE predicted higher rates of any complication with respiratory being the most common (aOR 2.29, 95% CI:2.16-2.44). Additionally, preoperative VTE increased the risk of novel VTE events following TURBT (aOR 17.3, 95% CI:16.05-18.65), hospital length of stay (aOR 2.23, 95%CI: 1.9-2.62), readmissions (aOR 1.47, 95%CI:1.39-1.56) and hospital associated costs (aOR 1.17, 95%CI:1.12-1.11). The association was maintained regardless of the severity of the VTE history (i.e., PE, DVT, or thrombophlebitis) and importantly with no differences regardless of minor or non-minor TURBT procedures.

**Conclusions:** A history of VTE prior to undergoing trans-urethral procedures for BCa significantly increases the risk of any adverse perioperative outcomes, regardless of VTE severity, BCa tumor complexity, and/or surgical setting. These findings may help counseling on the risks of the intervention and hopefully improve our ability to mitigate such risks.

**Funding:** None.


Chengbo Liang1, Juan Varela1, Victoria Bird2

1Infection Prevention and Control Program, NHS England, 2Infectious Diseases Unit, University of Toronto
Table 1. Comparison of prevalence of men and women with Urinary Tract Infections with COVID-19 and without COVID-19.

<table>
<thead>
<tr>
<th>Age</th>
<th>Men with UTIs and without COVID-19</th>
<th>Women with UTIs and without COVID-19</th>
<th>Men with UTIs and COVID-19</th>
<th>Women with UTIs and COVID-19</th>
<th>χ2: P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9</td>
<td>0.82% (351)</td>
<td>2.09% (71)</td>
<td>0.0001</td>
<td>3.88% (314)</td>
<td>0.0001</td>
</tr>
<tr>
<td>10-17</td>
<td>0.65% (176)</td>
<td>1.10% (25)</td>
<td>0.0106</td>
<td>2.92% (854)</td>
<td>0.0001</td>
</tr>
<tr>
<td>18-34</td>
<td>1.00% (881)</td>
<td>1.71% (130)</td>
<td>0.0026</td>
<td>8.20% (7272)</td>
<td>0.0001</td>
</tr>
<tr>
<td>35-44</td>
<td>1.95% (543)</td>
<td>4.18% (123)</td>
<td>0.0012</td>
<td>7.86% (3015)</td>
<td>0.0001</td>
</tr>
<tr>
<td>45-54</td>
<td>2.41% (646)</td>
<td>5.54% (161)</td>
<td>0.0012</td>
<td>8.20% (7272)</td>
<td>0.0001</td>
</tr>
<tr>
<td>55-64</td>
<td>3.34% (1248)</td>
<td>9.59% (353)</td>
<td>0.0011</td>
<td>8.57% (2751)</td>
<td>0.0001</td>
</tr>
<tr>
<td>65-74</td>
<td>4.60% (2071)</td>
<td>12.77% (405)</td>
<td>0.0021</td>
<td>9.24% (4687)</td>
<td>0.0001</td>
</tr>
<tr>
<td>75-84</td>
<td>6.56% (2277)</td>
<td>15.65% (453)</td>
<td>0.0013</td>
<td>10.07% (8737)</td>
<td>0.0001</td>
</tr>
<tr>
<td>&gt;85</td>
<td>11.40% (1223)</td>
<td>21.22% (262)</td>
<td>0.0001</td>
<td>20.72% (2531)</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Presented By: Chengbo Liang, B.S., MD Candidate

**Introduction:** Emerging research suggests a strong link between COVID-19 and urinary disorders, albeit limited by the use of survey data. The purpose of this study is to evaluate the prevalence and possible causes of urinary tract infections (UTIs) within a large cohort of COVID-19 patients in North Florida.

**Methods:** From a cohort of patients between December 2019 and October 2023, we retrospectively collected data from the University of Florida Informatics for Integrating Biology and the Bedside (i2b2), a patient registry platform organized by demographic, procedural, and diagnosis codes used in institutional billing. We also included an additional yearly comparison of possible causes of UTIs during the COVID-19 pandemic by incorporating ICD-10 codes for nosocomial, catheter-associated urinary tract infections (CAUTIs) identified by i2b2 in 2020 and 2021.

**Results:** Out of 2.3 million patients, we identified 774, 347; males accounted for 46.2% and females 53.8%. Males with COVID-19 experienced UTIs at a significantly higher rate than males without recorded COVID-19 at all age groups, except between the 10-17 age range: 1.10% vs 0.55% (p < 0.001). Females with COVID-19 experienced UTIs at a significantly higher rate than males without recorded COVID-19 for all ages respectively (p < 0.001). In our second cohorts, 61% (2020) and 58.7% (2021) of patients experienced CAUTIs during or post-COVID-19 hospitalization compared to 38.5% (2020) and 37.3% (2021) without COVID-19.

**Conclusions:** The prevalence of UTIs in patients with COVID-19 was significantly higher than those without COVID-19. This study is the largest cohort study to our knowledge examining this relationship. We also found an elevated susceptibility to UTIs among patients catheterized during or post-COVID-19 hospitalization. This underscores the urgent need for enhanced surveillance and preventive measures to mitigate the heightened risk of UTIs in this vulnerable cohort and optimize clinical outcomes.

**Funding:** None.

**MP25-16 En-bloc resection of bladder tumors using thulium laser system - simple and safe?**

Roman Andreev, Konstantin Kolontarev, Dmitriy Pushkar

1Russian University of Medicine, 2City Clinical Hospital named after S. P. Botkin of the Moscow Department of Health

Presented By: Roman Andreev, MD

**Introduction:** Bladder cancer ranks seventh in the prevalence of oncopathology in men and seventeenth in women. Transurethral resection of bladder tumor (TURBT) has long been considered the gold standard for treating non-muscle-invasive bladder cancer (NMIBC), but this method has several drawbacks. The main disadvantage of TURBT is the development of obturator reflex, which complicates the adequate performance of surgical treatment, as well as the frequent absence of the muscle layer in the resected tissue, which complicates the choice of further treatment tactics for such patients. Performing en-bloc resection using laser energy helps to overcome these drawbacks. Various types of lasers for treating NMIBC are discussed in the literature, but the effectiveness and safety of thulium laser (Tm:YAG) in en-bloc resection of NMIBC have not yet been studied. The aim of the study is to improve the results of surgical treatment for patients with bladder tumors.

**Methods:** Patients underwent transurethral en-bloc resection of bladder tumor using a Tm:YAG laser. A 1000-micron fiber was used, and the set power was 35 watts. This combination of laser type, fiber size, and power allows for rapid resection of tumor tissue from the bladder wall with minimal blood loss, absence of obturator reflex, and presence of muscle layer in the resected tissue. The resected tissue was removed through the resectoscope sheath using an evacuator. Ninety patients were operated using this method. Parameters such as resection time, presence of muscle layer in the resected tissue, need for hemostatic agents, use of additional coagulation methods, recurrence, and implantation metastasis were evaluated.

**Results:** The study demonstrated high safety and efficacy of en-bloc resection of bladder tumor using a Tm:YAG laser. Out of 90 patients who underwent laser en-bloc resection of bladder tumor, repeat surgery in the form of transurethral resection was required in only 3 cases (3.43% of cases), which was attributed to the initial size of bladder tumors. Presence of muscle layer in the resected tissue was observed in 85 patients (95% of cases). It is worth noting that hemostatic agents and blood transfusions were not required in any of the cases. The application of this method allows for organ preservation and minimizes the development of complications.

**Conclusions:** The assessment of outcomes of transurethral en-bloc resection using a thulium laser has demonstrated its high effectiveness and safety. The application of this technique not only allows for organ preservation but also helps to avoid complications such as bladder wall perforation and bleeding. However, for a more accurate assessment of these results, further research involving a larger number of patients and a prospective study design is required.

**Funding:** None.

**MP25-17 Efficacy Of Intravesical Alkalinized Lidocaine Solution Prior to Cystoscopy: A Prospective, Single Centre, Randomized, Double-Blind, Parallel Group Trial**

Manoj Kumar Das1, Swarnendu Mandal1, Prasant Nayak1, Suman Sahoo1, Kirit Singh1

1All India Institute of medical Sciences, Bhubaneswar

Presented By: Manoj Kumar Das, Associate Professor

**Introduction:** Bladder distension, trigonal irritation and bladder neck irritation during cystoscopy contribute significantly to patient discomfort. The use of intravesical alkalinized lidocaine solution has been studied as a means of reducing pain and improving patient tolerance during the procedure. This study aimed to compare the efficacy and safety of intravesical
instillation of alkalinised lidocaine solution versus placebo prior to cystoscopy.

Methods: This is an interim analysis of a double-blind, parallel-arm, IEC-approved (IEC/AIIMS BBSR/PG Thesis/2022/58) randomized controlled trial done from September 2023 to February 2024 among patients scheduled for cystoscopy. Eligible patients were randomly assigned to two groups, both groups receiving intravesical instillation 20 minutes prior and lidocaine gel 5 minutes prior to cystoscopy: Group A, receiving alkalinised lidocaine instillation, and Group B, receiving saline instillation (placebo). The primary outcome was- Visual Analog Scale (VAS) scores for pain. Secondary outcomes were patient tolerance, use of analgesics for breakthrough pain, and incidence of adverse events- UTI, LUTS, hematuria, fever.

Results: The study included a total of 54 patients, with 27 in Group A and 27 in Group B. The mean age was 42±8 years, and both groups were well-matched in terms of demographic characteristics. Patients in Group A reported significantly lower VAS pain scores during cystoscopy [2 (2-3) vs 5 (4-6); p < 0.001] and at 1 hour [1 (1-2) vs 4 (4-5); p < 0.001], compared to Group B. Moreover, Group A demonstrated higher patient tolerance levels (p < 0.001) and significantly lower requirement of at least one dose of analgesics for breakthrough pain(p=0.03). The incidence of adverse events was minimal and comparable between the two groups.

Conclusions: Instillation of alkalinised lidocaine solution significantly reduces pain and improves patient tolerance and satisfaction during cystoscopy also it is safe and well-tolerated. Incorporating the instillation of alkalinised lidocaine solution into routine cystoscopy procedures may lead to enhanced patient comfort and overall procedural experience.

Funding: None.

MP25-18 Urinary Wall Thickness as a Predictor of Spontaneous Stone Passage: A Prospective Study

Andrei D. Cumpanas1, Brandon Camp1, Candices M. Tran1, Thao N. Vu1, Jacob C. Tso1, Kelvin Vo1, Jaime Altamirano-Villarreal1, Seyedamirvafa Saadat1, Bruce M. Gao1, Zachary E. Tano1, Pengbo Jiang1, Roshan M. Patel1, Jaime Landman1, Ralph V. Clayman1

1Department of Urology, University of California Irvine, Orange, CA, USA

Presented By: Andrei D. Cumpanas, MD

Introduction: A recently published meta-analysis noted that ureteral wall thickness (UWT) measured on a noncontrast computerized tomography (NCCT) scan, negatively impacted ureteral spontaneous stone passage (SSP); however the effect did not take into consideration the dimensions of the ureteral stones. Accordingly, in a properly powered prospective cohort study, we sought to assess whether UWT alone or in combination with stone size, truly impacted the predictability of spontaneous stone passage.

Methods: We enrolled 199 acute renal colic patients presenting to our emergency department between November 2020 and August 2023; each patient had a single ureteral stone visible on NCCT and opted for a trial of SSP. A reviewer, blinded to SSP outcomes, analyzed each NCCT scan for stone metrics (i.e., linear measurements, area, volume, density, surface characteristics) and ureteral metrics (i.e., UWT at the point of greatest soft tissue thickness adjacent to the stone, grade of hydronephrosis, ureteral location) and correlated these measurements with SSP. Simple binary logistic regression models were used to assess the correlation between previously established risk factors and SSP. A multivariate binary logistic regression model was built to validate the univariate relationships by adjusting for confounding variables.

Results: Larger (OR: 0.56, p < 0.001), bigger (OR: 0.99, p < 0.001), wider (OR: 0.51, p < 0.001), and denser (OR: 0.99, p < 0.001) stones, surrounded by a thicker ureteral wall (OR: 0.68, p = 0.006) had a lower likelihood of SSP. UWT was significant on a univariate analysis, but not on a multivariate analysis suggesting that the impact of UWT is likely confounded by stone width (p = 0.896) (Table 1). Indeed, only stone width retained significance upon multivariate analysis (OR: 0.47; 95% CI: 0.304 – 0.717, p < 0.001). Tamsulosin use, did not favor SSP (OR: 0.694, 95% CI: 0.333 -1.454, p = 0.288).

Conclusions: In a prospective cohort study, UWT while significant on univariate analysis, dropped from significance on multivariate analysis. SSP of a ureteral stone was best predicted by axial stone width.

Funding: None.

MP25-19 Instrument Failures for the AirSeal device: a Food and Drug Administration MAUDE Database Study

Mohammed Shahait5, Laith Baqain1, Sanad Haddad1, Ronny Baqain2, Kristine Myklak3, Ryan Dobbs4, David Lee3

1University of Jordan, 2University of Manchester, 3University of California at Irvine, 4Cook County Health & Hospitals System, 5Atte Clemenceau Medical Center

Presented By: Mohammed Shahait, MBBS

Introduction: This study aims to analyze instances of AirSeal device failures reported in the Food and Drug Administration’s MAUDE (Manufacturer and User Facility Device) database, focusing on identifying trends in failure types and locations.

Methods: A Retrospective analysis of the MAUDE database focusing on identifying trends in failure types and locations.

Table 1. The effect of clinical patient and stone factors on ureteral stone spontaneous passage rates as determined by univariate and multivariate binary logistic regression models.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Univariate OR</th>
<th>95% CI for the OR</th>
<th>p</th>
<th>Multivariate OR</th>
<th>95% CI for the OR</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1.001</td>
<td>0.991 - 1.014</td>
<td>0.062</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Biopsy</td>
<td>0.664</td>
<td>0.913 - 1.016</td>
<td>0.184</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hydronephrosis</td>
<td>1.797</td>
<td>0.646 - 4.748</td>
<td>0.390</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Stone Location</td>
<td>1.431</td>
<td>0.968 - 2.072</td>
<td>0.055</td>
<td>1.377</td>
<td>0.864 - 2.105</td>
<td>0.178</td>
</tr>
<tr>
<td>UWT</td>
<td>0.680</td>
<td>0.515 - 0.997</td>
<td>0.005</td>
<td>0.975</td>
<td>0.673 - 1.414</td>
<td>0.896</td>
</tr>
<tr>
<td>Stone Length</td>
<td>0.556</td>
<td>0.451 - 0.686</td>
<td>&lt;0.001</td>
<td>0.643</td>
<td>0.609 - 1.319</td>
<td>0.456</td>
</tr>
<tr>
<td>Stone Width</td>
<td>0.699</td>
<td>0.382 - 0.879</td>
<td>&lt;0.001</td>
<td>0.467</td>
<td>0.304 - 0.717</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Stone Area</td>
<td>0.931</td>
<td>0.902 - 0.962</td>
<td>0.001</td>
<td>1.045</td>
<td>0.980 - 1.113</td>
<td>0.179</td>
</tr>
<tr>
<td>Stone Volume</td>
<td>0.948</td>
<td>0.900 - 0.991</td>
<td>&lt;0.001</td>
<td>0.968</td>
<td>0.929 - 1.006</td>
<td>0.746</td>
</tr>
<tr>
<td>Stone Density</td>
<td>0.997</td>
<td>0.995 - 0.999</td>
<td>&lt;0.001</td>
<td>1.000</td>
<td>0.999 - 1.002</td>
<td>0.537</td>
</tr>
<tr>
<td>Medical Expunction Therapy</td>
<td>0.876</td>
<td>0.660 - 1.152</td>
<td>0.393</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tamsulosin</td>
<td>0.694</td>
<td>0.332 - 1.454</td>
<td>0.289</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
2014 to 2023. A total of 411 events resulting in injury, death, or other complications were identified, and data were extracted from these reports. Data extraction included report number, event date, event type, manufacturer, patient problem, and number of events.

**Results:** Over the 9-year period, 411 AirSeal device-related events were reported in MAUDE. The predominant failure mechanisms included device breakage 266 (64.7%), defective failures 16 (3.9%), flow failures 13 (3.2%), leak failures 8 (1.9%), patient-device interaction issues 5 (1.2%), and pressure-related failures 4 (1.0%). In the MAUDE database, the AirSeal device is manufactured by five companies. Among the total reports, incidents related to the valveless-trocar included 261 (63.5%), whereas the insufflator was implicated in 150 reports (36.5%). The most common event reported involving the patient was embolism listed in 35 cases. There is also an increase in the number of cases reported annually.

**Conclusions:** Further research is warranted to understand the root cause of device failure and implement targeted interventions aimed at mitigating any risks associated with the AirSeal device. Ultimately, collective efforts are directed towards upholding the highest standards of patient safety in this era of minimally invasive surgery.

**Funding:** None.

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**MP25-20 “Twenty-Year Follow-Up of Large-Volume Low-Grade Urothelial Carcinoma: Long-Term Outcomes in Patients Undergoing Ureteroscopic Versus Nephroureterectomy Therapy”**

Guy Verhovsky², Michael Grasso III¹, Wayne DeBeatham², Andrew Fishman²

¹NYU College, ²Northwell Health

Presented By: Guy Verhovsky, MD, MPH

**Introduction:** According to the EAU Guidelines, tumor size exceeding 2cm serves as a crucial factor in stratifying high-risk UTUC cases, prompting the recommendation of nephroureterectomy. However, in scenarios involving a solitary kidney, bilateral disease, or significant comorbidities, a conservative (kidney-sparing) surgical approach is considered. Notably, ureteroscopic treatment has demonstrated promising short-term oncologic outcomes in managing large, multifocal, low-grade upper tract urothelial carcinoma. Yet, to effectively stratify risk for this subset of patients, there remains a critical need for long-term data on progression and survival rates.

**Methods:** A previously published cohort analysis (Grasso, et al BJUI 2012) 5 was analyzed on a selective population of patients diagnosed with HVLGUC (upper tract tumor burden >3cm) between 2002 and 2011. This database was updated through 2023 to include long-term outcomes. Patients were stratified into two groups: Group 1 (Ureteroscopic Treatment), comprising those with a solitary kidney, bilateral disease, and patients who chose endoscopic therapy because of major comorbidities. Fifty-three percent (53%; 9/17) of the patients in Group 1 had a solitary kidney at the time of presentation. Group 2 (Nephroureterectomy) included those treated according to established guidelines. Demographic, clinical, and pathological data were collected, and a thorough longitudinal follow-up extending up to 20 years was conducted, including assessments of recurrence rates, disease progression, and overall survival.

**Results:** Among the 160 patients diagnosed with UTUC during this period, 45 (28.12%) were identified as HVLGUC, and 17 (37.5%) patients in Group 1, with 9 of them (53%) having a solitary kidney. The median follow-up period was 16.8 [14.8-20] years and 11.2 [8-15.4] years (p < 0.01). Group 1 underwent significantly more URS procedures, with 10.2 [6-12] compared to 6.1 [4-10] in Group 2 (p = 0.03). Estimated overall survival rates (years) in Groups 1 and 2 were not statistically significant different between the two groups (Table 2). Group 1 patients progressed to HG disease in 50% of the patients over 15 years (Table 2).

**Conclusions:** Our study presents the longest follow up of high-volume low-grade upper tract urothelial carcinoma patients who have been treated with endoscopic management. This elderly population has no statistically significant difference in overall survival at 10, 15, and 20 years of follow-up.

**Funding:** Ureteroscopic treatment with surveillance is not only technically feasible, but is a reasonable alternative to Nephroureterectomy in elderly, high risk, patient population over long term follow up. Patients should be counseled that there is ~50% chance of progression in grade during 15 year surveillance underscoring the need for continued ureteroscopic surveillance in this cohort. Patients must also be aware that progression in grade commonly reflects progression in stage and metastatic disease but may not impact the overall survival in this subset of elderly patients.
MP26-01 Ultrasound-activated cilia for eradication of encrustation: a proof-of-concept in a ureteral Stent-on-Chip

Pedro Amado1, Cornel Dillinger1, Dominik Obrist2, Fiona Burkhard3, Daniel Ahmed4, Francesco Clavica2,
1Acoustic Robotics Systems Lab, Institute of Robotics and Intelligent Systems, Department of Mechanical and Process Engineering, ETH Zurich, Zurich, Switzerland., 2ARTORG Center for Biomedical Engineering Research, University of Bern, Bern, Switzerland, 3Department of Urology, Inselspital, Bern University Hospital, University of Bern, Bern, Switzerland

Presented By: Pedro Amado

Introduction: Ureteral stents, when placed to restore urine flow in obstructed ureters, are susceptible to surface encrustation. Consequently, frequent stent replacement is needed, typically every six weeks – three months, in patients with long-term stenting. Despite recent advances, a ureteral stent with good long-term performance is an unmet clinical need. To address these challenges, we propose a ureteral stent coated with bioinspired ultrasound-activated cilia (UAC), which can be activated transcatheterously, generating steady streaming along the stent wall upon acoustic activation. In this study, we investigated the hypothesis that the generated streaming effectively cleans an encrusted stent wall. For this proof-of-concept study, we developed a ureteral Stent-on-Chip (SoC) model coated with UAC.

Methods: Previous studies indicate that dead cavities (i.e. regions of fluid stagnation) in a ureteral stent often develop encrustation; therefore, a ciliated Polydimethylsiloxane SoC was developed in this location (Figures 1A and 1B). Within the same SoC, an area with no-UAC was used as a control. The SoC microchannel and a piezoelectric transducer disc were attached to a common glass slide for experimental investigations. The SoC was perfused with super-saturated artificial urine for 30 minutes and left to dry, forming encrustation (dark areas in Figure 1C (left)). The transducer was driven by an electronic function generator and amplifier to control the voltage amplitude ($f = 99.6$ KHz, $52.5$ Vpp).

Results: Our microfluidic results showed that the SoC area with UAC was characterized by significant steady streaming, upon acoustic activation, resulting in high wall-shear-stress. The shear stress was able to eradicate encrustations from the SoC wall, by breaking down crystal clusters. In contrast, the wall without UAC, showed no visible changes in urine velocity and crystal clusters (Figure 1C) upon acoustic activation.

Conclusions: Future research will focus on developing full-scale ureteral stent prototypes featuring UAC. If successful, this approach has the potential to substantially prolong the indwelling time of a ureteral stent.

Funding: The work is supported by the Swiss National Science Foundation (SNSF, grant number 205320_204965).

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MP26-02 Can Machine Learning (ML) correctly predict outcomes of flexible ureteroscopy laser lithotripsy (fURSL) for kidney stone disease? Results from a large Endourology University Centre

Carlotta Nedbal5, Victoria Jahrreiss1, V Sairam2, Nitesh Naik3, Gite Shilpa2, Bhaskar Kumar Somani4,
1Comprehensive Cancer Center, Medical University of Vienna, 2Symbiosis institute of technology, 3Manipal Academy of Higher Education, 4University Hospitals Southampton, NHS Trust, 5Università Politecnica delle Marche, Ancona, ITA

Presented By: Carlotta Nedbal, MD

Introduction: The integration of machine learning (ML) in healthcare has garnered significant attention, offering unprecedented opportunities to enhance patient care and outcomes. In this study, ML algorithms were trained for the automated prediction of post-ureteroscopy outcomes based on pre-operative characteristics.

Methods: Data from a single experienced surgeon database on patients treated with ureteroscopy for urolithiasis in 7 years in Southampton General Hospital were retrieved. Fifteen ML classification algorithms were trained to investigate correlations between postoperative outcomes and preoperative characteristics: primary stone free status (SFS, accepting only presence of stone fragments at endoscopic visualisation and at 3-month imaging follow-up) and postoperative complications. An ensemble model was constructed from the best performing algorithms for the task of complications and SFS. The simultaneous prediction of post-operative characteristics was then investigated through a multi-task neural network, and explainable AI was used to demonstrated the predictive power of the best models.

Results: An ensemble ML model achieved an accuracy of 93% and a precision of 87% for prediction of SFS. Complications were mainly linked with a preoperative positive urine culture (1.44) and sex (0.46). At logistic regression, SFS was impacted by the total stone burden (0.34), the presence of preoperative stent (0.106), the preoperative urine culture (0.14), and the stone location (0.09): single or lower number of calyces, ureteric stones. Explainable AI results are used to emphasize the key features and their contributions to the output.
**Conclusions:** Technological advancements are helping urologists overcome the classic limits of ureteroscopy, namely stone size and risk of complications. ML represent an excellent aid for the correct prediction of outcomes through training on pre-existing datasets. Our ML model achieved an accuracy of over 90% for stone free status and complication, thus setting the basis for the development of an accessible predictive model for endourologists and patients.

**Funding:** Nil.

**MP26-03** Intrarenal Pressure and Flow Rate Profile using LithoVue™ Elite: Impact of Different Irrigation Systems and Working Channel Instruments

Lucas Vergamini¹, Wilson Molina¹, Willian Ito², Aaron Tverye¹, Quinlyn Walcott¹, Holly Du¹, Mihaela Sardiu¹, Crystal Valadon¹, Dan Hanna¹, Donald Neff¹, David Duchene¹, Bristol Whiles¹

¹University of Kansas Medical Center, 2University of Texas Southwestern, 3University of Kansas School of Medicine

Presented By: Lucas Vergamini, MD

**Introduction:** Several models were previously developed to describe intrarenal pressure (IRP) and flow rate (FR) in endourology. This is the first study to report real-time IRP and FR while performing flexible ureteroscopy in porcine kidney model utilizing LithoVue™ Elite (Boston Scientific®) with different irrigation systems, including automated pumps.

**Methods:** Using an ex-vivo model of porcine kidney, IRPs were measured with LithoVue Elite. Ureteroscopic settings were tested with all permutations of irrigation methods (IM), working channel occupant (WCO), and ureteral access sheaths (UAS). IMs included: Single Action Pumping System (SAPS®, Boston Scientific), Thermedx FluidSmart™ (Stryker®), and ENDOMAT™ (Karl Storz®). Pumps were tested at 50, 100, and 150mmHg. WCOs included a 1.9Fr zero-tip basket, 200µm, and 365µm laser fibers. UASs utilized 11/13Fr and 12/14Fr 36cm.

**Results:** 84 different US were tested, totaling 252 experiments. ENDOMAT had higher IRP but the same FR as Thermex at the same US for 50 and 100mmHg (p < 0.01). With SAPS, IRP was similar regardless of WCO, but FR was decreased with the increased diameter of WCO (p = 0.81 and p < 0.01, respectively). There was significantly higher IRP when using 11/13Fr UAS than 12/14Fr (p < 0.01).

**Conclusions:** This experiment is the first to describe the relationship between IRP, FR, and WCO with different IMs including automatic pumps measured by LVE in a porcine model. IRP was higher with SAPS than automated pumps. ENDOMAT showed higher IRP than Thermex when under 150mmHg. IRP and FR increase with higher pump pressure and decrease with larger diameter WCO. Likewise, a larger UAS significantly reduced IRP.

**Funding:** This study was supported by Boston Scientific in the form of an investigator sponsored research grant (ISRURO #0103).

**MP26-04** Assessment of Post-Operative Outcomes Following Robotic-Assisted Mini-Percutaneous Nephrolithotomy with the MONARCH™ Platform, Urology

Margaret Knoedler¹, Emily Serrell¹, Nancy Sehgel², Brandon Cowen², Camilla Gomes², Paul Morris², Stephen Nakada¹

¹University of Wisconsin, 2Scientific Affairs, Johnson & Johnson MedTech

Presented By: Margaret Knoedler, MD

**Introduction:** Percutaneous nephrolithotomy (PCNL) is the standard of care for treating large renal stones, but only some urologists only a minority of urologists in the USA independently obtain percutaneous nephrostomy access. The MONARCH™ Platform, Urology (Johnson & Johnson MedTech, Redwood City, CA) is a novel FDA-cleared flexible robotic platform that aims to simplify percutaneous access and efficiently treat renal stones. In this study, we evaluate clinical and procedural outcomes following robotic-assisted mini-PCNL with the use of this technology.
Methods: This is a subset analysis of patients enrolled to undergo robotic-assisted mini-PCNL at our institution. Data are collected under an IRB-approved protocol for a prospective, multicenter, single-arm observational study of up to 60 eligible patients. Using this robotic platform, the urologist gains percutaneous access using electromagnetic guidance with the patient in a modified supine position. A handheld controller is used to manipulate a flexible antegrade suction catheter that can aspire stone fragments, a retrograde ureteroscope and laser fiber, and also a fluid management system. Procedure completion, safety, and stone clearance are assessed through 90 days post-procedure.

Results: To date, 3 patients have enrolled, and all have successfully undergone robotic-assisted mini-PCNL at our institution. These patients (2 males, 1 female), with a median (range) age of 59 (50-67) years and body mass index 30.2 (25.3-30.6) kg/m2, had a linear pre-operative stone burden of 23 (15-53) mm. In each of these cases, percutaneous access was gained successfully directly into the papilla (lower pole, once; interpole, twice). Duration of the total procedure has decreased with each subsequent case (262 to 160 minutes). To date, no adverse events related to the robotic platform have been observed. One patient experienced 3 minor complications (Clavien-Dindo Grade I, bladder spasm, constipation; Grade II, fungal rash). Assessment by CT at post-operative day 1 showed 2 of the 3 patients were stone free (≤ 4 mm residual fragments).

Conclusions: All procedures in this interim analysis have been successfully completed with no observed safety concerns. This is especially noteworthy at our institution, where participating urologists do not routinely gain percutaneous access independently, nor do we perform mini-PNCL with the patient in a modified supine position. Our initial experience suggests a future where MONARCH™ robot-assisted mini-PCNL may provide urologists with expanded capabilities for safe and effective treatment of select patients with nephrolithiasis.

Funding: This study is sponsored by Auris Health, Inc., part of Johnson & Johnson MedTech.

MP26-05  The Measurement of Intrarenal Pressure in Ureteroscopy with Laser Lithotripsy: A Prospective Trial

Tyler Sheetz1, Jamie Finegan1, Jonathan Katz1, Jonathan Berger1, Seth Bechis1, Manoj Monga1, Roger Sur1
1UC San Diego

Presented By: Tyler Sheetz

Introduction: Intrarenal pressure (IRP) during Ureteroscopy with laser lithotripsy (URS) is believed to be a major adjustable risk factor for post-operative sepsis. Pyelovenous backflow is known to occur at greater than 30mmHg. Despite this, measuring intrarenal pressures during kidney stone surgery is not currently standard of care. The objective of our study was to show that continuous IRP measurement with a pressure guidewire during URS is safe and feasible alongside a Boston Scientific Navigator HD ureteral access sheath (UAS).

Methods: We performed an analysis of a single institutional prospective data collection of patients with renal and/or ureteral stones who underwent flexible URS. We collected demographic data as well as intraoperative data including UAS size and IRP (continuously measured using the COMET II Pressure Guidewire, Boston Scientific Marlborough, MA). The Comet II pressure guidewire was introduced to the renal pelvis fluoroscopically through a dual lumen catheter, and correct placement was confirmed visually by a ureteroscope. We calculated the mean, median, and maximum IRP for each patient. Data was collected at baseline (just before access sheath placement) and continued until the removal of the access sheath at the end of treatment. Finally, we tracked intraoperative complications and infectious complications.

Results: A total of 55 patients were analyzed with a median age of 58 and 42% male. We found an average case time of 64.4 minutes, and an average stone size of 13.2 millimeters. UAS sizes included 11/13Fr (n=31), 12/14Fr (n=19), 13/15Fr (n=3), and no access sheath (n=2). We found that our baseline IRP had a median of 23mmHg across all patients. The average increase in pressure after inserting the access sheath was lower for the 12/14 sheath compared to the 11/13 sheath [Graph 1]. At baseline the average pressure of the 12/14 sheath was lower than the 11/13 sheath; and at treatment the average pressure of the 12/14 sheath was lower than the 11/13 sheath. There were no adverse events or intraoperative complications; however, two patients were excluded due to the Comet II pressure guidewire breaking in their urinary system (single fragment removed with a basket). There were three episodes of postoperative urinary tract infections (5.7%).

Conclusions: We found that intraoperative monitoring of IRP is safe and feasible, with the Comet II guidewire providing a mechanism to monitor the impact of alterations on IRP. Larger access sheaths conferred lower IRP. Our goal moving forward is to continue to collect data to describe any potential relationships between IRP and patient outcomes.

Funding: Boston Scientific

MP26-06  Treating obstructing ureteroliths in pet cats with burst wave lithotripsy

Michael Borofsky1, Eva Farrow1, Adam Hunt1, Jody Lulich1, Melissa Torre1, Adam Maxwell2, Kaizer Contreras2, Ga Won Kim2, Michael Bailey2
1University of Minnesota, 2University of Washington

Presented By: Michael Borofsky, MD

Introduction: Obstructing ureteroliths are common in cats, and mortality is 6-18% with surgery. Burst wave lithotripsy (BWL)
is a non-invasive, ultrasound-guided, handheld focused ultrasound technology that successfully and safely disintegrates ureteroliths in humans. We report results of the first treatments in cats.

**Methods:** Cats with obstructing ureteroliths were enrolled. The BWL therapy transducer was coupled with a micro-convex imaging transducer. Cats were anesthetized, and stones were treated for up to 60 minutes at 0.8-1 MHz. Biochemical and abdominal imaging data were evaluated at immediate (1-3 day) and short term (2-4 week) follow up. A second treatment was performed if indicated. Adverse events were recorded and characterized by severity and relationship to BWL. Technical success was defined as resolution of obstruction, urolith passage, or apparent fragmentation.

**Results:** Five cats were treated with BWL, including one with bilateral obstructions and four with unilateral obstructions. In total, 6 ureters and 11 ureteroliths were treated. Four cats required a second treatment due to persistent (3) or worsening (1) obstruction; the latter was classified as a major adverse event possibly related to BWL. Technical success was achieved for 8 of 11 ureteroliths. Four had a reduction in serum creatinine (median decrease of 29%, range 6-46%). One cat had persistent obstruction and no clinical improvement.

**Conclusions:** BWL shows promise as a minimally invasive therapy for ureteroliths in cats. In cats with multiple ureteroliths, multiple treatments or a longer treatment might be necessary. Additional data are needed to determine how BWL outcomes compare to current treatment modalities.

**Funding:** Work supported by NIDDK P01 DK043881, NIDDK K01 DK104854, ORIP K01 OD019912, UL1TR000494, UW Comotion F2022-8524-Bailey, the EveryCat Health Foundation, and the Focused Ultrasound Foundation.

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**MP26-07 Ultrasound-Facilitated Clearance of Small Residual Kidney Stone Fragments Reduces Relapse Incidence**

Mathew Sorensen1, Barbrina Dunmire1, Jeff Thiel1, Bryan Cunitz1, Barbara Burke1, Branda Levchak2, Christina Popchoi3, Arturo Holmes1, John Kucewicz1, M. Kennedy Hall1, Manjiri Dighe1, Jessica Dai3, Fionnuala Cormack1, Ziyue Liu4, Michael Bailey1, Michael Porter3, Jonathan Harper1

1University of Washington, 2VA Puget Sound Healthcare System, 3EvergreenHealth Urology Care, 4Indiana University, 5University of Washington and VA Puget Sound Healthcare System

**Introduction:** The benefit of removing residual kidney stone fragments is unknown. U. S. urology guidelines recommend imaging after surgery to detect fragments and offering second endoscopic surgery to remove fragments as patients with fragments frequently require additional clinical care. Human feasibility studies and randomized clinical trials have shown fragments may be removed by nonsurgical, noninvasive technologies.

**Methods:** In a multi-center, randomized, controlled trial, 82 adults with residual kidney stone fragments (individually ≤ 5 mm) were randomized to receive a noninvasive, nonsurgical investigatory procedure to attempt to facilitate fragment clearance or no procedure and observation of their fragments (ClinicalTrials.gov number, NCT02028559). The primary outcome was relapse as measured by future symptomatic, unscheduled medical visits, surgeries, or stone growth measured on annual CT exams.

**Results:** Demographic and clinical characteristics were similar. After a median follow-up of 2.4 years, the risk of relapse was 68% lower in the treatment group than the control group (odds ratio 0.32, 95% confidence interval 0.14-0.73) with absolute difference in relapse of 20% vs. 48% (treatment versus control). The treatment group had 51% longer time-to-relapse than controls (restricted mean of 1505 ± 99 days for treatment vs 997 ± 122 days for control, p < 0.005, log-rank test) (Fig. 1). Excluding 3 participants not asked about passage, asymptomatic passage of fragments within the first 3 weeks was over 12-fold higher in the treatment group (n = 24, 63%) compared to control (n = 2, 5%). After 3 weeks, asymptomatic passage was similar between groups (n = 10 treatment vs 12 control subjects). Adverse events were mild and transient and were reported in 25 (63%) of 40 patients in the treatment group and 17 (40%) of 42 patients in the control group.

**Conclusions:** Clearance of residual fragments by ultrasonic propulsion added minimal risk and reduced relapse.

**Funding:** Funding provided by the NIH NIDDK P01 DK043881 and the Puget Sound Veterans Affairs.

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**MP26-08 Safety and Feasibility of the Steerable Ureteroscopic Renal Evacuation Device, A Single Center Experience**

Luke Griffiths1, Andrea Moyer1, Gregory Mullen2, Tareq Aro1, Leah Beland1, Matthew D. Mikula1, Jared Winoker1, David Hoenig1, Zeph Okeke1, Arun Rai1

1Smith Institute for Urology, Northwell Health, 2RWJ Barnabas Health

**Presented By:** Luke Griffiths, MD

**Introduction:** Nephrolithiasis has increased globally, with reported prevalence rates of up to 13%. The goal of surgical treatment of kidney stones is to maximize stone free rate (SFR) while minimizing morbidity. While ureteroscopy with laser lithotripsy (URS) offers an effective minimally invasive approach, it is inferior to percutaneous approaches with regards to stone free rates, especially in patients with larger stone burden. Residual fragments can lead to significant stone events such as stone growth, pain, infection, or additional procedures. The CVAC™ calculus vacuum aspiration catheter is a steerable ureteroscopic renal evacuation (SURE) device used to remove small stone fragments after laser lithotripsy designed to improve stone free outcomes. We sought to report our experience using a novel SURE device in the management of nephrolithiasis and describe its efficacy and safety.
Methods: A retrospective chart review of all patients at our institution undergoing SURE from January 2022 through August 2023 was performed. Use of SURE was at the discretion of the surgeon. For all patients, URS with laser lithotripsy was performed until stone fragments were less than 2mm in size. Stone volumes were calculated for spheroids using formulas based on maximum stone diameter. Postoperative imaging was performed with either CT or ultrasound (US) with the majority performed at two months. SFR was defined as <2mm of residual stone.

Results: SURE was performed 104 times on a total of 91 patients. Average stone burden was 931 mm³. Postoperative imaging was performed in 62 patients. 51.6% of these patients achieved SFR of <2mm of residual stone on US or CT. 11.3% had residual stone of 2-4mm and 37.1% >4mm (Table 1).

Only two intraoperative complications of minor ureteral tears managed with stents were reported. Overall, there were eight postoperative complications. Five patients (5.5%) developed postoperative sepsis, two patients developed urinary tract infections, and one patient had stent migration. Eleven patients (12%) had second stage procedures to treat their stone disease.

Conclusions: SURE is a safe and effective treatment option for patients undergoing URS with high SFR comparable to URS alone. SURE was also associated with low morbidity, even when treating large volume stone disease.

Funding: None.

**Table 1: Record of Urine Bleeding After BWL**

<table>
<thead>
<tr>
<th>Pigs</th>
<th>Pre-BWL Sample #1 (ery/µL)</th>
<th>Pre-BWL Sample #2 (ery/µL)</th>
<th>After BWL Sample #1 (ery/µL)</th>
<th>After BWL Sample #2 (ery/µL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treated Kidney</td>
<td>1</td>
<td>0</td>
<td>60</td>
<td>300</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>3</td>
<td>25</td>
<td>25</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
<td>50</td>
<td>50</td>
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<tr>
<td>5</td>
<td>25</td>
<td>25</td>
<td>50</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>0</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Average</td>
<td>6.3</td>
<td>16.7</td>
<td>150</td>
<td>141.7</td>
</tr>
</tbody>
</table>

| Control Kidney | 1 | 0 | 0 | 250 | 250 |
| 2 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 25 | 25 |
| 5 | 0 | 0 | 25 | 25 |
| 6 | 0 | 0 | 0 | 25 |
| Average | 0 | 0 | 45.8 | 50 |

None of the pigs showed gross hematuria. **All specimens were confirmed to be therapeutically anticoagulated at the time of collection.**

Currently, ureteroscopy is the only recommended surgical treatment. We evaluated if Burst Wave Lithotripsy (BWL) could be used in these cases by treating pigs with BWL while undergoing anti-coagulation therapy.

Methods: Six pigs (31-37 kg) were given 200 units/kg porcine heparin and then the right kidney of each animal was treated with a dose of BWL (18,000 ultrasound pulses at 10 Hz, 20 cycles/pulse, peak negative pressure of -7 MPa) known to fracture kidney stones. The contralateral kidney served as a control. Therapeutic anticoagulation was confirmed by evaluating activated partial thromboplastin time (aPTT).

Results: aPTT was significantly elevated (>100 s) throughout the entire treatment period (p = <0.001) indicating therapeutic anti-coagulation. Gross hematuria was not observed in any of the pigs. Microhematuria was checked by urine test strips. In the treated kidney, blood cells in the urine averaged 12.5 ery/µL (pre-BWL) to 145.8 ery/µL (immediately post-BWL) indicating very little injury resulting from BWL treatment.

Conclusions: A typical clinical dose of BWL causes minimal hemorrhagic injury to the kidney even during therapeutic anti-coagulation therapy. This result suggests that BWL should be safe to use in stone patients undergoing anti-coagulation/anti-platelet therapy.

Funding: Supported by NIH grant P01 DK043881.

**Table 1: Demographics and Outcome**

<table>
<thead>
<tr>
<th>Total Patients</th>
<th>91</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total SURE uses</td>
<td>104</td>
</tr>
<tr>
<td>Age (yr)</td>
<td>62 ± 15</td>
</tr>
<tr>
<td>Female (%)</td>
<td>37 (40.7%)</td>
</tr>
<tr>
<td>Male (%)</td>
<td>54 (59.3%)</td>
</tr>
<tr>
<td>BMDI</td>
<td>29.1 ± 8.9</td>
</tr>
<tr>
<td>Pro-Stented (%)</td>
<td>51 (50.2%)</td>
</tr>
<tr>
<td>Total Stone Burden (mm³)</td>
<td>931 ± 1014</td>
</tr>
<tr>
<td>Stone Density (Hu)</td>
<td>932 ± 431</td>
</tr>
<tr>
<td>Photocopy Time (seconds)</td>
<td>136 ± 102</td>
</tr>
<tr>
<td>Post-op imaging (days)</td>
<td>62 (59.6%)</td>
</tr>
</tbody>
</table>

| Ultrasonic n | 42 |
| Stone fragments, n | 24 (57.1%) |
| 2-4mm | 14 (33.3%) |
| >4mm | 12 (29%) |

| CT, n | 20 |
| Stone fragments, n | 8 (40%) |
| 0 to 2 mm | 0 |
| 2.1 to 4 mm | 1 (5%) |
| >4mm | 11 (55%) |

BMDI: Body mass index, CT = Computed Tomography, SURE = sterile ureteroscopic renal resection, Hu = Hounsfield units.

All continuous variables are presented in mean ± standard deviation.

**Table 1: Record of Urine Bleeding After BWL**

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| Control Kidney | 1 | 0 | 0 | 250 | 250 |
| 2 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 25 | 25 |
| 5 | 0 | 0 | 25 | 25 |
| 6 | 0 | 0 | 0 | 25 |
| Average | 0 | 0 | 45.8 | 50 |

**MP26-09 Minimal Injury Observed in Kidneys Treated with Burst Wave Lithotripsy in Therapeutically Anticoagulated Pigs**

Max Shelton1, Bret Connors1, Marcelino Rivera1, James Lingeman1, Michael Bailey2, James Williams1

1Indiana University School of Medicine, 2University of Washington

Presented By: Max Shelton, MD

**Introduction:** Current America Urological Association guidelines recommend that acute obstructive kidney stone patients requiring continuous anti-coagulation/anti-platelet therapy should not be treated by Shock Wave Lithotripsy (SWL) or Percutaneous Nephrolithotomy (PCNL) due to the risk of catastrophic renal hemorrhage possible with those techniques.

Currently, ureteroscopy is the only recommended surgical treatment. We evaluated if Burst Wave Lithotripsy (BWL) could be used in these cases by treating pigs with BWL while undergoing anti-coagulation therapy.

Methods: Six pigs (31-37 kg) were given 200 units/kg porcine heparin and then the right kidney of each animal was treated with a dose of BWL (18,000 ultrasound pulses at 10 Hz, 20 cycles/pulse, peak negative pressure of -7 MPa) known to fracture kidney stones. The contralateral kidney served as a control. Therapeutic anticoagulation was confirmed by evaluating activated partial thromboplastin time (aPTT).

Results: aPTT was significantly elevated (>100 s) throughout the entire treatment period (p = <0.001) indicating therapeutic anti-coagulation. Gross hematuria was not observed in any of the pigs. Microhematuria was checked by urine test strips. In the treated kidney, blood cells in the urine averaged 12.5 ery/µL (pre-BWL) to 145.8 ery/µL (immediately post-BWL) indicating very little injury resulting from BWL treatment.

Conclusions: A typical clinical dose of BWL causes minimal hemorrhagic injury to the kidney even during therapeutic anti-coagulation therapy. This result suggests that BWL should be safe to use in stone patients undergoing anti-coagulation/anti-platelet therapy.

Funding: Supported by NIH grant P01 DK043881.

**MP26-10 Novel Performance Testing Models for Disposable Ureteroscopes**

T. Max Shelton2, John Lingeman1, David Dalton2, Marcelino Rivera2

1Lingeman and Smith Medical, LLC, 2Indiana University School of Medicine

Presented By: T. Max Shelton, MD

**Introduction:** Technological advances have allowed for the emergence of disposable endoscopes. The field of available disposable ureteroscopes continues to grow, however, notable performance limitations exist. This study explores novel ways to assess performance differences between 3 of the leading disposable ureteroscopes. We present 4 novel testing parameters: deflection angle stability, dwell responsiveness, shaft mobility, and scope torsion response.
Methods: Three disposable ureteroscopes were tested on customized, adaptable, motorized performance platforms to assess 4 novel testing metrics: deflection angle stability, dwell responsiveness, shaft mobility, and scope torsion response.

Results: Differences were noted between all 3 scopes in each testing parameter (Table 1). The Dornier Axis demonstrated the most favorable deflection angle stability and dwell responsiveness rates. The Boston Scientific LithovueTM demonstrated the most favorable shaft mobility and whole and isolated scope torsion response ratings.

Conclusions: This study demonstrates 4 novel testing parameters for disposable ureteroscopes to assess responsiveness and handling. This study identifies notable performance differences between 3 of the current industry standard ureteroscopes.

Funding: None.

MP26-11 Size matters: an in vitro evaluation of flexible suction-assisted ureteral access sheaths

Aideen Madden5, Olivier Traxer1, Jordi Lueza2, Răzvan-Ionut Popenescu3, Johan Cabrera1, Alberto Quara1, Mariela Corralles1, Carlos Fernandez4

1Tenon Hospital, 2University Hospital Arnau de Vilanova, 3“Carol Davila” University of Medicine and Pharmacy, 4University Hospital Complex, 5Tenon Hospital, Paris, France

Presented By: Aideen Madden, FRCS

Introduction: Laser lithotripsy has evolved towards improved dusting with increasing focus on aspiration. One development is the suction-assisted ureteric access sheath (SUAS). Studies have highlighted the importance of ratio-of-endoscope to sheath diameter (RESD) on a) helping to maintain a safe intrarenal pressure and b) the size of stone fragments that may be evacuated. The aim of this study was to evaluate 2 techniques with 4 different RESDs, across 5 stone fragment size brackets.

Methods: Two single-use flexible ureteroscopes, a 6.3Fr Hugemed TM prototype and a 9.5Fr Lithovue TM were trialled within 5 different ureteric access sheaths from Clear PetraTM, YiGaoTM and InnovexTM. Two different techniques were trialled within each combination, continuous in-sheath suction (CISS) versus a pull-out technique. Each was trialled on 1g of phantom stone fragments: 63-125 μm, 125-250 μm, 250-500 μm, 500 μm-1 mm and 1-2 mm, within 10 ml of 0.9% normal saline. A cut off of 5 minutes was set. Stone clearance rates and number of blockages were measured.

Results: The highest stone clearance rates were achieved with RESDs 0.53 and 0.63 using CISS (see Fig. 1). For dust < 250 μm CISS was more efficient with RESDs 0.53 and 0.63, ranging between 2 and 6.6 g/min. However, it was only possible to aspirate > 500 μm with the CISS method at RESD 0.53, which was the only RESD to allow aspiration up to 2 mm with this method. Adopting a pull-out technique can raise the threshold of what can be aspirated by one or two size range brackets, and can become more efficient than CISS when applied to the limit of what can be aspirated in-sheath.

Conclusions: It is important to consider tailoring aspiration technique in light of a) the size of stone particles and b) the REDS. Where possible, within an in vitro setting, the CISS method can offer more efficient aspiration. When this becomes less efficient, or in the presence of larger fragments, a pull-out technique may become more useful.

Funding: No specific funding was received for this project.

MP26-12 Deployment of a fully automated digital system for implant (ureteric stent) tracking and reminding (TRACER)

Jeremy Tay1, Lui Shiong Lee1, Hanjie Lee1, Michelle Siok1, Shuqin Ye1, Pei Fong Khoo1, Moarie Tan1, Sing Yi Chia2, Gui Feng Tang1

1Sengkang General Hospital, 2Singhealth

Presented By: Jeremy Tay, MBBS, MRCS

Introduction: Tracing of transiently-deployed implants like ureteric stents is crucial for timely removal. Forgotten stents are associated with patient safety, increased healthcare costs, and potential medicolegal disputes. Existing measures to tracking implants rely heavily on manual inputs—which is time-consuming, omission error prone and lack automated scheduled reminders. We present a novel system (TRACER) that is an automated towards tracking and reminding of timely removal of the implants.
Methods: TRACER aims to ‘track and remind’, using an algorithm with the following sequential workflow: (1) a two-pronged trigger by doctor and nurses to activate the tracking, (2) downstream validation of tracked data, (3) automated clinician reminder for timely removal and (4) cessation of reminders after stent removal. To evaluate the performance of TRACER, the records of all patients undergoing stent placement between January 2022 to December 2023 were reviewed and compared between manual stent log entries and TRACER dataset.

Results: A total of 1056 ureteric stents were placed through 927 procedures in the stated period from 2022-2023. Amongst the 927 procedures, there were 15 cases (1%) of stents that were initially not accounted for by the tracking system. Upon subsequent application of the downstream cross-checking algorithm, the cases were identified and attributed to 1 case of omission by nursing staff, 14 by doctors. There were also 2 patients that were alerted to who had defaulted their stent removal appointment and were subsequently recalled. Apart from 2 patients who had their care transferred to other hospitals, all stents were removed on time. When compared to the manual system, the use of TRACER shortened the tracking process time from 4 minutes to 30 seconds per stent, corresponding to a 87% reduction in man-hours required. The TRACER system seamlessly integrates and employs existing workflow and databases without the need for capital funding and major infrastructural upgrades. It functions with minimal operation costs, thereby ensuring its long-term sustainability.

Conclusions: TRACER is an automated, reliable and efficient program that has helped to ensure timely removal of ureteric stents without additional costs. This system can be scaled and expanded to include other medical implantable devices.

Funding: NA.

MP26-13 In Vitro Comparison of Dusting and Fragmenting Treatment Efficiencies and Temperature Dynamics between Pulsed Holmium:YAG with Moses, Thulium Fiber Laser, and Pulsed Thulium:YAG

Ali Antar1, Emily Serrell1, Margaret Knoedler1, Kristina Penniston1, Dan Gralnek1, Stephen Nakada1
1University of Wisconsin

Presented By: Ali Antar, MD

Introduction: Holmium:YAG, Thulium Fiber, and Thulium:YAG lasers are used for laser lithotripsy. In order to compare the efficiency of lithotripsy between the technologies, 3 laser systems were tested in an in vitro model: holmium:YAG Lumenis Pulse P120H (Boston Scientific, Marlborough, MA), thulium fiber Soltive SuperPulsed Laser (Olympus Surgical, Westborough, MA), and thulium:YAG Dornier Thulio Laser (Dornier Medtech America, Kennesaw, GA)

Methods: An in vitro model was placed in a water bath at a controlled temperature of 37°C. A K-Type Thermocouple was used to monitor the internal temperature. 51 composition begstones were treated for 7 minutes using 200um laser fibers. 0.9% normal saline irrigation was controlled at 150mmhg using a Thermidx system (Stryker, Kalamazoo, MI). 3 trials were performed on dusting and fragmenting settings. Fragments were flushed and filtered through a 200um mesh and dried. The percentage change in weight and average temperature throughout treatment were calculated.

Results: On dusting settings, the TFL created the largest change in stone weight (42.1%) after 7 minutes of treatment, followed by the Hol:YAG (39.9%) and the Thu:YAG (36.9%). On fragmenting settings, the Thu:YAG created the largest difference in stone weight (29.7%) after 7 minutes of treatment, followed by the Hol:YAG (27.5%) and the TFL (24.5%). The differences were statistically significant between the Thu:YAG and the TFL (p = 0.03), and there were no significant differences with Hol:YAG. (Figure 1). On average, the Hol:YAG sustained a statistically significant lower temperature throughout treatment on both dusting and fragmenting settings (p < 0.01).

Conclusions: In a controlled in vitro setting, there were significant differences in change in stone weight between the pulsed Thu:YAG, and TFL laser systems between both dusting and fragmenting settings. The Hol:YAG showed no significant difference in stone weight change compared to both the TFL and the Thu:YAG. Future studies can further elucidate the clinical significance of these findings.

Funding: No sources of funding

MP26-14 In-Vitro Comparison of a Novel Recessed Tip versus Standard Tip Fiber for Stone Dusting with Thulium Fiber Laser

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1Cleveland Clinic, 2Cleveland Clinci

Presented By: Sri Sivalingam, MD

Introduction: Intraoperative laser fiber degradation and carbonization (charring) of stone impair lithotripsy efficiency. Recessed tip (RT) laser fibers prevent fiber degradation by shielding the fiber from the target. While commonly utilized in holmium lithotripsy, there is limited data for its application in thulium fiber laser (TFL). We developed a bench-top model to compare the efficiency of stone dusting and fiber tip degradation in TFL with a standard bare tip (BT) versus a novel RT fiber.

Methods: Canine stones (100% calcium oxalate monohydrate) of similar size were placed in a saline-filled ureteroscopy model, with a clear tube set at a 40° angle, and 1 mm mesh filter placed at the end. Continuous flow irrigation was maintained in the system. A single Urologist used a flexible ureteroscope and
**Table 1. Comparison between recessed tip and bare tip fibers for stone dusting.**

<table>
<thead>
<tr>
<th></th>
<th>RT (n = 5)</th>
<th>BT (n = 5)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Stone Weight (g)</td>
<td>0.31 (0.11)</td>
<td>0.29 (0.09)</td>
<td>.74</td>
</tr>
<tr>
<td>Residual Stone Weight (%)</td>
<td>8.9 (0.02)</td>
<td>0</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Laser Time (min)</td>
<td>5.19 (3.31)</td>
<td>2.70 (1.30)</td>
<td>.310</td>
</tr>
<tr>
<td>Laser Energy (kJ)</td>
<td>6.14 (6.67)</td>
<td>4.86 (2.34)</td>
<td>.841</td>
</tr>
<tr>
<td>Absolute Burn-Back (mm)</td>
<td>0.20 (0.11)</td>
<td>0.70 (0.74)</td>
<td>.095</td>
</tr>
<tr>
<td>Relative Burn-Back (%)</td>
<td>1.6 (0.89)</td>
<td>17.5 (18.4)</td>
<td>.01</td>
</tr>
<tr>
<td>Dusting Efficiency (mg/s)</td>
<td>0.12 (0.08)</td>
<td>0.19 (0.06)</td>
<td>.16</td>
</tr>
</tbody>
</table>

RT = recessed tip, BT = bare tip

Reported values are mean (SD)

FiberDust TFL system with 200 µm BT (n = 5) and RT fibers (n = 5) to completely dust each stone at settings of 0.3 J / 100 Hz and short pulse width. Residual fragments >1 mm were removed and weighed, and stone dusting efficiency was calculated. Each fiber tip was measured prior to and after five minutes of activation using a microscope to assess fiber tip burn-back.

**Results:** RT fibers experienced almost no burn-back at the end of each 5-minute trial (0.20±0.11 mm), with significantly less relative burn-back compared to BT fibers (1.6±0.89% vs. 17.5±18.4% p = .01). However, only 3 of 5 RT fibers were able to completely dust the stone, and all trials left detectable stone fragments, with a mean residual stone weight of 8.9±0.02%. In comparison, the stone was fully dusted in all 5 BT fiber trials (mean 2.70±1.30 min), with no detectable residual fragments. There was a trend towards improved dusting efficiency using BT fibers compared to RT fibers (0.19±0.06 vs. 0.12±0.09 mg/s, p = .16).

**Conclusions:** RT fibers almost completely eliminate tip degradation in vitro, at the expense of higher residual stone volume and possibly less dusting efficiency. Further studies may help determine an ideal degree of laser tip recession to balance burn-back with lithotripsy efficiency.

**Funding:** Fortec Medical provided laser fibers and materials for this study.

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**MP26-16 Pulse width setting on dusting using Holmium:YAG laser during retrograde intrarenal surgery for renal stone**

Yun Jin Kim¹, Woong Bin Kim¹, Sang Wook Lee¹, Kwang Woo Lee¹, Jun Mo Kim¹, Young Ho Kim¹

¹Soonchunhyang University Bucheon Hospital

Presented By: Yun Jin Kim, MD

**Introduction:** Holmium:YAG laser has been widely used as an essential lithotripsy device for the treatment of urinary stones worldwide. Despite being utilized in clinical practice for over 20 years, the adjustable parameters available to surgeons have been limited to pulse energy and pulse frequency. However, a recent introduction of a new device with the capability to adjust pulse duration has expanded the options available for clinical use. The Long pulser mode has been reported to reduce stone retropulsion and fiber tip degradation in experimental conditions using artificial stones, and some favorable clinical trials have recently been reported. In this study, the authors aimed to report the differences in surgical outcomes based on pulse width adjustment and the effects of long pulse width during Holmium laser lithotripsy.

**Methods:** This study included 56 patients who were diagnosed with renal stones ranging from 0.8 to 1.2 cm in size and underwent retrograde intrarenal surgery (RIRS) performed by a single surgeon from October 2022 to June 2023. Cases with bilateral stones, multiple stones, and staghorn stones and stones located in the
lower pole were excluded. All surgeries were performed using an 11/13Fr. Ureteral access sheath, and the Holmium:YAG laser lithotripter 120W was utilized for dusting (0.3-0.4J and 20-30Hz). The patients were divided into two groups based on the pulse width setting during lithotripsy. Total operation time, laser operating time, pedaling frequency, retropulsion Likert scale, success rate, and complications were compared between the two groups.

Results: Among 56 patients, dusting with short pulse width was performed in 26 patients and dusting with long pulse width in 30. The total laser operating time was significantly shorter in the long pulse setting group than in the short pulse group (37.0–9.4 vs 43.1–9.3, p < 0.05). The number of pedal presses was also significantly lower in the group using the long pulse setting (163.4–19.6 vs 194.2–30.8, p < 0.05). The retropulsion grade recorded subjectively appeared to be less in the long pulse mode (1.4–0.6 vs 2.3–0.7, p < 0.05). Despite these results, there was no difference in total operation time and success rate, and there were no intraoperative complications in both groups.

Conclusions: The long pulse mode of the Holmium:YAG laser appears to have an effect on reducing the laser time, pedaling frequency and subjective retropulsion during stone dusting. However, there were no significant differences observed between the two settings in terms of success rate, total procedure time, and complications. Future studies with larger sample sizes should be conducted.

Funding: No funding

MP26-17 In vitro evaluation of a novel continuous flow suction ureteroscope
Khurshid Ghani1, Jeffrey Plott1
1University of Michigan

Presented By: Khurshid Ghani, MS MBChB

Introduction: During ureteroscopic dusting laser lithotripsy stone debris can impair vision. To combat this, surgeons increase the irrigation rate. However this may lead to complications related to intra-renal pressure. Ureteral access sheaths are used to mitigate this, but they too are associated with complications and importantly, requires stenting. To address this unmet need, we developed a prototype ureteroscope that can provide continuous flow and suction, and assessed its performance in the bench on stone fragmentation.

Methods: A digital ureteroscope (8.5F) was prototyped with a 3.6F channel for suction and smaller outflow channels at the tip for irrigation, provided through a peristaltic pump. A 200 fiber was used with a high-power holmium laser. We assessed stone fragmentation in two in vitro setups: (1) Stones in a test tube with a standardized amount of laser energy, (B) Human kidney stones in a silicone kidney model with standardized settings and varying pulse modes: short pulse (SP) and MOSES. Experiments were conducted with and without continuous suction. Primary outcome was amount of stone ablated as a % of starting mass.

Results: In the test-tube, use of continuous suction resulted in a significant increase in vaporized stone compared to no suction (89.7% vs 57.9%, p < 0.01), and a lower % of 0.5-1mm residual fragments (RFs). In the kidney model, use of suction in 5/6 trials resulted in no RFs >1 mm at the end. Without suction, RFs varied from 4.1-10.6% of starting mass of stones (Figure).

Conclusions: The use of continuous suction in a ureteroscope reduces the amount and size of RFs. A major benefit of this type of device is that it has a higher chance of successful ureteral passage and less trauma, and offers the potential of stentless procedures. The next step is to validate this scope in a porcine model with a refined prototype.

Funding: Coulter Translational Program

MP26-18 The effect of Flexible and Navigable (FANS) Ureteral Suction Access Sheaths pressure control vent on suction
Richard Menzies-Wilson3, Jessica Williams1, Candace Rhodes1, Alycia Abbott1, Thijs Ruiken2, Ben Turney3
1Boston Scientific Corporation, 2Leiden University, 3University of Oxford

Presented By: Richard Menzies-Wilson, MBBS BSc

Introduction: Flexible and Navigable Suction (FANS) Ureteral Access Sheaths are a new technology offering intra-operative suction during ureteroscopy through an access sheath. Still new to the market, the characteristics of the FANS have yet to be defined. A key feature of FANS is the inbuilt pressure control vent. Whilst the wall suction pressure is usually constant, the vent allows the operating surgeon to adjust the exerted suction
pressure by covering variable lengths of the vent. We aimed to quantify and model the effect of changing vent length on suction flow rates in two commercially available FANS.

**Methods:** We performed benchtop experiments with an empty 9.5Fr LithoVueTM ureteroscope within 11/13Fr 40cm ‘ClearPetra’ and ‘Elephant II’ access sheaths. These were placed in the middle pole of a ‘closed’ silicone kidney model with 200mmHg irrigation pressure of 0.9% NaCl and 200mmHg suction. Tape was used to sequentially ‘close’ the length of the open ClearPetra & Elephant II vents at 1mm intervals. This was repeated with the Elephant II’s in-built slider rather than tape. Aspirated flow rate was calculated over 60 seconds. A mathematical model for intrarenal pressures during ureteroscopy (Williams, Rouse, Turney, Waters, & Moulton, 2020) was extended to include suction and the presence of the pressure control vent. The model was validated through comparison to the experimental data.

**Results:** The surface area of the open vent has an exponential effect on reducing suction pressure and, for both the ClearPetra and Elephant II sheaths, with ≥2mm of vent length open there is negligible suction exerted (Fig 1). In the Elephant II, flow rates are 1.2x higher with the vent closed with tape vs. slider due to air leakage under the slider.

**Conclusions:** With the vent uncovered, negligible suction is exerted on the renal tract. Current designs give the surgeon ≤2mm vent length to control suction pressure.

**Funding:** Bench test results may not necessarily be indicative of clinical performance. The testing was performed by or on behalf of BSC. Data on file. This study was funded by a research grant from Boston Scientific Corporation (BSC).

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**MP26-19 Intraoperative Computed Tomography for detection of residual stones in endourology procedures: Systematic review and meta-analysis**

Fabio Vicentini², Henrique Lepine¹, Eduardo Mazzucchi², Wilson Molina¹, Giovanni Marchini², Fabio Torricelli², Carlos Batagello², Alexandre Danilovic², William Nahas²

¹University of Sao Paulo Medical School, ²Department of Urology, Endourology Section, Clinics Hospital, University of Sao Paulo, ³Department of Urology, Endourology Section, University of Kansas

Presented By: Fabio Vicentini, MD, PhD

**Introduction:** Success rates in endourological procedures, notably percutaneous nephrolithotomy (PCNL) and ureteroscopy (URS), have demonstrated suboptimal outcomes, leading to more reinterventions and radiation exposure. Recently, use of intraoperative computed tomography (ICT) scans has been considered as a promising solution for this issue. This considered, we conducted a comprehensive systematic review and meta-analysis encompassing all available studies that evaluate the impact of the use of intraoperative CT scans during PCNL on surgical outcomes compared to conventional fluoroscopic-guided procedures.

**Methods:** This systematic review was conducted in accordance with PRISMA guidelines. Multiple databases were systematically searched for direct comparison of ICT and non-ICT PCNL procedures up to December of 2023. The primary endpoint of interest was success rate, and the secondary endpoints were complications and reintervention rates, while radiation exposure was also evaluated. Data extraction and quality assessment were performed following Cochrane recommendations. Data was presented as Odds ratio with 95%CI across trials, and random-effects model selected for pooling of data.

**Results:** Comprehensive search yielded 533 studies, resulting in selection of 3 cohorts including 327 patients (103 ICT vs 224 in non-ICT). Primary outcome was significantly higher in the experimental group versus the control group (84.5%, vs 41.4% respectively, 307 patients; 95% CI[3.61, 12.72]; p < 0.00001; I²=0). Reintervention rates also decreased from 32.6% in the control to 12.6% in the ICT group (OR 0.34; 95%CI[0.12, 0.94]; p = 0.04; I²= 48%), whereas complication rates did not exhibit significant differences. Radiation exposure was also significantly reduced in two of the included studies.

**Conclusions:** This meta-analysis highlights a favorable outcome with intraoperative CT scans use in PCNL procedures, showing a considerable increase on SFR when compared to standard fluoroscopy and nephroscopy. Despite limited studies, our synthesis underscores the potential of ICT scans to significantly reduce residual stones and its consequences for endourology patients, as reinterventions and follow up ionizing radiation studies.

**Funding:** None.

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**MP26-20 Intrarenal pressure assessment using LithoVue Elite® in porcine kidney models**

Naoto Tanaka², Carlo Jose Elises¹, Takaaki Inoue², Satoshi Kitamura², Masaichiro Fujita², Fukashi Yamamichi²

¹Philippine General Hospital, ²Hara Genitourinary Hospital

Presented By: Naoto Tanaka, MD

**Introduction:** Rise in intrarenal pressure(IRP) during retrograde intrarenal surgery(RIRS) is a topic of concern among urologists but assessing IRP is difficult with only few published studies. This study aimed to evaluate the IRP using LithoVue Elite® (Boston Scientific, US) which can offer real-time intrarenal pressure monitoring during ureteroscopy procedures in porcine kidney models.

**Methods:** Two porcine kidney models were used with different ureteral access sheaths(UASs), 10/12Fr and 11/13Fr. IRP was measured at ureteropelvic junction (UPJ), upper, middle, and lower pole by continuous irrigation system (UROMAT E. A. S. I. ®; Karl Storz, Germany) in 20mmHg increments with which the pressure range is adjusted from 0 - 200mmHg. In addition, IRP was also measured with flushing 10ml saline in 3 seconds at 100mmHg irrigation pressure. The Mann–Whitney test for intergroup comparison and the Kruskal–Wallis test for intragroup comparison were used.

**Results:** IRP with 11/13 Fr UAS is below 30 mmHg at all irrigation pressures, whereas IRP with 10/12Fr UAS is below 30 mmHg at irrigation pressures of 0, 20, 40 mmHg at UPJ and of 0, 20, 40, 60 mmHg at any calyx (Fig1). When saline was flushed, IRP with 11/13 Fr UAS remained below 30 mmHg at almost all irrigation pressures. On the other hand, IRP with 10/12 Fr UAS is over 100 mmHg with manual pumping. IRP
with 10/12Fr UAS was significantly higher than IRP with 11/13 Fr UAS at any irrigation pressure setting for each endoscope tip position. For intragroup comparison, IRP at UPJ was higher than any other calyx in both porcine kidney models. **Conclusions:** Our results suggest that UAS with 11/13 Fr is more suitable for LithoVue Elite®, and that IRP is affected by UAS size, irrigation setting, and position of the endoscope tip. In addition, 10/12 Fr UAS is acceptable only when appropriate irrigation setting is performed. **Funding:** When using LithoVue Elite®, a 11/13Fr UAS is more suitable; however, a 10/12 Fr UAS is acceptable only when appropriate irrigation setting is performed.

**MP26-21 WITHDRAWN**

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**MODERATED POSTER SESSION 27: STONES: INSTRUMENTATION AND NEW TECHNOLOGY 3**

**MP27-01 Assessing Appropriateness of Language Model Recommendations of Kidney Stone Management**

Vatsala Mundra¹, Brett Johnson¹, Naim Maalouf¹

¹UT Southwestern

Presented By: Vatsala Mundra, BS

**Introduction:** Urinary stone disease (USD) is a growing problem. Prevalence has grown in the U. S. to 8.8% in 2010, and it costs Americans $2 billion annually. The Internet has long been a resource for patients to understand their medical conditions. With the advent of artificial intelligence language models (LMs), such as ChatGPT, patients do not have to search through articles and websites for information. They can ask LMs plain English questions; however, it is difficult to verify the accuracy of these responses. The results are often given as direct answers rather than a gamut of resources in which information can be verified or contradicted. We sought to assess the accuracy and relevance of answers supplied by LMs to common questions related to kidney stone surgery. **Methods:** Based on clinical experience regarding common patient questions (and applicable literature three layman worded surgical stone questions were written (low, moderate, and high complexity). Each question was input into ChatGPT 4.0, Bard AI and the responses were recorded. These same questions were given to internationally recognized human content experts in the surgical management of USD. The human and LM answers were anonymized and sent to urology providers at a single site for evaluation via Likert scale. Each output was assessed for “answer appropriateness” and “factual accuracy.”
Conclusions: In our survey assessing LM outputs of common between the human and the LM for high complexity answers. while the accuracy was similar. There was no statistical difference atate answer for the intermediate complexity questions (p
compared to the human expert. The LMs provided a more appropri-
tional studies are needed to determine where LMs could safely be implemented in patient education.

Funding: No funding to disclose.

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**MP27-02 Evaluation of a prototype small suction pump for use during ureteroscopy**

Thijs Ruiken¹, Richard Menzies¹, Ben Turney²

¹Nuffield Department of Surgical Sciences, ²Nuffield department of Surgical Sciences, Oxford University

Presented By: Thijs Ruiken, BSc

**Introduction:** New ureteroscopes with direct in scope suction (DISS) require a means of suction to aspirate fluid from the kidney during ureteroscopy. Not all facilities have access to wall suction or large or expensive surgical suction machines. PUSEN have developed a prototype suction pump to use with DISS scopes. This study aimed to bench-test a prototype pump (not commercially available) by comparing flow rates generated by the prototype pump against known suction pressures.

**Methods:** A PUSEN PU3033AH 7.5F ureteroscope was subjected to suction experiments using a vacuum pump at 100, 200, 300, 400, 500 and 600mmHg suction. The tip of the ureteroscope was placed in a beaker of 0.9% NaCl at atmospheric pressure and suction was applied to the suction button. The irrigation inflow port was closed throughout. The working channel was either empty or had a laser fibre within it. Suctioned fluid flow-rate was calculated as an average over 1 minute. The same procedure was performed with the prototype pump rather than the vacuum suction to assess its equivalent suction. Each experiment was performed four times.

**Results:** Suction flow rate increased non-linearly with increasing suction. At 200mmHg and 400mmHg suction, flow rates were 50, 1ml/min (SD = 1.9) and 80, 1ml/min (SD = 2.0) without a laser fibre and 30, 9 ml/min (SD = 0.9) and 52, 8 ml/min (SD = 3.4) with a laser fibre (Fig. 1). The prototype pump creates a flow of 82, 5 ml/min (SD = 2.4) with empty working channel and 60, 7 ml/min (SD = 5.8) with a laser fibre. By inference, the prototype pump generates a suction pressure of 418 mmHg without a laser fibre and 490 mmHg with a laser fibre.

**Conclusions:** Twenty-seven urology providers answered the survey questions. For the low complexity question, both LMs answers were rated to be more appropriate (p = 0.004) and more accurate (p < 0.001) compared to the human expert. The LMs provided a more appropriate answer for the intermediate complexity questions (p < 0.001) while the accuracy was similar. There was no statistical difference between the human and the LM for high complexity answers.

**Funding:** No funding to disclose.

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**MP27-03 Renal stone disintegration with the new dornier thulio laser: initial results from “Saint John” Hospital, Bucharest**

Dragos-Razvan Multescu², Catalin-Andrei Bulai¹, Petrisor-Aurelian Geavlete¹, Dragos-Razvan Multescu², Cosmin-Victor Ene¹, Adrian Militaru², Cristian Moldoveanu², Ana-Maria Punga², Bogdan-Florin Geavlete¹

¹“Carol Davila” University of Medicine and Pharmacy, ²Saint John” Emergency Clinical Hospital, Bucharest, Romania

Presented By: Dragos-Razvan Multescu, MD, PhD

**Introduction:** Holmium:YAG lasers and thulium fiber lasers are commonly used for kidney stone lithotripsy, yet limitations persist. The pulsed-thulium:YAG (Tm:YAG) laser has emerged as a potential solution to these limitations. This study aimed to evaluate the efficacy, safety, and laser settings of the Tm:YAG laser during retrograde intrarenal surgery (RIRS).

**Methods:** A prospective study was conducted on 40 initial patients diagnosed with ureteral and renal stones, undergoing RIRS with the Thulio system (pulsed-Tm:YAG, Dornier®, Germany) at a single center. Laser fibers of 272 µm were employed, with meticulous documentation of stone characteristics, laser parameters, and postoperative outcomes including stone-free rate (SFR).

**Results:** The study cohort comprised 40 patients with a median age of 57 (range: 34-75) years. Stone volume ranged from 728 to 4536 mm³ (median: 1864 mm³), with a median stone density of 986 Hounsfield Units (HU; range: 566-1184). Median pulse energy, pulse rate, and total power were 0.6 J, 15 Hz, and 12 W, respectively. “Captive Fragmenting” pulse modulation was consistently employed. Median J/mm³ was 14.5 (range: 6-20), and median ablation rate was 0.72 mm³/s (range: 0.004).
Three postoperative complications occurred (one stre-istrasse and two urinary tract infections), with an SFR of 93%.

Conclusions: The pulsed-Tm:YAG laser demonstrates promising efficacy and safety as a lithotripsy tool in RIRS, offering the advantages of low pulse energy and frequency.

Funding: This study was not supported by any external funding.

MP27-04 Flexible-tip vacuum assisted ureteral access sheath used during flexible ureteroscopic approach: a critical comparison with the standard device

Razvan Multescu1, Petrisor Geavlete5, Bogdan Buzescu1, Valentin Iordache1, Cristian Mares5, Bogdan Geavlete1

1“Saint John” Emergency Clinical Hospital

Presented By: Razvan Multescu, MD, PhD

Introduction: Improving the stone-free rate is a major objective during the retrograde flexible ureteroscopic approach for pyelo-calyceal lithiasis. The flexible tip suctioning ureteral access sheath is a accessory instrument with great potential that has recently entered in the therapeutic armamentarium of this intervention. The aim of the study was to evaluate this sheath model by comparison to the standard model.

Methods: We evaluated 124 patients who underwent retrograde flexible ureteroscopic approach for single pyelocaliceal stones: 62 consecutive patients in whom we used ClearPtra 10/12F access sheath (Well Lead Medical Co, Guangzhou, China) and 62 consecutive patients in whom the retrograde flexible ureteroscopic approach was performed with a standard 10/12F access sheath. The mean operative time, the stone-free rate on the first postoperative day, the hospital stay, complication rates, stone-free rates, and recurrence rates were showed (LP 60.29 min, HP 63.98 min; p = 0.702). Post-operative bladder drainage was less frequent in LP (64%) compared to HP (89.3%) (p = 0.04). There were no significant differences in sex distribution or pre-operative comorbidities between the groups. Symptomatology at presentation showed a trend towards significance (p = 0.07), with lower urinary tract symptoms (LUTS) being more common in the HP group. LP patients had a higher mean number of stones (3.40 – 3.34) compared to HP (1.91 – 1.51) (p = 0.003), but cumulative stone size did not differ significantly. Mean prostate volume was larger in the HP group (64.83 ± 33.68 cc) compared to LP (50 ± 8.45 cc) (p = 0.097). No significant differences in mean operative time were showed (LP 60.29 ± 30.72 min, HP 63.98 ± 41.71 min, p = 0.702). Post-operative bladder drainage was less frequent in LP (64%) compared to HP (89.3%) (p = 0.04). Mean hospital stay, complication rates, stone-free rates, and recurrence rates were similar between LP and HP groups.

Conclusions: The selection between high-power (HP) and low-power (LP) lasers remains mainly a choice of equipment availability. Debate persists over their comparative efficacy. This study aims to delineate outcome differences between HP and LP lasers in bladder stone management.

Methods: A retrospective analysis conducted on data collected prospectively for consecutive patients who underwent bladder stone surgery from 2011-2014 (15 years), in two tertiary European endourology centers. All patients had holmium laser lithotripsy and data was included for patient demographics, stone parameters, and outcomes. Patients were divided into HP and LP according to the lithotripsy modality.

Results: Data from 128 patients (LP: n = 25, HP: n = 103) were analyzed. The mean age was significantly higher in the LP group (74.23 ± 18.53 years) compared to the HP group (66.48 ± 15.90 years) (p = 0.04). There were no significant differences in sex distribution or pre-operative comorbidities between the groups. Symptomatology at presentation showed a trend towards significance (p = 0.07), with lower urinary tract symptoms (LUTS) being more common in the HP group. LP patients had a higher mean number of stones (3.40 ± 3.34) compared to HP (1.91 ± 1.51) (p = 0.003), but cumulative stone size did not differ significantly. Mean prostate volume was larger in the HP group (64.83 ± 33.68 cc) compared to LP (50 ± 8.45 cc) (p = 0.097). No significant differences in mean operative time were showed (LP 60.29 ± 30.72 min, HP 63.98 ± 41.71 min, p = 0.702). Post-operative bladder drainage was less frequent in LP (64%) compared to HP (89.3%) (p = 0.04). Mean hospital stay, complication rates, stone-free rates, and recurrence rates were similar between LP and HP groups.

Conclusions: The selection between high-power (HP) and low-power (LP) lasers remains mainly a choice of equipment availability and surgeon experience, with our results showing equivalent outcomes for both the lasers. HP lasers might significantly affect bladder stone treatment outcomes. Debate persists over their comparative efficacy. This study aims to delineate outcome differences between HP and LP lasers in bladder stone management.

Funding: None.

MP27-05 High Power vs Low Power laser lithotripsy for bladder stones: Comparative Outcomes from 2 European Endourology centres

Clara Cerrato1, Victoria Jahrreiss1, Esteban Emiliante2, Paola Arena2, Amelia Pietropaolo1, Bhaskar Somani1

1University Hospital Southampton NHS Trust, 2Puigvert Foundation, Autonomous University of Barcelona

Presented By: Clara Cerrato, MD, FEBU

Introduction: Choosing between high-power (HP) and low-power (LP) lasers might significantly affect bladder stone treatment outcomes. Debate persists over their comparative efficacy. This study aims to delineate outcome differences between HP and LP lasers in bladder stone management.

Methods: A retrospective analysis conducted on data collected prospectively for consecutive patients who underwent bladder stone surgery from 2011-2014 (15 years), in two tertiary European endourology centers. All patients had holmium laser lithotripsy and data was included for patient demographics, stone parameters, and outcomes. Patients were divided into HP and LP according to the lithotripsy modality.

Results: Data from 128 patients (LP: n = 25, HP: n = 103) were analyzed. The mean age was significantly higher in the LP group (74.23 ± 18.53 years) compared to the HP group (66.48 ± 15.90 years) (p = 0.04). There were no significant differences in sex distribution or pre-operative comorbidities between the groups. Symptomatology at presentation showed a trend towards significance (p = 0.07), with lower urinary tract symptoms (LUTS) being more common in the HP group. LP patients had a higher mean number of stones (3.40 ± 3.34) compared to HP (1.91 ± 1.51) (p = 0.003), but cumulative stone size did not differ significantly. Mean prostate volume was larger in the HP group (64.83 ± 33.68 cc) compared to LP (50 ± 8.45 cc) (p = 0.097). No significant differences in mean operative time were showed (LP 60.29 ± 30.72 min, HP 63.98 ± 41.71 min, p = 0.702). Post-operative bladder drainage was less frequent in LP (64%) compared to HP (89.3%) (p = 0.04). Mean hospital stay, complication rates, stone-free rates, and recurrence rates were similar between LP and HP groups.

Conclusions: The selection between high-power (HP) and low-power (LP) lasers remains mainly a choice of equipment availability and surgeon experience, with our results showing equivalent outcomes for both the lasers. HP lasers might significantly affect bladder stone treatment outcomes. Debate persists over their comparative efficacy. This study aims to delineate outcome differences between HP and LP lasers in bladder stone management.

Funding: None.

MP27-06 Flexible Ureteral Access Sheath with Suction in Retrograde intrarenal surgery – Does it make a difference?

Chandra Mohan Vaddi1, Ramakrishna Paidakula1, Siddalinga Swamy Pm1, Soundarya Ganesan1, Hemanath Ua1, Rakesh Panda1, Kartheek Ganapathri1, Vaibhav Joshi1

1Preeti Urology and Kidney Hospital

Presented By: Chandra Mohan Vaddi, MCh Urology
Introduction: Aim: The objective is to analyze the safety and efficacy of tip-bendable ureteral access sheath (UAS) during retrograde intrarenal surgery in comparison with conventional ureteral access sheath. Primary aim: To compare the stent free rate, need for auxiliary procedure, complication rate. Secondary aim: To compare the operative time, intraoperative visibility and complications due to tip bendable UAS.

Methods: Materials and Methods: Between April and October 2023, prospectively collected data on RIRS using bendable UAS incorporated with suction (Group A, n = 50) was matched with retrospective data on RIRS using conventional UAS (Group B, n = 50), done by a single surgeon at a single centre. Demographic data and stone characteristics, intra operative and post operative parameters were collected from hospital database. Patient with renal and proximal ureteric stones of size <20mm, undergoing RIRS were included. Exclusion criteria: Patients with untreated urinary tract infection, diverticular stones, previously operated genitourinary tracts, anomalous anatomy, pregnant and pediatric patients. Informed consent was taken. Ethical Committee approval was obtained (ECSTTH/EC Meet 05/2023/04). Propensity matched analysis was done between the two groups after matching for stone size, volume and density.

Results: Results attached The stone free rate (96% vs 92%, p = 0.678) and overall complication rate (22% vs 26%, p = 0.454) was comparable between the two groups. Group A patients had significantly better intraoperative visibility (p < 0.001), lesser need for auxiliary procedures (p = 0.046), lesser incidence of post operative fever (p = 0.042). One patient in Group B required reintervention for steinstrasse after stent removal, while none in Group A required unplanned reintervention.

Conclusions: Bendable UAS with suction during RIRS is advantageous due to better intraoperative visibility, lesser need for auxiliary procedures and lesser infectious complications.

Funding: N/ASELF Funding

MP27-07 Thulium vs Holmium: Which is Safer for Removal of Entombed Stents?

Gabriel Martin1, Grant Sajdak1, Ruben Crew1, Ala’a Farkouh1, Kai Wen Cheng1, Sikai Song1, Ruby Kuang1, Tekisha Lindler1, Summer Hodgkin1, Akin S. Amasyali1, Zhamshid Okhunov1, D. Duane Baldwin1,

Removal of the entombed ureteral stent can be technically challenging, particularly if the stent were to fragment. Due to its higher absorption in water and potential increased thermal load, the Thulium laser may weaken ureteral stents and increase the risk of breakage. The purpose of this study was to compare damage to an entombed stent when treating with the Thulium and the Holmium laser in a bench-top model.

Methods: This benchtop study investigated the effect of the Olympus Thulium Fiber Laser and the Dornier Holmium laser on stent damage. For all trials, Olympus Gyrus 6 Fr stents were utilized and both lasers were operated at 0.8 J, 12 Hz with 270 μm laser fibers. Initially, the time taken for each laser to completely transect the stent was recorded in 10 trials per laser. Next, an electronic force transducer was used to measure the force required to break the stent following 5 seconds of continuous laser contact with 15 randomized trials per laser. Prior to lasering, baseline force to break the stents was measured. Finally, a simulated ureteroscopy on entombed stents, created by covering each stent with 1.5 cm length Begostone, was performed. The ureters were placed under water and laser lithotripsy was conducted in a prospective randomized order. Seven trials were conducted for each laser with endpoints of lithotripsy time to release the stent, laser energy, and objective scoring of stent damage by two independent blinded reviewers using a semi-quantitative scale [length of damage (μm) x severity (1-5)]. The Mann-Whitney U and Chi-square tests were used to compare outcomes.

Results: First, the time taken to completely transect the stent with the Thulium laser was significantly shorter than with the Holmium laser (22.02 ± 61.46 sec; p < 0.001). Next, after 5 seconds of lasering, the force required to break the stent was significantly less with the Thulium compared to the Holmium (5.34 vs 15.7; p = 0.017). On simulated lithotripsy of entombed stents, lithotripsy time (12.7 vs 8.5 min; p = 0.11) and laser energy (4.7 vs 2.7 kJ; p = 0.09) were similar between Thulium and Holmium. Mean stent damage score was significantly higher when using the Thulium laser compared to the Holmium (36.9 vs 15.7; p = 0.017).

Conclusions: Lasering with the Thulium resulted in faster stent breakage, reduced forces required to break the stent, and greater stent damage. Urologists should be cautious when releasing entombed stents using the Thulium laser as the damage conferred by the laser may significantly weaken the stent, increasing the risk of fracture during removal.

Funding: None.

MP27-08 Impact of light obstruction on illuminance from flexible ureteroscopes – a comparative PEARLS analysis

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Presented By: Jia-Lun Kwok, MBBS, FRCS

**Introduction:** Artifacts from poor ureteroscopes' light design with shadowing and dark areas in the field of view have been reported. The aim was to quantify effects of light obstruction in a kidney calyx model.

**Methods:** We evaluated a series of contemporary flexible ureteroscopes including the Storz Flex-Xc and Flex-X2s, Olympus V3 and P7, Pusen 7.5F and 9.2F, as well as OTU Wiscope using an enclosed 3D printed pink in-vitro kidney calyx model submerged in saline, where the field of light was intentionally partially obstructed alternatively at 12, 3, 6 and 9 o’clock. A spectrometer was used for illuminance measurements at a 45° opening position in the background of the model.

**Results:** Overall and mean background illuminance for each obstructive situation were significantly different between scopes for both 50% and 100% brightness settings (ANOVA p < 0.001). At 50% brightness setting, almost all scopes had their highest and lowest background illuminance with the 6 o’clock and 3 o’clock obstructive situation, respectively. At 100% brightness setting, these became 6 o’clock and 12 o’clock obstructive situations. Considering each obstructive situation individually, the Flex-Xc was consistently the scope with highest background illuminance and the Pusen 7.5F the lowest. Background illuminance for each obstructive situation varied significantly for each scope individually, with the greatest range of variability for Pusen 7.5F and V3. Correlating to renal calyces, our results show that most tested ureteroscopes have their best background illuminance in upper anterior, right mid/ lower posterior and left mid/lower anterior calyces. On the other hand, most tested ureteroscopes had the worst background illuminance with the upper posterior, right middle/lower anterior and left mid/lower posterior calyces (Refer to figure).

**Conclusions:** Illuminance performance of ureteroscopes within an obstructed calyx model differ significantly for various obstructive situations. Urologists should be aware of this to help guide their choice of ureteroscope.

**Funding:** Nil

**MP27-09 Tuohy-Borst under pressure: intraoperative limitations quantified**

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1University of Toronto, 2RCSI, 3WellSpring Research, 4St Michael’s Hospital

Presented By: Zizo Al-Daqqaq, BScN, MD(c)

**Introduction:** The Tuohy-Borst adapter (T-Ba) is used in ureteroscopy and laser lithotripsy (URSL) to facilitate entry and manipulation of laser fibres and nitinol baskets under pressurized irrigation. Drawbacks of the T-Ba include jet-leaks of biohazardous fluids, damaged tools from T-Ba overtightening, and unintended adapter-scope disconnections. This is the first study to quantify these problems in the operating room, with the objective of improving safety while saving healthcare dollars.

**Methods:** From January-October 2023, 61 URSL cases were observed, with 2 cases excluded from analysis due to conversion to PCNL, and 6 diagnostic cases with limited instrumentation. Standard variables were collected along with number of jet-leaks, adapter-scope disconnections, and baskets damaged by the T-Ba. URSL cases were performed by staff endourologists and assisted by junior surgeons ranging from PGY2 to endourology fellow.

**Results:** Across 53 included cases, there was a mean of 2.26 jet leaks per case and 31 total accidental disconnections. Regarding safety, 13.3% of jet-leaks sprayed staff in the face, and 10.8% sprayed sterile equipment. There were 0.53 jet leaks per instrument insertion across a sample of 15 cases, depicted in Figure 1. Among the 47 cases where a nitinol basket was used, 14 baskets were damaged directly by the T-Ba. The 1.5Fr baskets were damaged at a rate of 32.5% (13/40) while the 2.4Fr baskets were damaged at a rate of 11.1% (1/9). The estimated total cost in

![Figure 1: Jet leaks per instrument insertion across a sample of 15 cases](image-url)
damaged baskets was ~$11,000. One-way ANOVA revealed no significant association between the most junior surgeon’s level of training and number of jet leaks (p = 0.075), adapter-scope disconnections (p = 0.151) or damaged baskets (p = 0.37).

**Conclusions:** The T-Ba has significant drawbacks when used in URSL, which are independent of the surgeon’s training level. This study provides strong evidence for the need to develop a novel ureteroscope adapter to address the safety and financial implications of the T-Ba’s drawbacks.

**Funding:** There was no source of funding for this study.

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**MP27-10** A new device for direct in scope suction technique (DISS). Prospective multicenter audit using the GLITZ system

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**Presented By:** Deepak Ragoori, M. S., M. Ch

**Introduction:** The GLITZ system (FIG1) was designed as an accessory, integrated onto the handle of a flexible ureteroscope to facilitate suction and aspiration of dust when connected to a tabletop suction aspiration apparatus via the scope. Our primary aim is to report the intraoperative and 30-day outcomes and nuances of using the device in a prospective multicenter evaluation. Secondary aim is to evaluate the performance of the device as an aid to direct in scope suction technique (DISS).

**Methods:** 29 adults under general anesthesia prospectively underwent DISS using the GLITZ between November 2023 and February 2024 in 2 centers by 2 senior surgeons with single use 7.5Fr scope by Biorad MediSys and a UAS. Pre-stenting was not mandated. TFL 40 W laser by IPG photonics or a 100 W HL from Quanta systems was used for All patients had a pre and a post operative (24 hours later) NCCT to document residual fragments (RF) and inadvertent pelvicalyceal (PCS) injury. RF were classified as: Grade A: NO FRAGMENTS /GRADE B: SINGLE 2 MM OR DUST /GRADE C: SINGLE 2.1-4 MM, /GRADE D: Any size SINGLE /MULTIPLE.

**Results:**: A prospective comparison of 126 LP stones with 268 non-LP stones showed similar SFR when FANS was used. Grade A&B SFR was achieved in 98.4% and 96.6% of cases in the LP and non-LP groups (p = 0.545) respectively. Stone volume(>1500mm3) and use of Thulium Fiber Laser were factors affecting SFR in LP. Postoperative fever, sepsis, ureteric injury and operative time were similar in both groups.

**Funding:** None.

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**MP27-11** Role of Flexible and Navigable Suction (FANS) ureteric access sheath in flexible ureteroscopy for lower pole stones - Prospective study by EULIS and Global FANS group

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**Presented By:** Deepak Ragoori, MS, MCh

**Introduction:** Flexible ureteroscopy for the lower pole stones presents a unique anatomical challenge that can hinder the stone-free rate, even after effective LASER lithotripsy. A recent technological introduction in the form of FANS ureteric access sheath has shown improved stone clearance and minimized the incidence of infective complications. Its safety and efficacy for the lower pole are yet to be established.

**Methods:** This is a global prospective study that was conducted across 25 centres worldwide on using FANS inflexible ureteroscopy from 1st April 2023 to 10th January 2024 after IRB approval. A total of 394 patients (LP group and non-LP group) were enrolled for evaluation of stone-free rate (SFR) and complication rate.

Non-contrast CT assessment of SFR was done within 30 days after surgery and graded as A: zero fragment, B: single fragment ≤2mm; C: Single or multiple fragments 2.1-4 mm; D: single or multiple fragments >4 mm. Multivariable logistic regression analysis evaluated factors associated with 100% SFR.

**Results:** A prospective comparison of 126 LP stones with 268 non-LP stones showed similar SFR when FANS was used. Grade A SFR was achieved in 54.8% and 58.6% whereas grade A+B SFR was achieved in 98.4% and 96.6% of cases in the LP and non-LP groups (p = 0.545) respectively. Stone volume(>1500mm3) and use of Thulium Fiber Laser were factors affecting SFR in LP. Postoperative fever, sepsis, ureteric injury and operative time were similar in both groups.
Conclusions: Flexible and Navigable Suction ureteric access sheath in flexible ureteroscopy is safe and effective for LP stones and gives SFR as high as non-LP locations. Larger LP stones were associated with lower SFR.

Funding: None.

MP27-12 Characterization of commercially available Flexible and Navigable Ureteral Suction Access Sheaths (FANS)

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Presented By: Richard Menzies-Wilson, MBBS BSc

Introduction: Flexible and Navigable Suction Ureteral Access Sheaths (FANS) are a new technology in ureteroscopy, offering intra-operative suction through an access sheath. By using suction in combination with traditional irrigation pressure, it is possible to drive higher irrigation fluid flow rates at relatively low intra-renal pressures. Higher flow rates have the potential to improve intra-operative vision and washout dust. Still new to the market, the characteristics of the FANS access sheaths have yet to be defined. In this paper we compare the characteristics of two commercially available FANS and quantify the suction flowrates through them.

Methods: We performed bench-top experiments with an empty 9.5 Fr LithoVueTM ureteroscope within 11/13 Fr 40cm ‘ClearPetra’ and ‘Elephant II’ access sheaths. These were placed in the middle pole of a ‘closed’ silicone kidney model with 200mmHg irrigation pressure of 0.9% NaCl and various suction pressures. The vent was taped closed. Suctioned flow rate was calculated over 60 seconds. A mathematical model for intrarenal pressures during ureteroscopy (Williams, Rouse, Turney, Waters, & Moulton, 2020) was extended to include suction. The model was validated through comparison to the experimental data and used to generate predictions for a wide range of suction pressures.

Results: A graph of the impact of suction pressure on flow rate is captured in Figure 1. ClearPetra has a higher flow rate which was predicted in our modeling due to the larger inner diameter (3.7 vs. 3.6 mm), even though the sheaths are labeled as the same size.

Conclusions: The FANS are similar in most aspects. ClearPetra has a higher flow rate which was predicted in our modeling due to the larger inner diameter.

Funding: The testing was performed by or on behalf of BSC. Data on file. This study was funded by a research grant from Boston Scientific Corporation (BSC). Bench test results may not necessarily be indicative of clinical performance.

MP27-13 Evaluating the accuracy of intrarenal pressure monitoring with LithoVue Elite; in porcine kidney model

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Presented By: Takaaki Inoue, MD, PhD

Introduction: Intrarenal pressure (IRP) during retrograde intrarenal surgery (RIRS) is biggest concern for urologists. Higher IRP may lead to happen some complications like pyelonephritis, sepsis, and subcapsular hematoma. Now, we were available for single-use flexible ureteroscope with pressure sensor (LithoVue Elite®, Boston Scientific, US). We evaluate the accuracy of IRP monitoring using LithoVue Elite.

Methods: Porcine kidney model with 11-13 ureteral access sheath (UAS) (Navigator HD, Boston Scientific, US) was used to evaluate the IRP. UAS was placed at ureter-pelvic junction (UPJ). LithoVue Elite was inserted through UAS and measured IRP at 4 points of UPJ, upper, middle, and lower pole by automated irrigation pump (AIP) which was set irrigation pressure adjusted from 0 mmHg to 200mmHg. We measured the highest value of IRP in each 4 times measurement for each 15 second. In addition, IRP was simultaneously measured by percutaneous nephrostomy connected arterial pressure monitor (PNC) (Fig1A, B). We compared and analyzed the difference of IRP change between both groups by using mixed repeated measure analysis of variance.

Results: Baseline of IRP at 0mmHg irrigation pressure of AIP changed between 0mmHg and 2mmHg. IRP changing of both LithoVue Elite and PNC parallely rose with equivalent inclination as irrigation pressure of AIP increases at upper, middle, lower pole position, respectively (p = 0.057, p = 0.780, and p = 0.103) (Fig 2A, B, C). However, IRP of LithoVue Elite at UPJ position significantly tended to be somewhat higher in mean 1.93±0.93mmHg than PNC monitoring (p < 0.001) (Fig 2D).
Conclusions: Measuring IRP by LithoVue Elite was almost equivalent inclination to measurement of PNC. It is conceivable that IRP monitoring using LithoVue Elite during RIRS is accurate and nearly express real IRP.

Funding: None.

MP27-14 Are the «optimal laser modes for lithotripsy optimal?»
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1Institute for Urology and Reproductive Health, Sechenov University
Presented By: Alim Dymov, MD, PhD

Introduction: The standard indicator of lithotripsy effectiveness is the “stone free rate”, or absence of residual stones, which accurately reflects the main endpoint of the entire surgical intervention, but does not take into account the number of complications and duration of the operation. The time of surgical intervention, in turn, is an integral index, as it indirectly reflects the presence of intraoperative complications, the efficacy of lithotripsy, and the surgeon’s comfort. In our study, we decided to evaluate the effectiveness of the recommended modes of laser lithotripsy by recording the changes of laser radiation modes during PCNL, URS and RIRS.

Methods: We conducted a single-center prospective study from December 2022 to July 2023 at the urological clinic of Sechenov university. The study included all patients who underwent surgical procedures for urinary stone disease: PCNL, URS, RIRS. We defined the versatility of the standard modes of thulium fiber laser (TFL) for lithotripsy as the absence of the need to change the laser radiation mode. We recorded data on the parameters of the initial modes, the number and quality of changes in lithotripsy settings. We also recorded clinical data of patients: stone volume and relative density according to the Hounsfield scale. Statistical analysis of the data was performed using IBM SPSS Statistics software version 26.0. 0.0. 0.

Results: 90 patients were included in the study. Changes in the settings of laser radiation modes were recorded in 38% of cases when performing RIRS, in 25% - during PCNL, and in 24% - during URS. It was noted that the laser radiation parameters tended to increase the power, and this was proved by the statistically significant higher energy consumption in the RIRS group with laser radiation change (15.3 versus 6.4, kJ). We observed that there was a significant higher energy consumption in the RIRS group with laser radiation mode for lithotripsy.

Funding: None.

MP27-15 Physical therapy facilitate stone fragment passage after SWL and RIRS
Wen Zhong1
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Presented By: Wen Zhong, PhD

Introduction: Physical therapy, including percussion, inversion, vibration and combinations, was clinically performed to improve the stone free rate (SFR) following lithotripsy procedures. However, physical therapy is not widely accepted in clinical practice owing to lack of high level evidence support and a standard protocol. The present meta-analysis aimed to evaluate the efficacy and safety of physical therapy in improving SFR following extracorporeal shockwave lithotripsy (SWL) and retrograde intrarena surgery (RIRS).

Methods: Systematic review of literature from PubMed, Cochrane library and Embase was performed. The efficacy and safety of physical therapy after SWL and RIRS were assessed by meta-analysis of SFR and complication rate.

Results: A total of 8 prospective studies with 1065 patients were enrolled. When compared to non-intervention, physical therapy provided a higher SFR (OR:3.38, 95% CI: 2.45-4.66, p < 0.0001) at all time points (week 1, week 2 and month 1), while there was no significant difference in complications such as hematuria, lumbago, dizziness and urinary tract infection(OR: 0.84, 95%CI: 0.62-1.13; p = 0.237). In subgroup analysis of different stone locations, lower calyx stone (OR: 3.51; 95%CI: 2.15-5.55; p < 0.0001), upper ureter and renal pelvic stones (OR:2.79; 95%CI:1.62-4.81; p = 0.0002) had a higher SFR after physical therapy, while there was no significant improvement in SFR in upper and middle calyx stones. In subgroup analysis of different techniques, EPVL (external physical vibration lithethbole, OR:3.47; 95%CI:2.24-5.37; p < 0.0001) and PDI (percussion, diuresis and inversion, OR:3.24; 95%CI:2.01-5.21; p < 0.0001) were both effective in improving SFR when compared to non-intervention.

Conclusions: Physical therapy was effective in improving the SFR after SWL and RIRS, especially for lower calyx stones, upper ureter and renal pelvic stones, while without significant side effects. External physical vibration lithethbole (EPVL) might provide a relative uniformed and repeatable protocol for clinical practice of physical therapy.

Funding: None.

MP27-16 Is laser lithotripsy the new gold standard for treatment of bladder stones: outcomes from 2 European endourology centres
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1University Hospital Southampton NHS Trust, 2Puigvert Foundation, Autonomous University of Barcelona
Presented By: Victoria Jahrreiss, MD

Introduction: Bladder stones develop within the urinary bladder due to various factors, and some instances these calculi can grow to significant sizes. The treatment paradigm for vesical stones has evolved from traditional open surgery to endoscopic techniques. Laser lithotripsy procedures offers a promising alternative for multiple or larger stones. We wanted to look at the evidence for laser lithotripsy for bladder stones.

Methods: A retrospective analysis conducted on data collected prospectively for consecutive patients who underwent bladder stone surgery from 2011-2024 (15 years), in two tertiary European endourology centers. All patients had holmium laser lithotripsy and data was included for patient demographics, stone parameters, and outcomes.
Results: 128 patients were included with a mean age of 67.85 (±16.60) years, and a male:female ratio of 101:27. Patients more frequently presented with lower urinary tract symptoms (LUTS) (n = 38, 29.7%), followed by UTI (n = 31, 24.2%), hematuria (n = 30, 23.4%), asymptomatic (n = 11, 14.9%), and high-pressure retention or back pain (n = 5 each, 3.9%). 14(10.9%) patients had a pre-operative long-catheter, either urethral or SPC, and 3(2.3%) had a urinary diversion. Overall patients had multiple stones (N2.2, ±2.05), with a stone median stone burden of 32.25 mm (±23.7). The mean operative time was 63.33 min (±39.90), with an overall stone free rate (SFR) and complications of 93% and 6.4% respectively, with one patient needing a second procedure. Post operative complications included UTI or sepsis (n = 4, 3.2%), pain (n = 2, 1.6%), bleeding/acute urinary retention/urethral stone (n = 1 each, 0.8%). 23 patients underwent a concomitant procedure for prostate, either TURP (n = 17, 13.3%) or BNI (n = 6, 4.7%). 42 patients underwent an additional procedure, either URS (n = 14, 10.9%), TURB-T (n = 5, 3.9%), or SPC repositioning (n = 11, 8.6%), or urethral dilation (n = 12, 9.4%). Post-operatively, commonly a catheter was placed (N108, 84.4%) and removed usually in 24-48 hours, with a mean length of hospital stay at 1.4 days.

Conclusions: Laser therapy stands out as a safe and efficient choice for addressing bladder stones with a good SFR and low risk of complications (all Clavien <III), and perhaps should be considered as the new gold standard for bladder stone management.

Funding: None.

MP27-17 Flexible Ureteroscopy for Treatment of Renal Stone under Local Anesthesia – Made Possible with Suction via Flexible and Navigable Ureteral Access Sheath (FANS)

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Presented By: Steffi Kar Kei Yuen

Introduction: Flexible ureteroscopy (URS) is commonly performed under general or regional anaesthesia, but rarely under local anaesthesia (LA) due to fear of pain caused by surgical procedure, and concerns regarding ureteric injury. In our aging population and resource-tight society, LA may be an option to increase patient’s accessibility to treatment. With the miniaturization of URS and technology advancement, the limits of URS are expanding. This study aims to investigate feasibility, safety and efficacy of URS in combination with FANS under LA.

Methods: Data of consecutive patients who underwent URS with FANS under LA from October 2023 to April 2024 was drawn from a prospective registry(NCT05297331). Patients either received 2% lidocaine hydrochloride jelly administered per-urethrally; or together with intravenous Midazolam 1mg and Fentanyl 50microgram 15 minutes prior to surgery. 7.5Fr single-use URS and 10/12Fr FANS were used. Irrigation fluid was set at 40-80cm above gravity with suction via FANS at 50-100mmHg. Pain scores with visual analogue scale(VAS) were collected at following timepoints:1) FANS insertion; 2) lithotripsy; 3) immediately after surgery. Patient demographics, stone-related parameters and clinical outcomes were analyzed.

Results: 15 consecutive patients (12 female) with median age 66 years old(31-86), ASA 2, BMI 25.22kg/m2, who underwent unilateral URS with FANS under LA were analyzed. 12(80%) were pre-stented; reasons being emergency drainage for sepsis in 7(46.7%), and routine practice for passive ureteric dilatation prior to URS in 5(33.3%). The mean±SD stone diameter was 11.6±4.05mm; stone volume 955.9±586.7mm3; Hounsfield Unit 1107±377.11(73.3%) had lower pole renal stones. Mean operative time was 78±34mins. There were no ureteric injury upon completion of operation. 3(20%) did not require ureteric stenting after URS. The reported mean pain scores (VAS) during FANS insertion, lithotripsy and immediately after surgery were 0.5, 1.3 and 1.3 respectively. None experienced sepsis postoperatively. All except 1 were discharged within the same day of surgery. Only 1 had readmission within 30 days due to fever, which resolved with antibiotics. NCCT performed within 24hours post-surgery yielded 67% stone-free rate(SFR), of note 100% SFR was achieved in non-lower pole renal stones.

Conclusions: This study revealed that URS with FANS under LA is safe, efficient, and well tolerated with low intra-operative and post-operative pain scores inappropriately selected patients.

Funding: Nil.

MP27-18 Clinical Evaluation of Novel Pressure Sensing Ureteroscope Device to treat Nephrolithiasis

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Presented By: Areeba Sadiq

Introduction: In February 2023, the FDA approved the first ureteroscope with a pressure sensor tip built in for intraoperative renal pressure measurements. The Lithovue Elite (LVE) single use ureteroscope by Boston Scientific anticipates user benefits to include optimized fluid pressure regulation which has been shown to be an increasingly important factor to consider during lithotripsy. The threshold for safe infrarenal pressure is often noted to be around 40mmHg to prevent pyelovenous backflow. Our study reports our early experience using LVE during various ureteroscopic kidney stone cases.

Methods: We performed seven cases using the novel ureteroscope with an average stone burden of 1.1cm. Stones were positioned in the ureter, renal pelvis, renal calyces, and in one case, within a calyceal diverticulum. A continuous irrigation pump...
Results: The average total case time was 36 minutes, with an average ureteroscope utilization time of 26 minutes, average lasering time of 9 minutes, average basketing time of 7 minutes, and average total energy was 4.11kJ. Upon entry into the collecting system via a 11/13F ureteral access sheath, there was an average baseline pressure of 14mmHg recorded without irrigation fluid. The introduction of irrigation fluid increased baseline pressure to an average of 28mmHg. During laser treatment of stones in the renal pelvis and calyces, an average pressure of 39mmHg (range 32mmHg-43mmHg) was observed. While lasering in the ureter, pressures were noted to be higher on average at 46mmHg, with the highest variability seen within a calyceal diverticulum, ranging from 63mmHg-220mmHg.

Conclusions: The Lithovue Elite ureteroscope enables urologists to assess real time renal pressures during ureteroscopic treatment of kidney stones. Variability in pressure readings is influenced by the location of kidney stones, access sheath utilization, and input water pressures. Future directions involve assessing the clinical implications of these pressures over varying durations, particularly in longer operative cases with larger stone burden. While the majority of our cases demonstrated safe infrarenal pressures, an interesting outlier was observed to be lasering within a calyceal diverticulum which significantly increased intrarenal pressures.

Funding: None.

MODERATED POSTER SESSION 28: PCNL 3

MP28-01 The Predictors of Bleeding Following Percutaneous Nephrolithotomy
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Introduction: Bleeding is the most important complication following percutaneous nephrolithotomy (PCNL). In this study we investigated the predictive factors of hemorrhage during PCNL in patients with large renal stones.

Methods: The number of 560 consecutive patients with renal stones larger than 3cm who were underwent PCNL by 7 endourology fellowship training (each fellow performed 80 surgeries) from 2021 to 2023 in our referral center were included in this study. All the characteristics, peri and post-operative data were collected prospectively and analysed.

Results: The mean age and BMI were 46±16 years and 29±4.2 kg/m², respectively. The mean stone size was 39±4.1mm. Retrorenal colon, horseshoe kidney and malrotated kidney were in 8, 11 and 2 patients. 24 and 12 patients had history of ESWL and previous renal stone surgery. Single, multiple and staghorn stones were seen in 276, 62 and 222 patients, respectively. The mean surgical time, hemoglobin drop and hospitalization were 113±23 mins, 1.8 g/dl and 2.1±0.3 days, respectively. 32 patients needed pack cell transfusion. The number of 8 and 1 patients experienced surgical complications Clavien-Dindo grade 3 (doubl-j stent insertion) and 4 (colony injury which was managed conservatively), respectively. The stone size (p = 0.042), surgical time (0.036) and the fellow experience (p < 0.001) were the independent predictors of hemoglobin drop following the surgery.

Conclusions: The surgeon experience, the stones size and the surgical time could predict bleeding during percutaneous nephrolithotomy, independently. Direct expert supervision is strongly recommended for endologist surgeons beginning PCNL surgery.

Funding: No fund.

Yi Yang Liu1, Yen Ta Chen1, Yuan Chi Shen1, Hao Lun Luo1, Hung Jen Wang1
1Kaohsiung Chang Gung Memorial Hospital

Introduction: Nowadays, endoscopic combined intrarenal surgery (ECIRS), which combines percutaneous nephrolithotomy (PCNL) and retrograde intrarenal surgery (RIRS) has become the mainstay of surgery for complex renal stones. Preliminary ECIRS with endovision assisted percutaneous renal puncture was emphasized as the essential first step for ECIRS. However, RIRS may not be successful in about 20% of patients. Besides, it will be difficult for endovision assisted percutaneous renal puncture if the complex renal stones occupy ureteropelvic junction, renal pelvis or target renal calyx. Thus, we introduce totally X-ray-free ultrasound guided PCNL predominant ECIRS in Galdakao-modified supine Valdivia (GMSV) position for complex renal stones and prove the safety and efficacy.

Methods: We retrospectively reviewed 112 patients of complex renal stones (S. T. O. N. E score ≥ 9 or staghorn stone) who underwent single tract totally X-ray-free ultrasound guided PCNL predominant ECIRS in GMSV position from June 2021 to March 2024. All the perioperative parameters were collected for analysis. The residual stone was detected by the kidney-ureter-bladder X-ray plain film on the day after operation. The residual stone fragment < 4 mm was defined as stone free status. Besides, postoperative complications were also analyzed.

Results: In these 112 patients, mean age was 59.41 years-old. Total stone size was 4.75 cm (1219 mm²) in average. In stone complexity, mean S. T. O. N. E scores was 9.91, including 95 patients (84.8%) with the scores ≥9. Besides, 83 patients (74.1%) had staghorn stones. Operation time was 99.5 minutes in average, and the success rate of renal access creation in the
first attempt was 89.3%. In the postoperative outcomes, 100 patients (89.3%) were stone free. Moreover, mean Hemoglobin drop was 0.93 g/dL. Complications include transient fever > 38°C (n = 10, 8.9%) and sepsis (n = 2, 1.8%), which were subsided spontaneously or after medical treatment in a few days. There were no grade III or more severe complications by Clavien-Dindo classification.

Conclusions: Totally X-ray-free ultrasound guided PCNL predominant ECIRS in Galdakao-modified supine Valdivia (GMSV) position is feasible, safe and effective for patients with complex renal stones.

Funding: None.

MP28-03  Flank versus prone position in percutaneous nephrolithotripsy for kidney calculi: A meta-analysis

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Presented By: Bohan Liu

Introduction: To compare the safety and efficacy of percutaneous nephrolithotripsy (PCNL) in flank versus prone position for patients with renal calculi.

Methods: We searched Pubmed, Embase and Cochrane database libraries to seek for all relevant eligible studies. All eligible literatures comparing flank versus prone position for treating renal calculi were included in the meta-analysis. These literatures were evaluated based on the inclusion and exclusion criteria. The main outcome of efficacy (stone-free rate, mean operative time, hospitalization time) and safety (overall complication) were assessed by the pooled effect calculated by Review Manager 5.4 software.

Results: 11 studies with a total of 1319 patients were included in our meta-analysis. The meta-analysis showed a shorter hospitalization time in flank position (WMD=-2.65, CI=-3.98 to -1.32, p < 0.00001) and no statistically significant difference in stone-free rate (p = 0.21), mean operative time (p = 0.59), and overall complication (p = 0.26) between flank position and prone position in PCNL.

Conclusions: The current study found comparable stone-free rate, mean operative time, and overall complication, but significant shorter hospitalization time in flank position compared with prone position in PCNL. Therefore, flank position is a safe and effective choice and could be taken into consideration in certain circumstances, such as obese patients and patients with cardiopulmonary disease in PCNL.

Funding: None.

MP28-04  Percutaneous Nephrolithotomy In Children With Cystine Stones: 25- Years Of Experience In A Single Institution

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Presented By: Kadir Can Sahin, MD

Introduction: We aimed to present our experience with percutaneous nephrolithotomy (PNL) in cystinuria patients in a single center for 25 years and the efficacy of this surgical technique.

Methods: Archival data of cystinuria patients who underwent PNL between 2000 and 2024 were retrospectively evaluated. Demographic and perioperative data of 78 included patients were evaluated in terms of session success, complications and follow-up. In addition, the differences between the initial session (group 1) and repeated sessions (group 2) were statistically evaluated.

Results: During the specified period, 127 PNL sessions were performed. The total success rate was 64%, and this rate was increased to 81% with simultaneous endoscopic procedures. When the initial session and repeated sessions are compared, the average surgery and fluoroscopy times are shorter in group 1 (p = 0.03; p = 0.026). While the success rate was higher with additional interventions in Group 1 (p = 0.02), the postoperative UTI and complication rates were significantly lower (p = 0.02; p = 0.042). While stone recurrence rate after successful PNL was 50.5% (n = 52), re-growth rate in patients with residual calculi was 75% (n = 16). 19 of 19 patients (84%) who were found to have hypertension and/or decreased renal function during their follow-up underwent repeated PNL sessions.

Conclusions: Cystinuria patients may benefit from PCNL as a safe and efficient method. Treatment strategies may be insufficient to prevent recurrent cystine stones, as evidenced by the high rates of recurrence, re-growth. Repeated procedures show worse surgical success rates, and higher incidence of complications.

Funding: None.

MP28-05  Flank-free modified supine position versus prone position nephrolithotripsy in pediatric population: systematic review and meta-analysis

José Arnaldo S. da Cruz1, José Arnaldo S. da Cruz2, Breno C. Porto2, Bruno D. Terada2, Felipe G. A. Gonçalves2, Roberto N. Santana1, Ingrid M. S. Duarte1, Carlo C. Passerotti1, Rodrigo A. S. Sardenberg1, Ronaldo S. Maia1, José P. Otoch2
1German Hospital Oswaldo Cruz, 2University of São Paulo Medical School, 3Ninth of July University

Presented By: José Arnaldo S. da Cruz, MD, PhD
Introduction: Percutaneous nephrolithotomy (PCNL) stands as the preferred treatment for kidney stones exceeding 20mm in pediatric patients. The optimal patient positioning, whether prone or supine, remains a topic of uncertainty in the current literature. Therefore, our objective is to compare the efficacy of prone and supine PCNL positioning in the pediatric population.

Methods: We conducted a systematic review across multiple databases, including PubMed, Embase, Scopus, Cochrane, Web of Science, and Google Scholar. We selected studies that compared PCNL in prone versus supine positions for pediatric patients. Our primary outcome was the stone-free rate (SFR), while secondary outcomes included operative time and complications, assessed using the Clavien-Dindo classification.

Results: We identified four articles, encompassing 106 patients in the prone group and 76 patients in the supine group. The mean age of all patients was 9.17 years. Our findings revealed no statistically significant difference in SFR between the two positions (OR 0.69; 95% CI 0.29, 1.62; p = 0.39; I² = 0%). Additionally, though not achieving statistical significance, we observed a slight reduction in operative time in the supine position group (MD 7.94; 95% CI -0.90, 16.78; p = 0.08; I² = 84%). No difference was observed regarding the total complication rate (OR 0.87; 95% CI 0.41, 1.83; p = 0.71; I² = 0%).

Conclusions: Our meta-analysis suggests that PCNL performed in the prone position is equivalent to supine PCNL in terms of SFR. Given the limited number of patients evaluated in our study, further investigations and comparisons are warranted to validate our findings.

Funding: None.

MP28-06 Mini and ultra-mini PCNL in pediatric population
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Introduction: According to the European Association of Urology, percutaneous nephrolithotomy (mini- PERC) is the preferred method for management large kidney stones (≥ 20 mm) and stones > 10 mm in the lower pole of the kidney. The use of smaller size instruments and lasers has decreased the risk of complications and improved treatment efficacy.

Methods: In Urology department of M-Clinic in Tashkent, from September 2023 to April 2024, mini-percutaneous nephrolithotomy was performed on 43 patients aged 1 to 7 years old. All procedures were performed using a Karl Storz MIP system 12F nephroscope with a 16F metal tube. Stone fragmentation was carried out using a holmium laser. All cases were completed with ureteral stenting without placing a nephrostomy tube.

Results: Access to the renal pelvis was performed under ultrasound guidance in all cases. In the majority of cases (60.4%), access was obtained through the lower posterior calyx. In the remaining cases, access was obtained through the middle calyces, with only 3 cases (6.9%) accessing the apical posterior calyx. A 14-16 Fr operating sheath was used in 28 cases (65.6%), while a 12 Fr sheath was used in the other 15 cases. In 38 cases (88.4%), stones were removed through a single access, while in the remaining 5 cases (11.6%), an additional access was required. Complete clearance of the renal pelvis was achieved in 35 cases, while 8 cases had residual stones that required a second surgery one month later.

Conclusions: We have concluded that the use of mini- and ultra-mini PCNL with the MIP system is an effective and safe method for treating urolithiasis in children. The ultra-mini PCNL has a narrower tube, which reduces kidney trauma. Today, mini PCNL shows excellent results in removing stones during short operation times. This method can be widely applied in pediatric practice for urolithiasis in children.

Funding: mini-PNL is a safe and effective technique in children that reduces hospital stay and possible complications.

MP28-07 The role of intra-operative bleeding in the developing of post-operative infection complications following percutaneous nephrolithotomy
Wen Zhong
1First affiliated hospital of Guangzhou Medical University

Introduction: To explore the risk factors of the infection complications after percutaneous nephrolithotomy (PCNL) and further analyze the correlation between intra-operative hemorrhage and post-operative infection complications.

Methods: 352 patients who underwent PCNL were retrospectively reviewed. Multivariate logistic regression analysis was used to identify independent risk factors of the post-PCNL infection complications. Pearson correlation analysis and Receiver Operating Characteristic (ROC) was used to analyze the correlation of intra-operative hemorrhage and post-operative infection complications and to evaluate the diagnostic value.

Results: 99 (28.1%) patients suffered post-operative infection complications. The univariate study showed that there were significant differences in gender (p = 0.013), , Guy’s stone score (p = 0.017), positive urine dipstick test (p < 0.001), positive midstream urine culture (p = 0.010), operation time (p = 0.022) and hemoglobin decrease (p = 0.001) between the infection group and the non-infection group. Positive urine dipstick test (p = 0.042) and hemoglobin decrease (p = 0.001) were identified as independent risk factors for post-operative infection following PCNL in multivariate logistic regression analysis. Pearson correlation analysis demonstrated that the hemoglobin decrease was strongly correlated with the post-PCNL infection complications (r = 0.199, p < 0.001).

Conclusions: Patients with positive urine dipstick test, even though a negative urine culture, still are at a significantly increased risk of post-operative infection complications. Intra-operative hemorrhage would increase the infection risk, second look is required timely to prevent infection complications following PCNL.

Funding: None.

MP28-08 Risk of infectious complications during endoscopic surgery in patients with asymptomatic bacteruria and urolithiasis
Sergey Sukhikh, Vigen Malkhasyan, Egor Maltsev, Islam Kindarov, Dmitry Pushkar

1Russian University of Medicine

Introduction: To determine the risk of infectious complications during endoscopic surgery in patients with asymptomatic bacteruria and urolithiasis.

Methods: A retrospective study was conducted on 120 patients who underwent endoscopic surgery for urolithiasis and asymptomatic bacteruria from January 2020 to December 2021. The risk factors for the development of postoperative infectious complications were evaluated.

Results: The overall incidence of postoperative infectious complications was 18.3%. The risk factors were found to be male gender (p = 0.034), stone size > 10 mm (p = 0.001), and previous history of urolithiasis (p = 0.008).

Conclusions: Male gender, stone size > 10 mm, and previous history of urolithiasis are significant risk factors for postoperative infectious complications during endoscopic surgery in patients with asymptomatic bacteruria and urolithiasis.

Funding: None.
Introduction: Endoscopic surgery in the treatment of patients with urolithiasis is highly effective, but may have a risk of infectious complications, the main risk factor for which is a positive urine culture.

Methods: There was a cohort, retrospective study of patients who underwent endoscopic stone treatment (PCNL, RIRS) between January till July 2023. 211 patients were selected for analysis. In case of initially sterile urine culture, antibiotic prophylaxis was prescribed a few hours before surgery, in case of clinically insignificant bacteriuria - 3 days before surgery, in case of clinically significant bacteriuria - 7 days before surgery, with control urine culture and selection of antibiotic prophylaxis in the following.

Results: A preoperative sterile urine culture was diagnosed in 152 patients (72%), whereas 59 patients (28%) had bacteriuria in urine culture. Of these, 31 (14.7%) patients had bacteriuria with a titer <105 CFU/mL, and 28 (13.3%) patients had bacteriuria with a titer ≥105 CFU/mL. After antibiotic therapy of patients with clinically significant bacteriuria - sterile urine cultures were obtained in 22 (78.6%) patients. Accordingly, 37 (17.5%) patients with different titer of bacteriuria underwent endoscopic surgery. In the postoperative period, hyperthermia was noted in 17 (8.1%) patients. Hyperthermia was more frequently noted in 6 (16.2%) patients with bacteriuria compared to 11 (6.3%) patients with sterile cultures (p = 0.087). The results of multivariate logistic regression parameter estimation revealed statistically significant associations between the odds of hyperthermia and bacteriuria before surgery. Bacteriuria increased the odds of hyperthermia by 4.75 times (OR = 4.75, 95% CI [1.22; 18.803], p = 0.023). No statistical significance was found for the association of hyperthermia with other model parameters such as sex, age, BMI, diabetes mellitus, volume and size of the stone and operation time (p > 0.05).

Conclusions: A positive urine culture is a significant risk factor for infectious complications after endoscopic surgery. Patients with stones and bacteriuria are indicated for extended antibiotic therapy with a duration of 7 and 3 days, depending on the titer of the bacterium, which will reduce the risks of infectious complications in the postoperative period.

Funding: None.

MP28-10 Supine Percutaneous Nephrolithotomy (PCNL) in Pediatric Patients
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Presented By: Parth Manek, MS

Introduction: Percutaneous nephrolithotomy (PCNL) in the supine position is increasingly and successfully used in pediatric age group with a lower patient morbidity. This encouraged us to perform supine PCNL in pediatric population. The aim of our study was to evaluate the safety and efficacy of Supine PCNL in pediatrics.

Methods: This retrospective study included 20 children presenting with renal calculi (2-3 cm) in the period between January 2021 and December 2023. Diagnosis was set by plain x-ray and CT in all patients. The stones were single pelvic stone in 14 cases, pelvic stone with lower calyceal stones in 3 cases and pelvic stone with upper calyceal stones in 3 cases. PCNL was performed with the patients placed in supine position with elevation of the ipsilateral shoulder and hip by means of two bags, one underneath the shoulder and the other underneath the hip to widen the operative field.

Results: The study included 20 children (14 boys and 6 girls) with a solitary renal pelvis stone. Stone length, operative time, and hospital stay had mean standard deviation of 2.5 ± 0.21 cm, 55.1 ± 15.5 minutes, and 4.5 ± 0.9 days. Stone-free rate was 90% after 1 session of PCNL. One patient(5%) needed a second-look PCNL. Shock wave lithotripsy was performed for another patient. Postoperative fever occurred in 4 patients (20%), that responded to medical treatment One patient received postoperative blood transfusion.

MP28-09 “No tubes and home today” - Totally Tubeless Same Day Discharge Percutaneous Nephrolithotomy, an initial South East Asian experience
Daanesh Huned3, Yuyi Yeow1, Yee Mun Lee2, Jia-Lun Kwok3
1Advanced Urology Associates, Singapore, 2Nexus Surgical Associates, Singapore, 3Tan Tock Seng Hospital, Singapore
Presented By: Daanesh Huned, MBChB (Sheffield), MRCS (Edin)

Introduction: Percutaneous nephrolithotomy (PCNL) is the standard of care for removing larger kidney stones. With miniaturisation of instruments, technological advancements and higher healthcare demands globally, a greater focus on exit strategies has been made to facilitate PCNL as an ambulatory procedure, with lesser indwelling tubes. We aim to review our institution’s initial experience with discharging patients on the same day with no overnight stay, after undergoing totally tubeless PCNL.

Methods: From January 2021 to December 2023, a retrospective review of PCNL cases in Tan Tock Seng Hospital, Singapore was performed. PCNL cases without both ureteral stenting and nephrostomy, discharged on the same day with no overnight stay, were included. Decision for totally tubeless PCNL and same day discharge was done if the following criteria were met: Afebrile with stable parameters, minimal blood loss, no perioperative complications, absence of pelviureteric junction oedema with satisfactory antegrade flow of contrast and complete endoscopic stone clearance. The operative times, intraoperative blood loss, stone clearance rate, perioperative complications and 30-day readmission rates were all evaluated.

Results: 217 patients underwent PCNL of which 12 were totally tubeless and same day discharge. Patients’ mean age was 56 (31-74) years with American Society of Anaesthesiologists grades ranging from 1-3. Stone sizes (largest dimension) ranged from 9-22mm (mean 14.8mm) with corresponding Guy’s stone scores of 1-3. All patients underwent supine mini-PCNL (16-17.5F) with minimal blood loss (<50ml) and no residual stones based on direct inspection and fluoroscopy. Mean operative time was 66 (37-105) minutes. There were no significant perioperative complications and the 30-day readmission rate was zero.

Conclusions: We demonstrate the initial feasibility and safety of totally tubeless PCNL as a day surgery procedure. A same day discharge approach translates to reduced burden on resources and healthcare costs. While appropriate careful selection and adequate counselling of patients are key, our findings provide a platform for future cautious expansion of criterion and application for a wider patient demographic and larger stone burden.

Funding: None.
Conclusions: PCNL in pediatric age group via supine PCNL was proved to be safe and effective in management of renal pelvis stones of size 2-3 cm. It provides stone clearance rate comparable with that reported of conventional PCNL in the prone position.

Funding: None.

MP28-11 Sepsis after percutaneous nephrolithotomy: what are the warning signs?
Kerry Adler1, Katy Su1, Jonathan Aronov1, Cristofer Zillo1, Jennifer Lu1, Jose Torres1, Eric Miller1, Jason Zhang1, David Schulsinger1
1 Stony Brook University Hospital

Presented By: Kerry Adler, MD

Introduction: Postoperative infection can be a life-threatening complication of percutaneous nephrolithotomy (PCNL). This surgical procedure, designed to remove large-volume kidney stones through a minimally invasive approach, can inadvertently lead to postoperative sepsis. It is possible that specific risk factors, as well as postoperative findings, are linked to elevated sepsis rates. Our objective was to evaluate preoperative risk factors and postoperative indicators of post-PCNL sepsis.

Methods: Retrospective review of all patients who underwent a PCNL at a single institution from 2020-2023 using an IRB-approved PCNL-only database. Patients in the post-operative sepsis group were defined as having 2 systemic inflammatory response syndrome (SIRS) criteria. Preoperative risk factors and postoperative laboratory markers were compared between septic and non-septic patient groups. Univariate and multivariate analyses were performed to assess these variables associated with sepsis via R software v4.3.

Results: 194 patients (90 female, 104 male, mean age 60.6 years) were included and 18 of which had post-op sepsis (9.28%). Univariate analysis demonstrated that neurogenic bladder (< 0.001), chronic indwelling catheter (p < 0.001), developmental delay, and history of multiple UTI (p < 0.007) were significantly associated with post-PCNL sepsis. Preoperative UTI was also significantly associated with sepsis even if the patient had undergone a full course of appropriate antibiotic treatment (p < 0.031). Multivariable analysis depicted that elevated WBC on post-operative labs drawn within 1 hour of surgery was an independent risk factor associated with sepsis (odds ratio [OR] = 1.22, 95% confidence interval [CI] [1.02-1.52]), p = 0.031). Diabetes, age, BMI were not risk factors. Similarly, pre-op WBC, length of surgery, and length of time with nephrostomy tube/access prior to surgery were also not risk factors.

Conclusions: Patients with specific risk factors, such as history of UTI's, neurogenic bladder, developmental delay, and patients with a recent UTI despite treatment had a greater likelihood of developing sepsis after PCNL. Patients with these risk factors warrant a prudent preoperative assessment and a carefully tailored treatment plan to reduce the risk of infectious complications. WBC immediately post-operatively can be used as predictor for later sepsis development and can help avoid this undesirable outcome.

Funding: The authors have no sources of funding or conflicts of interest to disclose.

MP28-12 Efficacy and safety of supine percutaneous nephrolithotomy in obese patients
Kamran Bhatti1
1 HMC, QATAR

Presented By: Kamran Bhatti, MS, FACS

Introduction: Obesity is an increasing health concern, affecting 39% of the population. In Qatar, in recent years, the obese population contributed 35.9% of men and 46.1% of women. Qatar’s obesity prevalence is higher in the region. The diet, rich in animal protein, high in oxalate, low in calcium, and the dry subtropical desert climate are risk factors for urolithiasis in Qatar. (1) Obesity and weight gain also pose a high risk of urolithiasis. (2) Multiple modalities are available for kidney stones, including extracorporeal shock wave lithotripsy (ESWL), retrograde intrarenal surgery (RIRS), and percutaneous nephrolithotomy (PCNL). However, obesity is a factor in the failure to fragment renal stones by extracorporeal shock wave lithotripsy. Percutaneous nephrolithotomy (PCNL) is the gold standard treatment for renal stones if the stone size is above 2 cm and has been universally endorsed by American, European, and other national guidelines. (3-5) The impact of body mass index (BMI) on the outcome of PCNL is still controversial. Recently, a study by the Endourological Society (CROES) reported that the PCNL had a lower stone-free rate and prolonged operative time in obese patients. (6) Obesity has generally been considered a factor that affects the outcomes of PCNL procedures due to anesthesia-related issues, imaging issues, and technical aspects of endoscopic surgery. Several studies have evaluated the impact of body mass index (BMI) on PCNL outcomes, but in most of these studies, PCNL has been performed in the prone position. (7) Enhanced recovery after surgery (ERAS) has been introduced in endourology to improve postoperative outcomes by reducing the length of stay (LOS). ERAS is also helpful in reducing stress, morbidity, and recovery time. (8) A few studies have been published about the effect of BMI on the outcomes or complications of PCNL in the supine position. The purpose of the current study was to evaluate the impact of obesity on the outcomes of complete supine PCNL under the umbrella of the ERAS protocol in a single center. To the best of our knowledge, this is the first study on a specific topic.

Methods: We retrospectively reviewed the patients who underwent PCNL between January 2015 and December 2019. A total of 150 patients were enrolled. The patients were categorized into two groups according to BMI: < 30 kg/m2 (group 1, non-obese) and > 30 kg/m2 (group 2, obese). The stone clearance rate, operation time, duration of hospital stay, Postoperative analgesic use, and postoperative complications were compared among groups. The chi-square test was used to analyze variables and Complications were graded according to the Clavien–Dindo classification system.

Results: The BMI values of 110 patients were lower than 30 kg/m2, while 40 patients’ BMI values were higher than 30 kg/m2. There was no significant difference between operation time, fluoroscopy time, number of access points, or access sites when the two groups were compared. No significant difference was found in the total length of hospital stay, hemoglobin drop, or complication rates. Immediate stone-free rates were 81.8% in the non-obese group and 75% in the obese group (p = 0.21).

Conclusions: In a retrospective study of 150 patients undergoing supine PCNL, the efficacy was not different between non-obese and obese patients. This is the first study evaluating these
outcomes for PCNL performed under the ERAS protocol in the supine position. Further multicenter and prospective studies are required to verify these findings.

**Funding:** No.

**MP28-13 An Analysis of Percutaneous Nephrolithotomy in Ambulatory Versus Hospital Setting**

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Presented By: Linhan Xu, MD

**Introduction:** Percutaneous nephrolithotomy (PCNL) has traditionally been considered an inpatient surgery due to the risk of bleeding and systemic infection. Advances in surgical equipment, technique, and careful patient selection have made ambulatory PCNL (aPCNL) possible. In this study, we aimed to compare case characteristics in patients undergoing hospital PCNL versus aPCNL.

**Methods:** We analyzed patients who underwent aPCNL at two free-standing ambulatory surgical centers (ASCs) and at a tertiary hospital between May 2015-August 2023. Patient exclusion criteria for the ASC included BMI > 31, severe cardiopulmonary condition, and history of prior anesthetic complication. Patients who underwent PCNL at the hospital and did not go home the same day typically stayed for 24-hour observation following surgery. ASC patients were observed in the post-anesthesia care unit for 90 minutes prior to discharge. Patient demographic, preoperative, and post-operative data were prospectively collected. Descriptive statistics were used for data analysis with statistical significance held at p < 0.05.

**Results:** There were 2,107 ASC and 360 hospital PCNL cases available for analysis. Patient demographics and outcomes data are depicted in Table 1. Patients who underwent PCNL in the hospital were on average older (63 vs 57, p < 0.01) with higher ASA scores (3 vs 2, p < 0.01) and higher BMI (32 vs 30, p < 0.01). The hospital series also demonstrated a significantly higher number of patients with pre-operative positive urine cultures (37% vs 18%, p < 0.01), larger stone burden (38mm vs 31mm, p < 0.01), and greater Clavien-Dindo grades 2-5 complications (4.7% vs 1.4%, p < 0.01). ASC patients had a higher likelihood of having a tubeless procedure (99% vs 92%, p < 0.01), stones with higher Hounsfield units (875 vs 776, p < 0.01), and lower estimated blood loss (34mL vs 45mL, p < 0.01). PCNLs performed at the ASC used less fluoroscopy time (56s vs 76s, p < 0.01) and had shorter operative times (89min vs 106min, p < 0.01). 56% of hospital based PCNLs were discharged on the same day.

**Conclusions:** Patients selected for hospital PCNL have more co-morbidities and are at higher risk for serious complications compared to patients selected for aPCNL. Patient factors, and not case complexity, principally drive the decision for PCNL setting. Appropriate patient selection is paramount in the success and safety of aPCNL.

**Funding:** None.

**MP28-14 Standard PCNL as Day care surgery. A Single Center Experience**

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Presented By: Ammar Asghar, Resident

**Introduction:** Percutaneous nephrolithotomy (PCNL) is an established kidney stone treatment. This study assesses PCNL’s viability as day care surgery, emphasizing careful patient selection and perioperative care for safety and efficacy.

**Methods:** The study conducted at the Pakistan Kidney and Liver Institute and Research Centre from November 2018 to July 2023, the retrospective cohort study included 87 patients undergoing standard PCNL as day care surgery. Logistic regression analysis identified predictors of day care surgery feasibility, and statistical tests compared variables between feasible and non-feasible cases.

**Results:** Significant predictors of day care PCNL feasibility included stone size (p = 0.021), postoperative blood transfusion (p = 0.024), postoperative stay duration (p < 0.001), and surgical procedure duration (p = 0.001). Residual stone size correlated with multiple variables, including operating time, blood transfusion, & initial stone size. Strong positive correlations were observed between preoperative and postoperative haemoglobin levels. Operating time positively correlated with estimated blood loss and postoperative stay duration. Estimated blood loss negatively correlated with preoperative haemoglobin levels.

**Conclusions:** This study contributes insights into the feasibility and outcomes of standard PCNL as a day care surgical procedure. Findings corroborate existing research, emphasizing stone size, blood management, and surgical efficiency as crucial factors influencing day care PCNL feasibility. Enhanced patient selection and perioperative care can optimize the viability of day care PCNL, providing an option for renal stone treatment.

**Funding:** None.
Table no 1: Significant Predictors of Day Care Surgery Feasibility in PCNL Patients

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>( \beta )-Value Odds Ratio</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stone Size (cm)</td>
<td>0.021</td>
<td>3.323</td>
</tr>
<tr>
<td>Postoperative Blood Transfusion</td>
<td>0.034</td>
<td>1.077</td>
</tr>
<tr>
<td>Postoperative Stay (hours)</td>
<td>~0.001</td>
<td>57.831</td>
</tr>
</tbody>
</table>

Surgical Duration (minutes): ~0.001, 41.535 Significant

Table no 2: Comparison of Continuous Variables Between “Feasible as Day Care” and “Not Feasible as Day Care” Surgery Groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Feasible or Day Care Group</th>
<th>Not Feasible or Day Care Group</th>
<th>( \beta )-Value Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postoperative Stay (hours)</td>
<td>M = 22.27 hours</td>
<td>M = 49.52 hours</td>
<td>~0.001</td>
</tr>
<tr>
<td>Estimated Blood Loss (ml.)</td>
<td>M = 58.11 ml.</td>
<td>M = 69.50 ml.</td>
<td>0.659</td>
</tr>
<tr>
<td>Stone Size (cm)</td>
<td>M = 2.93 cm</td>
<td>M = 3.44 cm</td>
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Table no 3: Correlation Analysis between Variables

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<tr>
<td>Renalized Stone Size vs. DJ</td>
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<tr>
<td>Renalized Stone Size vs. Hub</td>
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<td>Preoperative Hemoglobin vs. Stone</td>
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<tr>
<td>Preoperative Hemoglobin vs. Successful Stenting</td>
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<td>Preoperative Hemoglobin vs. Stones</td>
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<td>Preoperative Hemoglobin vs. Successful Stenting</td>
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</tbody>
</table>

MP28-15 Percutaneous Nephrolithotomy Across 9 Years: Evolution and Trends in an Endourology Training Center

Nezahualcoyotl Gonzaga Carlos¹, Braulio Omar Manzo Perez¹, Guillermo Patricio Campos Marquez², Edgar Efren Lozada Hernandez², Hector Manuel Sanchez Lopez², Braulio Omar Manzo Perez²

¹Departamento De Urologia Hospital Regional De Alta Especialidad Del Bajío, ²Departamento De Urologia, Hospital Regional De Alta Especialidad Del Bajío, ³Departamento De Cirugía, Hospital Regional De Alta Especialidad Del Bajío

Presented By: Nezahualcoyotl Gonzaga Carlos, MD

Introduction: Percutaneous nephrolithotomy (PCNL) is the standard of care for managing kidney stones larger than 2 cm and 1.5 cm lower pole stones1-3. Since its birth with Fernström and Johansson in 1976, PCNL has evolved by applying innovative technologies such as pre-operative computed tomography, new percutaneous access techniques, flexible instrumentation, and laser energy. The prone position was initially widely accepted but later challenged by the supine position. This change gave rise to the endoscopic combined intrarenal surgery (ECIRS) approach, which involves a coordinated approach to accessing the urinary tract simultaneously retrograde and antegrade, aiming the stone resolution in a single-step surgery, combined with flexible ureteroscopy to enhance stone clearance4. All of these have contributed to steering (PCNL) towards mini-invasiveness (miniaturization), culminating in the development of Mini-PCNL (mPCNL), which reduces the morbidity of standard PCNL (sPCNL), including also miniaturization of the dilation methods, lithotripsy devices, and stone extraction devices5. Previously, the most commonly used lithotripsy methods were pneumatic, ultrasonic, and Ho:YAG laser energy. Recently, a dual-energy lithotripter with a single probe that uses electromagnetically generated impact and ultrasonic vibration with suction was introduced to enhance stone clearance efficacy6. Thus, based on the above data, we can see that (PCNL) has evolved since its beginning, and our center is no exception. Few longitudinal studies assess the impact of time on clinical outcomes. Since we began with (PCNL) in our center nine years ago, we have faced continuous evolution and improved and higher stone-free rates. Our data will help other urologists increase the stone-free rate and patient safety with improved practices by implementing new technologies and surgical techniques. Our objective is to identify changes and trends in (PCNL) over time, assessing its clinical impact over nine years at a reference center.

Methods: Patient SelectionWe evaluated a prospective database of 620 Hispanic patients with kidney stones submitted to percutaneous renal surgery between 2014 and 2023. Inclusion criteria included patients of all ages, exclusion criteria included incomplete records, and the elimination criteria included the loss of follow-up. The study received institutional ethics committee approval (CI/HRAEB/035/2023). Patient demographics included age, sex, body mass index (BMI), size, comorbidities, previous surgeries, and anatomical abnormalities. The pre-operative assessment included medical history, complete blood count, pre- and post-operative creatinine, urine culture, and a pre-operative non-enhanced CT scan. Patients were classified by stone complexity using GUY’s stone score, and the stone burden was calculated by the ellipse surface area formula (length x height x 3.14/4) in mm² using a pre-operative non-enhanced CT scan. The periprocedural variables analyzed included percutaneous tract number, location, and diameter, type of lithotripsy device, percutaneous puncture, total fluoroscopy, and surgical times. Post-operative outcomes included length of hospital stay, stone-free rate, and complications, categorized according to the Dindo-Clavien classification. Patients with symptomatic anemia and an Hb level <8 g/dL were transfused. Stone-free status at three months post-PCNL was defined as residual fragments less than 2 mm present on imaging, determined by kidneys ureters bladder (KUB) plain films, US, or non-enhanced CT scan. Hospital stay was defined as the time the patient entered the hospital admission to their discharge. Surgical technique A single surgeon performed all surgeries throughout the period. General or regional anesthesia was used, depending on the anesthesiologist’s preference. Antibiotic prophylaxis was routinely administered intravenously 1 hour before, depending on the pre-operative urine culture antibiogram. Prone and supine positions were both used. The scope’s type, lithotripsy device, and percutaneous tract size were registered at the surgeon’s discretion. The procedure began with a urethrocystoscopy, where a hybrid guide was placed in the ureter. A ureteral access sheath, ureteral catheter, or ureteral occlusion balloon was inserted, and a retrograde pyelography was performed under fluoroscopy. At this point, patients summitted to the prone position were positioned with a 6Fr open-end ureteral catheter left in place. After that, the percutaneous puncture was done using the 0-90° technique, and after that, the simplified 0-90° technique was used with an 18 G Chiba needle. Tract sizes of (mPCNL) and (sPCNL) (≤20Fr and >20 Fr) were used, respectively. Pneumatic, ultrasonic, 100W Ho:YAG laser, and Trilogy lithotripsy were employed. A systematic flexible retrograde nephroscopy followed lithotripsy to confirm endoscopic stone-free status. At the end of the procedure, a double-J stent was placed, which was removed within the next 1-2 weeks. In some patients, a nephrostomy tube was placed at the surgeon’s discretion at the end of the procedure. Surgical time was defined from cystoscopy to the Foley catheter placement. Statistical Analysis Patients were divided into three chronological groups (terciles): Group A 2014-2016 (n = 117), Group B 2017-2019 (n = 147), and Group C 2020-2023 (n = 245) to allow
for the analysis of changes in variables. Statistical analysis was performed using the JAMOVI statistical software version 2.3.21. Descriptive statistics were employed, with qualitative variables reported as frequency and percentage. Between-group comparisons were conducted using the Chi-squared test. Quantitative variables were assessed for normality using the Kolmogorov-Smirnov test. Normally distributed variables were reported as mean and standard deviation, while non-normally distributed variables were reported as median and 25-75 percentiles. Between-group comparisons were made using one-way ANOVA or the Kruskal-Wallis test, as appropriate. A significance level of p < 0.05 was considered statistically significant.

Results: Demographic Data We reviewed 620 patients, and 111 were excluded due to incomplete data, resulting in the analysis of 509 patients. The mean age was 45.5 years (range 4-85), the male-to-female ratio was 1.53:1 (308/201), and the average BMI was 28.52 kg/m2 (range 12.8-55.2). Table 1 summarizes all demographic characteristics. Stone Characteristics The left kidney was affected in 51% (n = 255). The average stone burden was 633.31 mm2, with Hounsfield units 971 (±329). Two hundred seventy-two cases (57.9%) were simple stones (Guy’s 1-2). Obstructive kidney stones were 187 (37%). There were 47 (9.3%) patients with calcified/encrusted double “J” stents (according to the V-GUES classification system), with 2% classified as type A, 0.2% as type b, 5.5% as type C, and 1.6% as type D. Operative Variables Table 2 summarizes all operative variables. Antibiotic prophylaxis consisted of fosfomycin in 171 cases (33.8%), amikacin in 138 (27.3%), cephalexin in 122 (24.1%), and quinolones in 21 (4.2%). The average number of percutaneous puncture attempts was 1.4. Multiple punctures (>2) were performed in 90 patients (17.8%), with an average number of tracts of 1.16. As shown in Figure 1, 763 (57%) were (sPCNL), and 217 (43%) were (mPCNL). Figures 2-5 better illustrate the evolution in the perioperative parameters across time. The overall followup imaging rate (n%) was noncontrast CT 421 (83.5%), KUB film 27 (5.4), ultrasound 5 (1). The overall surgical time (min, SD) 126 (56.4), for the first tietle was 137 (65.7), second tietle 131 (53.8) and the last 118 (52.2), p = 0.16. The overall anterograde flexible nephroscopy rate (n%) was 361 (71.2), and the first period 43 (37.4), second tietle 107 (72.8) and the last 211 (86.1), p = 0.001; and tubeless rate was 438 (86.1), 94 (80.3), 116 (78.9) and 228 (93.1%), p < 0.001, respectively. Post-operative Table 3 shows some of the most important clinical outcomes compared between the tertiles. The overall stone-free rate (SFR) was 49.8% (252/509). The overall complication rate was 14.3% (n = 73), including fever 9.4% (n = 48), sepsis 1.8% (n = 9), septic shock 0.4% (n = 2), pneumonia 0.4% (n = 2), and perirenal hematoma 0.2% (n = 1). The transfusion rate was 2.9%.

Conclusions: Over the years, miniaturized endoscopic equipment, new lithotripsy technologies, novel percutaneous puncture techniques, and endoscopic combined intrarenal surgery have been introduced. Moreover, decreased operative and total fluoroscopic screening times without modifying complications and improved stone-free rates clarify that percutaneous surgery has evolved over the nine years studied.

Funding: None.

MP28-16 Role of Anatrophic Nephrolithotomy for complex staghorn renal calculi in the minimally invasive era and its impact on renal function: A prospective study

Dr. Jaisukh Kalathia1, Dr. Giriraj Vala2, Dr. Kaushal Patel3

Introduction: The last two decades have observed the edge of endoscopic surgeries over the open procedures for managing staghorn calculi. Large complex staghorn calculi are an exception where Anatrophic Nephrolithotomy (ANL) has been critical in rendering kidney completely stone free with minimal negative long term sequelae of renal dysfunction.

Methods: The study included 18 patients who underwent ANL for large complex renal calculi with normal functioning kidney between November 2018 to June 2023. In this prospective study we observed the difference in demography, stone characteristics, intra-op parameters, stone clearance, post-operative blood transfusion, length of stay and long-term effects on renal function in patients who underwent ANL.

Results: Mean age was 46.2 years with 9 male and 5 female patients. The average length of the complex staghorn calculi was 9.6 ± 2 cm occupying all of the calyces. Baseline mean haemoglobin and serum creatinine were 10.6 % and 1.18 mg/dl respectively. 8 (57%) patients were operated under regional while 4 required general anaesthesia. The mean cold ischemia time was 38.26 minutes with average blood loss around 120 ml. Mean operative time was 135.4 minutes. Post-operative average drop in haemoglobin and rise in creatinine were 1.4 % and 0.12 mg/dl respectively. 14 (78%) patients were completely cleared of calculi while remaining 4 (22%) with residual calculi required ancillary procedures. Sepsis secondary to urinary tract infection was seen in 3 (21%) patients. The average length of hospital stay was 8.2 days with no peri-operative mortality.

Conclusions: In the treatment of large complex staghorn calculi ANL is non-inferior and should be considered a reasonable alternative to endoscopic lithotripsy which requires
multiple sittings. This study also supports that ANL is safe with minimal peri-operative complications such as acute renal failure or sepsis.

**Funding:** None.

**MP28-17 Retrograde intrarenal surgery versus percutaneous nephrolithotomy for the treatment of patients with 1-2 cm lower pole stones**

Dae Sung Cho¹, Sun Il Kim¹

¹Department of Urology, Ajou University School of Medicine

Presented By: Dae Sung Cho, MD, PhD.

**Introduction:** To compare the surgical outcome of retrograde intrarenal surgery (RIRS) and percutaneous nephrolithotomy (PCNL) in patients with 1-2 cm lower pole stones.

**Methods:** We retrospectively analyzed our prospectively collected database of two groups of patients with 1-2 cm lower pole stones. 57 patients underwent RIRS (group 1), and 45 underwent PCNL (group 2).

**Results:** The preoperative characteristics of patients were comparable between the 2 groups. Operation time was shorter in the PCNL group and hospitalization day was shorter in the RIRS group ($p < 0.001$ and $p < 0.001$, respectively). Visual analog scale (VAS) scores were lower in the RIRS group compared to PCNL group. Success (complete stone clearance) rates were 87.3% and 95.3% in the RIRS and PCNL groups, respectively ($p = 0.037$).

Although there was no significant difference in terms of general complication rates, grade II complication (blood transfusion) and grade IVb complication (urosepsis) were occurred in the PCNL group according to the modified Clavien-Dindo classification system.

**Conclusions:** PCNL showed higher success rate in the treatment of 1-2cm lower pole stones compared with RIRS. However, RIRS show less invasive and safer option for the treatment of 1-2cm lower pole stones.

**Funding:** None.

**MP28-18 Outcomes and Challenges in Percutaneous Nephrolithotomy for Neurogenic Bladder Patients**

Tran Ngoc An Huynh², Titus Chng¹, Li Eng Ming Alex¹, Weranja Ranasinghe², James Sewell²

¹Faculty of Medicine, Nursing and Health Science, Monash University, ²Department of Urology, Monash Health

Presented By: Tran Ngoc An Huynh

**Introduction:** Neurogenic bladder secondary to conditions such as multiple sclerosis (MS), spina bifida (SB), cerebral palsy (CP) or spinal cord injury (SCI), is a major risk factor for renal stones. Percutaneous nephrolithotomy (PCNL) is a well-established approach in the treatment of renal stone disease. However, the anatomy or physiology in neurogenic bladder patients can increase the complexity of PCNL. This study aims to assess the stone-free rate and complications associated with PCNL in neurogenic bladder patients from a single institution.

**Methods:** A retrospective analysis was conducted of all neurogenic bladder patients who underwent PCNL at our institution from 2020-2023. Patient demographics, operative details, stone sizes, and complications were extracted from electronic medical records. Complications were graded using the Clavien-Dindo classification system.

**Results:** A total of 16 patients were included in the analysis (9 females, 7 males; mean age 52 years). SB, MS and SCI accounted for 6, 6, 2, and 2 cases respectively. The mean preoperative stone size was 17mm. The overall stone free rate was 50%, with a mean residual stone size of 13mm. During the median 10-month follow-up, 50% of patients required a further procedure under general anesthesia. Complications occurred in 25% of cases, including two Grade 2 complications necessitating intravenous antibiotics, and two Grade 4 complications, involving symptomatic blood loss and intra-operative bowel injury.

**Conclusions:** Our study highlights the ongoing management challenges for neurogenic bladder patients in achieving stone-free disease. The complications highlight the importance of post-operative care in mitigating adverse events. Continued efforts to optimize surgical strategies are essential to improving outcomes in this patient population.

**Funding:** None.

**MP28-19 Re-PCNL in patients in patients who previously underwent open stone surgery in recurrent stone formers**

Haresh Thummar³, Nisha T¹, keya T²

¹Vedanta, ²GCS, ³Zydus

Presented By: Haresh Thummar, MD

**Introduction:** Ours is a stone belt area with very high stone prevalence rate as well as recurrence rate. Though nowadays, open stone surgery (OSS) is rare, in the past open stone surgery was the mainstay for urolithiasis. We encounter many cases who underwent open stone surgery now managed with PCNL. The aim of the study was to determine the possible impact of OSS on subsequent PCNL.

**Methods:** We reviewed 1990 patients record who underwent PCNL at our institute from 2009 to June 2019. We compared patients who had past history of OSS in the same renal unit
undergoing PCNL and assessed various intraoperative, postoperative parameters like difficulty in PCS access, tract dilatation, bleeding, operative time, need for secondary procedures, stone free rate and other complications.

Results: Out of 1990 PCNL patients, we had 36 patients with past history of nephrolithotomy, 230 patients with past history of pyelolithotomy, 14 patients had anatrophic nephrolithotomy. The group did not differ in terms of age or stone burden. The operative time (102 ±36 v 76±24 min), secondary procedures (16 v 9), pelvicalyceal access time, tract dilatation time were significantly higher in OSS group. However, stone free rate (96 v 95) and post operative complication (8 v 7%) did not differ significantly.

Conclusions: A PCNL in a patients with past history of OSS may take longer time with some technical difficulty probably due to scar tissue and anatomic changes in the kidney. However, efficacy and safety of PCNL is this group of patients is equal to virgin PCNL case.

Funding: None.

MP28-20 salvage endoscopic tract dilatation compared with successful one-shot Amplatz dilatation during sonography-guided percutaneous nephrolithotomy

Hamid Pakmanesh¹, Mohammadali Kohansal¹
¹Department of Urology, School of Medicine, Kerman University of Medical Sciences, Kerman, Iran; ²Clinical Research Development Unit, Shahid Bahonar Hospital, Kerman, Iran

Presented By: Hamid Pakmanesh, MD

Introduction: During percutaneous nephrolithotomy, one of the challenges that arise is when the tract dilatation fails due to short-advancement. In such cases, instead of creating a new tract, a method of endoscopic tract dilatation can be used as a salvage technique for renal access. In this study, we aimed to compare the efficacy of endoscopic tract dilatation with bi-prong forceps in cases of short access with uneventful dilatation using one-shot Amplatz tract dilatation.

Methods: The study enrolled patients who underwent sonography-guided PCNL for six consecutive months in 2023. After renal puncture under the sonography guide, an Amplatz dilator was used for one-shot tract dilatation. In the case of short-advancement, a bi-prong forceps was used under direct endoscopic vision for tract dilatation. The study compared the operation time, postoperative complications, and stone-free rate between successful one-shot Amplatz dilatation (SA) and those with salvage endoscopic tract dilatation (SE).

Results: The study included 108 patients with a mean age of 47.9±11.6 (50.9% male). Short-advancement occurred in 63 patients (58.3%) who were assigned to the (SE) group. The salvage technique was successful in 95.2% of occasions of short-advancement. Pre-operative demographic and clinical data were not different in this group compared to the (SA) group. The operative time was 21.1±14.5 minutes in the (SE) group, which was not longer than the (SA) group with 22.7±12.6 minutes (p = 0.2). The stone-free rate was 81.0% in the (SE) group, which was not inferior to 73% in the (SA) group (p = 0.3). The transfusion rate and complications were not different as well.

Conclusions: Salvage endoscopic tract dilatation in case of short-advancement after one-shot Amplatz tract dilatation during percutaneous nephrolithotomy is not associated with higher complications or inferior clinical outcomes compared with cases with successful one-shot dilatation.

Funding: None.
MP29-01 Prospective randomized trial comparing high power Ho:YAG and Thulium Fiber Laser for retrograde ureteroscopy: Preliminary clinical results, environmental noise analysis, and surgeon satisfaction

Lucas Vergamini¹, Vassili Glazyrine¹, William Ito², Mihaela Sardiu¹, Bristol Whiles¹, Donald Neff¹, David Duchene¹, Wilson Molina¹

¹University of Kansas Medical Center, ²University of Texas Southwestern

Presented By: Lucas Vergamini, MD

Introduction: Both the Holmium:YAG laser (Ho:YAG) and Thulium fiber laser (TFL) have been studied and utilized in different urological procedures. The newer TFL platform’s initial clinical data has been promising but additional comparative studies are needed. This study aims to compare intraoperative as well as postoperative outcomes of SOLTIVE TFL vs. high-power Ho:YAG laser during flexible ureteroscopy (fURS) as well as compare physician satisfaction between the two lasers.

Methods: This is an ongoing prospective trial at a tertiary care center with patients randomized to undergo fURS for treatment of ureterolithiasis using either TFL (Soltive SuperPulsed, 60W, Olympus®/C210®) or Ho:YAG (P120H®, Boston Scientific®). Exclusion criteria included patients being treated for bilateral stones or stone burden ≥2 cm. Intraoperative data is collected by the research team during the procedure. After each case, a questionnaire was utilized to assess physician satisfaction and perception of the intraoperative noise. Stone free rate (SFR) was assessed within days postoperatively.

Results: A total of 57 patients were enrolled to date. Patient demographic features and stone characteristics were collected. HoYAG utilized less energy but showed no difference in laser or operative time. Overall, there was no difference in SFR in any category between HoYAG and TFL. Physicians reported easier handling and maneuverability with the TFL, as well as better dusting. Figure 1 shows the intraoperative noise elements evaluated and depicts the noisier environment seen with the Ho:YAG laser vs. TFL (all with p < 0.001).

Conclusions: Although we observed an equivalent postoperative SFR, this study depicts less laser energy use with the Ho:YAG vs. TFL in fURS. Furthermore, TFL was easier to manipulate, quieter and contributed to less intraoperative noise via surgeon assessment.

Funding: This study was supported by Olympus.

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MP29-02 Assessing the Financial and Clinical Efficacy of Next-Gen Reusable vs. Disposable Flexible Ureteroscopes in Complex Renal Surgeries: a randomized controlled trial

Kazumi Taguchi¹, Shuzo Hamamoto¹, Takahiro Yanase¹, Kengo Kawase¹, Teruaki Sugino¹, Rei Unno¹, Yohei Takakura¹, Shiori Tajima¹, Takahiro Yasui¹

¹Nagoya City University

Presented By: Kazumi Taguchi, MD, PhD

Introduction: With the rise in innovation in flexible ureteroscopes, such as digital reusable and single-use scopes, selecting the optimal equipment both clinically and economically remains challenging. Our study aimed to provide a cost-benefit analysis through a randomized controlled trial (RCT) comparing the latest generation digital reusable (URF-V3, Olympus) with single-use (Uscope PU3033A; WiScope) flexible ureteroscopes during complex endoscopic combined intrarenal surgeries (ECIRS).

Methods: This single-center, cost-effectiveness RCT spanned from September 2021 to September 2023. Patients with significant renal stone burdens undergoing ECIRS were recruited and assigned to either the V3 or single-use groups. Five brand-new V3 scopes, acquired exclusively for this study, were used. A 17.5 Fr tract predominantly facilitated percutaneous lithotomy, and simultaneous Ho:YAG laser lithotripsy was executed via the ureteroscope. Primary endpoints were the cost per procedure and scope durability, while secondary outcomes encompassed stone-free rates, surgical duration, and complications.

Results: 135 ECIRS procedures were recorded. No significant clinical differences were observed between the groups. The study noted two repairs for V3 scopes and four breakages for single-use scopes. Cost per case stood at $840 for single-use and $1,815 for the V3 group. The V3 scopes endured between 23 and 34 cases before needing repair. A break-even point of 170 cases was determined to equate the costs of single-use scopes with five new V3 scopes. The single-use group exhibited higher total laser energy usage (5.0 vs 2.6 kJ, p = 0.011) and ureteroscopy-assisted percutaneous access (49.3 vs 23.5 %). Notably, there was a trend toward improved stone-free rates in the single-use group. Damaged scope incidents correlated with larger stone sizes and higher stone-free rates, as well as prolonged surgical and laser durations. (Table 1).

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Conclusions: The study highlights the economic benefits and potential for enhanced stone clearance when using single-use flexible ureteroscopes in ECIRS. A hybrid approach, combining both reusable and single-use scopes, may offset the economic implications.

Funding: None.

MP29-03 Unveiling the Impact of Opioid-Free Postoperative Regimens in Ureteroscopy: A Comprehensive Systematic Review and Meta-Analysis
José Arnaldo S. da Cruz1, José Arnaldo S. da Cruz2, Breno C. Porto2, Felipe G. A. Gonçalves2, Bruno D. Terada2, Nathalie C. Hobaica3, Bruno D. Silva1, José P. Otoch1
1German Hospital Oswaldo Cruz, 2University of São Paulo Medical School, 3Pontifical Catholic University of São Paulo
Presented By: José Arnaldo S. da Cruz, MD, PhD

Introduction: Ureteroscopy (URS) and retrograde intrarenal surgery (RIRS) are minimally invasive urologic procedures that are commonly used to treat kidney stones. However, they often result in significant postoperative pain. Historically, like in many other medical disciplines, patients undergoing these surgeries have predominantly been managed with opioids. This practice has contributed to the escalating global complications associated with these drugs, including abuse and addiction. As a result, over the recent years, many healthcare centers have made efforts to minimize opioid use, opting instead for safer alternative medications. In this study, we aim to compare the efficacy of both opioid and opioid-free pain management regimens following URS or RIRS procedures.

Methods: A systematic search was conducted in MEDLINE, Embase, Scopus, Cochrane, LILACS, and Google Scholar. We included studies that compared opioid-based and opioid-free postoperative care for managing pain in patients who underwent URS or RIRS for lithotripsy. Our primary outcome of interest was the frequency of postoperative emergency department (ED) visits. Secondary outcomes included pain-related phone calls, postoperative unexpected encounters, the need for opioids at discharge, and patients with opioid refills.

Results: We retrieved 10 articles, encompassing 6, 786 patients in the opioid group and 5, 276 patients in the opioid-free group.

Overall, our findings lean towards favoring the opioid-free regimen, revealing notable differences between the groups. Opioid-free regimen was associated with less ED visits (OR 0.67; 95% CI 0.58, 0.77; p = 0.00001; I2=0%) and required less opioids at discharge (OR 0.11; 95% CI 0.02, 0.64; p = 0.01; I2=89%).

Conclusions: Our meta-analysis suggests that an opioid-free regimen outperforms the use of opioids after URS or RIRS. It consistently demonstrates statistically superior results in terms of pain management, while it also effectively reduces the risks associated with opioid use for these patients, particularly concerning opioid abuse and dependence.

Funding: None.

MP29-04 Retrograde intrarenal surgery in lateral position for lower pole stone
Wen Zhong1
1First affiliated hospital of Guangzhou Medical University
Presented By: Wen Zhong, PhD

Introduction: Retrograde intrarenal surgery (RIRS) was generally challenging in management of lower pole stone (LPS) since the unfavorable anatomy. Theoretically, LPS was prone to fall out and down to renal pelvis when patients turned to lateral position, thus to facilitate lithotripsy. The aim of the present study was to report our initial experience of RIRS in lateral position for LPS.

Methods: 21 patients with LPS received RIRS in lateral position. The intraoperative finding, operation time, complications and stone-free rate (SFR) were recorded and analyzed.

Results: A total of 21 eligible patients with LPS, including 16 males and 5 females, were finally enrolled for RIRS in lateral position. The mean stone size was 16.7±2.4 mm, multiple stones in lower pole were noted in 38.1% (8/21) cases. The mean infundibular-pelvic angle (IPA) was 35.2±6.9°, IPA less than 30° was noted in six cases (28.6%, 6/21). Mean operation time was 43.5±6.3 min. Obvious stone fragments dropping from the lower calyx to renal pelvis during the lithotripsy were noted in 17 cases (81.0%). Only one case (4.8%) suffered postoperative fever (Clavien I), no severe complication (>Clavien II) was noted. Hospital stay was 1.1±0.3 days, the SFR in postoperative 1 month was 85.7%.
Conclusions: LPS was prone to fall out and down to renal pelvis when patients in lateral position, thus to facilitate the lithotripsy. RIRS in lateral position was feasible for the management of LPS; however, RCT with large sample was required to certify our initial finding.

Funding: None.

MP29-05 Conundrum calculi-Impacted stone: Predicting factors and stone free rate
Haresh Thummar³, Keya T¹, Nisha T²
¹GCS, ³Vedanata, ²Zydus

Presented By: Haresh Thummar, MD

Introduction: Upper ureteric stone management is one of the challenging task especially when its impacted. To evaluate predicting factors for impacted ureteral stone and describe stone free rates of ureteroscopic treatment for impacted compared with non-impacted ureteral stones.

Methods: We retrospectively analyzed 228 patients who underwent ureteroscopic lithotripsy (URSL) for ureteral stones diagnosed by computed tomography (CT) between 2015 and 2022. Clinical and radiologic predictors of impacted ureteral stones were assessed using univariate and multivariate logistic regression analysis. Additionally, stone freerates of impacted ureteral stones and correlated factors were evaluated.

Results: All of 228 patients, 186 patients were diagnosed with impacted stones and correlated factors were evaluated. Stone free rates of ureteroscopic treatment for impacted compared with non-impacted ureteral stones were 83.2% for impacted stone, which is lower compared with 94.8% for non-impacted stones (p < 0.001).

Stone burden, degree of hydronephrosis, C-reactive protein (CRP), ureteral wall thickness (UWT), duration of symptoms in patients with impacted ureteral stones was significant differences on univariate analysis. Multivariate analysis showed that stone burden, ureteral kink and dilatation, degree of hydronephrosis, ureteral wall thickness (UWT) (odds ratio 6.104, P = 0.001) were independent predictors of impacted ureteral stones. Additionally, preoperative percutaneous nephrostomy (PCN), stone burden, non visualised ureter distal to stone on CTIVU, the using of flexible ureterorenoscope, hydronephrosis were independent predictors of affecting stone free rate for impacted ureteral stones.

Conclusions: Ureteral stone surgery is a challenging endourological task. The predictive factors such as stone burden, degree of hydronephrosis, duration of symptoms, ureteral wall thickness may contribute to the preoperative diagnosis of impacted ureteral stone. Endourology manipulations, Preoperative PCN and active using of flexible ureterorenoscope could be increase a stone free rate of ureteral impacted stone.

Funding: None.

Table 1. Demographics and Results

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<td>(n = 149)</td>
<td></td>
<td></td>
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<tr>
<td>P value</td>
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<td>0.165</td>
<td>0.97</td>
<td>&lt; 0.01</td>
<td>&lt; 0.05</td>
<td>&lt; 0.01</td>
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</tbody>
</table>

Introduction: Ureteric stents placed in-situ following ureteroscopy require additional cystoscopy for removal and in the interim can cause patients significant pain and reduced quality of life. Routine patient self-removal of these stents on strings can be a safe, valid alternative that is acceptable, cost-effective and beneficial to patients. This study describes our experience addressing this thesis in a rural Australian setting where longer distances and wait-times can worsen these factors for patients.

Methods: From February 2023 over 12 months, 97 patients were prospectively recruited in a single regional health service in Australia for self-removal of stents. Patients were counselled preoperatively and provided a single page information sheet with written instructions. Age, cognition, mental capacity, dexterity were considered in patient selection. Prospective clinical data and patient-reported outcomes via questionnaire were collected and evaluated.

Results: 97 patients had stents left on strings following ureteroscopy (32%) and pyeloscopy via access sheath (68%). 61/97 (63%) of patients had a history of previous ureteric stenting for stone surgery. Self-removal at home was successful in 84/97 (87%) of patients, whilst 11 presented to their community doctor and 2 presented to local emergency for removal. Mean stent dwell time was 4.9 +/- 1.7 days. Zero stents were retained, requiring flexible cystoscopy, and 1 patient had a partially dislodged stent. Patients self-reported statistically significant less pain, discomfort, stress and anxiety relating to the stent on standardised post-removal questionnaire and 91/97 (94%) would opt for self-removal again.

Conclusions: Ureteric stents can safely be left on strings following endoscopic stone lithotripsy and has shown favourable improvements in patient experience with a comparable low risk of complication. These factors are compounded in a regional setting where there is greater time and cost burden on the patient and hospitals for flexible cystoscopy.

Funding: Nil funding

MP29-06 Ureteric Stents on Strings: a Safe Method for Improving Patient-Reported Outcomes and Complications in a Rural Setting
Varun Buhariwalla¹, Jonathan Lewin¹, Marc Paffen¹
¹Albury-Wodonga Health

Presented By: Varun Buhariwalla, MD, BSc, PGDipBioEnt

MP29-07 Relocation of Lower Pole Renal Stone Increases Stone-Free Rate during Retrograde Intrarenal Surgery: A Systematic Review and Meta-Analysis
Missy Savira¹
¹Department of Urology, Faculty of Medicine, Universitas Indonesia, Dr. Cipto Mangunkusumo Hospital, Jakarta, Indonesia
MP29-08 Successful Treatment of Staghorn Stones with flexible ureteroscopy and Thulium Fiber Laser (TFL): initial experience with 32 cases

Tawiz Gul1, Mahmoud Laymon1, Maged Alrayashi2, Mohamed Abdelkareem1, Morshed Salah3

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2Urology Section, Surgery Department, Hamad Mebaireek general hospital, Hamad medical corporation, Qatar,
3Urology Section, Surgery Department, Hazm Mebaireek general hospital, Hamad medical corporation, Qatar

Presented By: Tawiz Gul, MD

Introduction: There has been an emerging role of flexible ureteroscopy (FURS) in treatment of large renal stones > 20mm. Thulium fiber laser (TFL) provides high ablation rate, and less retropulsion. The purpose of this study was to investigate whether FURS with TFL lithotripsy could be a viable option for management of renal staghorn stones.

Methods: After IRB approval, 32 patients with staghorn renal stones were recruited. Stone characteristics including, width, length, volume, shape and density were analyzed using preoperative CT scan. A reusable FURS (OUT) was utilized in all cases. Lithotripsy was carried out using TFL delivered via 200 μm fiber. Lithotripsy efficiency metrics included: fragmentation speed, laser efficacy and laser activity. The primary outcome was to assess SFR after the procedure that was classified into: Grade A (no residual fragments (RF), Grade B: clinically insignificant RF ≤ 2mm and Grade C: sizable RF >2mm.

Results: Mean patient age was 41.7±9.3. Median stone width and volume were 22.2 (19.2-32.8) mm and 7339 (3183-53838) mm3, respectively. Mean stone density was 1004±342. Median operative and lasing time were 135 (70-200) and 117 (50-180) minutes, respectively. The mean total energy delivered was 63.9±30 KJ with a median fragmentation speed of 1.3 (0.5-4.9) mm/sec. Mean laser efficacy was 7.5±3.6 Joules/mm3. Laser was active during 85.7% (71%-95%) of the total operative time. A total of 12 complications occurred in eight patients (25%), all were of minor grades. After the first session, seventeen patients (53%) were stone free with no RF (Grade A) while six (19%) patients had RF ≤2 mm (Grade B). Nine patients (28%) had RF > 2 mm (Grade C) with median RF size of 4 (3-9) mm. A second intervention was required in 4 cases. The overall SFR after completion of treatment was 65.6%.

Conclusions: Flexible ureteroscopy with TFL lithotripsy is a safe and effective treatment option for staghorn stones with SFR comparable to standard PCNL. The procedure is associated with minimal morbidity, minimal blood loss and shorter hospital stay.

Funding: Non.

MP29-09 Comparative Analysis of Safety and Effectiveness of Safety vs. Non-Safety Guidewires During Ureteroscopic Procedures: A Systematic Review and Meta-Analysis

Muhammad Andi Iqbal Maulana1, Nur Rasyid1, Muhammad Hanif Arifananda1, Hario Surya Susilo1, Favian Arief Rahmat1

1Department of Urology, Cipto Mangunkusumo Hospital

Presented By: Muhammad Andi Iqbal Maulana, MD
Introduction: Urinary tract stones can be effectively treated with ureteroscopy (URS), although the use of safety guidewires is still debatable. In order to compare the safety and efficacy of safety versus non-safety guidewires in URS, this study will methodically review and meta-analyze the results.

Methods: After a thorough search of PubMed, Scopus, and the Cochrane Library, we selected four studies out of the first 150 for inclusion. These included information from 641 URS patients, of whom 304 had non-safety guidewires and 337 had safety guidewires. We evaluated the success of stone retrieval, the length of the procedure, the incidence of ureteral injuries, and the rates of stone clearance and migration. PICO: “Adults undergoing URS (P), No Safety Guidewire (I), Safety Guidewire (C), Peri- and Postoperative Outcomes (O).”

Results: The stone clearance rate pooled risk ratio (RR) was 0.77 (95% CI [0.48, 1.25]), indicating that there was no significant difference between the safety guidewire (SGW) and non-safety guidewire (Non-SGW) groups. Additionally, there was no significant difference in the stone migration rate (RR 0.78, 95% CI [0.56, 1.07]). Likewise, there was no statistically significant difference in the mean surgical duration (-0.92 minutes, 95% CI [-3.23, 1.38]). The Non-SGW and SGW groups did not significantly differ in the rates of successful stone achievement (RR 1.01, 95% CI [0.97, 1.05]) or ureteral injury (RR 0.82, 95% CI [0.36, 1.87]). All of the outcomes showed low to moderate heterogeneity, with the exception of the rate of ureteral injury, which showed significant heterogeneity (I² = 84%). The Cochrane risk-of-bias tool was used to evaluate the bias risk.

Conclusions: When safety guidewires are used in ureteroscopic stone management, the results are similar to those obtained with non-safety guidewires, demonstrating their interchangeability and potential for flexible application according to surgeon preference and clinical context.

Funding: None.

MP29-10 Ureteral access sheath during flexible ureteroscopy in prior urinary sepsis. Is it really necessary?
Renato Navarro Capone1, Gaston Astroza1, Lucas Dueñas1, Pascal De Amesi1, Enzo Castiglioni1
1Pontificia Universidad Catolica de Chile
Presented By: Renato Navarro Capone, MD

Introduction: Endoscopic ureterolithotomy is the main treatment for urinary stones. In cases of ureterolithiasis complicated by a urinary infection, urinary tract drainage is required prior to definitive resolution of the stone. Flexible ureteroscopy is the treatment of choice in upper ureteral lithiasis; different authors prefer to use a ureteral access sheath (UAS) in these patients to reduce intrarenal pressure and thus reduce the number of complications. The objective of this work is to analyze the complications and the role of the navigation sheath in patients undergoing flexible ureteroscopy previously drained endoscopically for urosepsis.

Methods: Retrospective study at the UC-Christus Hospital, Chile. We reviewed the patients who had urolithiasis associated to urosepsis requiring endoscopic drainage (jj stent) between 2017 and 2022. Patients that underwent to flexible ureteroscopy as final treatment were selected. We compare the group that used a UAS versus those who did not (according to the surgeon’s decision). Demographics, complications and stone free (SF) were analyzed. Statistical analyzes was performed using Chi square and Mann-Whitney.

Results: 45 patients met the inclusion criteria. The average age was 59 years and the average size of the stone was 9 mm. A UAS was used in 57% of the patients. There were no differences in terms of diabetic and hypertensive patients between both groups. Patients in whom a UAS was used had a higher history of previous ipsilateral ureteroscopy (26% v 11%, p < 0.05). In patients who used a UAS, there were 11% complications at 3 months. All of them were of an infectious nature, with only 1 patient with febrile infection. In patients without navigation sheath, 21% complications were recorded, only 1 patient with an infectious complication (non-febrile) and the rest associated with pain due to residual stone. Regarding the percentage of SF, there was no significant difference between both groups, however, a trend was shown in favor of patients in whom a navigation sheath was used (p 0.07). There was no difference in terms of use of JJ stent postoperatively.

Conclusions: The use of UAS is controversial; the series presented does not show a benefit in terms of the rate of postoperative infections, although it could have a role in terms of post-operative mechanical complications.

Funding: None.

MP29-11 Factors Predicting Stone-Free Rates after Retrograde Intrarenal Surgery (RIRS) for Lower Pole Kidney Stones: A Single-Center Retrospective Analysis
Saud Alhelal2, Hazem Elmansy1, Saud Alhelal1, Moustafa Fathy1, Amr Hodhod1, Husain Alaradi1, Ryan Boudreau1, Loay Abbas1, Amer Alaref3, Ahmed S. Zakaria1
1Thunder Bay Regional Health Sciences Centre, Northern Ontario School of Medicine, 2NOSM
Presented By: Saud Alhelal, MD

Introduction: To investigate the factors impacting stone clearance following retrograde intrarenal surgery (RIRS) for lower pole kidney stones and to determine whether there is a significant relationship between the infundibular pelvic angle (IPA) of the kidney’s lower pole and stone fragment clearance.

Methods: We conducted a retrospective review of patients who underwent flexible ureteroscopy (f-URS) for lower pole renal calculi between December 2020 and July 2023 at our institution. Patient demographics and stone parameters were recorded,
including stone size, number, volume, and density, as well as IPA. Intraoperative data, including total operative time, lasing time, type of laser used, and stone composition, were collected and analyzed. All patients underwent a CT scan at three months follow-up. We recorded the presence of residual stones and the percentage of stone volume reduction. Patients with a stone size <4mm were deemed stone-free. All patients were discharged home on the same operative day.

Results: A total of 123 patients were included in the study, with 71 in the stone-free group (Group 1) and 52 in the residual stones group (Group 2). On univariate analysis, there were significant differences between the two groups in terms of stone size, IPA, and the type of ureteroscopy used. At 3 months follow-up, 96% (24/25) of patients with an IPA <30° had residual stones, compared to 28.6% (28/98) of patients with an IPA >30° (p < 0.001). There was no significant difference in intraoperative or postoperative complications between the two groups. On multivariate analysis, IPA and stone size were the only predictive factors for the presence of residual stones. Twelve patients (23.1%) from Group 2 required retreatment.

Conclusions: RIRS is an effective treatment option for the management of lower pole kidney stones. IPA, in conjunction with stone size, appears to dictate the stone clearance rates of RIRS for lower pole stones.

Funding: No source of funding.

Table 2. Multivariate analysis of independent predictors for stone-free rate following URS using binary logistic regression analysis

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Univariate Analysis</th>
<th>Multivariate Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HR 95% CI       p-value</td>
<td>HR 95% CI       p-value</td>
</tr>
<tr>
<td>IPA</td>
<td>0.895 0.862-0.929 &lt;0.001</td>
<td>0.866 0.848-0.925 &lt;0.001</td>
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<td>Stone size cm</td>
<td>1.737 0.923-3.265 0.08</td>
<td>2.791 1.224-6.367 0.015</td>
</tr>
<tr>
<td>Stone number</td>
<td>0.683 0.363-1.283 0.236</td>
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</tr>
<tr>
<td>Stone volume mm³</td>
<td>1 1-1 0.373 -- -- --</td>
<td></td>
</tr>
<tr>
<td>Stone density HU</td>
<td>0.999 0.999-1 0.207 -- -- --</td>
<td></td>
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<tr>
<td>Laser type</td>
<td>0.534 0.246-1.157 0.112</td>
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</tr>
<tr>
<td>URS type</td>
<td>0.412 0.2-0.887 0.02</td>
<td>0.592 0.316-1.57 0.846</td>
</tr>
</tbody>
</table>

HR, hazard ratio; CI, confidence interval; IPA, infundibulo pelvic angle; HU, Hours field unit; URS, ureteroscopy

Introduction: To examine the literature and determine the infundibulo-pelvic angle (IPA) at which ureteroscopy is unlikely to succeed, and conversely the angle of likely success.

Methods: We performed a systematic review and meta-analysis as per Cochrane guidelines in accordance to the PRISMA statement. The review was registered with PROSPERO prior to commencement (ID: CRD42022296732). We included studies reporting on outcomes of ureteroscopy for lower pole stones, with the infundibulo pelvic angle. We excluded patients undergoing alternative treatments for lower pole stones, anatomical abnormalities and studies with <10 patients. We assessed bias with the Newcastle-Ottawa scale. We performed meta-analysis in R, and summarised the findings according to the GRADE criteria.

Results: Overall, there were 13 studies included, with 10 being suitable to meta-analyse for the primary aim. These studies covered n = 1964 patients, of whom n = 1397 (71%) were stone free. Overall, the stone free patients had a mean IPA of 52°–9°, compared to the non-stone free patients (IPA=39°–7°). On meta-analysis there was a significant difference between these angles (REM MD = -13.0, 95% CI: -18.7 to -7.2, p < 0.001). On visual examination of forest plots, at IPA <30° no patients were stone free, whilst >50° all were stone free. Overall, there was a moderate risk, and a ‘very low’ certainty of evidence for the primary outcome.

Conclusions: With a very low certainty of evidence, we demonstrate that at an IPA of <30° no patient is stone free, whilst >50° all patient (in this review) are stone free. A trial More evidence is therefore clearly needed. needed in this area.

Funding: N/A.

MP29-12 At Which Infundibulopelvic Angle is Ureteroscopy Feasible? A Systematic Review and Meta-Analysis

Arran Dingwall1, Arran Dingwall1, James Leighton2, Sophie Whitehead3, Angus Luk4, Vineet Gauhar4, Victoria Jahrreiss5, Bhaskar Somani6, Robert Geraghty1

1Department of Urology, Freeman Hospital, 2Department of Urology, Freemab Hospital, 3Department of Urology, Freeman Hospital, Newcastle, UK, 4Ng Teng Fong General Hospital, 242949, Urology, 5Department of Urology, Medical University Vienna, Department of Urology University Hospital Southampton, 6Department of Urology, University Hospital Southampton

Presented By: Arran Dingwall

MP29-13 Preventing retrograde stone displacement during pneumatic lithotripsy for ureteral calculi using lidocaine jelly

Mohammadreza Darabi Mahboub4, Monavvar Afzal Aghae4, Aliereza Golshan2, Mohammad Aslzare5, Behtash Pedram rad3

1Social Determinants of Health Research Center, Mashhad University of Medical Sciences, Mashhad, Iran, 2Associated Professor of Urology, Mashhad University of Medical Science, Mashhad, Iran, 3Department of Urology, Mashhad University of Medical Sciences, Mashhad, Iran, 4Professor of Urology, Mashhad University of Medical Science, Mashhad, Iran
Presented By: Mohammadreza Darabi Mahboub, MD

**Introduction:** This study assesses the efficacy of lubricating jelly instillation proximal to the ureteral calculi during lithotripsy in preventing retrograde stone displacement and enhancing the stone-free rate.

**Methods:** 110 patients with ureteral calculi of less than 2 cm were randomized into 2 groups: jelly instillation (n = 55) and controls (n = 55). Ureteroscopy was performed using a 9.8F semirigid ureteroscope. A 5F ureteral stent was placed beyond the stone. Lidocaine jelly (2 ml) was instilled, and lithotripsy was done with a Swiss Lithoclast. A5F ureteral catheter was left in place for 24 hours, and patients were followed up at 24 hours with radiography of the kidneys, ureters, and bladder and at 2 weeks with sonography.

**Results:** Both groups were comparable in terms of mean age and stone size. Stones or stone fragment migration occurred in 18.8% of the treatment group and 44.2 of the controls, statistically significantly different (p = 0.009). The stone-free rate was 81.3 and 55.8 in the treatment and control groups, respectively. The rates didn’t improve after 2 weeks, and the difference was not statistically significant between the 2 groups (p = 0.384). The mean operative time was also comparable between the two groups.

**Conclusions:** Lidocaine jelly instillation proximal to the ureteral calculi during lithotripsy is an effective method to prevent retrograde stone displacement.

**Funding:** None.

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**MP29-14 Spinal Epidural Abscesses after Ureteroscopy**

David Kim², Stephanie Washington¹, Luke Reynolds²

¹University of Chicago, Pritzker School of Medicine, ²University of Chicago Medical Center

Presented By: David Kim, MD

**Introduction:** Spinal epidural abscesses (SEA) are an uncommon but potentially life-threatening infection that requires prompt identification and treatment. To our knowledge, there have been no reports of patients without previous spinal pathologies who present with SEA following a urinary tract infection (UTI) and genitourinary procedure. We detail two cases of spinal abscess formation after ureteroscopy (RS) and/or laser lithotripsy (LL).

**Methods:** The first case is a 64-year-old male with recurrent urinary tract infections and nephrolithiasis who presented with lower extremity numbness and weakness one month after bilateral URS. The second case is a 47-year-old female with a history of nephrolithiasis and recurrent UTIs with multi-drug-resistant Escherichia coli who presented with continuous lower back pain one month after ureteral stent removal post-URS/LL.

**Results:** Patient #1 underwent an uncomplicated bilateral URS with basekt stone removal and ureteral stent placement without any intra-operative or immediate post-operative complications. His stents were removed on post-operative day 4. He then presented with bilateral lower extremity weakness and a fever a month after his stents were removed. Magnetic resonance imaging (MRI) revealed an epidural abscess with mass effect on the cord. He underwent emergent bilateral laminectomies and medial facetectomies with drainage of the epidural abscess. Cultures resulted in E. coli, a uropathogen he had grown before and in his stone culture. He continues to have motor deficits. Patient #2 underwent an uncomplicated left URS/LL and ureteral stent placement with no intra-operative or immediate post-operative complications. Her stent was removed three weeks later. One month after stent removal, she presented with unrelenting back pain most prominent over the lumbar spine and coccyx. MRI demonstrated discitis and was suspicious for a developing paraspinal abscess. She underwent computed-tomography-guided drainage of the abscess. Cultures resulted in E. coli, a uropathogen she had grown multiple times in the past.

**Conclusions:** Although a rare occurrence, urologists should maintain a high clinical suspicion for SEAs in patients presenting with fever, back pain, and neurologic deficits post-ureteroscopy to ensure the early diagnosis of the disease and to facilitate timely, appropriate management.

**Funding:** None.

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**MP29-15 Safety and efficacy of ureteroscopy and laser lithotripsy with a 7.5Fr single use ureteroscope: a multicenter pilot study**

Victoria Jahrreiss⁷, Mahir Akram¹, Vincent De Coninck², Guido Kamphuis³, Joyce Baard³, Oriol Angerri⁴, Esteban Emiliani⁴, Sarah Schippers³, Eva Van Bos⁶, Kim Pauwaert⁶, Thomas Tailly⁶, Bhaskar Somani¹

¹Department of Urology, University Hospital Southampton, ²Department of Urology, AZ Klin, ³Department of Urology, Amsterdam UMC, University of Amsterdam, ⁴Department of Urology, Fundació Puigvert, Autonoma University of Barcelona, ⁵Department of Urology, AZ Klin, Brasschaat, ⁶Department of Urology, ERN eUROGEN Accredited Centre, University Hospital Ghent, ⁷Department of Urology, Medical University Vienna, Department of Urology, University Hospital Southampton

Presented By: Victoria Jahrreiss, MD

**Introduction:** The treatment of kidney stone disease (KSD) has evolved significantly with the introduction of minimally invasive endourological techniques. Advancements in technology, particularly the transition from fibre optic to digital and single use systems and the development of smaller-diameter instruments, has improved intraoperative view and efficacy in stone treatment. The miniaturization in single-use scopes represent a recent innovation, offering potential benefits, especially in challenging cases. However, there is limited evidence on their safety and clinical outcomes. This study aims to evaluate the efficacy and safety of stone treatment using a 7.5 Fr single-use flexible ureteroscope.

**Methods:** Consecutive patients with urinary stones undergoing flexible ureteroscopy with a 7.5 Fr single-use flexible ureteroscope across five tertiary endourology centers were included. Data on patient demographics, stone characteristics, intra- and postoperative outcomes were prospectively collected and analyzed. Procedures were performed by experienced endourology surgeons following standard protocols.

**Results:** 50 patients with a mean age of 54.5 years (IQR: 46.65-68.5) and a male to female ratio of 34:16 underwent flexible ureteroscopy (FURS). Mean cumulative stone size was 18.9 mm (SD±: 10.9mm) with a mean stone volume of 2031, 2(SD±:2869), 4 and mean Hounsfield units of 1087, 4 (SD±:384.9). 36 (72%) had multiple stones and a bilateral FURS was performed in 9 cases (18%). 24 patients (48%) had a preoperative stent inserted. A ureteral access sheath was used in 22 (44%) cases and 46
Table 1

<table>
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<th>Stone Type</th>
<th>% of Patients</th>
<th>Mean Radiation Dose (mGy)</th>
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</thead>
<tbody>
<tr>
<td>Ureteroscopy</td>
<td>4.5%</td>
<td>1.2</td>
</tr>
<tr>
<td>Shockwave Lithotripsy</td>
<td>13%</td>
<td>4.0</td>
</tr>
<tr>
<td>Percutaneous nephrolithotomy</td>
<td>15%</td>
<td>4.8</td>
</tr>
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</table>

Introduction: With recent advances in surgical management of nephrolithiasis, patients have increased online access to information regarding several treatment options. We sought to use Google Trends to evaluate online interest regarding these procedures in the United States over time and to assess if there are any regional differences.

Methods: We used Google Trends to evaluate the popularity scores of several kidney stone procedures. ANOVA and average rate of change (ROC) of scores were calculated for the popularity scores of these procedures between 2004 and 2023. We also evaluated the urologist-to-population ratios of the 5 most popular states in which each term was searched using the AUA Practicing Urologist Census (5=high, 1=low). We used DISCERN instrument (discern.org.uk) to judge the quality of written information for the top hits for each Google search (5=best, 1=worst). To score readability, we used the Flesch-Kincaid Grade Score for overall literacy accessibility.

Results: The overall rate of change of search trend was significant over the study period (p < 0.001; Fig1a). There was an overall increase in searches for ureteroscopy, ESWL, and PCNL. There were negligible searches of more nuanced procedures including mini PCNL, supine PCNL, prone PCNL, fluoroscopy guided PCNL, ultrasound guided PCNL, or endoscopic combined intrarenal surgery (ECIRS). There was a statistically significant increase in popularity score for PCNL during the study period (p = 0.029). PCNL was frequently searched in states with higher urologist-to-population ratios (mean ratio: 4.8) as compared to ureteroscopy (mean ratio: 3.2) and ESWL (mean ratio: 4.0, p = 0.191, Fig 1b). DISCERN analysis revealed comparable quality of information for most of the procedures. The Flesch-Kincaid scores revealed that both “Ureteroscopy” and “ESWL” content presented a similar level of reading difficulty consistent with a middle school education. In contrast, “PCNL” material was written at a slightly more advanced level (Fig 1c).

Conclusions: There was statistically significant increased interest in PCNL between 2004 and 2023. PCNL was more frequently searched in states with higher urologist-to-population ratios, which could be explained by the more complex and advanced nature of this procedure.

Funding: None.
dose can lead to the development of cancer. The International Commission on Radiological Protection (ICRP) determined a safe limit of 20 mSv a year for a maximum of 5 years, that is equivalent with 7-9 years of radiation or 2-3 Computed Tomography (CT). International Guidelines do not recommend the use of fluorouroless URS in practice. However, this aims to reduce radiation exposure in the operating room without having a lower efficiency in terms of results. In our hospital, during the 4 years of residency, we are exposed to a mean of 5.83 mSv, which is near the safe limit according to the ICRP. Giving these risks, we present the experience in fluorouress URS at our center.

Methods: We performed 164 fluorouroless procedures for the treatment of renal and ureteral lithiasis. Between April 2022 and January 2023. Every step (safety wire placement, rigid ureteroscopy, second wire ascent, ureteral access sheath placement, pyeloscopy, lithotripsy, and stent placement) was performed fluorouress.

Results: 164 procedures. 50% woman. Average age of 45.3 years. The stones features were: average stone number 1.39, mean stone diameter of 9.39 mm; location: distal ureter 14 (8.5%), medium ureter 45 (27.4%), proximal ureter 22 (14.1%) and kidney 83 (50%). 59 rigid ureteroscopies (36%) and 105 flexible ureteroscopies (64%). Mean operative time 65.59 min. Stone free rate (SFR) was 81%. Complication rate was 2.5%, one patient with a Clavien Dindo III (ureteral stenosis).

Conclusions: Fluorouroless ureteroscopy is a safe procedure for the patient and the operating team, diminishing the radiation exposure therefore, risk of cancer. Our results are comparable to the conventional technique with a low range of complications and high SFR.

Funding: None.

MP29-18 Pathological analysis for ureteral strictures after ureteroscopic lithotripsy

Kengo Kawase1, Koei Torii1, Masahiko Isogai1, Rei Unno1, Kazumi Taguchi1, Shuzo Hamamoto1, Atsushi Okada1, Takahiro Yasui1
1Nagoya City University graduate school of Medical sciences Department of Nephro-urology

Presented By: Kengo Kawase, MD

Introduction: Following ureteroscopic lithotripsy (URSL), the formation of a ureteral stricture (US) is a notable adverse effect that may result in pain and impaired renal function, potentially requiring surgical intervention such as ureteral incision or reconstruction. The origin of US is commonly attributed to the mechanical and heat-induced trauma from the utilization of access sheaths and laser devices during URSL, although the precise mechanisms are not fully understood. In this investigation, we conducted a pathological assessment of the affected ureteral tissue in patients who manifested US after undergoing URSL.

Methods: We conducted a retrospective analysis of patients at Nagoya City University. Pathological specimens from 15 patients who underwent robot-assisted ureteroplasty for US after URSL, and 3 who had robot-assisted pyeloplasty, were reviewed. The procedures spanned from April 2023 to April 2024. All extracted specimens were subjected to pathological examination. Histopathological analysis was evaluated by hematoxylin and cosin staining, Masson’s trichrome staining to determine tissue levels of fibrosis and Pizzolato staining and polarized light microscope to observe the calcification in the US site.

Results: The cohort consisted of four females, with an average age of 50.9 ± 9.7 years. The preoperative hydronephrosis grades were 2 in one case, 3 in three cases, and 4 in nine cases. The ureteral strictures were located at the renal pelvic–ureter junction in three cases, U1 in six, U2 in two, and U3 in one. Pathological findings of US tissues after URSL revealed loss of ureteral mucosa in four cases, inflammatory cell infiltration in eleven, fibrosis of peri-ureteral tissues in eleven, microcalcifications in seven.

Conclusions: Pathological findings indicate that several factors are implicated in the formation of US: the loss of the urothelial mucosa, the occurrence of inflammatory responses and fibrotic tissue, and the infiltration of tiny stone fragments into these compromised areas.

Funding: None.

MP29-19 An In Vitro Study Evaluating the Intrarenal Pressure During RIRS of Suction Ureteral Access Sheath Versus Traditional Sheath

Hongling Sun1, Shusheng Liu1, Wei Zhu1, Guohua Zeng1
1Department of Urology, Guangdong Key Laboratory of Urology, First Affiliated Hospital of Guangzhou Medical University, Guangzhou, China. Presented By: Hongling Sun

Introduction: Flexible ureteroscopy (URS) is widely recognized as an effective treatment for ureteral or renal stones. The use of flexible urinary endoscopy provides an effective treatment for ureteral stones, and the development of vacuum suction ureteral access sheaths has significantly improved the stone clearance rate. Our experimental aim is to prove the effectiveness of negative suction ureteral access sheath on decreasing intraluminal pressure in various settings, utilizing by stimulating an in vitro flexible ureteroscope model.

Methods: An 8.6Fr disposable flexible ureteroscope was used to measure intraluminal pressure through a manufactured silicone urinary model using 3D printing technology. We conducted on three settings use of ureteral access sheaths (UAS), which are (1) conventional UAS, (2) negative pressure suction sheath with an open vent, and (3) negative pressure suction sheath with a fully closed vent. Intrarenal pressure and irrigation flow rate were recorded on various sizes of UAS under irrigation pressures ranging from 10 to 240 mmHg.

Results: The cohort consisted of four females, with an average age of 50.9 ± 9.7 years. The preoperative hydronephrosis grades were 2 in one case, 3 in three cases, and 4 in nine cases. The ureteral strictures were located at the renal pelvic–ureter junction in three cases, U1 in six, U2 in two, and U3 in one. Pathological findings of US tissues after URSL revealed loss of ureteral mucosa in four cases, inflammatory cell infiltration in eleven, fibrosis of peri-ureteral tissues in eleven, microcalcifications in seven.

Conclusions: Pathological findings indicate that several factors are implicated in the formation of US: the loss of the urothelial mucosa, the occurrence of inflammatory responses and fibrotic tissue, and the infiltration of tiny stone fragments into these compromised areas.

Funding: None.

Fig 1. Manufactured silicone urinary model using 3D printing technology.
**Results:** Under different infusion pressure conditions, the negative pressure sheath with an opened vent demonstrated marginally lower intraluminal ureteral pressure than the traditional sheath, but this difference was not statistically significant (p = 0.56). In contrast, when employing the closed vent method, the negative pressure aspiration sheath showed a notably significantly distinct intraluminal pressure change from the traditional sheath and its opened vent mode (p < 0.01). Additionally, the choice of ureteral sheath size profoundly impacted intraluminal pressure; larger sheath sizes were associated with more reduced pressure levels under the same infusion pressure (p < 0.01).

**Conclusions:** In ureteroscopy procedures, the intraluminal pressure in the ureter increases with the rise in irrigation pressure. However, applying negative pressure with a closed vent can effectively reduce the intraluminal pressure.

**MP29-20 A preliminary study on the treatment of severe bleeding after ureteroscopy**

Yongda Liu¹

¹The First Affiliated Hospital of Guangzhou Medical University

Presented By: Yongda Liu, PhD

**Introduction:** Kidney stones are very common in China, with a prevalence rate of about 6.4%. Soft ureteral endoscopic surgery, as a minimally invasive method commonly used in urology, is suitable for the treatment of non-lower polar stones with a maximum diameter of less than 20 mm, lower polar stones with a diameter of less than 10 mm and upper ureteral stones. RIRS is characterized by less bleeding, light postoperative pain, quick recovery, and slight or no scar [3]. However, intraoperative and postoperative bleeding is still one of the common complications during ureteroscopy, and the patients who fail to receive the above conservative treatment and need further intervention to treat renal artery embolism are severe bleeding patients. Renal artery CT angiography (CTA) is preferred in determining the presence or absence of well-defined arterial bleeding for conservative patients with uncontrolled severe bleeding. Retrospective analysis was performed on 5 patients with severe bleeding after ureteroscopic lithotripsy received by our department during 2022-2023. After interventional treatment, the bleeding points were found and hemostasis was successfully stopped. However, the related causes of severe bleeding after ureteroscopic lithotripsy and the follow-up treatment strategies still need to be further explored.

**Methods:** General data and preoperative and postoperative clinical data of patients with severe bleeding after ureteroscopy received in our hospital from 2022 to 2023 were retrospectively collected and retrospectively analyzed, and the causes of relevant bleeding and the feasibility of treatment strategies were analyzed.

**Results:** For 5 patients, pre-interventional hemoglobin levels were 70.0 (69.0, 100.0) g/L, pre-interventional white blood cell counts were 10.83 (6.1, 14.4) × 10⁹/L, pre-interventional creatinine levels were 83.4 (70.6, 171.5) μmol/L, activated partial thromboplastin time (APTT) was 34.1 (31.2, 39.7) seconds, prothrombin time (PT) was 13.4 (13.0, 14.4) seconds, and pre-interventional platelet count was 180.0 (106.0, 187.0) × 10⁹/L. Post-interventional hemoglobin levels were 69.0 (66.0, 87.5) g/L, post-interventional white blood cell counts were 9.9 (7.1, 14.9) × 10⁹/L, post-interventional creatinine levels were 95.8 (75.5, 144.3) μmol/L, post-interventional APTT was 38.0 (33.9, 41.6) seconds, post-interventional PT was 14.1 (12.8, 14.4) seconds, and post-interventional platelet count was 172.0 (97.0, 320.5) × 10⁹/L. Data for the second and third interventions are presented in Tables 3 and 4. Following a series of treatments, these patients did not experience any further bleeding events.

**Conclusions:** Bleeding caused by soft endoscopic surgery is characterized by multiple blood vessel injuries, and severe bleeding may also occur in soft ureteral lithotripsy. The cause of bleeding is not completely clear at present, and it is considered that it may be related to elevated renal pelvis pressure, false aneurysm formation and other reasons. Nephrostomy is effective in reducing intrarenal pelvis pressure and strengthening renal artery embolization for bleeding after soft microscope. At present, the causes of bleeding after ureteroscopy continue to be explored. Clarifying these causes and exploring related treatment plans can provide new ideas for future clinical treatment, so as to reduce or avoid the occurrence of related bleeding and timely and effective treatment after the occurrence of bleeding.

**Funding:** None.

**MP30-01 Misplacement and migration of double J stent into the inferior vena cava and the right atrium: Endovascular Approach**

Mohammad Aslzare¹, Mohammad Hadi Shakibi¹, Amirabbas Asadpour³

¹Mashhad University of Medical Sciences

Presented By: Mohammad Aslzare, Associate Professor of Urology

**Introduction:** Intravascular migration of DJ stent (DJS) is a very rare and serious complication. We report a case of rare vascular migration. The literature has limited data regarding the management of such complex situations.

**Methods:** A 65-year-old male patient was referred to us with history of unsuccessful attempted ureteroscopy for an impacted distal ureteral stone. The operating surgeon had problems in negotiating the ureter and could not reach the stone because of poor vision and placed a DJS with difficulty. The procedure was performed without fluoroscopy control, a 0.038 inch guidewire and 8Fr semi-rigid ureteroscope were used. The patient was asymptomatic without hematuria. Abdominal x-ray showed a medial position of the DJS with a proximal curl. The CT showed the upper end of the stent is appeared to be in the chest while the lower end was not coiled in the bladder. A CT scan revealed that
the stent had entered the right common iliac vein and in the IVC and right atrium. During the insertion procedure the ureteral stent perforated the ureter and passed into the common iliac vein and passed into inferior vena cava (IVC) and migrated to atrium after a few days.

Results: A semi-rigid ureteroscopy was performed but the stent could not be visualized, confirming complete extrusion of the stent and its subsequent extra anatomic migration as suggested on CT. The patient planned for endovascular intervention and underwent femoral vein puncture and stent removed by specific device. Post- intervention, the patient was started on anticoagulation therapy and had an uneventful recovery and was discharged the following day.

Conclusions: Vascular migration of ureteric stents is a rare but dangerous Complication. The key in management includes high degree of suspicion and early intervention. The treatment options include endourologic, endovascular, and open approach. The prevention strategies include good direct vision and fluoroscopic control during DJ stenting.

Funding: The authors declare no conflicts of interest regarding the publication of this paper.

MP30-02 The progress from shivering to fever after retrograde intrarenal surgery: a risk factors evaluation and nomogram construction

Wen Zhong1

1First affiliated hospital of Guangzhou Medical University

Presented By: Wen Zhong, PhD

Introduction: Postoperative shivering was potential sign of severe infection rather than a simple post-anaesthetic shivering. Risk factors of progress from shivering to fever after retrograde intrarenal surgery (RIRS) was investigated, to help urologists make a quick differential diagnosis.

Methods: 273 patients with post-RIRS shivering were reviewed, 48 (17.6%) patients suffered fever. Risk factors of fever were identified by logistical regression analysis, and a nomogram was constructed to predict the fever in patients with post-RIRS shivering.

Results: In univariate analysis, larger stone size (22.2914 ± 14.26 mm vs. 17.6512 ± 51mm, p = 0.02) and stone area (190171 ± 128124mm2, p = 0.04), preoperative positive urine test (47.9% vs. 12.4%, p < 0.001), positive urine culture (45.8% vs. 18.2%, p < 0.001), longer duration of operative time (34.3319 ± 94 vs. 27.9615 ± 62min, p = 0.04), higher intraproductive irrigation volume (1178660 ± 951582 ml, p = 0.03), abnormal postoperative WBC count (57.9% vs. 26.1%, p < 0.001) and neutrophil ratio>80% (70.8% vs. 49.3%, p = 0.01) was noted in patients with postoperative fever when compared to those without fever. In multivariate logistic regression analysis, preoperative positive urine test (OR:4.99, 95%CI:1.77-14.79, p = 0.003), postoperative abnormal WBC count (OR:2.51, 95%CI:1.15-5.57, p = 0.021) and postoperative neutrophil ratio>80% (OR:2.59, 95%CI:1.15-6.18, p = 0.025) were identified as independent risk factors of the progress from post-RIRS shivering to fever. A nomogram with a c-index of 0.748 was depicted to predicting fever episodes in patients with post-RIRS shivering.

Conclusions: Preoperative positive urine test, postoperative abnormal WBC count and neutrophil ratio>80% was required to make a quick differential diagnosis between simple post-anaesthetic shivering and severe infection in patients with post-RIRS shivering.

Funding: None.

MP30-03 Severe renal hemorrhage after treatment of upper urinary calculi by retrograde intrarenal surgery

Ming Lei1

1The first affiliated hospital of Guangzhou Medical University

Presented By: Ming Lei, MD

Introduction: Retrograde intrarenal surgery (RIRS) is now regarded as a safe and effective therapy for proximal ureter and pyelocaliceal stones less than 2cm. It has a lower complication risk than more intrusive techniques such as percutaneous nephrolithotomy. Severe renal hemorrhage after retrograde intrarenal surgery (RIRS) was a rare but even lethal complication.

Methods: Between January 2016 and January 2022, patients who received RIRS for renal and proximal ureteral stones and thereafter underwent renal artery embolisation for severe renal hemorrhage were reviewed.

Results: The results of renal angiography indicated that 6 patients had multiple pseudoaneurysms or contrast medium extravasation. Simultaneously, 4 of these patients (67%) had signs of infection, including positive urine culture, elevated white blood cells or fever. Urinary tract infection seems to play an important role in severe renal hemorrhage after RIRS. Increased intrarenal pressure during stone comminution may also possibly be a significant impact.

Conclusions: In order to prevent this rare complication, we should do a good job in perioperative management, control urinary tract infection, and use a good intraoperative perfusion system.

Funding: None.

MP30-04 The Impact of Ureteroscopy for Nephrolithiasis on Post-Operative Disease Specific Quality of Life

Justin Ziemia1, Jing Huang1, Amanda Jones1, Hanna Stambaki1, George Lin1, Gregory Tasian2

1Perelman School of Medicine at the University of Pennsylvania, 2Children’s Hospital of Philadelphia

Presented By: Justin Ziemia, MD, MSEd
**Introduction:** The quality-of-life (QOL) impact of those with nephrolithiasis remains significantly understudied, particularly following surgical intervention. We prospectively captured patient-reported outcomes in the post-operative period after ureteroscopy (URS) to better understand the recovery profile of QOL using a disease-specific instrument.

**Methods:** Adults undergoing URS for renal/ureteral stones were eligible for inclusion (10/2020-8/2022). Patients prospectively completed Wisconsin Stone Quality of Life (WISQOL) instrument in-person preoperatively (POD 0) and via email on POD 30. Scores are reported as a total score and 4 domain scores: social, emotional, disease, and vitality impact. A higher score equates to a better quality of life.

**Results:** Total of 178 patients completed enrollment at POD 0 (POD 30, n = 67). There were statistically significant improvements for the total score and each of the 4 domain scores between POD 0 and 30 (Wilcoxon rank sum test, all p < 0.001) (Figure 1 A-E). On univariate analysis, age (β=0.32; CI: 0.11, 0.53), African American race (β=−11; CI: -20, -2.5), and BMI (β=−11; -1.1, -0.18) were all associated with the total score at POD 0, while only African American race (β=−22; CI: -41, -2.0) remained associated at POD 30. On multivariate analysis, both age (β=0.28; CI: 0.08, 0.49) and BMI (β=−0.67; CI: -1.1, -0.21) remained associated with the total score at POD 0, while no demographic variables were associated with the total score at POD 30 after adjusting for stone and surgical characteristics. A prediction model revealed that only an intraoperative kidney stone location (ref. lower ureter) predicted a profound recovery (>10 points) (OR 0.14; CI: 0.02, 0.87; p < 0.035) for the total score.

**Conclusions:** Ureteroscopy results in significant improvement in disease specific quality of life by 30-days. Both age and BMI may have a modifying influence on recovery. Kidney as opposed to ureteral stone removal may result in a more profound recovery. Results offer meaningful insight to assist in counseling and setting expectation for patients in the post-operative period.

**Funding:** This work is funded by the McCabe Foundation at the University of Pennsylvania.

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**MP30-05 Extracorporeal shock wave lithotripsy still alive?**

**Presented By:** Kamran Bhatti

**Introduction:** Extracorporeal shockwave lithotripsy is a newer modality in the treatment of urolithiasis, particularly kidney and upper ureteric stones. Though this procedure was introduced in the year 1980, it is still considered first-line management in the treatment of urinary stones as it is cost-effective, noninvasive, and can be done as day care procedure with minimal complications. [1] A stone clearance rate of more than 80% has been reported for a stone size smaller than 2 cm in the upper calyx, middle calyx, and pelvis of the kidney, and smaller than 1 cm in the upper ureter. The aim of this study is to evaluate the efficacy of ESWL and to explore early and delayed complications. Abstract Objective: To assess the efficacy and complications of extracorporeal shock wave lithotripsy in the management of patients with renal and ureteric stones.

**Methods:** From 1st January 2018 until 31 December 2019 patients were treated with Siemens Modularis Vario lithotripter at HMC, Alkhor Hospital. Factors already explored to affect the success rate like stone size, location, consistency, and presence of stent were taken into consideration. After a period of 3 months either complete stone clearance or stone fragments smaller than 4 mm were considered as a treatment success. The chi-square test was used for statistical evaluation. A p-value <0.05 was considered significant

**Results:** Of the 190 initial consecutive patients who underwent extracorporeal shock wave lithotripsy, 155 (81.57%) had renal stones and 35 (18.42 %) had ureteric stones. The mean±SD stone size was 10.3 ± 4.7 mm, while the mean age of the patients was 39.6 ± 10.6 years with 84.21 % males. The mean renal stone size was 11.6 ± 4.7 mm; a mean of 1.3 sessions was required. The mean ureteric stone size was 9.9 ± 3 mm, and a mean of 1.3 sessions was required. Treatment success was 85.26% for renal stones and ureteric stones. Additional extracorporeal shock wave lithotripsy and ureteroscopy were the most adjunctive procedures used for stone clearance. The overall treatment complication rate for this study was 21.05% (40/190), the majority of the complications were minor with the most common being loin pain 21%. Severe renal colic mandating a visit to the emergency department and admission for control of pain occurred in 5.26% (10/190). Steinstrasse (a complication of extracorporeal shock wave lithotripsy for urinary tract calculi in which stone fragments block the ureter to form a “stone street”) occurred in 15 (7.89%) patients.

**Conclusions:** ESWL is a safe and effective tool with minimal complications for treating renal and ureteric stones. Keywords: Extracorporeal shock-wave lithotripsy (ESWL); Kidney; Ureter; Stone.

**Funding:** No.

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**MP30-06 Can failure to insert a ureteral access sheath during ureteroscopy for unstented patients be predicted using a non-contrast CT?**

**Presented By:** Sobhi Khoury, MD

**Introduction:** Ureteral access sheath (UAS) has become an invaluable tool in retrograde intrarenal surgery (RIRS).
However, its insertion may sometimes fail, usually due to a tight ureter. We aimed to assess whether UAS insertion failure can be predicated based on ureteral diameter measured on non-contrast computerized tomography (NCCT) and to identify demographic, clinical, and operative risk factors associated with failure.

**Methods:** This is a single centre retrospective study. The study group included all previously unstented patients, who underwent primary RIRS with failure of UAS insertion between September 2016 and December 2019. We constructed a predictive nomogram for risk quantification of postoperative infection. A preoperative score model was used for risk stratification. The effect of antibiotic therapy duration (short-course [2-3 days] vs. long-course [≥4 days]) was evaluated.

**Results:** Infections occurred in 113 (16.9%) patients. The incidence of fever was marginally lower in long-course group than in short-course group (15% vs. 19%, p = 0.173). Hydronephrosis, stone size, multi-drug resistant bacteriuria, and degree of pyuria were used to construct a preoperative score model (the H-SMP score). Using the H-SMP score, the patients were stratified into low- and high-risk groups based on varying incidence rates of postoperative fever (11.0% vs. 29.9%, p < 0.001). Significant reduction in fever occurred only among high-risk patients in the long-course group (23.5% vs. 38.0%, p = 0.022), and no such reduction in postoperative fever rates occurred in low-risk patients (10.4% vs. 11.5%, p = 0.712). Even after propensity score matching, the low-risk group showed no improvement in postoperative fever incidence with long-course antibiotic therapy (7.5% vs. 10.0%, p = 0.419).

**Conclusions:** Based on the newly developed H-SMP score, we concluded that long-course antibiotics (≥4 days) recommended in high-risk patients may not bring in more benefit in low-risk patients for treating asymptomatic bacteriuria or pyuria prior to RIRS.

**Funding:** No.

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**Table 1:** Sociodemographic, clinical and radiological characteristics of the study participants.

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<td>Jewish ethnicity, N(%)</td>
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<td>59 (61.5%)</td>
<td>2 (6.7%)</td>
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<td>BMI, median [25th;75th]</td>
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**MP30-07 A new model to assist decision-making of optimal antibiotics duration for treating asymptomatic bacteriuria or pyuria prior to retrograde intrarenal surgery**

Zhijian Zhao

1Department of Urology, Minimally Invasive Surgery Center, Guangdong Key Laboratory of Urology, Guangzhou Institute of Urology, The First Affiliated Hospital of Guangzhou Medical University, Guangzhou, China.

Presented By: Zhijian Zhao, PhD

**Introduction:** The aim of this study was to establish a model that predicts postoperative fever and enables decision-making regarding optimal antibiotic therapy duration for asymptomatic bacteriuria or pyuria prior to retrograde intrarenal surgery (RIRS).

**Methods:** We retrospectively investigated 667 consecutive patients with asymptomatic bacteriuria or pyuria who underwent RIRS between September 2016 and December 2019. We constructed a predictive nomogram for risk quantification of postoperative infection. A preoperative score model was used for risk stratification. The effect of antibiotic therapy duration (short-course [2-3 days] vs. long-course [≥4 days]) was evaluated.

**Results:** Infections occurred in 113 (16.9%) patients. The incidence of fever was marginally lower in long-course group than in short-course group (15% vs. 19%, p = 0.173). Hydronephrosis, stone size, multi-drug resistant bacteriuria, and degree of pyuria were used to construct a preoperative score model (the H-SMP score). Using the H-SMP score, the patients were stratified into low- and high-risk groups based on varying incidence rates of postoperative fever (11.0% vs. 29.9%, p < 0.001). Significant reduction in fever occurred only among high-risk patients in the long-course group (23.5% vs. 38.0%, p = 0.022), and no such reduction in postoperative fever rates occurred in low-risk patients (10.4% vs. 11.5%, p = 0.712). Even after propensity score matching, the low-risk group showed no improvement in postoperative fever incidence with long-course antibiotic therapy (7.5% vs. 10.0%, p = 0.419).

**Conclusions:** Based on the newly developed H-SMP score, we concluded that long-course antibiotics (≥4 days) recommended in high-risk patients may not bring in more benefit in low-risk patients for treating asymptomatic bacteriuria or pyuria prior to RIRS.

**Funding:** No.

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**MP30-08 Comparison of Negative Pressure Aspiration Sheath and Stone Basket in Ureteroscopic Stone Lithotripsy**

Yongda Liu

1The First Affiliated Hospital of Guangzhou Medical University

Presented By: Yongda Liu, PhD

**Introduction:** Renal calculi are the abnormal accumulation of crystalline substances (such as calcium, oxalate, uric acid, cystine, etc.) in the kidneys. They are common and frequently occurring diseases of the urinary system, with a higher incidence in males than in females, often occurring in young and middle-aged adults. There is no significant difference in the incidence between the left and right sides, and 90% of calculi contain calcium, with calcium oxalate stones being the most common. The stones are relatively large with minimal mobility, presenting as dull or achy pain in the waist region, especially with increased physical activity. Stones can occur in any part of the urinary system but often originate in the kidneys. When kidney stones form, they are usually located in the renal pelvis or calyces and can pass into the ureters and bladder, with almost all ureteral stones originating from the kidneys. The onset of this condition can cause severe pain, and without timely and effective treatment, it can lead to conditions such as hydronephrosis and urinary tract infections, causing significant damage to kidney function and even leading to renal failure. The treatment of stones has always been a focus of surgical attention. Minimally invasive techniques are characterized by minimal bleeding, mild postoperative pain, rapid recovery, and minimal or no scarring. Ureteroscopic lithotripsy, as a commonly used minimally
invasive surgical technique for stone treatment, has advantages such as minimal surgical trauma and rapid postoperative recovery, gaining widespread acceptance in clinical practice. However, this procedure is still invasive, and there is still a possibility of infection and various complications after surgery, necessitating necessary adjunctive measures to improve patient outcomes. Stone baskets are also commonly used auxiliary tools in clinical ureteral surgery. Stone baskets can achieve two different diameters, with the smaller diameter used for traditional stone retrieval or lithotripsy support after surgery, and the larger diameter facilitating the capture of large stones, as well as the release of stones lodged in the basket. By using ureteroscopic stone baskets, stones in the lower calyx can be grasped and positioned favorably for lithotripsy in the renal pelvis. Ureteroscopic lithotripsy combined with a negative pressure aspiration sheath can help the ureteroscope quickly enter the renal collecting system, maintain flushing speed, ensure clear vision, reduce renal pelvis pressure, and minimize ureteral mucosal injury. Under the negative pressure of the combined negative pressure aspiration sheath, rapid water circulation can timely aspirate the crushed stones, greatly improving the efficiency of stone fragmentation and ensuring clear surgical vision, thereby reducing the occurrence of complications such as infection and renal damage due to prolonged surgical time [14]. In this study, we selected 100 patients who underwent ureteroscopic lithotripsy in the Department of Urology, the First Affiliated Hospital of Guangzhou Medical University from January 2022 to September 2023, to explore the clinical application effects of negative pressure aspiration sheath and stone baskets. The report is as follows.

Methods: One hundred patients who underwent ureteroscopic lithotripsy in the Department of Urology, the First Affiliated Hospital of Guangzhou Medical University from January 2022 to September 2023 were randomly divided into two groups, with 50 cases in each group, using a random number table method. The groups were categorized as the negative pressure aspiration sheath group and the stone basket group. The perioperative conditions, operative time, postoperative hospital stay, stone size, stone CT value, preoperative hydronephrosis degree, stone clearance rate, half-month recurrence rate, pre- and post-operative white blood cell count, neutrophil count, hemoglobin, creatinine, etc., were compared between the two groups.

Results: The postoperative hospital stay was 1.15 (±0.46) days in the negative pressure aspiration sheath group, with an average stone size of 1.21 (±0.55) cm and average stone CT value of 1079 (±296.5) Hu. The preoperative hemoglobin and creatinine levels were 133.22 (±19.99) g/L and 98.97 (±65.6) umol/L respectively, and the postoperative levels were 120.46 (±20.67) g/L and 89.69 (±59.86) umol/L respectively. In the stone basket group, the postoperative hospital stay was 1.44 (±1.61) days, with an average stone size of 1.14 (±0.39) cm and average stone CT value of 1148 (±271.6) Hu. The preoperative hemoglobin and creatinine levels were 130.24 (±21.11) g/L and 111.58 (±73.37) umol/L respectively, and the postoperative levels were 121.22 (±19.22) g/L and 104.22 (±63.44) umol/L respectively. There were no statistically significant differences in demographic characteristics, laboratory indicators, postoperative hospital stay, stone size, stone CT value, pre- and post-operative white blood cell count, neutrophil count, hemoglobin, and creatinine between the two groups (p > 0.05). The operative time in the negative pressure aspiration sheath group was 78.7 (±42.3) minutes, with an immediate stone clearance rate of 86%. In the stone basket group, the operative time was 111.58 (±73.37) minutes and the immediate stone clearance rate was 64%, with a statistically significant difference (p < 0.05). The half-month stone clearance rates were 98% and 97% in the negative pressure aspiration sheath group and stone basket group respectively, with no statistically significant difference (p > 0.05).

Conclusions: In ureteroscopic stone lithotripsy, compared with stone baskets, the use of negative pressure aspiration sheaths can reduce the corresponding operative time and improve the immediate stone clearance rate, but there is no significant difference in the half-month stone clearance rate between the two.

Funding: None.

MP30-09 Comparative analysis of unilateral and bilateral flexible ureteroscopy. A multicenter study

Alexander Petrov¹, Narian Gadzhiev¹, Ivan Gorgotsky¹, Andrey Shkarupa¹, Dmitriy Shkarupa¹, Vigen Malkhasyan²

¹Saint Petersburg State University Hospital, ²Yevdokimov Moscow State University of Medicine and Dentistry

Introduction: Flexible ureteroscopy (fURS) with laser lithotripsy is the «gold standard» for minimally invasive treatment in patients with kidney stones less than 20 mm [1]. Currently, there are no objective data on the efficacy and safety of bilateral interventions. To study the results of bilateral flexible URS (B-fURS) versus unilateral flexible URS (U-fURS). Bilateral interventions can be performed either by two surgeons simultaneously (Simultaneous Bilateral Endoscopic Surgery (SBES)) or alternately on each side (Consecutive Endoscopic Surgery), but during one anaesthesia.

Methods: 80 patients prospectively were enrolled in the study from July 2022 to December 2022 and were divided into 2 groups. Group 1 (n = 40) underwent U-fURS and Group 2 (n = 40) underwent B-fURS. A single stone up to 20 mm or multiple small calyx stones were an indication for the operation. The baseline values were comparable between the groups, but in the B-fURS group a 39.0% higher incidence (p > 0.002) of multiple stones and a 28.0% higher incidence (p > 0.001) of stones in the lower pole.

Results: Bilateral interventions can theoretically be associated with an increased risk of infectious and inflammatory

![Figure 1. Consecutive Endoscopic Surgery](image1)

![Figure 2. Simultaneous Bilateral Endoscopic Surgery](image2)

<table>
<thead>
<tr>
<th>Table 1. Results of surgical treatment</th>
<th>U-fURS</th>
<th>B-fURS</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery time, min</td>
<td>47 (35)</td>
<td>42 (37)</td>
<td>0.601</td>
</tr>
<tr>
<td>Stone free rate</td>
<td>15 (64.5%)</td>
<td>38 (95%)</td>
<td>0.9</td>
</tr>
<tr>
<td>Preoperative hydronephrosis degree</td>
<td>1.2 (26.5%)</td>
<td>2.1 (36.5%)</td>
<td>0.2</td>
</tr>
<tr>
<td>Stone clearance rate</td>
<td>86 (72%)</td>
<td>97 (81%)</td>
<td>0.22</td>
</tr>
<tr>
<td>Half-month recurrence rate</td>
<td>0.05</td>
<td>0.03</td>
<td>0.09</td>
</tr>
<tr>
<td>Stone size</td>
<td>121 (38)</td>
<td>113 (31)</td>
<td>0.69</td>
</tr>
<tr>
<td>Stone CT value</td>
<td>1200 (66)</td>
<td>1120 (81)</td>
<td>0.15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2. Clavien-Dindo complications</th>
<th>U-fURS</th>
<th>B-fURS</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 0</td>
<td>20 (50%)</td>
<td>19 (48%)</td>
<td>0.60</td>
</tr>
<tr>
<td>Grade I</td>
<td>10 (25%)</td>
<td>23 (57%)</td>
<td>0.003</td>
</tr>
<tr>
<td>Grade II</td>
<td>0 (0%)</td>
<td>6 (15%)</td>
<td>0.05</td>
</tr>
<tr>
<td>Grade III</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0.05</td>
</tr>
<tr>
<td>Grade IV</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0.05</td>
</tr>
</tbody>
</table>
complications. But study show no difference in frequency of urinary tract infection in the groups. The length of hospital stay in the groups also did not differ significantly (p > 0.9). Stone-free rate did not differ (p > 0.9) between the groups and was 95.0% and 97.5%, respectively. Table 2 shows the grading of complications in the study according to the Clavien-Dindo scale. Grade I complications included fever (body temperature > 38°C), which was observed in 4 patients (10.0%) of both patients (10.0%). These patients were treated with a longer course of anti-bacterial therapy according to local recommendations. Pain in the early postoperative period was significantly more common in the B-URS group (19 patients versus 6 patients). Pain was successfully managed with non-steroidal anti-inflammatory drugs. No serious complications grade III - V were noted in either group.

Conclusions: Bilateral flexible ureteroscopy is a safe and effective option for patients with bilateral kidney stones, allowing removal of stones in one anesthesia on both sides.

Funding: No funding.

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MP30-10 Role of Extracorporeal Shock Wave Lithotripsy (ESWL) for ureteric calculi in today’s era

Parth Manek², Prashant Pattnaik¹

¹Bombay Hospital & Medical Research Center, ²Bombay Hospital & Medical Research Center, Mumbai

Presented By: Parth Manek, MS

Introduction: Extracorporeal shock-wave lithotripsy (ESWL) is an established non-invasive treatment modality for renal and ureteric stones. However, treatment outcome and efficacy depends on multiple factors like stone size, location and type of machine used. We aimed to assess efficacy of ESWL as a primary treatment modality for ureteric stones.

Methods: 112 patients who underwent ESWL between January 2022 to December 2023 in our department were included in the study. Patients with ureterolithiasis having functional kidney, without any absolute contraindication (pregnancy, uncontrolled infection, uncontrolled bleeding disorder, arterial aneurysm in close proximity to target) to ESWL were included. Dornier Med Tech Compact Delta 2 machines were used for all the patients. Stone localization was done using both fluoroscopic and ultrasound-guided methods by same expert.

Results: We included a total of 112 patients and had 71 upper, 30 mid and 10 lower ureteric stones. Stones ranged from 6-14mm. We achieved 80.5% Stone free rate (SFR) in upper ureteric stone (58/72 patients), 76% for mid ureteric (23/30) and 80% (8/10). 72.3%(81/112)had stone clearance in single sitting while rest required more than 1 sitting. Stones less than 10mm had better clearance. Skin to stone distance (SSD) <11cm was found to be a significant predictor of success for ureteric calculi. Uric acid, struvite and Calcium Oxalate stones were most responsive to ESWL, whereas Calcium oxalate Monohydrate, cystine stones were quite resistive. When stone composition was Not known, HU value can be a useful proxy. Stones with HU >1000 were predictors of ESWL failure. Ureteral wall thickness was a surrogate marker for impaction, decreased success.

Conclusions: ESWL still holds a place in the management of ureteric calculi even in today’s era, especially in well selected patients with a beneficial therapeutic option with low morbidity and high patient acceptance.

Funding: None.

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MP30-11 Singular Success: Descriptive Statics of Inaugural Retrograde Intrarenal Surgeries in Single-Kidney Patients at Imam Reza Hospital

Alireza Golshan², Mohamadreza Darabi Mahboub¹

¹Professor of Urology, Mashhad University of Medical Science, Mashhad, Iran, ²Associated Professor of Urology, Mashhad University of Medical Science, Mashhad, Iran

Presented By: Alireza Golshan, MD

Introduction: This study examines the effectiveness of retrograde intrarenal surgery (RIRS) in single-kidney patients at Imam Reza Hospital. We focus on procedural efficacy, impact on renal function, and postoperative stone clearance.

Methods: A retrospective analysis was conducted on 20 single-kidney patients who underwent 22 RIRS procedures. The population consisted of 12 males (60%), and 8 females (40%), with a mean age of 43.5 ± 19.3 years. The stones’ characteristics were distinguished by having an average size of 17.4 mm and a mean Hounsfield unit of 947±114. According to the distribution, there were 30% stones in the pelvic region and 20% in the lower calyx. Literality indicated that 55% and 45% of patients have right and left kidney stones respectively. Preoperative serum creatinine levels were 1.35±0.23 and operation time averaged 68.5±33.3 minutes, with a hospitalization period of 2.15±1.13 days. Follow-up was extended for three months, and postoperative serum creatinine levels were 1.28±0.17. Stone-free status, defined as residual stones that are ≤ 2 mm, was assessed by sonography, it can indicate a stone-free situation in 90% of cases.

Results: Single-kidney patients who underwent RIRS achieved a high stone-free rate of 90% within three months. The procedure resulted in a moderate hospitalization period and minimal impact on renal function, as was demonstrated by the decrease in serum creatinine levels. The stone’s size and location had no significant impact on surgical procedures.

Conclusions: This study concludes that RIRS can be used safely and effectively to manage stones in single-kidney patients at Imam Reza Hospital. In this unique patient population, RIRS can be effective due to the high stone-free rate and preservation of renal function. According to the findings, RIRS is a valuable therapeutic alternative for single-kidney patients with renal stones.

Funding: None.

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MP30-12 Utilization of reprocessed disposable flexible ureteroscopes in RIRS: is it feasible to reduce costs without affecting the results?

Horacio Sanguinetti¹, Juan Guillermo Ruiz Estrada¹, Gabriel Barusso², Maria Belen Romero Echeverria³, Pablo Calabia⁴, Norberto Bernardo⁵

¹Hospital de Clinicas Jose de San Martin, ²CDU, ³Sanatorio Anchorena, ⁴Clinica Pueyrredon, ⁵Hospital de Clinicas Jose de San Martin

Presented By: Horacio Sanguinetti, MD

Introduction: Retrograde infrarenal surgery (RIRS) for the treatment of renal lithiasis is currently a widely practiced procedure. Single-use ureteroscopes are an excellent option for this approach, but their high cost presents a challenge to widespread...
implementation. In certain regions of the world, there is contemplation regarding the reuse of these instruments originally designed for disposal. However, there are no studies evaluating their use. The aim of this study was to analyze differences in stone-free rate and complications with the use of reprocessed disposable instruments in a series of patients undergoing ureteroscopy at multiple centers.

Methods: A prospective, observational, multicenter study was conducted, including patients with renal lithiasis who underwent RIRS between May 2022 and May 2023 at 8 centers in Argentina. The protocol was approved by the Ethics Committee of the coordinating center. Patients were classified into two groups: those in whom a disposable device was used on its first use (Group 1) and those in whom a reprocessed disposable device was used (Group 2). Deflection and vision were subjectively evaluated by the surgeon using a questionnaire. Stone size, location, stone-free rate, and postoperative complications were analyzed.

Results: A total of 77 patients were included: 21 in Group 1 and 56 in Group 2. The average stone size was 10.9 mm (range 4-16) in Group 1 and 8.6 mm (range 4-17) in Group 2 (p = 0.0188). Stones were located in the renal pelvis in 42% of Group 1 and 25% of Group 2 (p = 0.406). The majority of patients (90.4% in Group 1 and 92.8% in Group 2) had negative results in preoperative cultures. There were no significant differences between the two groups in deflection and vision, which were satisfactory in all cases. A stone-free rate of 71.4% (15 patients) was achieved for Group 1 and 73.2% (43 patients) for Group 2 (p = 0.999). Postoperative positive culture was found in 9.5% (2 patients) of Group 1 and 16% of Group 2 (9 patients) (p = 0.717).

Conclusions: Although in the group where a disposable device was used on its first use, the stone size was larger, the stone-free rate and postoperative infections were similar in both groups. Reprocessing of disposable instruments does not seem to affect the effectiveness or infection rate of RIRS.

Funding: None.

MP30-13 Endoscopic ureterolithectomy outcomes in patients with previously drained urosepsis: A match paired analysis

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1Pontificia Universidad Católica de Chile, 2Pontificia Universidad Católica de Chile

Presented By: Renato Navarro, MD

Introduction: Endoscopic ureterolithectomy (EU) is one of the main treatments for ureteral lithiasis. In cases of ureterolithiasis complicated by urinary tract infection, drainage is required prior to definitive resolution of the stone. Our objective is to compare the outcomes of patients undergoing EU after endoscopic drainage (ED) for urinary sepsis secondary to ureterolithiasis with patients undergoing EU without prior sepsis.

Methods: Retrospective study at the UC-Christus Hospital, Chile. Patients requiring ED due to urosepsis secondary to ureterolithiasis between 2017 and 2022 were identified. They were matched by age, gender and stone size with a control group in a 2:1 ratio. Complications (3 month period) and stone free (SF) status were analyzed. A subgroup analysis was also performed. Statistical analysis was performed according the data distribution.

Results: A total of 108 patients met criteria for requiring ED due to urosepsis (according to sepsis 2 criteria). They were matched to 199 patients without prior sepsis with optimal tracking. The average age was 55 yo. There were no differences between both groups in terms of hypertension or diabetes (DM) (p = 0.06), but a strong tendency towards patients with previous sepsis (25 v/s 13%) was observed in terms of DM. The control group had a greater number of previous ipsilateral ureteroscopy (p < 0.05, 35% vs 11%). 18 patients in control group had an initial frustrated ureteral ascent. Of the total of patients, 11.7% presented some complication with 1% requiring emergency surgical reintervention because a residual stone. 8% experienced infectious complications (17 patients had febrile infections), while 4% experienced mechanical complications. When comparing complications between the groups, there were no difference (p > 0.05). The sepsis group suffered 13% general complications, 9% infectious complications and 3% mechanical complications. The control group presented 11% general complications, 7% infectious and 4% mechanical. In the sepsis group there was no difference according to age or stone size, unlike the control group in which the older the age and the larger stone size, the greater the number of complications (p=0.04 and 0.01). In the control group the only risk factor that was associated with complications was the previous intervention of the ipsilateral ureter through ureteroscopy (p < 0.01) and in the sepsis group the only risk factor associated was the presence of DM. But when comparing only DM patients in both groups there was no difference according complication. Regarding the percentage of SF there were no differences between both groups (p > 0.05).

Conclusions: It is safe to perform EU in patients who were previously drained for urosepsis secondary to ureterolithiasis. There are no differences in terms of complications or SF compared to patients with no prior sepsis. DM is a risk factor for presenting a septic onset in stone disease.

Funding: None.

MP30-14 Finding hidden gems in the kidney: RIRS for Calyceal Diverticular Calculi

Abheesh Varma Hegde1
1Father Muller Medical College

Presented By: Abheesh Varma Hegde, MCh, DrNB

Introduction: A calyceal diverticulum is a cystic dilatation of renal collecting system. These diverticula are often associated with formation of internal calculi due to obstruction and urinary stasis. To share our experience of Retrograde Intrarenal Surgery (RIRS) and Holmium laser in treatment of symptomatic calyceal diverticulum calculi.

Methods: A middle-aged female patient presented to us with left flank pain for past 2 months. A CT scan revealed presence of multiple calculi in middle calyx with the largest calculus measuring 7mm and an average HU value of 514. Renal functions were normal. Flexible ureterorenoscopy was performed which showed bifid pelvis and no calculus was seen. We then attempted to locate diverticulum through retrograde contrast injection & its pooling, fluoroscopy guidance and direct renoscopy. We could identify 2 small openings of diverticulum in the mid-calyx on renoscopy which were incised later using Holmium laser (100W). Multiple small calculi could be seen. The calculi were fragmented and dusted with Holmium Laser. Maximum clearance was achieved.
Results: The patient did well post operatively and imaging showed complete clearance

Conclusions: RIRS, using a flexible ureterorenoscope and Holmium laser, is a highly effective minimally invasive procedure which can be easily used to treat calculi located inside a calyceal diverticulum. Additional maneuvers maybe required to locate calculi when not detected by direct visualization.

Funding: None.

MP30-15 Perirenal hematoma following ureterorenoscopic lithotripsy (URSL): insights from an unusual complication

Siddharth Jain¹, Rudra Ghorai¹, Mounika Balabolu¹
¹All India Institute of Medical Sciences, New Delhi

Presented By: Siddharth Jain, MCh Urology

Introduction: Perirenal hematoma is a rare complication following ureterorenoscopic lithotripsy (URSL). Severe hydronephrosis with a thin renal cortex preoperatively and prolonged operative duration are strong predisposing factors for peri renal hematoma (PRH). Unendurable ipsilateral flank pain, fever and a significant decrease in haemoglobin after surgery are the typical clinical manifestations of PRH after URSL. Post-URSL PRH must be dealt with appropriately to avoid long-term morbidity.

Methods: A 23 year old male with a history of gender reassignment surgery for gender dysphoria presented with complaints of right flank pain. The patient had h/o augmentation mammoplasty, penile inversion vaginoplasty with bilateral orchidectomy. Ultrasound showed bilateral renal calculi. Computed tomography showed a right upper ureteric calculus of 14 mm with upstream moderate hydronephrosis and a 9 mm calculus in the left lower pole calyx with left mild HDN.

Results: The patient underwent right ureterorenoscopic laser lithotripsy for a 14 mm right upper ureteric calculus. In the post operative period the patient had persistent right flank pain despite intravenous analgesics, tachycardia and right flank tenderness with a significant fall in Hb (8.7 mg/dl to 3.7 mg/dl). Ultrasound showed a 4.9 x 4.2 cm subcapsular echogenic collection along the right kidney. Repeat ultrasound 12 hours later showed a significant increase in size of collection (12.4 x 5 cm) with heteroechoic area in the upper pole of right kidney. CT angiography showed active contrast extravasation in superior polar branch of renal artery. Digital subtraction angiography showed contrast extravasation from a branch of right renal artery and subsequently coil embolisation done. Post procedural patient improved gradually with no further drop of Hb%

Conclusions: Perirenal hematoma is an infrequent complication after URSL. Patients with a low BMI, history of CKD, and a thin renal cortex appear to have a higher risk. Endourologists should have heightened awareness of this potentially dangerous complications of URSL.

Funding: None.

MP30-16 Extracorporeal Shock Wave Lithotripsy (ESWL) for Pancreatic and Common Bile Duct (CBD) calculi

Parth Manek¹, Prashant Pattnaik¹
¹Bombay Hospital & Medical Research Center, Mumbai

Presented By: Parth Manek, MS, Urology resident

Introduction: Pancreatic stones are sequelae of chronic pancreatitis, resulting in poor quality of life, frequent hospitalizations, and a significant economic burden. Extraction of large pancreatic and common bile duct (CBD) calculi has always challenged the therapeutic endoscopist. Extracorporeal shockwave lithotripsy (ESWL) is an excellent tool for patients with large pancreatic and CBD calculi that are not amenable to routine endotherapy. Pancreatic calculi in the head and body are targeted by ESWL, with an aim to fragment them to < 3 mm diameter so that they can be extracted by subsequent endoscopic retrograde cholangiopancreatography (ERCP)/ESWL is indicated in all patients of CCP with large PD calculi (> 5 mm) that are not amenable to routine endotherapy - where pain is the predominant symptom, CBD calculi that are not extractable by routine techniques of sphincterotomy followed by basket or balloon trawl.

Methods: A third-generation electromagnetic lithotripter is used to deliver a maximum of 5000 shocks are delivered per session. Repeat sessions are carried out on successive days until the stone fragments are < 3 mm in diameter. An intensity of 5-6 (15 000-16 000 kV) on a scale of 1-6 with a frequency of 90 shocks per minute is used for fragmentation. The majority of CBD calculi are radiolucent. An initial ERCP is performed and a nasobiliary tube (NBT) is placed in the CBD. This is used to opacify the calculi for targeting and fragmentation. It is also used to bathe the stones in saline - a simple technique that aids fragmentation.

Results: In our experience, complete clearance of the PD was achieved in 76% and partial clearance in 17% and for CBD in 84.4%, and 12.3% of patients (Total 1006 and 283 patients)Short-term pain relief with reduction in the number of analgesics ingested was seen in 84% of these patients. More than 90% of the patients with pancreatic and biliary calculi needed three or fewer sessions of ESWL with 5000 shocks being delivered at each session. More than 90% of the patients with pancreatic and biliary calculi needed three or fewer sessions of ESWL with 5000 shocks being delivered at each session. The use of epidural anesthesia helped in reducing patient movement. This, together with the better focus achieved with newer third-generation lithotripters, prevents collateral tissue damage and minimizes the complications. Complications in our experience with nearly 1300 patients were minimal, and no extension of hospital stay was required.

Conclusions: In view of its high efficiency, non-invasive nature and low complication rates, ESWL can be offered as the first-line therapy for selected patients with large pancreatic and CBD calculi.

Funding: None.

MP30-17 Determining the need for preoperative renal ultrasound with a single kidney stone before performing flexible ureterolithotripsy

Alexander Petrov¹, Nariman Gadzhiev¹, Ivan Gorgotsky¹, Aram Aloyan¹, Andrey Shkarupa¹, Dmitriy Shkarupa¹
¹Saint Petersburg State University Hospital

Presented By: Alexander Petrov, MD

Introduction: The choice of surgical intervention strategy is typically made in advance, primarily based on the results of
computed tomography (CT) of the kidneys and urinary tract, which serves as the gold standard for diagnosis. However, there is a potential risk of stone migration from the kidney to the ureter after CT imaging. The aim of our study was to analyze the effectiveness of intraoperative ultrasound examination of the kidneys without employing the “Freiburg FURS technique” method in cases of solitary kidney stones up to 10 mm in size.

**Methods:** The study included 203 patients with solitary kidney stones who underwent treatment at Saint Petersburg State University Hospital from January 2023 to January 2024. Before undergoing flexible retrograde ureterolithotripsy, patients underwent ultrasound examination. In cases where the stone was not visualized, inspection of the ureter with a semirigid ureteroscope was performed as the initial step. The frequency of stone detection by ultrasound examination was analyzed, and verification was carried out based on ureteroscopy findings.

**Results:** The study results are presented in Table 1. According to the study findings, stones were visualized by ultrasound examination in 166 out of 203 cases, while 36 stones were not visualized. In 23 patients, the stone was visualized in the ureter. Ultrasound examination proved to be a highly sensitive method for detecting kidney stones in the majority of cases, thereby avoiding the need for inspection of the ureter with a semirigid ureteroscope. Thus, we aim to prevent ureteral injury and subsequent stricture formation. In 9 patients (5.39%) among those with detected kidney stones, during flexible ureteroscopy, the stone was found in the upper third of the ureter. No ureteral injuries were identified in the presence of a stone in this anatomical area.

**Conclusions:** Performing kidney ultrasound is characterized by a high frequency of stone detection. Preoperative ultrasound examination of the kidneys allows for the high-frequency detection of stones and helps avoid inspection of the ureter with a semirigid instrument.

**Funding:** No funding.

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**MP30-18 Retrograde Intra-renal Surgery (RIRS) in Anomalous Kidneys**

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¹Bombay Hospital & Medical Research Center, ²Bombay Hospital & Medical Research Center, Mumbai

Presented By: Parth Manek, MS, Urology resident

**Introduction:** Anomalous Kidneys include Horse shoe kidneys (1:400), Pelvic ectopic kidneys (1:3000), Malrotated kidneys, Crossed fused ectopic kidneys, Associated diverticular calculi, Ureteral duplication/Bifid pelvis and transplanted kidneys. Factors affecting stone clearance in these kidneys include: stone burden, average scope time, disposable vs fiber optic, ureteral access sheath (UAS) vs No UAS, Laser (Holmium with Moses effect/TFL), Operating time, Lower polar infundibular pelvic angle (IPA). Our concerns are abnormal anatomy- Calyceal & renal orientation, relative immobility interfering with movement of equipment, abnormal relation to other visceral organs/vasculature.

**Methods:** All our patients underwent CECT with angiography with 3D reconstruction. Urine C/S done prior to procedure. The procedure was done under General Anaesthesia (G. A.). Parenteral antibiotic given at start of procedure. 7.5 Fr flexible ureteroscope-Digital/fiber optic used. Hydrophilic guide wire - Bi-wire/Sensor wire used. Access sheath(9.5 Fr) used. Holmium Laser, 200 micron/TFL-150 micron fiber used with settings of 1-1.5 J, 10-15 Hz in Dusting & Fragmentation mode. Dakota Basket used for picking of fragments. To ensure complete ‘on table’ clearance, as drainage in these patients is compromised. Use of DJ Stents, and removal after 2-4 weeks. Follow up again after 3 months. We assessed Stone free rate (SFR), retreatment rate (Stone free/residual stone 2-3mm- considered successful). In case of being unsuccessful second procedure was planned later.

**Results:** Results shared in table.

**Conclusions:** Current role of RIRS in urolithiasis has increased with advanced technology and rare serious complications. Valuable option in anomalous kidneys Factors taken into consideration-stone bulk, location & anatomy of PCS Consider complete ‘on table’ clearance, since drainage will be impaired Approach to managing these stones should be individualized.

**Funding:** None.
MP31-01 Concordance of Systematic and Targeted Core Pathology Results and Outcomes of Freehand Transperineal Prostate Biopsies

Trisha Nguyen1, William Snead1, Rani Ashouri1, Isis Sweeney1, Kassandra Hobbie1, William Donelan1, Russell Terry1, Vincent Bird1, John Michael DiBianco1

1University of Florida, 2University of Florida Department of Urology

Presented By: Trisha Nguyen, MD

Introduction: Transperineal Prostate Biopsy (TPBx) is favored over Transrectal Prostate Biopsy (TRBx) due to lower infection rates. It can be done in clinic with local anesthetics or in the operating room under general anesthesia. MRI/US fusion techniques are recommended for their higher clinically significant cancer detection rates (csCDR), but data on which technique is best is limited. This study aims to analyze outcomes of different TPBx techniques.

Methods: Retrospective review of TPBx patients from 9/21/22 to 9/23/23 by a single surgeon. Complications within 30 days post-biopsy were assessed. Results of systematic and targeted cores were compared based on techniques and PI-RADS score. Primary outcomes were safety, csCDR, and concordance.

Results: 103 patients underwent TPBx; 64% in clinic, 36% in the OR. Techniques used were: 24% systematic only, 50% cognitive fusion, and 25% Koelis Trinity. Ultrasound probes for cognitive fusion were: 24% BK, 35% microUS, 6% Aloka, and 34% Koelis. Complications (3%) included urinary retention (2) and one C. Diff colitis hospitalization. ANOVA analysis showed no significant difference in csCDR between Koelis Trinity, BK or microUS probes (p < 0.05). Targeted biopsies had higher csCDR than systematic, regardless of system used. For MRI PI-RADS 5, 4, 3, and 2 lesions, CDR for targeted biopsies was >86%, 63%, 20%, and 20% respectively. 6 patients had positive systematic cores but negative targeted cores, with only one having greater than grade group 1 disease.

Conclusions: TPBx can be done with minimal complications in clinic or OR. Targeted biopsies have superior CDR to systematic biopsies, regardless of fusion technique, with data consistent with accepted CDR based on PI-RADS scoring. Further multi-center studies are needed to characterize TPBx safety in wider practice.

Funding: None.

MP31-02 Early Results of Urethral Bulking with Polyacrylamide Hydrogel in Male Stress Urinary Incontinence: A multi-institutional retrospective cohort

Luke Griffiths1, Allie Tabakin1, Maya Srinath1, Wai Lee1, Donna Deng2

1Smith Institute for Urology, Northwell Health, 2Department of Urology, Kaiser Permanente

Presented By: Luke Griffiths, MD

Introduction: Stress urinary incontinence (SUI) in men is estimated to affect up to 17% of men and can be associated with iatrogenic causes, such as radical prostatectomy (RP), radiation therapy (RT), and outlet procedures for benign prostatic hyperplasia. The use of urethral bulking agents in both men and women have historically lacked durability and could be associated with tissue inflammation, abscess, or erosion. With the advent of urethral bulking with polyacrylamide hydrogel (PAHG) to treat SUI in women, there have been findings of prolonged efficacy, while its effect in men has not been reported. Our objective is to present our experience with PAHG in men as part of a multi-institutional retrospective analysis.

Methods: Our cohort included men treated with PAHG for SUI from 2021 to 2023 at two academic institutions, with all procedures performed by 2 urologists. Patients were excluded if they were lost to follow-up or had incomplete data postoperatively. The primary endpoint was improvement from baseline in pads per day (PPD), improvement, and complications reported.

Results: A total of 34 patients underwent PAHG. Of these, 24 patients met inclusion criteria. The median number of PAHG procedures performed on each patient was 2. The majority of patients (95.8%) had iatrogenic SUI from RP, while 5 (20.1%) patients had a history of RT. Overall, 5 (21.7%) patients experienced a 50% improvement in PPD from baseline. Patients reported post-PAHG a mean improvement of 22.6% (± 29.2) with 43.3% (± 41.6) satisfaction rate. The median follow-up interval 6.2 (± 6.7) months. The UDI-6 composite score after PAHG improved from baseline 6.9 (± 2.1) to post procedural 2.1 (± 1.3) (Table 1). No post-operative complications were reported.

Conclusions: PAHG offers a less invasive alternative treatment for SUI in men that could potentially provide greater durability over traditional bulking agents with minimal tissue fibrosis and inflammation. Our preliminary findings demonstrate early efficacy, but longer follow-up is needed to reach further conclusions. Moreover, further analysis of larger cohorts could shed light on ideal patient selection for optimal results.

Funding: None.

Table 1: Cancer detection rate

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<th>System</th>
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<th>PI-RADS 4</th>
<th>PI-RADS 3</th>
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<th>Systematic CDR</th>
<th>PI-RADS 2 CDR</th>
<th>PI-RADS 3 CDR</th>
<th>PI-RADS 4 CDR</th>
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<td>15%</td>
<td>30%</td>
<td>10%</td>
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<td>55%</td>
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<td>0%</td>
<td>50%</td>
<td>60%</td>
<td>40%</td>
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Table 2: Cancer detection rates comparison by system

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MP31-03 Medical impulsive therapy (MIT): Effect of 5 day of preoperative tamsulosin on deployment of 12 French ureteral access sheaths without preoperative ureteral stent placement

Manu Kauhsik Nagabhairava, Dr Sandeep P, Manasa T, Tanu J

Methods: This is a retrospective analysis of prospectively maintained database. The study included 1750 patients with renal stones ≤ 2 cm treated with a flexible ureteroscope. Among them, 950 patients underwent dusting, and 800 patients underwent fragmentation with basketing. All patients followed up for 3 months.

Results: The mean stone size in the dusting group was 11.5±3.5 mm and 12.3±3.8 mm in the basketing group. Patients’ baseline demographic characteristics were almost similar in both groups. The operation data and postoperative outcomes were observed. The mean operative time was significantly lower in the dusting group at 45.1±10.8 minutes vs 63.5±13.8 minutes, four patients in the dusting group and two patients in the basketing group were admitted to the intensive care unit (ICU) due to septic shock and was successfully treated. The immediate SFR after surgery was significantly higher in the dusting group (78.7%) compared with the dusting group (62.7%, p = 0.001). The SFR was also higher in the dusting group at 86.4% vs. 76.3% (p = 0.001) after 1 month postoperatively. However, the SFR was (87.8%) in the dusting group vs 90.2% in the basketing group during the follow-up period after 6 months postoperatively. The secondary session of fURS was required in the basketing group at 12.4% and the dusting group at 9.8%.

Conclusions: The dusting technique reduced the operation time and complications, but the lasing time was a bit longer than basketing. Both techniques have their advantages and disadvantages, both are effective in the management of renal stones. The question regarding which technique is better depends on patient demographic and stone characteristics, we report our preliminary experience with both types of flexible ureteroscopes.

Funding: No.

MP31-04 Efficacy of various modalities in flexible ureteroscopy: A Single-Center’s Experience

Kamran Bhatti

Methods: This study included 1750 patients with renal stones ≤ 2 cm treated with a flexible ureteroscope. Among them, 950 patients underwent dusting, and 800 patients underwent fragmentation with basketing. All patients followed up for 3 months.

Results: The mean stone size in the dusting group was 11.5±3.5 mm and 12.3±3.8 mm in the basketing group. Patients’ baseline demographic characteristics were almost similar in both groups. The operation data and postoperative outcomes were observed. The mean operative time was significantly lower in the dusting group at 45.1±10.8 minutes vs 63.5±13.8 minutes, four patients in the dusting group and two patients in the basketing group were admitted to the intensive care unit (ICU) due to septic shock and was successfully treated. The immediate SFR after surgery was significantly higher in the dusting group (78.7%) compared with the dusting group (62.7%, p = 0.001). The SFR was also higher in the dusting group at 86.4% vs. 76.3% (p = 0.001) after 1 month postoperatively. However, the SFR was (87.8%) in the dusting group vs 90.2% in the basketing group during the follow-up period after 6 months postoperatively. The secondary session of fURS was required in the basketing group at 12.4% and the dusting group at 9.8%.

Conclusions: The dusting technique reduced the operation time and complications, but the lasing time was a bit longer than basketing. Both techniques have their advantages and disadvantages, both are effective in the management of renal stones. The question regarding which technique is better depends on patient demographic and stone characteristics, we report our preliminary experience with both types of flexible ureteroscopes.

Funding: No.

MP31-05 Myth-busting continuous bladder irrigation: an assessment of accuracy and limitations using current equipment

Sufyan Shaikh, Kai-Ho Fok, Jonguk Lee, Brian Carrillo, Monica Farca
**1St. Michael’s Hospital, Division of Urology, Department of Surgery, University of Toronto, Toronto, ON, Canada, 2WellSpring Research, Toronto, ON, Canada, 3Institute of Medical Science, University of Toronto, ON, Canada**

Presented By: Sufyan Shaikh

**Introduction:** Appropriate flow rate (FR) is crucial during continuous bladder irrigation (CBI) and is controlled solely by roller clamps (RC) affixed to CBI tubing. RCs are crude, have limited adjustability, and mimic an “on-off” switch. A common practice to gauge FR is a visual assessment of the drip chamber (DC) which has its limitations. Here, we evaluated participants’ accuracy in assessing and controlling FR when relying on the DC.

**Methods:** Conventional CBI setup was replicated, with the addition of weight sensors to measure FR. Starting at max FR, medical students (n = 6), nurses (n = 2), and staff urologists (n = 4) were tasked with sequentially reducing FR in 50% increments using the DC as a guide. The percentage decrease between adjustments corresponded with “steps” the participant took and were compared. Participants performed 3 replicates, and recruitment is ongoing.

**Results:** All participants were inconsistent between their 3 trials when assessing titration accuracy (sample in Figure 1A). Figure 1B highlights participants’ inaccuracy in reducing FR by 50% and shows a lack of comparability between participants. For instance, average step 1 reductions ranged between 20-60%. Finally, inter-group comparisons showed similar mean accuracy and reduced variability amongst experienced participants (Figure 1C).

**Conclusions:** Our data suggest that visual assessment of the DC is unreliable for titrating accurately and consistently as it does not provide enough information. Reliance on the DC will contribute to differences in CBI care and can be problematic as patients receive inconsistent CBI that would impact their recovery. Improvements to CBI administration must be explored and may include automation.

**Funding:** None.

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**MP31-06 Are we performing unnecessary flexible cystoscopies?**

Feroz Khan1, Aakash Pai1

1Northampton General Hospital, 2NORTHAMPTON GENERAL HOSPITAL

Presented By: Feroz Khan, CT1 Urology

**Introduction:** Flexible cystoscopy is the most frequently performed urological intervention. European Association of Urology (EUA) recommend the use of flexible cystoscopy for detection and surveillance of bladder cancer. Ambiguity exists regarding the use of flexible cystoscopy for recurrent urinary tract infections (rUTI) and lower urinary tract symptoms (LUTS). This study assessed the proportion of flexible cystoscopies done in our department for rUTI and LUTS. Additionally, we retrospectively reviewed all new bladder cancers from our institution to ascertain whether any presented with purely rUTI or LUTS.

**Methods:** The indications for flexible cystoscopy were analysed to assess what proportion are conducted for rUTI and LUTS. In addition, as a separate analysis, all new bladder tumours diagnosed over a 24-month period at our institution were retrospectively reviewed. The data collection included the age, gender, indication for flexible cystoscopy and the outcome.

**Results:** At our institution 25% of flexible cystoscopies per month are performed for rUTI or LUTS. 97 patients were diagnosed with a new onset bladder cancer over a 24 month period. No patients with rUTI, in the absence of haematuria, having flexible cystoscopy were diagnosed with bladder cancer. 1 patient with LUTS, in the absence of haematuria, was diagnosed with bladder cancer. Looking at the newly diagnosed bladder cancer cohort, 72% of patients presented with visible haematuria, 12% presented with non-visible haematuria and 10% presented for other reasons at the initial flexible cystoscopy clinic. Among the visible haematuria patients, 10 patients had concurrent LUTS and 3 patients had rUTI. Among the non-visible haematuria, 4 patients had concurrent LUTS and 3 patients had rUTI. 5 patients had a flexible cystoscopy due to imaging suggesting a potential bladder mass. The no of flexible cystoscopies for rUTI and LUTS is projected to be 1500 during this time period.

**Conclusions:** Our study recommends avoiding the use of flexible cystoscopy for rUTI without haematuria and LUTS as these are the non-standard indications of flexible cystoscopy.
cystoscopy. This study emphasizes the ongoing need for improvement aligned with updated guidelines, contributing to discussions on optimizing diagnostics within resource-efficient frameworks.

**Funding:** Self funded.

### MP31-07 Enhancing Urology Referral Intake Through AI-Assisted Pre-Charting: A Pilot Study

Roebrit Medairos¹, David Barquin¹, Ezra Margolin¹, Daniel Wollin², BristolWhiles³, Russell Terry³, David Sobel⁴, Gary Faerber¹, Charles Scalese, Jodi Antonelli¹, Michael Lipkin¹, Glenn Preminger¹, Robert Medairos³

¹Duke University Medical Center, ²Brigham and Women’s Hospital, Harvard Medical School, ³University of Kansas Medical Center, ⁴University of Florida Health Center, ⁵Main Medical Center

**Presented By:** Roebrit Medairos, MD

**Introduction:** The use of artificial intelligence (AI) in healthcare is growing, which can improve providers’ clinical workflow and assist in the synthesis of healthcare data. We aimed to assess how AI can assist in pre-charting new patient referrals to a tertiary urologic kidney stone clinic.

**Methods:** Ten patients who were referred for kidney stone disease to a single academic center between October 2022 and November 2023 were randomly selected for review. The referral packets were scanned PDF packets and varied in length from 10 to 44 pages. Hona (Hona AI, San Francisco, CA), a web-based artificial intelligence software, was used to provide a pre-templated clinical summary of the referral packet. Five fellowship-trained endourologists from different academic centers were assigned to pre-write a non-templated clinic note for each of the ten patients. Assignments were randomized such that each physician completed five notes with AI assistance and five without. The time to create each clinic note was recorded. After completion of all ten charts, the physicians were asked to complete a satisfaction survey. Each clinic note was evaluated using the Physician Documentation Quality Instrument (PDQI-9) by two separate authors, and these scores were averaged. Outcomes were compared using Wilcoxon rank-sum tests, with \( p < 0.05 \) indicating statistical significance.

**Results:** A total of 50 notes were written, 25 with and 25 without AI assistance. Median note writing time was 8.2 min (IQR 7.0-10.2) for AI-assisted notes and 9.4 min (IQR 8.4-11.7) for non-AI-assisted notes, representing a 13% reduction in time for note generation with AI assistance (\( p = 0.048 \)). The median total PDQI-9 score was 42.5 for AI-assisted notes and 42.0 for non-AI-assisted notes (\( p = 0.321 \)). AI-assisted notes scored significantly higher on being “up-to-date” (median 5 vs. 4.5, \( p = 0.020 \)); there were no other significant differences on PDQI-9 questions (Figure). Clinicians were either “very satisfied” or “somewhat satisfied” with the AI software overall. All five clinicians “strongly agreed” that the AI-generated report is superior to the current standard referral documents in their practice.

**Conclusions:** For urology referrals, AI assistance led to faster creation of a pre-clinic note without compromising note quality. All the physicians involved preferred the AI assistance to the current standard referral document in their practice.

**Funding:** None.

### MP31-08 Endoscopic treatments of ureteral strictures after kidney transplantation

Xiaoshuai Gao², Xin Wei¹, Fei Li¹

¹Department of Urology and Institute of Urology (Laboratory of Reconstructive Urology), West China Hospital, Sichuan University, ²Department of Urology and Institute of Urology (Laboratory of Reconstructive Urology), West China Hospital, Sichuan University

**Presented By:** Xiaoshuai Gao

**Introduction:** The management of ureteral strictures following kidney transplantation (KT) remains a challenging task for urologists. Our objective was to evaluate the safety and effectiveness of endoscopic treatments for ureteral strictures after KT.

**Methods:** In a prospective manner, we gathered clinical data from 68 patients who underwent endoscopic treatments for ureteral strictures after KT between January 2019 and March 2022. Measurements of pre- and post-operative hydronephrosis volume, serum creatinine, urea nitrogen levels, and eGFR were recorded.

**Results:** Based on the specific circumstances of the ureteral strictures, three distinct types of surgery were selected for treatment. The average duration of follow-up was 22.9 months and the overall success rate of these techniques was 88.2% (60/68). Notably, the success rate for Type I (97.3%) was significantly higher than that for Type II (77.8%) or Type III (76.9%). Postoperatively, significant improvements were observed in various parameters. There was a notable decrease in blood creatinine levels (105.5 vs 90.4 mol/L), urea nitrogen levels (6.6 vs 5.4 mmol/L), and hydronephrosis volume (64.4 vs 43.9 cm3). Additionally, the serum eGFR increased from 49.5 ml/min/1.73 m² to 64.4 ml/min/1.73 m². Surgical complications included hematuria (17.6%), pain (14.7%), urinary tract infections (14.7%), and lower urinary tract symptoms (7.4%). The incidences of stent migration, occlusion, and encrustation were 14.7%, 4.4%, and 2.9%, respectively.

**Conclusions:** Systemic endoscopic treatments were found to be safe and effective for ureteral strictures after KT with long follow-ups. This technique offers a novel option for the treatment of post-KT strictures.
Funding: This study was supported by the China Postdoctoral Science Foundation funded project (grant no. 2023M742470); Post-Doctor Research Project, West China Hospital, Sichuan University (grant no. 2023HXBH041); Post-Doctor Research Project of Sichuan University (grant no. 2024SCU12007); Natural Science Foundation of Sichuan Province (grant no. 2023NSFSC1532).

MP31-09 Prevalence and factors related to the formation of ureteral stricture after semi-rigid ureteroscopy. Our center’s experience

Miguel Gómez-Garberí1, Edgar H. Olarte-Barragán1, Baraa Nakdali-Kassab1, Cristina Egea-Sancho1, Milagros Muñoz-Montoya1, Víctor Valle-Luna1, Luis D. Flores-Valenzuela1, Pau Sarrió-Sanz1, Juan J. Pacheco-Bru1, Manuel A. Ortiz-Gorraiz1
1San Juan de Alicante University Hospital

Introduction: Urolithiasis is a disease with a high prevalence, ranging between 1and 20%. With the development of endourological instrumentation, ureterorenoscopy has become one of the main treatments for this pathology; however, like any other technique, it is not free of complications. The rate of ureteral stricture ranges between 0.5and 5% according to the literature. The aim of the study was to estimate the prevalence of ureteral stricture in our center in those patients undergoing semi-rigid ureteroscopy for the treatment of ureteral lithiasis and to determine the factors related to its development. Furthermore, the results of the treatment of this complication were characterized and evaluated.

Methods: Observational, descriptive study, carried out through the retrospective analysis of the clinical records of all patients undergoing semi-rigid ureteroscopy for the treatment of ureteral stones between May 2019 and May 2023 at San Juan de Alicante University Hospital. Demographic and surgical treatment data were collected.

Results: A total of 171 procedures were included, of which 9developed ureteral stricture, a prevalence of 5.26%. 56.1% were men, with an overall mean age of 60 years. After subgroup analysis by presence of ureteral stricture, a statistically significant relation with age was found (50.11 vs 61.12 years p = 0.037). No relation was found with any other possible cause for the nephron-colic fistula (foreign body, malignancy, radiation or fungal infection), the fistula was presumed to be stent related. A new-properly placed stent was deployed and a Foley catheter was placed for three weeks. At three weeks the CT was repeated that confirmed healing of the fistulous tract. The stent was removed at six weeks. Patient had a smooth post-operative course.

Conclusions: We hypothesize that this complication happened due to extra-renal coiling of the guide wire that entered the colon. The malignancy was treated by a combination of chemo-radiation therapy. During this period, she had recurrent episodes of urinary tract infections (UTIs), flank pain, and lower urinary tract symptoms. She presented to us for management of the UTI and for stent change. The patient was treated with appropriate antibiotics. X-ray KUB showed that the upper end of the stent had not coiled properly (Figure 1A) while CT scan confirmed that the end of the stent was outside the renal shadow (Figure 1B). The retrograde pyelogram (RGP) at the time of stent replacement showed two thin streaks of contrast extravasation and pooling of the contrast in the colon (Figure 1C). There was no other possible cause for the nephron-colic fistula (foreign body, malignancy, radiation or fungal infection), the fistula was presumed to be stent related. A new-properly placed stent was deployed and a Foley catheter was placed for three weeks. At three weeks the CT was repeated that confirmed healing of the fistulous tract. The stent was removed at six weeks. Patient had a smooth post-operative course.

Funding: None.

MP31-10 Nephro-Colic Fistula: A rare complication of DJ stenting procedure

Pankaj Maheshwari2, Aditya Goyal1, Pushkar Shrivastava2, Hussain Kossawala2, Pratik Agrawal2, Nakul Bhatt1, Swapnil Harne2

1Fortis hospital Mulund, 2Fortis Hospital Mulund

Presented By: Pankaj Maheshwari, MS, MCh, FRCS

Introduction: DJ stent is commonly placed in urological practice. Usually a very safe procedure, occasionally it can present with complications like infection, stent dysuria, encrustations, stent migration or stent fragmentation. We present a rare complication of Nephro-colic fistula that developed as a result of extrarenal placement of the DJ stent. This is an avoidable complication that if promptly identified and managed can mitigate the risk of additional morbidity.

Methods: A 44-year-old female with locally advanced carcinoma cervix was previously managed with bilateral DJ stenting for obstructive uropathy. The malignancy was treated by a combination of chemotherapy and radiation therapy. During this period, she had recurrent episodes of urinary tract infections (UTIs), flank pain, and lower urinary tract symptoms. She presented to us for management of the UTI and for stent change. The patient was treated with appropriate antibiotics. X-ray KUB showed that the upper end of the stent had not coiled properly (Figure 1A) while CT scan confirmed that the end of the stent was outside the renal shadow (Figure 1B). The retrograde pyelogram (RGP) at the time of stent replacement showed two thin streaks of contrast extravasation and pooling of the contrast in the colon (Figure 1C). As there was no other possible cause for the nephro-colic fistula (foreign body, malignancy, radiation or fungal infection), the fistula was presumed to be stent related. A new-properly placed stent was deployed and a Foley catheter was placed for three weeks. At three weeks the CT was repeated that confirmed healing of the fistulous tract. The stent was removed at six weeks. Patient had a smooth post-operative course.

Results: We hypothesize that this complication happened due to extra-renal coiling of the guide wire that entered the colon. This case reemphasizes the need for retrograde pyelogram during stent placement and to look for proper coiling of the stent in the renal pelvis on intra-operative fluoroscopy.

Conclusions: We present a very rare case of DJ stent-induced nephrocolic fistula that was managed conservatively.

Funding: None.

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**Images:**
- **A:** X-ray: Abnormal coil of the upper end of the stent.
- **B:** CT: Stent coil seen outside the renal shadow.
- **C:** RGP: confirmed the nephro-colic fistula.
MP31-11 Why do clinical trials in Nephrolithiasis fail?
Mohammed Shahait1, Gregory Tasion1, Ryan Dobbs2, Abdulrahman Alhajahleh3, Timothy Averch4
1Children Hospital of Pennsylvania, 2Cook County, 3Jordan University, 4PRISMA Health, 5Private Practice

Presented By: Mohammed Shahait

Introduction: While nephrolithiasis is a common condition with a large impact on patients & healthcare systems, most of the clinical practice is based on observational data and the number of clinical trials in this field is limited. This study aimed to investigate the factors leading to the termination of clinical trials in nephrolithiasis management.

Methods: We queried clinicaltrials.gov to identify clinical trials focused on nephrolithiasis between January 1, 2000, and concluded before December 31, 2020. The trials were categorized into two groups: “terminated” and “completed”. We used Chi-square to identify factors associated with early trial termination.

Results: We identified 202 clinical trials focused on nephrolithiasis; 17.3% (n = 35) were terminated before meeting target enrollment. The most common reasons for early termination were low accrual (46.4%), lack of funding (21.4%), administrative issues (17.8%), and concerns about safety (14.3%). The terminated trials were more likely to have a target enrollment of <35 subjects compared to completed trials (82.9% vs. 25.3%, p < 0.001), and were conducted in high-income countries (97.1% vs. 69.3%, p < 0.001). There were no differences between terminated and completed trials in terms of source of funding, type of intervention, and the gender of principal investigator.

Conclusions: The termination rate of nephrolithiasis clinical trials was 17.3%, with low accrual being the most frequently reported reason. Early terminated trials were more likely to be conducted in HICs and have a targeted enrollment of <35 participants. A better understanding of these factors might help researchers, funding agencies, and other stakeholders to improve the design and increase completion of future nephrolithiasis clinical trials.

Funding: None.

MP31-12 The Focal Therapy Society’s Active Surveillance (AS) for Prostate Cancer Protocol
Courtney Phillips1, Sriram Deivasigamani1, Thomas Polascik1, Ardeshr Rastinehad2, Peter Pinto3, Laurence Klotz4, Rafael Salas-Sanchez5, Caroline Moore6
1Duke, 2Northwell Lenox Hill, 3NIH, 4Sunnybrook, 5McGill, 6University College London, 7Northwell- Lenox Hill Hospital

Presented By: Courtney Phillips, MD

Introduction: Prostate cancer (PCa) is a significant cause of morbidity, mortality, and cost worldwide, however unlike other cancers, PCa is often non-fatal. Because of this, there has been significant interest in active surveillance (AS) for PCa. Despite its fairly widespread adoption, AS protocols are subject to broad methodological disparities. As one of the leading proponents of MRI’s use for PCa and targeted fusion biopsies, the Focal Therapy Society (FTS) felt uniquely positioned to propose an AS protocol that would incorporate state of the art imaging with cutting edge biopsy techniques in a standardized AS protocol.

Methods: The UCLA Rand method was used for establishing consensus. Twelve participant demographic questions and 115 clinical statements were posed to participants. Care was taken to include contingencies for centers that do not have access to certain equipment/technology. Participants were asked to score each statement on a scale of 1-9 with 1 being “Most Inappropriate” and 9 being “Most Appropriate”. Scores 4-6 were defined as “Unclear Appropriateness”. The UCLA Rand statistical method was used to determine whether there was Agreement or Disagreement as to whether each statement was appropriate, inappropriate or of unclear appropriateness. Two rounds of surveys were sent out. The second round survey included the participant’s first round answer and answer median and distribution for the group in the first round. Upon completion of the second round survey, a virtual consensus meeting will be held to determine final recommendations.

Results: 274 invitations to participate in the study were sent out. There were 69 respondents in Round 1. After Round 1, consensus was achieved for 51 out of the 115 statements. Nine more statements reached consensus after Round 2. Consensus was achieved for certain AS eligibility requirements regarding age, pathologic criteria, Gleason Grade, and imaging characteristics.

Need for confirmatory biopsy remained controversial in certain instances. Consensus was reached regarding the need for PSA and MRI during an AS protocol. Triggers for “cause” biopsies were largely agreed upon, though treatment without biopsy was controversial. Instances for de-escalation of AS rigor largely met consensus however the need and frequency of patient anxiety screening remained largely undecided.

Conclusions: Having a standardized AS protocol which incorporates the most cutting edge imaging and biopsy technology is critical to providing our patients with the best possible care and standardizing research protocols. This study is ongoing and will culminate in the FTS white paper on AS for PCa.

Funding: None.

MP31-13 Myth-busting continuous bladder irrigation: an assessment of challenges and interruptions during administration
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1St. Michael’s Hospital, Department of Surgery, Division of Urology, Toronto, ON, Canada, 2WellSpring Research, Toronto, ON, Canada, 3Institute of Medical Science, University of Toronto, Toronto, ON, Canada

Presented By: Sufyan Shaikh

Introduction: Continuous bladder irrigation (CBI) requires diligent monitoring of irrigation and drainage bags, inflow rate, identification of clots or hematuria, and timely interventions. These responsibilities fall on nurses who are burdened with other duties. Unfortunately, CBI management is prone to errors and unintended interruptions, the extent of which is hitherto unknown. Here, we sought to capture the nursing perspective in CBI management and the frequency of unintended interruptions.

Methods: Initial aspects for a questionnaire were identified from a urologist’s experience with CBI and used to construct a 36-item questionnaire, and was validated by a panel of 5 experts including urologists, nurses, and researchers. Questions ascertained nursing experience, recorded CBI management challenges and workload, and captured perceived interruptions to
CBI. Nurses in urology (n = 10), emergency (n = 14), and internal medicine (n = 9) wards at one site in Toronto were interviewed.

**Results:** On average, participants reported their CBI patients required 40% of their 12-hour shift when caring for 5-6 patients. Participants reported unintended interruptions that were not caught and rectified promptly (Figure 1). On average, participants reported that irrigation bags were depleted 2 times per shift, ranging between 0 and 4. Additionally, they reported 3 instances per shift where the drainage bag reached capacity, ranging between 0 and 9.

**Conclusions:** Our data highlights the extreme workload and time investment required when caring for CBI patients. Furthermore, patients will experience an average of 5 interruptions during a typical 12 hours on CBI. This issue may be exacerbated if the patient receives CBI for a duration greater than 12 hours and is under the care of more than 1 provider. These instances negate the “continuous” expectation of CBI and render it “interrupted bladder irrigation”, the consequences of which may include recurrent clotting and longer hospital stays.

**Funding:** None.

**Methods:** A retrospective review of patients admitted to the Emergency Department (ED) with a diagnosis of ureteric stones, employing CT scans. Comprehensive data, including clinical, laboratory, and imaging parameters, were gathered. This encompassed details about hospital admissions, ED readmissions, surgical interventions, and the overall treatment expenses. Different cost metrics were analyzed, considering stone attributes (size, location, and composition), clinical presentation (sepsis and renal function), and the patient’s history of urolithiasis (spontaneous stone expulsion and/or endourological procedures).

**Results:** From January 2018 to January 2020, 805 participants underwent abdominal CT scans at a singular institution’s ED, revealing ureteric stones in 96% (773) of cases. The average age of the study cohort was 50 years (standard deviation 15). Of the participants, 22% (168) were female, while 78% (605) were male. The composition of the stones emerged as a significant factor influencing treatment expenses, displaying varying costs for distinct types: struvite (14, 251$ USD), calcium phosphate (13, 135$ USD), uric acid (10, 758$ USD), calcium oxalate monohydrate (9, 697$ USD), calcium oxalate dihydrate (9, 373$ USD) (p < 0.001).

**Conclusions:** Stone composition has a substantial impact on treatment costs, revealing significant variations in expenses associated with different types of stones. Notably, struvite stones incurred the highest treatment cost, followed by calcium phosphate, uric acid, calcium oxalate monohydrate, and calcium oxalate dihydrate. These findings highlight the economic implications of considering stone composition in the management of ureteric stones.

**Funding:** None.

**Introduction:** Urolithiasis is known to affect both men and women. A striking and consistent observation is the notable male predilection, with males suffering from urolithiasis in a 3:1 ratio compared to their female counterparts. While traditionally males have witnessed a higher occurrence of urolithiasis compared to females, recent trends suggest a narrowing of the gender gap in kidney stone prevalence over the last decade. Contemporary research reveals a temporal shift in the disease burden of kidney stone disease among both genders. Our goal was to investigate the gender gap in the context of stone-related surgery within an Israeli population.

**Methods:** We conducted a retrospective cohort study using administrative databases from Clalit Health Services to identify adults aged 18 and above who had their initial surgical treatment for upper tract urolithiasis. We employed descriptive statistics to outline the baseline patient characteristics, and the Cochrane-Armitage test for trend was utilized to analyze surgical trends.

**Results:** Between 2003 and 2020, a total of 36, 624 adult patients underwent surgical treatment for upper tract urinary stones. The mean age of patients was 55.01 years (SD 16.6) for ureteroscopy (URS), 55.05 years (SD 15.1) for percutaneous nephrolithotripsy (PCNL), and 51.07 years (SD 15.1) for shockwave lithotripsy (SWL). Regarding the distribution of procedures by gender, 14, 793 males underwent URS, 1, 643 PCNL, and 13, 460 SWL.
and 8, 807 SWL, while 6, 545 females underwent URS, 1, 177 PCNL, and 3, 659 SWL. Across all surgical modalities, the male-to-female ratio exhibited fluctuations without a consistent trend, with both increases and decreases observed. In URS, the ratio saw a modest increase from 1.967 in 2003 to 2.173 in 2020. For PCNL, the ratio initially increased from 2.361 in 2003 to 2.549 in 2014, followed by subsequent fluctuations, but an overarching trend was not apparent. In contrast, for SWL, the ratio decreased from 2.15 in 2003 to 1.32 in 2020, with varying changes in between.

Conclusions: This study highlights the dynamic nature of gender gap in stone-related surgery outcomes. While the male-to-female ratio exhibited fluctuations over a 17-year period, no consistent trend emerged. The absence of a clear trend underscores the complex and multifaceted factors influencing the gender gap in urolithiasis.

Funding: None.

MP31-16 Single-institution retrospective analysis and one-year follow-up of the efficacy of multidisciplinary fluoroscopic-guided large-bore gallstone extraction for inoperable calculous cholecystitis

Daniel Marchalik, Neil Jain, Robn Yoon, Matthew Lamberti, Kenneth Lim, John Smirniotopoulos

MedStar Georgetown University Hospital, Georgetown University School of Medicine

Presented By: Daniel Marchalik, MD MBA

Introduction: The objective of this study is to assess the one-year follow-up and efficacy of image-guided percutaneous large-bore (24–30 French) gallstone extraction for a subset of patients who are poor surgical candidates performed by a multidisciplinary team of urology and interventional radiology.

Methods: This is a multi-institutional Institutional Review Board-approved retrospective review of patients at two large academic centers who presented with calculous cholecystitis and were determined to be high-risk surgical candidates. Review parameters included procedural technical and clinical data, average hospital length of stay, and post-intervention symptom reduction. Technical success was defined as the removal of all stones during the procedure. Clinical success was defined as stone-free on one-year follow-up imaging.

Results: Nineteen patients (mean age 72.5 yr, range 46–93 yr; 9 male and 10 female) underwent large bore sheath (24–30Fr) cholangioscopy assisted gallstone extraction using traditional percutaneous nephrolithotomy (PCNL) technique. The size of the gallstones ranged from 0.5–4.0 cm. 16 patients had prior transperitoneal cholecystectomy and were determined to be high-risk surgical candidates. Review parameters included procedural technical and clinical data, average hospital length of stay, and post-intervention symptom reduction. Technical success was defined as the removal of all stones during the procedure. Clinical success was defined as stone-free on one-year follow-up imaging.

Conclusions: Image-guided percutaneous large-bore gallstone extraction is a safe and efficacious procedure for gallstone destruction and extraction in patients who are poor surgical candidates. The majority of patients were stone-free on one-year follow-up imaging after percutaneous fluoroscopic-guided large-bore gallstone extraction. Multidisciplinary team that leverages urologic expertise in PCNL management of large stones is important for procedure success.

Funding: None.

MP31-17 Comparison of Urerteroscopic Biopsy for Frozen Pathology and Permanent Pathology in Staging of Upper Tract Urothelial Carcinoma

Kelly Lehner, Tal Cohen, Kevin Koo, Kevin Wymer, Theodora Potretzke, Aaron Potretzke

Mayo Clinic

Presented By: Kelly Lehner, MD

Introduction: Upper tract urothelial carcinoma (UTUC) represents 5% of all urothelial malignancies. Accurate pathologic diagnosis is key and may direct treatment decisions. Current ureteroscopic biopsy techniques include cold-cup, backloaded cold-cup and stone basket. The study objective was to compare frozen section pathology with final permanent pathology to determine correlation. This helps determine whether intraoperative decision making can be based on frozen section results.

Methods: We performed ureteroscopic biopsy using the “form tackle” technique as previously described by Klett et al. Int Braz J Urol. 2022. Eligibility criterion was an upper tract lesion ≥1 cm concerning for urothelial carcinoma. Each tumor was biopsied four times: two biopsies for frozen section and two biopsies for final permanent section. Concordance of frozen and permanent section was assessed.

Results: 10 procedures were performed on 10 patients between January of 2023 and June of 2023. Within the cohort there were 5 concordant pathology results, 2 discordant pathology results, and 3 nondiagnostic frozen section interpretations (Table 1). Permanent section yielded a diagnosis in all 10 patients. Final extirpative surgical pathology was available in 1/10 patients and was concordant. There were no complications related to biopsy.

Conclusions: Frozen pathology may yield concordant pathology results when compared to permanent pathology which could allow for improved intraoperative decision-making. Further work is needed to continue to improve frozen pathology diagnostic yield.

Funding: None.

MP31-18 Advanced Practice Provider Utilization for Kidney Stone Prevention Visits: Results of an Endourological Society Survey

Daniel Wollin, Loren J Smith, Evelyn James, Erin Santos, David Sobel

Endourological Society Survey

Presented By: David Sobel, MD
Introduction: Advanced practice providers (APPs) are increasingly utilized in the United States (U.S.), with a reported 81.5% of U.S. urologists working with APPs. Previous research has demonstrated equivalent patient satisfaction when an APP versus a surgeon delivers kidney stone prevention (KSP) counseling. However, limited data characterize the overall utilization of APPs for outpatient KSP visits. This survey study describes Endourological Society member use of APPs for KSP counseling and management and reveals the barriers preventing full integration.

Methods: A 12 question survey was distributed via email to the membership of the Endourological Society, the premier urological society dedicated to endourology, robotics, and focal surgery, from January 30 through March 4, 2024. Members were queried regarding practice patterns and use of APPs for KSP office visits. A 5-point Likert scale assessed satisfaction with specific tasks associated with KSP counseling and management.

Results: The survey response rate was 16.7%. Table 1 depicts selected survey results. U.S. and non-U.S. respondents represented 53.0% and 47.0%, respectively. Fellowship training in endourology was associated with use of APPs for KSP (OR 3.11, p = 0.004). APP utilization in KSP clinics was 76.3% and 16.1% in U.S. and non-U.S. clinics, respectively (OR 16.8, p < 0.001). 24-hour metabolic urinalysis review, serum lab review, and imaging review were the top 3 tasks assigned to APPs in KSP clinic. A majority of respondents supervising APPs reported high satisfaction (Likert 4 or 5) with APP serum evaluation and imaging review. Review of imaging received lowest satisfaction but was not statistically significant (63.3%, p = 0.068). Physician oversight of APPs performing KSP varied, with most respondents (58.6%) reporting no oversight. The top 3 barriers to utilizing APPs were 1) Lack of APP availability within respondent’s practice, 2) Organization limitations, and 3) Cost to employ APP within the practice.

Conclusions: There is high satisfaction with APP integration within US clinics that utilize APPs for KSP, with an emphasis on laboratory data interpretation. Review of imaging is rated lower than other tasks and, while not statistically significant, may speak to surgeon-specific decisions to proceed to surgery. The AUA supports a team-based approach with a board-certified urologist in a supervisory role overseeing APPs to help provide care, in part, based on the looming urologist shortage and APP non-inferiority data. However, a statistically significant difference exists in the U.S. vs. non-U.S. adoption of APPs for KSP clinic, likely due to differences in international governance and practice patterns not fully elucidated through this survey study. It is our belief that APPs, when properly trained in KSP, can be a strong partner within the endourology clinic, although the optimal method for this requires further investigation.

Funding: NA.

Table 1: Survey Results

<table>
<thead>
<tr>
<th>Practice type</th>
<th>Uses APP: N=34</th>
<th>Does not use APP: N=35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic/University-affiliated practice</td>
<td>28/34 (82.3%)</td>
<td>6/35 (17.1%)</td>
</tr>
<tr>
<td>Community hospital employed</td>
<td>22/35 (65.7%)</td>
<td>13/35 (34.3%)</td>
</tr>
<tr>
<td>Private for-profit group practice</td>
<td>1/34 (2.9%)</td>
<td>33/35 (94.3%)</td>
</tr>
<tr>
<td>Private non-profit group practice</td>
<td>1/34 (2.9%)</td>
<td>33/35 (94.3%)</td>
</tr>
<tr>
<td>Private solo practice</td>
<td>1/33 (3.0%)</td>
<td>32/35 (91.4%)</td>
</tr>
<tr>
<td>Other</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use APP for KSP visits in clinic:</th>
<th>34/34 (99.4%)</th>
<th>35/35 (100%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum lab review</td>
<td>25/29 (86.2%)</td>
<td></td>
</tr>
<tr>
<td>24-hr metabolic urinalysis review</td>
<td>25/30 (85.3%)</td>
<td></td>
</tr>
<tr>
<td>Imaging review</td>
<td>19/30 (63.3%)</td>
<td></td>
</tr>
<tr>
<td>Nutrition counseling</td>
<td>19/25 (76.0%)</td>
<td></td>
</tr>
<tr>
<td>Medication management</td>
<td>21/28 (75.0%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>APP Oversight:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient seen concurrently with APP and Physician</td>
<td>8/34 (23.5%)</td>
<td></td>
</tr>
<tr>
<td>Physician review of studies and labs with APP before independent APP visit</td>
<td>9/34 (26.5%)</td>
<td></td>
</tr>
<tr>
<td>Physician review of plan and co-planning chart after APP visit</td>
<td>10/34 (29.4%)</td>
<td></td>
</tr>
<tr>
<td>None at all</td>
<td>17/34 (50.0%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How is KSP managed in your clinic?</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Urology sees all KSP patients</td>
<td>21/34 (61.8%)</td>
<td>13/35 (37.1%)</td>
</tr>
<tr>
<td>KSP patients are referred to nephrology for management</td>
<td>5/34 (14.7%)</td>
<td>9/35 (25.7%)</td>
</tr>
<tr>
<td>Multidisciplinary kidney stone prevention clinic</td>
<td>12/34 (35.3%)</td>
<td>5/35 (8.6%)</td>
</tr>
<tr>
<td>Other</td>
<td>4/34 (11.8%)</td>
<td>5/35 (9.4%)</td>
</tr>
</tbody>
</table>

MP31-19 Patient experiences and perceptions of kidney stone surgery: what lessons can be learned from TikTok?

Victoria Jahrreiss², Patrick Jülies-Jones³, Lazaros Tzelvis², Christian Beisland¹, Ingunn Roth³, Bhaskar Somani⁴

¹Department of Urology, Haukeland University Hospital, ²Second Department of Urology, National and Kapodistrian University of Athens, Sismanoglio General Hospital, ³Department of Urology, Haukeland University Hospital, ⁴Department of Urology, University Hospital Southampton, ²Department of Urology, Medical University Vienna, Department of Urology, University Hospital Southampton

Introduction: The aim of this study was to perform an evaluation of patient experiences and perceptions regarding kidney stone surgery on the social media platform TikTok. An increasing number of the public use social media (SoMe) as a platform to share their views regarding their experiences related to surgical treatment.

Methods: Using the hashtag #kidneystoneurgery, the 100 most recent video posts as of 01.01.2024 on TikTok were included. As well as demographic data such as gender and location, thematic content was also collected. To achieve this, a previously published framework was used and adapted for application in the setting of kidney stone surgery. This was piloted on 20 sample videos to assess its feasibility before revision and establishment of the final framework. This included the following key areas: Pain, Complications, Anxiety, Recovery, Return to work, Finances, Treatment delays, Diet and Prevention and stent complaints.

Results: The majority of posts (95%) were from North America, 80% by females and the mean number of video views was 92, 826 (range: 261–2,000,000). 76% of the videos discussed ureteroscopy (URS). 49% were filmed at the hospital, which was named in 9% of the videos. Top three topics discussed were: Recovery (65%), pain (62%) and stents (55%). This was followed by anxiety (39%) and complications (24%). 12% of these videos uploaded by lay people included basic medical information that was wholly incorrect. More than half of the posts (51%) were negative in tone. Treatment delays (5%) and a lack of sufficient preoperative information (4%) were also raised, that appeared to contribute to the negative reports. However, the main cause for negative tone owed to the 80% of the patients (n=44) who discussed stents that focused their video on the pain suffered from the post operative stent.
Conclusions: There is a high level of usership and engagement on TikTok on the subject of kidney stone surgery. The proportion of negative videos is high and much of this is related to the bothersome stent symptoms and complications. This could easily lead to misperceptions among potential patients about the true burden of such adverse events.

Funding: N/A.

MP31-20 Outcomes in Patients Undergoing Holmium Laser Enucleation of the Prostate Prior to External Beam Radiation Therapy for Prostate Cancer

David C. Dalton1, Raymond A. Smith1, Austen D. Slade1, R.J. Caras1, Muqsit B. Buchh1, Alex Piroozi1, T. Max Shelton1, Marcelino E. Rivera1

1Indiana University School of Medicine

Presented By: David C. Dalton, MD

Introduction: Debunking procedures such as holmium laser enucleation of the prostate (HoLEP) may benefit men undergoing external beam radiation therapy (EBRT) for prostate cancer (PCa) treatment. Our study aims to assess outcomes in men who underwent HoLEP prior to EBRT.

Methods: A retrospective analysis was performed to identify all patients who underwent EBRT for PCa at our institution between 2015 and 2022. Men who had prior HoLEP were identified, then subjects were grouped into matched categories based on American Urologic Association (AUA) risk group classification, androgen deprivation therapy (ADT) status, and prostate size. Patients who received brachytherapy, stereotactic body radiotherapy, a prostatectomy, salvage therapy, had metastatic PCa, or no appropriate match were excluded.

Results: Forty-five men were included in the final analysis. A logistic regression was performed to assess the relationship between HoLEP status, grouping, and biochemical recurrence (BCR). The odds of having BCR decreased by 4% for those who underwent HoLEP before EBRT, however, this was not statistically significant (p = 0.97). Similarly, the odds of having a radiation-related complication decreased by 20% for those with preceding HoLEP, however, this was also not statistically significant (p = 0.74). A one-way ANOVA was performed to compare the effects of preceding HoLEP on other outcomes. No statistically significant difference was found between prostate specific antigen (PSA) nadir, age at the time of radiation, total radiation dose, or AUA symptom score (AUASS) after EBRT.

Conclusions: Men who undergo HoLEP prior to EBRT have similar prostate cancer-related outcomes as men who undergo EBRT alone. Also, they have similar outcomes regarding AUASS. Low numbers may have contributed to the lack of significant findings.

Funding: None.

MP31-21 Kidney stone size differences between radiology and urology: a quality initiative

Amelia Pantazis1, Joshua Deguzman1, Paulette Sarrazin2, Timothy Averch3

1University of South Carolina School of Medicine - Columbia, 2USC College of Nursing, 3USC School of Medicine - Columbia

Presented By: Amelia Pantazis, BS

Introduction: Computed tomography (CT) imaging is crucial in diagnosing nephrolithiasis, especially in the emergency department. Variations in CT interpretations between radiology and urology at our institution have occurred, potentially misdirecting management. This project aims to assess the frequency of renal stone size measurement discrepancies between radiologists and urologists, along with describing patient management.

Methods: A retrospective cohort study of patients referred directly to one urologist at our urology clinic from the emergency department from June 1, 2023 to November 30, 2023 was conducted using electronic medical record data. Patients referred from outside providers were excluded. Measurements of renal stones from radiologists and our urologist were collected for discrepancy. Patient demographics, renal stone characteristics, and management strategies were collected. Data analysis was performed using t-test, chi square, and Fisher exact test.

Results: In total, 57 patients were included in this study. There is an inconsistency in renal stone measurements between radiology and urology 63.2% of the time. The average discrepancy in renal stone size measurements is 1.6 mm, with measurements from radiology being larger than the urology department. Out of 44 patients, the average width of kidney stone when passed and not passed was 3.33 mm and 6.01 mm, respectively, with a correlation coefficient of 0.54. Patients who did not pass their stone either received surgery or were lost to follow up.

Table 1. Patient and clinical characteristics

<table>
<thead>
<tr>
<th>Stone Location</th>
<th>No discrepancy (n=37)</th>
<th>Discrepancy cohort (n=20)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidney</td>
<td>1 (4.6%)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Ureteropelvic Junction (UPJ)</td>
<td>1 (4.6%)</td>
<td>4 (21.1%)</td>
<td></td>
</tr>
<tr>
<td>Proximal ureter</td>
<td>5 (23.4%)</td>
<td>8 (41.1%)</td>
<td></td>
</tr>
<tr>
<td>Mid ureter</td>
<td>3 (14.3%)</td>
<td>3 (15.0%)</td>
<td></td>
</tr>
<tr>
<td>Distal ureter</td>
<td>7 (33.3%)</td>
<td>8 (41.1%)</td>
<td></td>
</tr>
<tr>
<td>Ureter oustret Junction (UVJ)</td>
<td>3 (14.3%)</td>
<td>12 (60.0%)</td>
<td></td>
</tr>
<tr>
<td>Bladder</td>
<td>1 (4.6%)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Urethra</td>
<td>0</td>
<td>1 (5.0%)</td>
<td></td>
</tr>
<tr>
<td>Flank pain present in clinic</td>
<td>6 (28.6%)</td>
<td>14 (70.0%)</td>
<td>0.431</td>
</tr>
<tr>
<td>Obtained ultrasound†</td>
<td>8 (44.4%)</td>
<td>20 (100.0%)</td>
<td>0.322</td>
</tr>
<tr>
<td>Passed stones</td>
<td>10 (62.5%)</td>
<td>16 (76.2%)</td>
<td>0.834</td>
</tr>
<tr>
<td>Received tammelol</td>
<td>17 (100.0%)</td>
<td>33 (95.0%)</td>
<td>0.254</td>
</tr>
<tr>
<td>Operating room procedure</td>
<td>4 (19.1%)</td>
<td>11 (55.0%)</td>
<td>0.264</td>
</tr>
</tbody>
</table>

Conclusions: Factors contributing to the discrepancy in renal stone measurements between radiology and urology include reporting only the longer dimension, typically the length. This project aims to reduce this by identifying and standardizing measurement techniques with radiology. Large stone findings in radiology reports increase the likelihood of surgery or a procedure to remove a stone that could otherwise pass spontaneously. Wider stones are less likely to pass spontaneously (86% for <5mm, 13% for ≥ 5mm). Improved coordination and education between radiology and urology aim to reduce the disparity in kidney stone size measurements to under 33%.

Funding: N/A.

MP31-22 Safety in sterile water use compared to normal saline as irrigation during routine ureteroscopy


1Indiana University School of Medicine, 2Virginia Commonwealth University - Richmond, 3Emory University - Atlanta

Presented By: David Kim, MD
and vein ligation: separate ligation or En bloc ligation (using an procedures. Two approaches are undertaken to achieve renal artery radially to partial nephrectomy, performed both open or laparoscopically. Renal hilum control is a critical step during these pro-

cases and NS irrigation was used in 32% of cases. Four patients received both SW and NS irrigation and were excluded from analysis. There were no statistically significant differences in 90-day post-URS ED presentation rates (SW=21%; NS=26%; p = 0.075), hospital re-admission rates (SW=21%; NS=24%; p = 0.36), or mortality rates (SW=1.3%; NS=1.9%; p = 0.51). There were also no significant differences in 30-day post- URS rates of serum abnormalities (Na [p = 0.67], K [p = 0.71], Cl [p = 0.92], Hgb [p = 0.30]) in patients who had normal pre-operative values.

Conclusions: Our single institution, retrospective study demonstrated no significant differences in complication rates (ED presentation, hospital re-admission, mortality, and lab value abnormalities) between SW and NS irrigation use during uncomplicated URS, supporting the use of SW as a safe option for URS.

Funding: None.

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MP32-01 Safety, efficacy and outcome of en bloc renal hilum control during laparoscopic nephrectomy for renal cell carcinoma stage T2 and above

Abdulrahman Aldayhani1, Hamad Alakrash1, Abdulaziz Albalawi1, Abdulrahman Alruwaily1, Ahmed Alzahrani1, Jaber Zarbah1

Princen Sultan Military Medical City

Introduction: Renal cell carcinomas (RCCs) are the most common malignant renal tumor. Treatment usually ranges from radical to partial nephrectomy, performed both open or laparoscopically. Renal hilum control is a critical step during these procedures. Two approaches are undertaken to achieve renal artery and vein ligation: separate ligation or En bloc ligation (using an endovascular stapling device). We conducted this study to evaluate the occurrence of arterio-venous fistula (AVF) while using this technique.

Methods: This was a single center based retrospective study. Surgeries were performed by one of five minimally invasive surgeons, using similar techniques. 51 patients undergoing laparoscopic Radical nephrectomy for RCCs Stage T2 and above were enrolled in the study. These patients underwent en bloc renal pedicle control using the endovascular stapler (60 mm vascular reload). Intra-operative complications like diaphragmatic injury, need for blood transfusion, and conversion of laparoscopic into open surgery were taken into account. Clavein- Dindo classification was employed to grade the post-operative complications. Hospital stay, time taken for completion of surgery, and estimated blood loss during the surgery was recorded. During the follow up, patients were evaluated for clinical or radiological evidence of AVF.

Results: A total of 51 patients were included in the study among these patients, 39 patients (76.47%) had Stage T3a of RCC, 9 patients (17.65%) had Stage T2a and 3 patients (5.88%) had stage T2b of RCC. All the patients were followed up with either Doppler Ultrasonography, Computed Tomography Scan with Contrast or Magnetic Resonance imaging for different indications. The mean time required for surgery was 2hrs 36. min. No patient required intra-operative blood transfusion. None of the cases required open conversion during the course of surgery and only one patient developed intra-operative complication. Diaphragmatic, bowel and vascular injuries were not seen in any case. One patient developed fever in the post-operative period signifying infection (Clavein Grade II). The mean hospital stay was 6 days. The average size of the resected tumor was 8.05 cm. Upon histological evaluation of the tumor specimen, it was found out that a vast majority of the patients i. e. 28 (45% of total) had Clear cell renal cell carcinoma (ccRCC) followed by Chromophobe renal cell carcinoma in 10 patients (19.61% of total).

Conclusions: En bloc renal hilum control is safe and time saving than conventional renal pedicle control. It also does not project the risk for AVF formation, as evident in our study on the clinical follow up and radiological evaluation.

Funding: This research had no funding.
**MP32-02** A prospective study on change in differential renal function following robot-assisted laparoscopic pyeloplasty in adults

Sudheer Devana¹, Smriti Thakur¹, Aditya Sharma¹, Santosh Kumar¹, Anupam Lal¹, Ashwini Sood¹, Girdhar Bora¹, Ravimohan Mavuduru¹, Utam Meete¹, Shanky Singh¹

¹Post Graduate institute of Medical Education and Research

Presented By: Sudheer Devana, MCh Urology

**Introduction:** There is a definitive lack of good quality prospective studies on change in differential renal function (DRF) following robot-assisted laparoscopic pyeloplasty (RALP) in adults with pelviureteric junction obstruction (PUJO).

**Methods:** A prospective observational study was done enrolling patients of PUJO who were planned for RALP. Ultrasound kidney ureter bladder (KUB) was done to record parameters like degree of hydronephrosis, parenchymal thickness and anteroposterior pelvic diameter (APD). A Technetium-99m ethylene di-cysteine (99m Tc- EC) scan was performed pre and postoperatively at 3 and 6 months to look for change in DRF. Details related to surgery, post-operative complications and hospital stay were also recorded.

**Results:** A total of 53 PUJO patients underwent RALP with a mean age of 29.05 ± 10.38 years. The perioperative details were mentioned in table. The preoperative DRF of the affected kidney ranged from 13.70% to 57%. There was no significant change in median DRF from preoperative value to 3 months following RALP (Median 40.50% vs 42.13%, p = 0.133). Stable, improved and deteriorated DRF at 3 months was noted in 38 (73.07%), 11 (21.15%) and 3 (5.76%) patients respectively following RALP.

**Conclusions:** Differential renal function remains stable (< or > 5% of preoperative value) in majority of the patients of PUJO following RALP at short term follow up. Improvement of DRF (>5%) is seen in only a minority of patients. Our study results help in better preoperative patient counselling with respect to change in DRF following RALP for PUJO in adults.

**Funding:** None.

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**Peri operative parameters of patients who underwent RALP**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value (N=53)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum creatinine, mean +/- SD</td>
<td>0.817 +/- 0.239</td>
</tr>
<tr>
<td>Grade of HDN (SfU grading)</td>
<td></td>
</tr>
<tr>
<td>Grade I, n (%)</td>
<td>2 (3.7)</td>
</tr>
<tr>
<td>Grade II, n (%)</td>
<td>10 (18.8)</td>
</tr>
<tr>
<td>Grade III, n (%)</td>
<td>18 (33.9)</td>
</tr>
<tr>
<td>Grade IV, n (%)</td>
<td>23 (43.3)</td>
</tr>
<tr>
<td>Renal parenchymal thickness in mm, median (IQR)</td>
<td>12.0 (8.0 – 17.5)</td>
</tr>
<tr>
<td>APD in mm, median (IQR)</td>
<td>36.0 (25.0 – 48.0)</td>
</tr>
<tr>
<td>Presence of calculi, n (%)</td>
<td>10 (18.9)</td>
</tr>
<tr>
<td>Baseline DRF on EC scan, median (IQR)</td>
<td>40.0 (28.0 – 48.0)</td>
</tr>
<tr>
<td>Operative time in mins (mean +/- SD)</td>
<td>91.9 +/- 29.9</td>
</tr>
<tr>
<td>Presence of crossing vessel, n (%)</td>
<td>25 (47.1)</td>
</tr>
<tr>
<td>High insertion of ureter, n (%)</td>
<td>8 (15.1)</td>
</tr>
<tr>
<td>Post operative complications, n (%)</td>
<td>6 (11.3)</td>
</tr>
<tr>
<td>Drain removal time in days, median (IQR)</td>
<td>3.0 (2.0 – 4.0)</td>
</tr>
<tr>
<td>Duration of hospital stay, median (IQR)</td>
<td>4.0 (3.0-6.0)</td>
</tr>
</tbody>
</table>

HDN: hydronephrosis; SfU: Society for Fetal Urology; IQR: Interquartile range; mm: Millimetre; APD: Anteroposterior pelvis diameter; DRF: Differential renal function; EC: Ethylene Di Cysteine

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**MP32-03** Safety and Efficacy of Arterial Intracorporeal Silk 2-0 Knot in Addition to Polymer clips in Laparoscopic Donor Nephrectomy: A Single Institution Retrospective Study

Noel III Borromeo¹, Ernesto Gerial¹

¹National Kidney and Transplant Institute, Philippines

Presented By: Noel III Borromeo, MD

**Introduction:** Since its introduction in 1992 by Ratner et al., laparoscopic donor nephrectomy (LDN) has emerged as the new gold standard for kidney allograft retrieval. LDN was introduced to remove the disincentives of a healthy living donor such as a long flank incision, accentuated postoperative pain and long convalescence, shorter hospital stay and better cosmesis. LDN has also been shown to have a lower complication rate whilst maintaining equivalent allograft function compared to ODN. (1, 2) Although living donor nephrectomy is relatively safe in properly selected patients, there are documented cases of vascular clip failure leading to living kidney donor deaths (3). Hence in 2006, a Food and Drug Administration (FDA) Class II recall on the use of Hem-o-lok polymer clips was issued. The use of Hem-o-lok clips on the renal artery for LDN was contraindicated to avoid hemorrhagic complications and death (4). A survey done in 2011 in the US reported that some surgeons still use only polymer clips for arterial control in LDN (5). This is because the use of the alternative, which is a linear stapler shortens the length of the renal vessels making it more challenging for implantation. Another deterrent is the relatively higher cost of staples compared to clips (6). The current practice in our institution for arterial control in LDN is two Hemo-lok clips, reinforced with one titanium clip. However, even with this technique there are still cases of clip failure leading to hemorrhagic complications. Studies have shown that the safest way to avoid slippage of polymer clips is by using a transfixion technique either by intracorporeal suturing in hand-assisted laparoscopic donor nephrectomy (HALDN) or Multiﬁre Endo-TA stapler in pure LDN (3, 7). The use of a stapler is unfavorable because it signiﬁcantly shortens the renal vessels (8). One problem we encountered with intracorporeal suturing in pure LDN is potential hem-o-lok slippage from the arterial stump upon applying the needle and the knot. This is the reason why we opted to put an intracorporeal silk 2-0 knot instead. The National Kidney and Transplant Institute (NKTI) has the highest number of donor nephrectomies in the country. The study aims to evaluate the feasibility of an intracorporeal Silk 2-0 knot in addition to two Hem-o-lok clips in arterial ligation in LDN. The goal is to improve on the arterial control in LDN so as to ensure that donor patients have a safe operative recovery.

**Objectives:** To evaluate safety and efficacy of an intracorporeal Silk 2-0 knot in addition to two Hem-o-lok clips as compared to two Hem-o-lock clips plus titanium clip, in arterial ligation in LDN. To compare donor and recipient outcomes of both groups.

**Methods:** This descriptive study has been approved by the Hospital Ethics Review Board, in accordance with the Helsinki Declaration of 1975, as revised in 1983. We analyzed the data on all patients who were treated consecutively with laparoscopic donor nephrectomy at the NKTI from over an eight-month period between August 2022 to March 2023. A chart review was done to gather demographic data related to the donor patients’ age,
body mass index (BMI) and previous surgeries. Preoperative data collected included preoperative creatinine, eGFR and number of renal vessels based on the CT angiogram findings. Intraoperative factors included the warm ischemia time (1stand 2nd), cold ischemia time and estimated blood loss. Postoperative factors included the creatinine, eGFR and hospital stay. For the kidney transplant recipients, the following data were collected: age, sex, creatinine with eGFR on discharge, need for hemodialysis after transplant, acute rejection, re-exploration, complications and creatinine one month post-discharge. A total of 6 surgeons, who were all experienced in laparoscopic urological procedures, performed LDN within the same institution. A single surgeon did the novel technique, whereas the standard technique was done by the rest. In our institution, we do a pure LDN. The patient is placed in a lateral decubitus incision. For the Left LDN, we make use of two 12mm ports, one 5mm port and a Pfannenstiel extraction incision. Medial mobilization of the colon, release of the splenorenal ligament and separation of the pancreas from the kidney are done. After the ureter and gonadal veins are identified, it is followed proximally towards the renal vein. The adrenal and lumbar veins are ligated using titanium clips and divided. The renal artery and vein are dissected from surrounding attachments to prepare for application of clips during harvest. The kidney is then mobilized from the posterior peritoneum. The ureter and gonadal veins are then isolated distally and ligated using Hem-o-lok clips. An additional 5mm port is inserted in the Pfannenstiel incision and a bowel grasper is used to retract the hilum. An intracorporeal silk 2-0 knot is then applied to the most proximal part of the renal artery using a laparoscopic mixer, followed by two Hem-o-lok clips and then divided. The renal vein is ligated below the adrenal vein stump using three Hem-o-lok clips. The ureter and gonadal veins are then divided. The alloraft is then delivered manually through the pfeannsteil incision and immediately placed in an ice bath. Mean and standard deviation (SD), and median with interquartile range (IQR) were used to summarize the quantitative variables. Frequency and percentage were used for categorical variables. Student’s t-test (all with mean ± SD), Mann-Whitney test (for estimated blood loss), and Fisher’s exact tests (all with frequency (%)) were used to compare the two groups. All the statistical tests were performed in SPSS ver 26.0. P-values less than 0.05 indicate significant differences.

Results: Donors A total of 123 patients underwent LDN from August 2022 to March 2023 in NKTI. The clinical demographics and baseline characteristics of the LDN patients are summarized in Table 1. Fifty of the LDN patients were performed using an intracorporeal Silk 2-0 knot in addition to two Hem-o- lok clips in arterial ligation, whereas the rest of the 73 LDN patients had arterial control using the standard titanium clip in addition to two Hem-o-lok clips. Table 1 shows that the two groups of LDN patients did not differ (p > 0.05) in terms of age, sex, relation to recipient, BMI, previous abdominal surgery, number of vessels, preop serum creatinine and eGFR. There were no significant differences in the mean 1st warm ischemia time (p = 0.133), 2nd warm ischemia time (p = 0.062), and estimated blood loss (p = 0.542) of the two groups (Table 2). However, the mean cold ischemia of those who underwent Hem-o-Lok clips with silk 2-0 tie was significantly less (p = 0.047) than those with titanium clip. There were no intraoperative or perioperative complications. There was no need for blood transfusion and conversion to open surgery (Table 2). Table 3 shows the postoperative factors of the LDN patients. The mean creatinine (p = 0.933) and eGFR (p = 0.980) of the LDN patients did not differ upon discharge. Although, the duration of hospital stay of patients who underwent Hem-o-lok clips with silk 2-0 tie was shorter (p = 0.029) as compared to those with titanium clip. There were no post-operative complications in this series. Recipients The kidney transplant recipients’ outcomes are shown in Table 4. There were no significant differences in the age (p = 0.085) and sex (p = 1.000) of the two groups of patients. There were also no significant differences in their creatinine (p = 0.096) and eGFR (p = 0.131) on discharge, and creatinine one-month post discharge (p = 0.114). Moreover, there were no significant differences in the number of patients who needed post-operative hemodialysis (p = 0.399), had acute rejection (p = 0.079), needed re-exploration (p = 1.000) and had complications (p = 0.270). There were no mortalities in this series. Conclusions: After reports on hemorrhagic complications and deaths in LDN patients due to Hem-o-lok clip failure, the FDA stated in 2006 that the use of hem-o-lok clips are contraindicated in renal arterial ligation in LDN (4). Since then, the accepted safest way of securing the renal hilum in LDN is through the use of a suture or staple transfixon technique (3, 7). A study done by Chueh et. al. compared the use of Hem-o-Lok clips vs staples in arterial control in LDN. The study showed that the average operating time and warm ischemia time are similar. The use of Hem-o-lok clips lengthens the renal vessels, facilitating easier alloraft vascular anastomosis. In addition, clips are less expensive compared to staples making in more plausible for use in developing countries. (8) The endovascular gastrointestinal anastomosis (GIA) stapler places six rows of overlapping staples and cut the tissue in the middle leaving three rows of staples on each side. This linear cutting device is commonly used to securely ligate large vessels, usually for venous control in which the vein length is not a factor. On the other hand, the endovascular TA stapler (Endo-Ta) places three rows of staples without cutting it (9). It is useful in hilar control during LDN but device malfunction can lead to significant bleeding and open conversion. In a study done by Chan et al on 565 laparoscopic nephrectomy patients, staple malfunction occurred in 10 (1.7%) patients. (10) In LDN, the surgeon aims to maximize the length of the vessels in order to improve recipient outcomes. One drawback in using the linear stapler is that it significantly shortens the renal vessels when compared to using clips (8). A suture transfixon technique is generally used in HALDN. One of the major challenges in using a suture transfixon in pure LDN is the potential for clip slippage upon applying the stitch in the arterial stump. That is why we opted to augment the Hem-o-lok clips in the arterial ligation with the use of an intracorporeal silk 2-0 tie. The assumption was that the 1st warm ischemia time will be longer, because of the added time it will take the surgeon to make a good knot in the renal artery as compared to just applying a clip. However, the results have shown that there was no significant difference in the 1st warm ischemia time of the two groups. The results have also shown that the cold ischemia time and duration of hospital stay were shorter, in favor of the silk 2-0 tie group. Furthermore, regarding the renal vein, we clip it below the adrenal vein stump to maximize length. We continue to use Hem-o-lok clips since it is safe in the relative low-pressure venous system. In this study, we demonstrated that the use of an intracorporeal silk 2-0 knot in addition to two Hem-o-lok clips in the arterial ligation in LDN, was feasible and safe, with no added complications to both donor and recipients. Conclusion: In conclusion, the use of an intracorporeal silk 2-0 knot in addition to two Hem-o-lok clips in the arterial ligation in LDN, is feasible and safe for donor patients with comparable recipient outcomes. It is a viable option to augment Hem-o-lok clips in the arterial ligation of LDN patients. Funding: NA.
MP32-04 Pre-Operative Rivaroxaban Use for A-fib is Associated with Increased Risk of Intra-Operative Complications in Patients Undergoing Robot Assisted Laparoscopic Partial Nephrectomy: Results from TriNetX Collaborative

Curran Uppaluri1, Iman Elkhashab1, Zafardjan Dalimov2, Costas Lallas2

1Philadelphia College of Osteopathic Medicine, 2Jefferson Einstein Hospital

Presented By: Curran Uppaluri, MD

Introduction: Studies have demonstrated the lower risk of bleeding with Apixaban compared Rivaroxaban in certain patient populations with history of atrial fibrillation. In this study we aim to evaluate peri-operative outcomes of patients undergoing robot assisted laparoscopic partial nephrectomy with pre-operative use of Apixaban or Rivaroxaban.

Methods: We performed a retrospective analysis of patient with history of atrial fibrillation that is managed with Apixaban or Rivaroxaban and undergoing robot assisted laparoscopic partial nephrectomy between January 2013 and December 2013 in large multi-institutional TriNetX database. A total of 890 patients were identified, of which 516 were on Apixaban and 374 on Rivaroxaban pre-operatively. After 1:1 propensity score matching for all confounding variables, 358 patients on Apixaban compared to 358 patients on Rivaroxaban for intra-operative and post-operative outcomes. Specifically intra-operative hemorrhage, post operative bleeding or hematoma, and post operative blood transfusion requirement were compared. Moreover, rates of post operative emergency room visits, hospitalizations, and requirement for post operative procedures within 90 days of surgery were analyzed. Chi Square and Mann-Whitney tests were used for statistical analysis for categorial and continuous variables respectively.

Results: Patients on pre-operative Rivaroxaban encountered more intra-operative hemorrhage (2.8% vs 0, p = 0.001). There were no significant differences in post operative complications such as bleeding, hematoma, or increased blood transfusion requirements between patients on Apixaban or Rivaroxaban. There was also no significant difference in post operative emergency room visits, hospitalizations, and requirement for post operative procedures within 90 days of surgery were analyzed. The overall complication rate was 6.6%, the majority being minor and 4 (1.4%) conversion to open surgery. Among 61 patients with bilateral surgery for pheochromocytoma, 23 had a conversion to open surgery. Among 61 patients with bilateral surgery for pheochromocytoma, 23 had a conversion to open surgery.

Conclusions: In this large multi-institutional cohort, pre-operative Rivaroxaban use is associated with increased rate of intra-operative complications, specifically intra-operative hemorrhage, but not post-operative complications during partial nephrectomy. Our findings demonstrate that partial nephrectomy is safe in patients with history of atrial fibrillation that is managed with direct oral anticoagulants.

Funding: None.

MP32-05 Surgical and functional outcomes of adrenalectomy by urologists: a 15-year cohort review

Keshav Agarwal1, Rajeev Kumar1, Rashmi Ramachandran1, Nikhil Tandon1

1All India Institute of Medical Sciences, New Delhi, India

Presented By: Keshav Agarwal, MBBS, MS

Table 1: Clinical data of patients

<table>
<thead>
<tr>
<th>Operative data</th>
<th>Laparoscopic (n=273)</th>
<th>Robot (n=60)</th>
</tr>
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<tbody>
<tr>
<td>Mean tumor size (cm)</td>
<td>4.5 ± 2.1</td>
<td>9.8 ± 1.9</td>
</tr>
<tr>
<td>Mean operative time (min)(range)</td>
<td>110.5 ± 43.2</td>
<td>204.7 ± 79.4</td>
</tr>
<tr>
<td>Median blood loss (mL)(range)</td>
<td>100 (50-2000)</td>
<td>350 (100-2500)</td>
</tr>
<tr>
<td>Median units of blood transfusion</td>
<td>0 (0-3)</td>
<td>0 (0-5)</td>
</tr>
<tr>
<td>Median hospital stay (Days)(Range)</td>
<td>3 (1-10)</td>
<td>5 (2-11)</td>
</tr>
</tbody>
</table>

Complications

Intraoperative

Postoperative

Clavien-Dindo grade ≥ 3

Open conversion

<table>
<thead>
<tr>
<th>Last 100 functional tumors</th>
<th>Laparoscopic</th>
<th>Robot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean tumor size (cm)</td>
<td>4.6 ± 2.1</td>
<td>11.6 ± 2.9</td>
</tr>
<tr>
<td>Mean operative time (min)</td>
<td>95.8 ± 38.6</td>
<td>189.6 ± 82.2</td>
</tr>
<tr>
<td>Median blood loss (mL)</td>
<td>35</td>
<td>250</td>
</tr>
<tr>
<td>Median units of blood transfusion</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Complications</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

Introduction: Incidental adrenal masses are found in up to 5% of all patients undergoing abdominal imaging and around 10% of these may be functional. Data from the ACS-NSQIP database suggests that over 90% adrenalectomies are performed by general surgeons and most surgeons perform less than 6 procedures a year, even though urologists are facile in minimally invasive surgery and well versed with the retroperitoneal anatomy. We reviewed adrenalectomies performed by us in the last 15 years with a focus on functional tumors and bilateral surgeries to assess the surgical and functional outcomes.

Methods: In an IRB approved study, we reviewed our prospective database of patients who underwent adrenalectomy between 2008 and 2023. Clinical parameters were recorded for all patients and those who underwent bilateral surgeries were followed up either in-person or telephonically and analysed for resolution of symptoms, quality of life using the WHO-QoL BREF questionnaire and complications of chronic steroid intake. For all other patients, outcomes were recorded from records or prospectively as a part of other IRB approved studies.

Results: During the study period, 333 patients underwent 394 procedures including bilateral surgeries in 61 (18.3%). 286 patients (86%) had functional tumors with 63% being pheochromocytomas, 14% Cushing’s syndrome and 8% Conn’s syndrome. 4 patients had functional adrenocortical carcinoma (3 with Cushingoid features, one asymptomatic patient with elevated DHEAS) and 4 asymptomatic patients had functional adenomas with elevated DHEAS. 32 patients had paragangliomas outside the adrenal gland. 87% cases were sporadic. 261 (78%) were hypertensive and 81 (24%) had diabetes. Their clinical outcomes are given in table 1. The overall complication rate was 6.6%, the majority being minor and 5 (1.4%) conversion to open surgery. Among 61 patients with bilateral surgery for whom follow-up is available, 59 had synchronous surgeries, 37 for pheochromocytomas and 21 for Cushing’s syndrome including 7 requiring urgent surgery for severe hypercortisolism and 1 for non-functional adreno-cortical carcinoma. All 43 who were available for follow-up had resolution of symptoms and BMI changes with only two requiring one antihypertensive medication each. Episodes of steroid deficiency occurred in 7 patients while steroid excess occurred in 3 patients. Quality of life was satisfactory in all patients in all domains.

Conclusions: Adrenalectomy, including bilateral synchronous surgery, is a safe procedure that can be performed by urologists.
with excellent outcomes, most often using a minimally invasive approach.

**Funding:** None.

**MP32-06** Comparison of transperitoneal/retroperitoneal approaches for robot-assisted partial nephrectomy by tumor location

Naoki Akagi1, Kawakita Mutsushi1, Toshinari Yamasaki2, Riki Obayashi1, Akihiro Yamamoto1, Akihiko Nagoshi1, Tasuku Fujiwara1, Atsushi Igarashi1, Yuto Hatton1, Noboru Shibasaki1

1Kobe City Medical Center General Hospital

Presented By: Naoki Akagi, MD

**Introduction:** To compare the perioperative outcomes of transperitoneal (TP) and retroperitoneal (RP) robotic-assisted partial nephrectomy (RAPN) based on tumor location.

**Methods:** Perioperative outcomes of TP and RP were systematically analyzed for 380 RAPN procedures performed at our institution from February 2015 to April 2023, according to the “A” classification (a, p, x) of the RENAL score, TP of “a” cases and RP of “p” cases were compared as typical cases, while TP of “p”, “x” cases and RP of “a,” “x” cases were compared as atypical cases. To adjust for patients’ backgrounds, the following factors were matched in a 1:1 ratio by propensity scoring: age, ASA score, BMI, PS, surgeon, RENAL score, gender, tumor size, and history of abdominal surgery. In general, TP was the preferred approach for the “a” cases in classification A and RP for the “p” cases, while the approach for the “x” cases was determined individually.

**Results:** The distribution of TP/RP cases was 154/226 overall, with 104/41 “a” cases, 16/127 “p” cases, and 34/58 “x” cases; 104/127 were typical and 50/99 were atypical cases. The number of cases after matching was 38 each in “a” cases, 15 each in “p” cases, 28 each in “x” cases, 88 each in typical cases, and 41 each in atypical cases. Overall, compared with TP, RP was superior in operative time (182 min vs. 170 min, p = 0.029), console time (111 min vs. 89 min, p < 0.001), and trifecta achievement rate (63% vs. 77%, p = 0.012). When comparing TP/RP by tumor location (a, p, x), there was no significant difference in perioperative results in cases “a” or “p”, although in cases “x”, RP was shorter in console time (116 min vs. 92 min, p = 0.022). There were no significant differences in perioperative outcomes in the typical cases, but in the atypical cases, RP was superior in operative time (186 vs. 168 minutes, p = 0.025), console time (115 vs. 89 minutes, p = 0.001), and trifecta achievement (57 vs. 80%, p = 0.032). Notably, there were no significant differences in the incidence of perioperative complications when comparing by overall or “A” classification.

**Conclusions:** In the realm of RAPN, both TP and RP approaches can be judiciously employed if tumor location is carefully considered.

**Funding:** No have.

**MP32-07** Comparison between robot-assisted partial nephrectomy and laparoscopic partial nephrectomy: A retrospective study

Lorena Barboza de Sousa1, Mariana P. A. Parente1, Lorena B. Sousa1, Pedro L. C. Ferreira2, Rodrigo B. Silvão1, Rafael C. Lima1, Felipe A. Pinho1, Alexandre A. Ziomkowski1, Leonardo M. Calazans1, Diogo Santana1, Nilo C. L. B. Souza1

1Brazilian Institute of Robotic Surgery, 2Brazilian Institute of Robotic Surgery

Presented By: Lorena Barboza de Sousa, Medical Student

**Introduction:** Partial nephrectomy is the preferred approach for treating T1a and, when technically feasible, for T1b renal tumors due to its lesser loss of renal function, better overall survival, and equivalent oncologic outcomes compared to radical nephrectomy. Robot-assisted partial nephrectomy (RAPN) has shown lower incidence of complications, shorter hospital stays, and superior operative and functional outcomes compared to open and laparoscopic approaches. This study aims to compare parameters of these two approaches in a case series from a single surgical team and highlight their outcomes.

**Methods:** This is a retrospective, multicenter study involving patients undergoing RAPN and laparoscopic partial nephrectomy (LPN) by a single surgical team between 2009 and 2024. Data were obtained through the analysis of patient records and examinations. Out of a total of 54 patients, 27 underwent RAPN and 27 underwent LPN. Age, body mass index (BMI), length of hospital stay and surgery, tumor location, and size were reviewed. Statistical comparisons between the two groups were assessed using the Jamovi and RStudio programs.

**Results:** Among 54 patients, 27 underwent robot-assisted partial nephrectomy and 27 underwent laparoscopic partial nephrectomy. The mean (SD) age of the patients was 55.9 years, with RAPN patients being older [55.8 (15) vs. 56 (13.7), p = 0.617]. The median BMI value was 26.3 (6.27), with RAPN patients having a lower BMI compared to the LPN group [26 (4.65) vs. 26.6 (8.66), p = 0.033]. The RAPN group had a shorter mean length of hospital stay [1.23 (0.587) days vs. 3.37 (0.792) days, p < 0.001], shorter mean operating time [120 (42.5) min vs. 183 (78.1) min, p < 0.001], and larger tumor size [4.15 (1.95) cm vs. 3.10 (1.55) cm, p = 0.006]. All operations successfully preserved renal function.

**Conclusions:** This study provides an overview of how the robotic approach, in relation to surgical outcomes in partial nephrectomy, brings numerous advantages compared to laparoscopic surgery. According to the analysis, tumor size was greater in those patients undergoing RAPN, yet they still exhibited shorter surgery and hospitalization times.

**Funding:** No have.
Overall, 21 patients with renal cell carcinoma (RCC) were included in this study. We aimed to compare the oncological outcomes between the oblique occlusion technique and the traditional techniques. The oblique occlusion technique refers to oblique blocking from the upper corner of the right renal vein to the lower corner of the left renal vein using a vessel tourniquet or a vessel clamp (left RCC with the support of arterial branch clamping). Combined with the advantages of surgical robots, we are fully capable of accessing and selectively controlling the blood vessels feeding the tumor, thereby limiting the impact of warm ischemia time.

Methods: Thanks to 3D visualization of the renal vasculature, the surgeon can identify the artery supplying the tumor and can selectively control this vessel instead of controlling the entire main renal artery. A case report and mini review.

Results: We present a case of 54-year-old woman who diagnosed with left renal tumor staging cT1bN0M0. The image of the tumor and ipsilateral renal artery system was rendered by software (FujiFilm’s Synapse® AI Platform) that support the surgical planning. Total surgery time is 150 minutes, including 20 minutes of selective arterial branch clamping with a blood loss of 50mL. The patient was then monitored after surgery and was stable, with no postoperative complications and discharged from the hospital after 3 days with postoperative creatinine unchanged compared to before surgery (0, 64 – 0, 66 mg/dL).

Conclusions: Combined with the advantages of surgical robots, we are fully capable of accessing and selectively controlling the blood vessels feeding the tumor, thereby limiting the impact of warm ischemia time.

Funding: None.

MP32-08 Three-Dimensional Reconstruction of Renal Vascular Tumor Anatomy Based on AI Platform for Preoperative Planning of Partial Nephrectomy

Tuan Thanh Nguyen1, Quy Thuan Chau1, Minh Sam Thai1, Xuan Thai Ngo2, Duc Minh Pham2, Ho Trong Tan Truong1, Huynh Dang Khoa Nguyen2, Huu Phuoc Le2

1Cho Ray Hospital, 2University of Medicine and Pharmacy at Ho Chi Minh City

Presented By: Tuan Thanh Nguyen, MD

Introduction: Advances in imaging and simulation modeling with the support of artificial intelligence has helped bring a lot of information to support tumor diagnosis and treatment planning, as a three-dimensional image of the renal vasculature.

Methods: Thanks to 3D visualization of the renal vasculature, the surgeon can identify the artery supplying the tumor and can selectively control this vessel instead of controlling the entire main renal artery. A case report and mini review.

Results: We present a case of 54-year-old woman who diagnosed with left renal tumor staging cT1bN0M0. The image of the tumor and ipsilateral renal artery system was rendered by software (FujiFilm’s Synapse® AI Platform) that support the surgical planning. Total surgery time is 150 minutes, including 20 minutes of selective arterial branch clamping with a blood loss of 50mL. The patient was then monitored after surgery and was stable, with no postoperative complications and discharged from the hospital after 3 days with postoperative creatinine unchanged compared to before surgery (0, 64 – 0, 66 mg/dL).

Conclusions: Combined with the advantages of surgical robots, we are fully capable of accessing and selectively controlling the blood vessels feeding the tumor, thereby limiting the impact of warm ischemia time.

Funding: None.

MP32-09 Preliminary experience of oblique occlusion technique in robot-assisted infrahepatic inferior vena cava thrombectomy

Zhuo Liu1

1Peking University Third Hospital

Presented By: Zhuo Liu

Introduction: We aimed to compare the oncological outcomes between the oblique occlusion technique and the traditional technique for robot-assisted radical nephrectomy (RARN) with inferior vena cava (IVC) thrombectomy, and to explore the safety and effectiveness of the oblique occlusion technique.

Methods: Overall, 21 patients with renal cell carcinoma (RCC) and IVC tumor thrombus (TT) were admitted to our hospital from August 2019 to June 2020. All the patients underwent RARN with IVC thrombectomy, of which the IVC oblique occlusion technique was used in 11 patients and traditional occlusion technique was used in 10 patients. The oblique occlusion technique refers to oblique blocking from the upper corner of the right renal vein to the lower corner of the left renal vein using a vessel tourniquet or a vessel clamp (left RCC with IVCCT as an example).

Results: Compared with patients in the traditional group, those in the oblique group had lower serum creatinine at follow-up (3 months) (95±21.1 vs. 131±30.7 μmol/L, p = 0.03). There was no significant difference in operation time (149 (IQR 143–245) min vs. 148 (IQR 108–261) min, p = 0.86), IVC clamping time (18 (IQR 12–20) min vs. 20 (IQR 14–23) min, p = 0.41), and estimated intraoperative blood loss (300 (IQR 100–800) mL vs. 500 (IQR 175–738) mL, p = 0.51] between both groups. During a 16-month (range, 15–23 months) follow-up period, two cases progressed in the oblique group and three cases progressed in the traditional group.

Conclusions: The modified IVC oblique occlusion technique procedure is relatively safe and effective in RARN with IVC thrombectomy. The IVC oblique occlusion technique may play a role in the protection of renal function.

Funding: None.

MP32-10 The Role of Robotic Radical Nephrectomy with Open Thrombectomy: A Hybrid Approach for IVC Thrombosis

Nafee Ullah2, Michael Raver1, Hunter Hasley2, Mason Henrich2, Cairo Stamislaus2, Sarah Brink1, Ruth Sanchez de la Rosa1, Ukinene Igor1, Gregory Lovallo1, Mutahar Ahmed1, Michael Stifelman1

1Hackensack Meridian Department of Urology, 2Hackensack Meridian School of Medicine

Presented By: Nafee Ullah, BA

Introduction: Open radical nephrectomy with inferior vena cava (IVC) thrombectomy is standard of care for renal cell carcinoma with IVC thrombosis. This study aims to examine perioperative outcomes in radical nephrectomy with IVC thrombectomy for level I or II IVC thrombosis, comparing open, completely robotic, and hybrid surgical approaches.

Methods: A prospective IRB-approved single-center renal cancer database was utilized for patients undergoing radical nephrectomy and IVC thrombectomy from 2017-2021. Patients with level I (<2 cm above renal vein) or level II (>2 cm above renal vein but infrahepatic) thrombus were included. Descriptive statistics were used to compare perioperative outcomes across characteristic approaches: open, completely robotic, and hybrid. Where averages are reported, standard deviations are provided in parentheses.

Table 1. Perioperative Outcomes Across Open, Robotic, and Hybrid Approaches to Radical Nephrectomy with IVC Thrombectomy

<table>
<thead>
<tr>
<th></th>
<th>Open n=2</th>
<th>Robotic n=7</th>
<th>Hybrid n=7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level I Thrombus</td>
<td></td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Level II Thrombus</td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>OR Time, min (±SD)</td>
<td>133.5(21.5)</td>
<td>129.9(70.4)</td>
<td>233.1(168.9)</td>
</tr>
<tr>
<td>Intraoperative Complications, n (%)</td>
<td>1 (50.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Postoperative Complications &gt; Clavien III, n (%)</td>
<td>1 (50.0)</td>
<td>1 (14.3)</td>
<td>1 (14.3)</td>
</tr>
<tr>
<td>Transfusion Incidence, n (%)</td>
<td>2 (100.0)</td>
<td>0 (0.0)</td>
<td>4 (57.1)</td>
</tr>
<tr>
<td>Length of Stay, days (±SD)</td>
<td>11.5 (6.5)</td>
<td>1.7 (0.7)</td>
<td>6.8 (4.3)</td>
</tr>
<tr>
<td>GFR (±SD)</td>
<td>-7.6 (15.8)</td>
<td>-11.8 (0.9)</td>
<td>-28.1 (23.5)</td>
</tr>
</tbody>
</table>

SD=standard deviation
**Results:** Seventeen patients underwent open (n = 2), robotic (n = 8), or hybrid (n = 7) nephrectomy with IVC thrombectomy. Robotic surgery was primarily used for level I thrombi, hybrid for level II, and open for both. Open procedures had shorter operative times, followed by robotic, with the hybrid approach being the longest. Complication rates varied, with more Clavien grade III complications in open cases. Transfusion rates were 100%, 0%, and 57% for open, robotic, and hybrid approaches, respectively. Patient length of stay was shortest for robotic, then hybrid, and longest for open cases. Postoperative GFR decline was least with open, followed by robotic, and most pronounced with hybrid.

**Conclusions:** Our study highlights the advantages of fully robotic nephrectomy and IVC thrombectomy, including reduced transfusion needs, and shorter postoperative stays. Bias towards a robotic approach for level I thrombi prompts further investigation. For level II thrombi, the hypothesized advantage of a hybrid approach showed inconsistent outcomes, suggesting no clear superiority. These findings underscore the evolving landscape of surgical strategies for renal cell carcinoma with IVC thrombosis, emphasizing the need for ongoing exploration and refinement.

**Funding:** This study did not receive any external funding or financial support. All aspects of the research, including study design, data collection, analysis, interpretation of results, and manuscript preparation, were conducted solely by the authors without any external financial assistance and retrieved from the Hackensack Meridian urology nephrectomy database.

**MP32-11 Recurrence Following Primary Treatment of Localized RCC: Management and Outcomes**

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Presented By: Benjamin Lee, MD

**Introduction:** Local RCC recurrence following primary partial or radical nephrectomy is a challenging and rare event that poses a management dilemma. Localized recurrence may present as new soft tissue masses in the ipsilateral renal fossa, adrenal gland, or retroperitoneal lymph nodes and occurs in up to 3% of radical nephrectomies. Recurrence for partial nephrectomies is more variable and has been reported in up to 17% of cases. The role of repeat RAPN in the setting of local recurrence of renal cancer is a challenging management dilemma and represents a more complicated surgical issue due to potential adhesions with a previously dissected renal artery and vein. While technically feasible, data regarding outcomes of RAPN in this setting are limited with conflicting results.

**Methods:** A prospectively maintained, IRB-approved, institutional database of patients treated for renal cell carcinoma (n = 781) was reviewed to identify patients with local or metastatic recurrence between 2013-2023. A recurrent renal mass was defined as a new contrast enhancing mass in the ipsilateral renal fossa, adrenal gland, or retroperitoneal lymph nodes. All patients had a history of thermal ablation, partial nephrectomy, or radical nephrectomy. Baseline patient characteristics including age, gender, race, BMI, and baseline eGFR were collected. Oncologic history factors including method of previous treatment, nephrometry score, history of high grade disease, positive surgical margins, or aggressive histology were obtained. Time to recurrence, tumor size, and method of surgical management were evaluated for all patients. For patients undergoing repeat robotic partial nephrectomy, perioperative variables including warm ischemia time, transfusion rate, hospital length of stay, and complication rates were reviewed. Functional outcomes include renal function preservation which was evaluated by eGFR immediately post operative and 3 months post operative.

**Results:** Twelve patients were identified with RCC recurrence. The cohort was predominantly male, Caucasian, with a median age of 61.4 (45.4-81.2) years old at time of index RCC diagnosis. Baseline CKD was present in 8.3% at initial therapy. Initial management was partial nephrectomy (50%), radical nephrectomy (41.7%), and percutaneous ablation (8.3%). Median follow up was 37.4 (5-143) months. Median time to recurrence was shortest amongst patients initially treated by radical nephrectomy (6.0 months). Five patients recurred with distant, multiple metastases and referred to medical oncology without surgical re-intervention. A single patient recurred with localized, well-defined nodal metastasis which was successfully managed by robotic retroperitoneal lymph node dissection. Five patients underwent repeat robotic partial nephrectomy or completion nephrectomy. All cases were technically successful without major complications. Average length of hospitalization was 1 day. Median creatinine preoperatively was 1.21 mg/dl (0.75-1.79) and three month or greater post reintervention 1.42 mg/dl (1.2-7).  

**Conclusions:** An algorithm for management of local recurrence includes review of initial pathology report, increased frequency of imaging in the context of positive margin, diligent compliance with surveillance, percutaneous biopsy to confirm histological evidence of recurrence and counseling patient as to risks of chronic renal failure, conversion to completion radical nephrectomy, and a multidisciplinary approach with medical oncology.

**Funding:** Departmental.

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**MP32-12 Clinical and Biochemical Outcomes of Adrenalectomy in Primary-Hyperaldosteronism, Comparison to Accepted Clinical and Biochemical response**

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Presented By: Fahed Atamma, MD
**Introduction:** Adrenalectomy is a preferable treatment for adrenal adenoma producing hormone, also calls Conn syndrome. The effort of diagnosis Adrenal adenoma and Primary-Hyperaldosteronism is insufficient and consequently, not enough adrenalectomies performed. In the era of Robotic assisted laparoscopic surgeries, we believe that this approach should be used more often, in order to avoid multiple medication use and better blood pressure control in those patients. This study aims to evaluate the effectiveness and outcomes of adrenalectomy as a treatment for Conn syndrome.

**Methods:** A cohort study, conducted on patients diagnosed with PA who underwent adrenalectomy. Clinical data, including preoperative laboratory results, imaging findings, surgical details, and postoperative outcomes, were collected and analyzed. Patients with suspected pheochromocytoma were excluded from this study. We defined Full success: as clinical and biochemical normalization (normal aldosterone and renin levels, and without medication). Partial success: defined as a decrease in aldosterone levels or the number of medications, and failure: defined as no change.

**Results:** From September 2019 to the present, ten patients underwent adrenalectomy for PA indications in our institution, three of whom were female. The median age was 47 years (range: 35-80). Female patients were younger than male patients, 39 vs 61 years, respectively. All patients suffered from refractory hypertension, with elevated aldosterone levels, and suppressed renin levels. Before surgery, two patients were taking one medication for hypertension, while the remaining patients were taking 2-4 medications. Adrenal venous sampling, required in one patient presented with bilateral adrenal adenoma. The median adrenal nodule size was 15 mm (range: 8-77 mm). All patients underwent adrenalectomy using a minimally invasive Robotic and laparoscopic transperitoneal approach, with a standard surgical procedure and minimal blood loss. Transient hemodynamic instability was observed during surgery in one patient and in the postoperative recovery of an additional patient. Complete success was observed in seven patients, two others achieved partial success as their aldosterone levels normalized, and hypertension medication were reduced. One failure was noted in this cohort study. No post-operative complications, recorded.

**Conclusions:** The results of this study support the use of adrenalectomy as a viable therapeutic option, for Primary-Hyperaldosteronism. This will require a team work of Nephrology, Anesthesiology, Radiology and Urology to enable a proper patient selection.

**Funding:** NON FUNDED.

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**MP32-13 assessment of gabapentin effect on postoperative pain, nausea and vomiting in patients undergoing laparoscopic urology surgery**

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Presented By: Pooya Kolahghoochi, MD

**Introduction:** Gabapentin is a class of anticonvulsant drugs that prevent the transmission of nerve messages in the synaptic space of pain-inducing nerve fibers by producing aminobutyric acid. The present study was designed and implemented with the aim of determining the effect of gabapentin on pain, nausea and vomiting after surgery in patients undergoing laparoscopic urological surgery.

**Methods:** In this clinical trial, patients were divided into placebo and gabapentin groups by block randomization method. In the gabapentin group, patients received one 300 mg gabapentin capsule 2 hours before surgery and one 300 mg gabapentin capsule daily until 48 hours after surgery. Patients in the placebo group also received placebo in the same way. After the end of the operation, the severity of pain was evaluated using the VAS scale, the intensity of nausea and vomiting using PONV, as well as the cumulative dose of narcotics consumed in 6, 12, 24 and 48 hours after laparoscopic urological surgery. The data was statistically analyzed with SPSS software.

**Results:** A total of 100 patients were studied in this study in two groups of 50 each. The two groups were not significantly different from each other in terms of age, sex, duration of surgery and duration of anesthesia (p < 0.05). The average pain score of the patients and the rate of nausea and vomiting of the patients at 6 and 12 hours after the operation in the patients of the gabapentin group were significantly lower than the placebo group (p < 0.001). The cumulative dose of anti-nausea drugs and narcotic drugs in the patients of the gabapentin group was significantly lower than the placebo group (p = 0.04 and p = 0.01, respectively).

**Conclusions:** The results of the present trial show that gabapentin is effective on pain, nausea and vomiting in patients compared to placebo.

**Funding:** This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors

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**MP32-14 Initial experience of Robot-assisted partial nephrectomy (RAPN) using hinotori surgical robot system**

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1Nippon Medical School

Presented By: Hayato Takeda, MD

**Introduction:** Robot-assisted partial nephrectomy (RAPN) using hinotori surgical robot system (h-RAPN) was introduced in April 2023. Treatment outcomes of the induction phase were compared with RAPN using the DaVinci (d-RAPN) performed during the same period.

**Methods:** Renal cell cancer patients treated with h-RAPN or d-RAPN between April 2023 to January 2024 were recruited. Patient background, operative time, blood loss volume, intraoperative complications, and pathological results were examined.

**Results:** 5 cases of h-RAPN and 11 cases of d-RAPN were performed. Median age was 75 vs 69 years old, BMI 20.8±2.4 vs 27.2±8.6, tumor diameter (24.5±4.5 vs 23.0±13.0)mm. Left tumor site (3 vs 8) cases and right tumor site (2 vs 3) cases. Average R. E. N. A. L. score was 5.4 vs 5.7, and peritumoral or retroperitoneal approach was selected in (4 vs 7) cases and (1 vs 4) cases. Ischemic time was 21.4 (14-29) vs 18.6 (13-38) minutes, and blood loss was (10-150 vs 10-120) ml. All margins of the removed specimens were negative, and no serious complications of Clavian-Dindo grade 3 or higher were observed in the perioperative period.

**Conclusions:** Treatment outcomes of h-RAPN were comparable to d-RAPN, and can be safely performed.

**Funding:** None.
MP32-15 Oncological outcomes and risk factors after Robot Assisted Partial Nephrectomy for clinically localized renal cell carcinoma

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Presented By: Shuji Isotani, MD, PhD

Introduction: Robot-assisted partial nephrectomy (RAPN) has been accepted as a standard treatment option for small renal cell carcinoma (RCC). The incidence of postoperative recurrence of kidney cancer after RAPN is known to range from 1% to 10% following resection therapy. However, recurrence of RCC after RAPN is relatively uncommon due to its infrequency. In this study, we retrospectively evaluated oncological outcomes and investigated the factors related to postoperative recurrence after RAPN.

Methods: We enrolled 344 patients who underwent RAPN at the Department of Urology, Juntendo University Hospital, between September 2012 and August 2022. Patients with benign tumors or metastasis of RCC were excluded. Among patients of pathological confirmed RCC, we retrospectively evaluated 302 cases with a postoperative observation period of more than one year. Outcome measures included time to disease progression, recurrence-free survival, or overall survival, Kaplan-Meier method was used to estimate survival.

Results: The median age at initial RAPN surgery was 60 years, with a median follow-up period of 52.8 months (IQR 13–132 months) and a median tumor size of 30 mm at initial surgery. Preoperative clinical staging among the 302 patients included 267 (89.1%) with cT1a, 33 (10.9%) with cT1b, and 3 (1.0%) with cT2. Histopathological examination revealed clear cell carcinoma as the predominant histological subtype in 257 cases (85.1%). ISUP grades 1 and 2 were found in 60.0%. Positive surgical margins were present in 3 patients (1.0%). The recurrences of RCC were observed in 10 patients (3.0%). Of these, 4 patients (1.3%) experienced only local recurrence (3 on the surgical side, 1 contralateral), and 6 (1.9%) had distant metastases. The 3-year and the 5-year Recurrence-free survival rate were 97.1% and 95.4%, respectively. Salvage robot-assisted renal surgery was performed in 2 cases, open surgery in 1 case, and cryotherapy in 1 case for local recurrence treatment. Univariate analysis revealed that high-grade tumors, upstaging to T3a, T stage, and sarcomatoid component were factors associated with tumor progression after RAPN for RCC (p < 0.05).

Conclusions: Robot-assisted partial nephrectomy (RAPN) has shown favorable oncological efficacy and safety in the management of RCC. However, careful postoperative follow-up is recommended, particularly for patients with high-grade tumors and upstaging to T3a, due to their increased risk of recurrence

Funding: None.

MP32-16 Laparoscopic Renal Surgery Using ArtiSental: IDEAL Stage 2a Study

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Presented By: Jong Keun Kim, MD, PhD

Introduction: This study was designed to evaluate the feasibility of performing laparoscopic renal surgery using ArtiSental, and to prepare data on the efficacy and safety of ArtiSental.

Methods: The study protocol was approved by the Institutional Review Board of Asan Medical Center, Seoul, Korea (2022-0597). The brief study protocol was registered on the Clinical Research Information Service site of the Korea Disease Control and Prevention Agency (KCT0007329). Candidates fulfilling all inclusion and exclusion criteria were enrolled in the clinical trial and underwent laparoscopic renal surgery using ArtiSental coupled with straight-shaped instruments. The operator judged the feasibility in each surgical step. Data on the efficacy included operation time, ischemia time, estimated blood loss. Data on the safety included intraoperative complication.

Results: Of the 31 potential candidates from June to October 2022, 30 were enrolled in the clinical trial and one excluded due to declining participation. The type of surgery included eight radical nephrectomy, 16 partial nephrectomy, and six nephroureterectomy. Of the six patients underwent nephroureterectomy, two were converted to open surgery due to blood loss and ischemia time were 167 and 30 minutes, respectively. Median estimated blood loss was 36 mL. Each case of venous injury and spleen injury occurred during kidney mobilization step.

Conclusions: In IDEAL stage 2a study, it was possible to perform laparoscopic renal surgery using ArtiSental coupled with straight-shaped instruments in all surgical steps.

Funding: This work was supported by ‘Supporting Project to Evaluate New Domestic Medical Devices in Hospitals’ funded by Ministry of Health and Welfare (MOHW) and Korea Health Industry Development Institute (KHIDI). Funding included matching fund from LIVSMED.

MP32-17 A New Attachment for a Navigation System Using 3D Models in Robot-Assisted Partial Nephrectomy Guides Surgeons Accurately for the Target

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Presented By: Keiji Tsukino, MD

Introduction: A navigation system combined with threedimensional (3D) models moved synchronously according to the endoscope’s movement tracked using an optical tracking system (OTS) was deployed into robot-assisted partial nephrectomy (RAPN). The navigation system needed to register between 3D models in virtual reality and endoscopic images in physical reality according to the scenes desired by the surgeon during the surgical process. However, re-registrations were needed by infrared light interrupting with “blind spots”. In this study, a new attachment compatible with the da Vinci Xi system for navigation in RAPN was developed to address tracking interruptions caused by blind spots in the surgical field.

Methods: The attachment was designed to ensure clearance from the robotic arm and physician in the operative field and
was manufactured using stainless steel. Three infrared reflective markers were placed on the attachment, and files of read-only memory (ROM) of markers were created to enable tracking of

the attachment with OTS. The attachment, including the ROM files, was deployed into the navigation system for RAPN from April 2023 onwards. To validate the feasibility of a new attachment, a comparison study between a previous attachment and a new attachment was performed, and the effectiveness was assessed using the following metrics: the number of tracking interruptions and registration times until renal artery securing.

**Results:** The old attachment often encountered blind spots due to obstruction by the robotic arm or assistant. However, we achieved marker placement with the new attachment that eliminated blind spots. The new attachment reduced tracking interruption by 25% and registration frequency by 78%. Stable navigation was achieved without interruptions in infrared tracking.

**Conclusions:** In this study, the new attachment for navigation into RAPN was proposed and our results showed the feasibility of the attachment.

**Funding:** None.

### MP32-18 Robot-assisted Partial Nephrectomy for Complex (PADUA Score ≥10) Tumors: Results from a High Volume Single Center

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Presented By: Tunkut Doganca

**Introduction:** The aim of this study is to compare perioperative outcomes of robot assisted partial nephrectomy (RAPN) in T1a and T1b renal masses.

**Methods:** This is a retrospective analysis of RAPN patients operated between 2008 and 2023 in a single institution. A total of 265 patients with T1a and 98 with T1b tumors underwent RAPN.

**Results:** Mean age and BMI in T1a patients were 53.89 ± 12.43 and 27.48 ± 4.33 kg/m² and 52.23 ± 14.5 and 28.68 ± 5.17 kg/m² in T1b patients, respectively. Mean tumor size was 26.78 ± 7.87 mm. in T1a and 49.64 ± 8.06 mm. in T1b patients. In T1a group, mean operative and warm ischemia times (WIT) were 97.14 ± 40.89 and 15.33 ± 8.7 minutes and in T1b group, 118.79 ± 36.9 and 18.78 ± 7.74 minutes, respectively. Mean estimated blood loss was 176.98 ± 201.03 and 263.57 ± 194.93 ml in T1a and T1b patients, respectively. Surgical margins were positive in 6 (2%) T1a patients and in 3 (3%) T1b patients. Eleven patients (4% in T1a, 11% in T1b) had complications in each group; (1 Clavien I, 2 Clavien II, 8 Clavien IIIB in T1a) (2 Clavien I, 1 Clavien II, 7 Clavien IIIB and 1 Clavien IVA in T1b). Mean pre- and postoperative creatinine were 0.88 ± 0.22 and 0.9 ± 0.25 mg/dl in T1a patients and 0.87 ± 0.21 and 0.93 ± 0.28 mg/dl in T1b patients, respectively. Mean preoperative and postoperative eGFR were 91.04 ± 18.74 and 89.62 ± 19.82 ml/min/1.73m in T1a patients and 93.22 ± 19.6 and 88.8 ± 21.13 ml/min/1.73m in T1b patients, respectively.

**Conclusions:** Compared to T1a renal masses, RAPN can be performed in T1b renal masses with slightly longer operative and warm ischemia times, higher complication rates and similar surgical margin positivity and renal function preservation rates.

**Funding:** None.

### MP32-20 Laparoscopic assisted Robotic partial nephrectomy – An improvised way

Vipin Tyagi¹

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Presented By: Vipin Tyagi

**Introduction:** Robotic partial nephrectomy is the standard of care for localised cancer of kidney. In developing countries cost is the main important limiting factor for the usages of the robot. We describe our way of laparoscopic assisted robotic partial nephrectomy. The use of robot in partial nephrectomy is also more questionable when we end up doing radical nephrectomy which can be done by laparoscopic way. Other limitation factor with robot is restriction of instruments use due to cost implication. We describe our way of laparoscopic assisted robotic partial nephrectomy.
Methods: We did 145 robotic assisted partial nephrectomy of which 100 were done by combined laparoscopy and robotic way. We did laparoscopic approach for dissection of the kidney to expose the hilum using sharp and blunt dissection using hook, energy source and suction. All of these instruments usages will not incur any financial implication yet doing all the necessary job. We dissected out the renal tumour and made sure that we will be proceeding for partial nephrectomy. Robot is docked once we are all set for partial nephrectomy.

Results: We took 20 minutes average for laparoscopic step and robotic part of excision of the tumour and renorrhaphy was done in average 45 minutes. Total operative time was average 90 minutes. We need to do laparoscopic radical nephrectomy in 3 cases as in 2 we found multiple tumor and in 1 case tumor was not accessible. We were able to achieve good functional and oncological outcome in all the cases. Estimated blood loss was 50-150ml. There was no perioperative complication except one where patient had hamaturia 3 weeks after surgery and underwent angio-emolization for his pseudo-aneurysm. We had comprehensive cancer control with complete removal of the tumour in all the patients.

Conclusions: Laparoscopic assisted robotic partial nephrectomy feasible and simplified option for partial nephrectomy whenever surgeon is in doubt. Surgeons can use instruments of his choice without worrying of the cost.

Funding: None.

MP32-21 Renal cell carcinoma associated with XP11 mutation undergoing robotic surgery: A case series

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1brazilian institute of robotic surgery

Presented By: Lorena Barboza de sousa, Medical Student

Introduction: Renal cell carcinoma represent 3% of all cancers. Within this statistic, those associated with XP11 mutation represent approximately 1% of RCCs. In this challenging scenario, robotic-assisted partial nephrectomy (RAPN) and robotic-assisted radical nephrectomy (RARN) have shown significant improvements in prognosis. This study aims to exposed the outcomes of a case series of XP11 mutation renal cell carcinomas treated surgically with RAPN and robot-assisted radical nephrectomy (RARN).

Methods: A retrospective analysis of the patient’s medical records was conducted. Among the 3 cases, 2 were treated with RAPN and 1 with RARN. The procedures utilized the same 4 8mm robotic trocars from the DaVinci XI system, arranged linearly, along with two additional of 5 and 12mm auxiliary trocars. Robotic instruments used included monopolar scissors, fenestrated bipolar forceps, prograsp, and robotic needle driver. All 3 surgeries were performed by the same surgical team. Due to suspicion of RCC associated with XP11 mutation, immunohistochemical testing was requested, confirming the diagnosis.

Results: The average age was 35 years (range = 20-53 years) and the mean BMI was 24.23. Lymphadenopathy was present in 67% of patients, and all 3 tumors affected the left kidney. The diameter of these tumors ranged from 3.6 to 10.0 cm, with a mean of 7.36 cm. Patients presented with stages T1aN0M0, T3N1M0, and one stage T2bN1M0. Only one case was associated with Hereditary Leiomyomatosis and Renal Cell Carcinoma (HLRCC). The average surgery time was 83.6 minutes. The mean hospital stay was 1.3 days. The estimated mean blood loss was 116.1 ml. No intraoperative or postoperative complications were observed.

Conclusions: To date, this is the only described case series related to XP11 mutation, where surgical treatment was exclusively performed through a robotic-assisted platform. In these cases, robotic surgery performed more efficiently in smaller tumors, showing no signs of postoperative recurrence. In the context of advanced tumors, minimally invasive surgical techniques demonstrated significant results in reducing complications and estimated blood loss. This highlights the benefits of robotic surgery in the context of rare neoplasms.

Funding: None.

MP32-22 Clinical Experience and Management Strategy of Retroperitoneal Tumor With Venous Tumor Thrombus Involvement

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Presented By: Zhuo Liu

Introduction: This study aims to report the surgical management, complications, and outcomes for patients with retroperitoneal tumor and venous thrombus.

Methods: We retrospectively analyzed 19 cases of retroperitoneal tumor with venous tumor thrombus from August 2015 to March 2021. A new tumor thrombus PUTH-RT grading system was proposed on the basis of the characteristics of the surgical techniques.

Results: Two cases of PUTH-RT-1a, two cases of PUTH-RT-1b, six cases of PUTH-RT-2, six cases of PUTH-RT-3, and three cases of PUTH-RT-4 were included. Surgeries were successfully performed in all 19 patients. Among them, five cases (26.3%) were operated via a completely laparoscopic approach and 13 cases (68.4%) via an open approach. One case (5.3%) was converted from laparoscopic to open approach. Five cases (26.3%) experienced postoperative complications. All patients were followed for a median of 14 months. Cancer-associated death occurred in three cases. Distant metastases occurred in seven cases.

Conclusions: We propose a new tumor thrombus grading system based on the anatomical characteristics of retroperitoneal tumors with venous tumor thrombus. Retroperitoneal tumor resection and removal of venous tumor thrombi are safe and effective for the treatment of such diseases.

Funding: None.

MP32-23 PUTH Grading System for Urinary Tumor With Supradiaphragmatic Thrombus: Different Techniques for Different Tumor Characteristics

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Presented By: Zhuo Liu

Introduction: This study aims to report the surgical management, complications, and outcomes for patients with supradiaphragmatic tumors involving the right renal vein.

Methods: We retrospectively analyzed 19 cases of supradiaphragmatic urinary tumors from August 2015 to March 2021. A new tumor thrombus PUTH-RT grading system was proposed on the basis of the anatomical characteristics of the surgical techniques.

Results: Two cases of PUTH-RT-1a, two cases of PUTH-RT-1b, six cases of PUTH-RT-2, six cases of PUTH-RT-3, and three cases of PUTH-RT-4 were included. Surgeries were successfully performed in all 19 patients. Among them, five cases (26.3%) were operated via a completely laparoscopic approach and 13 cases (68.4%) via an open approach. One case (5.3%) was converted from laparoscopic to open approach. Five cases (26.3%) experienced postoperative complications. All patients were followed for a median of 14 months. Cancer-associated death occurred in three cases. Distant metastases occurred in seven cases.

Conclusions: We propose a new tumor thrombus grading system based on the anatomical characteristics of retroperitoneal tumors with venous tumor thrombus. Retroperitoneal tumor resection and removal of venous tumor thrombi are safe and effective for the treatment of such diseases.

Funding: None.
Introduction: To explore the different treatment strategies for urinary tumors with Mayo IV thrombus.

Methods: We retrospectively analyzed the patients with Mayo IV thrombus in Peking University Third Hospital from January 2014 to April 2021. We used the Peking University Third Hospital (PUTH) grading system to classify urinary tumors with supradiaphragmatic thrombus. PUTH-A referred to the filled thrombus whose tip just reached above the diaphragm, or the thrombus entering the right atrium (<2 cm). PUTH-B referred to the filled thrombus entering the right atrium (>2 cm), or the thrombus invading the wall of the inferior pericardial vena cava. Detailed techniques were described for various scenarios. Clinicopathological data and perioperative outcomes were reported. Group difference statistical analysis was performed.

Results: A total of 29 cases of urinary tumors with supradiaphragmatic IVC thrombus (Mayo grade IV) underwent treatment were enrolled in this study. 21 patients in the PUTH A group received the open approach without sternotomy and cardiopulmonary bypass. Eight patients in the PUTH-B group received open thoracotomy assisted by cardiopulmonary bypass. No intraoperative death occurred. After 56 months of follow up, 46.2% (12 of 26) patients died of all causes. Estimated 1-year, 2-year, and 3-year overall survival were 72.0% (95% CI, 54.4%-89.6%), 58.2% (95% CI, 38.0%-78.4%), and 52.4% (95% CI, 31.2%-73.6%), respectively.

Conclusions: We introduced the PUTH grading system for the characteristics of urinary tumors with supradiaphragmatic tumor thrombus, and selected different surgical techniques according to different classifications. This grading system was relatively feasible and effective.

Funding: None.

MP32-24 Laparoscopic pyelolithotomy for large renal stones: Experience of a tertiary referral center during 18 years

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Presented By: Behzad Narouie, MD

Introduction: This study aimed to evaluate the outcomes of laparoscopic pyelolithotomy, including its efficacy and feasibility in treatment of large renal stones.

Methods: All patients who underwent laparoscopic pyelolithotomy operations in a referral center were enrolled from 2003-2020. Our approach included a transperitoneal operation and extraction of the kidney stone through a U-shaped anterior pelvis incision. The final analysis included 436 patients.

Results: The total stone free rate was 88.3% and the stone-free rate for staghorn/multiple stones versus other types of stones was 81% vs. 91% (p = 0.002). Likewise, the total operation duration was 158 ± 50 and the operation duration for staghorn/multiple stones versus other types of stones was 171 ± 51 min vs. 153 ± 49 min (p < 0.001). The operation duration (169 ± 51 vs. 155 ± 58 vs. 155 ± 42 minutes) and hospitalization (4.5 ± 2.3 vs. 4.0 ± 2.2 vs. 3.6 ± 1.8) decreased with increasing the surgeons’ experience over time.

Conclusions: The outcomes of laparoscopic pyelolithotomy for children versus adults versus geriatric patients and in patients with normal versus abnormal kidney anatomy did not reveal statistically significant differences. Severe complications (Clavien ≥ 3) were observed in 4% of patients. Laparoscopic pyelolithotomy could be employed as an alternative surgical approach for patients with large kidney stones of any age or with kidney abnormalities provided that appropriate expertise is available to carry out the procedure.

Funding: Not Applicable.

MODERATED POSTER SESSION 33: RECONSTRUCTIVE SURGERY

MP33-01 Unsupervised Machine Learning to Identify Risk Factors of Pyeloplasty Failure in Ureteropelvic Junction Obstruction

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Presented By: Daniel Wollin, MD, MS

Introduction: In adult patients with Ureteropelvic Junction Obstruction (UPJO), the literature that attempts to preoperatively predict pyeloplasty success in adults is fundamentally limited by lack on what defines pyeloplasty success. Since the risk factors of surgical failure are validated from a mix of outcomes data, the risk factors may be somewhat arbitrarily defined as well. To mitigate bias of retrospectively picking significant outcomes, we performed an unsupervised machine learning cluster analysis on a dataset of 216 pyeloplasty patients between 2015-2023 from a multi-hospital system to identify the defining risk factors of clusters of patients that experience worse outcomes.

Methods: A KPrototypes model was fitted with pre- and per- operative data and blinded to postoperative outcomes. Appropriate number of k-clusters was decided by minimizing
cost and number of clusters. T-test and chi-square tests were performed to look at significant differences (p < 0.05) of pre-, peri-, and postoperative characteristics between clusters. SHAP (SHapley Additive exPlanation) values were calculated from a random forest classifier to determine the most predictive pre- and peri-operative features of cluster membership. A logistic regression model was run to identify which of the most predictive variables remained significant (p < 0.05) after adjusting for confounders.

**Results:** After inclusion and exclusion criteria were applied, 216 patients were used for our study. 135 (62.5%) patients were female, with average age at surgery being 49.5 (±17.6). Average split function of the affected side improved after surgery by 1.4% (±15.3). Postoperative improvement of flank pain and hydronephrosis was reported in 120 (56.1%) and 128 (65.6%) patients, respectively. Two distinct clusters were identified, one of which we denoted as “high-risk” as it contained 111 (51.4%) patients with distinctly greater comorbidity. The features most likely to promote high-risk cluster membership were advanced age (62.7 v. 35.7), high body-mass-index (BMI) (26.9 v. 23.8), and history of hypertension (66.7% v. 17.1%). Cardiovascular disease (55.9% v. 7.6%), abdominal surgery (72.1% v. 37.1%), and left-sided UPJO (62.4% v. 32.7%). The high-risk group was found to have more frequent severe perioperative complications with Clavien-Dindo grade ≥3 (7.2% v. 1.0%) and significantly lower postoperative eGFR (70.2 v. 101.8), though change from pre-operative baseline was not significant. After adjusting for confounding effects, older age, lower eGFR, hypertension, greater BMI, previous abdominal surgery, and left-sided UPJO remained as significant predictors of high-risk class membership, which we found to be driven by higher incidence of severe perioperative complications.

**Conclusions:** UPJO patients with older age, lower eGFR, hypertension, greater BMI, previous abdominal surgery, and left-sided UPJO naturally cluster into a group that more commonly suffers from perioperative complications. Preoperative counseling and perioperative management for patients with these risk factors may need to be thought of or approached differently.

**Funding:** None.

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**MP33-02 An Evaluation of Radiographic Changes After Ureteral Rest**

Matthew Lee1, Nathan Liss1, Kelley Zhao1, Brian Chao1, Omar Agosto1, Daniel Eun1

1Temple University Hospital

Presented By: Matthew Lee, MD, MBA

**Introduction:** We evaluate radiographic changes involved with ureteral rest before robotic surgical management of ureteral strictures.

**Methods:** We retrospectively reviewed our single-institutional robotic ureteral surgery database to identify all consecutive patients who underwent preoperative ureteral rest before robotic ureteral reconstruction for surgical management of ureteral strictures between 1/2020 and 12/2022. Ureteral rest was defined as having the absence of hardware across a structured segment before definitive surgical repair. All patients who obtained both pre- and post-ureteral rest retrograde pyelograms were included for analysis. An expert genitourinary radiologist reviewed all retrograde pyelograms to determine stricture quality and length. Primary outcomes included the change in stricture quality after ureteral rest and the difference in ureteral stricture length after ureteral rest.

**Results:** Overall, 32 patients met the inclusion criteria (Table 1). Preoperative stricture quality was determined to be narrowed in 87.5% and obliterative in 12.5% of patients. The median duration of ureteral rest was 7.9 (IQR 5.4-17.3) weeks. Of those with narrowed strictures, 10.7% progressed to obliterative strictures after ureteral rest. There were 68.8% of patients who had an increase in stricture length after ureteral rest. The median growth in stricture length after ureteral rest was 0.2 (IQR -0.2-0.4) centimeters. At a median follow-up of 7.6 (IQR 3.2-10.0) months, 90.6% of patients were surgically successful.

**Conclusions:** Preoperative ureteral rest may allow for stricture maturation, as characterized by radiographic changes including a mild increase in stricture length and an alteration in stricture quality.

**Funding:** None.

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**Table 1: Descriptive Analysis of Variables Pre- and Post-Ureteral Rest**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Ureteral Rest (N=32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stricture Location:</td>
<td></td>
</tr>
<tr>
<td>Uretropelvic junction obstruction (%)</td>
<td>12.5</td>
</tr>
<tr>
<td>Proximal (%)</td>
<td>43.8</td>
</tr>
<tr>
<td>Middle (%)</td>
<td>21.9</td>
</tr>
<tr>
<td>Distal (%)</td>
<td>21.9</td>
</tr>
<tr>
<td>Preoperative Quality of Stricture:</td>
<td></td>
</tr>
<tr>
<td>Narrowed (%)</td>
<td>87.5</td>
</tr>
<tr>
<td>Obliterative (%)</td>
<td>12.5</td>
</tr>
<tr>
<td>Median Duration of Ureteral Rest (IQR, weeks)</td>
<td>7.9 (5.4-17.5)</td>
</tr>
<tr>
<td>Median Difference in Stricture Length After Ureteral Rest (IQR, centimeters)</td>
<td>0.2 (-0.2-0.4)</td>
</tr>
<tr>
<td>Surgical Success (%)</td>
<td>90.6</td>
</tr>
<tr>
<td>Median Follow-up (IQR), months</td>
<td>7.6 (3.2-10.0)</td>
</tr>
</tbody>
</table>

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**MP33-03 Multi-institutional outcomes of robotic intracorporeal ileal ureter replacement in patients with more than one year follow-up**

Emily Ji1, Jeffery Lin1, Rohan Bhalla2, Aurash Naser-Tavakolian3, Rebeca Gonzalez Jauregui2, Nathalie Eid1, Brian Flynn2, Lee Zhao1, Zihoo Lee3

1NYU Langone Health, 2University of Colorado Anschutz Medical Center, 3Northwestern Memorial Hospital

Presented By: Emily Ji, MD

**Introduction:** Although ileal ureter replacement is a technically demanding procedure associated with significant morbidity, it may be necessary to reconstruct long-segment ureteral defects. We report our multi- institutional experience with robotic intracorporeal ileal ureter replacement (RIUR) in patients with more than one year follow-up.

**Methods:** We retrospectively reviewed all patients who underwent RIUR at three institutions from 4/2016- 04/2023 with...
minimum one year follow-up. Indication for surgery was a long segment ureteral defect that was not amenable to less invasive forms of reconstruction. Patients undergoing RIUR in the setting of a urinary diversion were excluded from our analysis. Surgical success was defined as the absence of obstructive flank pain, and ureteral obstruction on functional imaging and/or endoscopic evaluation.

**Results:** Of 39 patients who underwent RIUR during the study period, 26 had greater than one year follow-up. Nineteen/26 (73.1%) had unilateral reconstruction and 7/26 (26.9%) had bilateral reconstruction. Seven/26 (26.9%) patients had a history of pelvic radiation. The most common etiology of ureteral stricture was iatrogenic (15/26, 57.7%). Median stricture length was 18.5 cm (IQR 14.5-22.0). In 4 patients, a concomitant abdominopelvic reconstruction was performed at time of RIUR: 2 underwent bladder augmentation, 1 had sigmoid colectomy with diverting loop ileostomy, and 1 underwent bladder neck reconstruction. Median operative time was 371 minutes (IQR 351-412), estimated blood loss was 100 ml (IQR 50-200), and length of stay was 5 days (IQR 3-6). There was 1 (4.3%) intraoperative complication, a chylous leak from the peri-aortic lymph nodes that required retroperitoneal lymph node dissection. There were 4 (15.4%) major (Clavien >II) complications within 30 days: 2 patients had urinary anastomotic leaks that required drain placement, 1 had an intraabdominal abscess that required drain placement, and 1 had a small bowel anastomotic leak that required exploratory laparotomy and primary repair as well as a urinary leak. At a median follow-up of 21 months (IQR 16-36), 24/26 (92.3%) were surgically successful. Postoperatively, 1/26 (3.8%) patient went on chronic oral sodium bicarbonate for metabolic acidosis.

**Conclusions:** RIUR is an effective long-term treatment for patients with long-segment ureteral strictures. However, the procedure is challenging and may be associated with significant morbidity.

**Funding:** None.

**MP33-04 Insights into the Incidence, Distribution, and Management of Crossing Vessels in Retroperitoneal Laparoscopic Pyeloplasty**

Guy Verhovsky,2 Michael Grasso III1, Wayne DeBeatham2, Andrew Fishman2

1NYU collage, 2Northwell Health

Presented By: Guy Verhovsky, MD, MPH

**Introduction:** This study aims to ascertain the incidence and variability of crossing vessels associated with ureteropelvic junction obstruction, defining various strategies during retroperitoneal laparoscopic pyeloplasty.

**Methods:** A prospective review of 170 consecutive cases of retroperitoneal laparoscopic pyeloplasty over 18 years was conducted. The study focused on identifying crossing vessels, their types and distribution and how different anomalies are addressed surgically. The surgical approach was based on a three-port extraperitoneal laparoscopic technique. Postoperative outcomes were tracked using ultrasonography and diuretic renal scans, with a median follow-up of 160.4 months.

**Results:** All 170 cases utilized a retroperitoneal laparoscopic approach, with a mean patient age of 48 years and a mean operative time of 115 minutes. Crossing vessels were encountered in 70% of cases, gonadal vein variants composed 64% of the cases, accessory renal artery in 54%. Ureteral transposition was performed in only 6.5% of cases with crossing vessels. Coexisting renal calculi (twelve cases identified) were removed intraoperatively. The overall minor complication rate was 5.7%, with no major complications. The success rate was 98.4% with a median follow-up of 160.4 months.

**Conclusions:** Retroperitoneal laparoscopy provides prompt and clear visualization of the renal hilum, enabling the identification of anomalies crossing vasculature. Meticulous vascular dissection and ureteropelvic junction reconstruction contribute to successful outcomes.

**Funding:** This study supports the effectiveness of retroperitoneal laparoscopic pyeloplasty in managing ureteral pelvic junction obstruction associated with crossing vessels and achieving long-term success.

**MP33-05 Indocyanine Green Reduces the Risk of Ureteroenteric Anastomotic Stricture Following Robot-Assisted Radical Cystectomy and Extracorporeal Urinary Diversion**

Daniel Lama1, Salvador Jaime Casas1, Matthew Hudnall1, Oluwatimilehin Okunowo1, Clayton Lau1, Bertram Yuh1, Kevin Chan1

1Division of Urology and Urologic Oncology, Department of Surgery, City of Hope Comprehensive Cancer Center

Presented By: Daniel Lama, MD

**Introduction:** Ureteroenteric anastomotic stricture (UAS) is a clinically significant complication following robot-assisted radical cystectomy (RARC) and urinary diversion. Indocyanine green (ICG) is an intravenous agent that demonstrates ureteral perfusion using fluorescence imaging to facilitate ureteroenteric anastomosis. Our objectives were to evaluate the impact of ICG and clinical factors on the risk of developing UAS.
Methods: We reviewed a single tertiary center prospective database of consecutive patients who underwent RARC with or without ICG use at the time of extracorporeal urinary diversion (ECUD) between 2011 and 2022. If clinically suspected, UAS was confirmed with placement of a nephrostomy tube and antegrade nephrostogram. Sequelae of UAS including Clavien-Dindo grade IV events and unplanned return visits between the time of diagnosis and prior to definitive repair were recorded. Kaplan-Meier analysis was performed to estimate stricture-free survival. Cox regression was performed to characterize risk factors of UAS.

Results: A total of 392 patients underwent RARC and ECUD; the first 196 (50%) without ICG use and the subsequent 196 (50%) with ICG use. Of the 772 renal units that required ureteroenteric anastomosis, 34 (4.4%) UASs were identified; 28/385 (7.3%) in the non-ICG group over a median follow-up of 73.2 (IQR 16.6-97.3) months, and 6/387 (1.6%) in the ICG group over a median follow-up of 27.7 (IQR 16.8-44.4) months. Grade IV complications occurred for 6/24 (25%) and 0/6 (0%) non-ICG and ICG patients, respectively. Of the 42 unplanned return visits, 34 (81%) occurred among non-ICG patients and 8 (19%) occurred among ICG patients. In multivariable analysis, ICG use significantly reduced the risk of UAS (HR 0.20, 95%CI: 0.08-0.49, p < 0.001), whereas history of diabetes mellitus significantly increased the risk of UAS (HR 3.06, 95%CI: 1.47-6.39, p = 0.003). The stricture-free survival probabilities based on ICG use are shown in Figure 1.

Conclusions: Intraoperative ICG fluorescence can safely and significantly reduce the risk of UAS following RARC/ECUD, can impact postoperative outcomes, and affect overall morbidity. Metabolic comorbidity can impact the risk of UAS.

Funding: None.

Introduction: To evaluate the feasibility of robotic assisted ureteral reconstruction for managing ureteric complications in transplanted kidney as the minimally invasive alternative to open surgery.

Methods: Methods from January 2020 to December 2022, robot-assisted ureteral reconstruction was performed for a total of twelve patients with transplanted kidney who had vesicoureteral reflux (VUR) or ureteral stricture and had failed to treat with previous endoscopic treatments.

Results: Patients were nine females and three males, mean age was 54.3 ± 6.6. Five (41.7%) patients underwent surgery due to VUR (grade III) on transplanted kidney while seven (58.3%) patients had transplanted ureteral stricture. Ten (83.3%) received kidney transplants from living donors while two (16.7%) received from deceased donors. For VUR patients, average number of preoperative endoscopic submucosal macroplastique injections were 2.2 ± 0.8. Seven transplanted ureteral stricture patients had a balloon dilatation with keeping ureteral catheter. After the surgery, post-op voiding-cystourethrography (VCUG) was performed on 3.8 ± 1.6 months. Four (80%) patients became VUR free and one (20%) had VUR regression from grade III to I. Seven patients who underwent reconstruction due to anastomosis site stricture, became stenosis free without indwelling ureteral catheter. For patients with long stenosis length of more than 5 cm, two patient underwent boari flap and one patient had end to end anastomosis with native ureter while performing reconstruction surgery. In total, mean operating console time was 146.5 ± 33.5 minutes and patients stayed in hospital for average 6.42 ± 4.5 days. Urethral catheter was removed on 16.3 ± 5.4 days and the ureteral catheter was removed after 4.58 ± 1.5 weeks. The mean serum creatinine level was 1.22 ± 0.1 mg/dl on 1 month after the surgery. The mean follow-up period was 25.0 ± 6.8 without having additional intervention after the surgery.

Conclusions: Robot ureteral reconstruction is a technically feasible and may provide effective treatment for ureteric complications in transplanted kidney as minimally invasive alternative to open surgery.

Funding: None.

MP33-06 Robot-assisted ureteral reconstruction for the management of kidney transplant patients with ureteric complications

Dongho Shin

1Department of Urology, College of Medicine, The Catholic University of Korea, Seoul, Republic of Korea

Presented By: Dongho Shin, MD
MP33-07  A Quantitative Analysis of Renal Function and Drainage after Robotic Ureteral Reconstruction for Proximal and Middle Ureteral Strictures
Matthew Lee1, Kelley Zhao1, Daniel Eun1
1Fox Chase-Temple Urologic Institute

Presented By: Matthew Lee

Introduction: Limited quantitative evidence exists to evaluate outcomes after robotic ureteral reconstruction (RUR) in patients with ureteral strictures. We investigate the effects on renal function and drainage in patients who underwent RUR for surgical management of proximal and middle ureteral strictures.

Methods: We retrospectively reviewed our single-institution, RUR database to identify all consecutive patients undergoing RUR for management of proximal and middle ureteral strictures between 1/2017 and 6/2023. All patients who obtained a pre and postoperative nuclear medicine renal scan with Lasix were included for analysis. Primary outcomes included median difference in preoperative and postoperative renal split function and clearance half time. Secondary outcomes included median difference in creatinine and estimated glomerular filtration rate. A descriptive analysis was performed on primary and secondary outcomes.

Results: Overall, 46 patients met inclusion criteria (Table 1). Median time to obtain a renal scan was 5.1 (IQR 4.0-7.1) months after the index surgery. There was a median improvement of 8.8 (IQR 0.0-15.9) minutes in clearance half time and a negligible improvement of 0.4% (IQR -2.6-5.0) in renal split function on the affected renal unit. Preoperative creatinine was 0.96 (IQR 0.8-1.1) and postoperative creatinine was 0.95 (IQR 0.8-1.3). Median preoperative estimated glomerular filtration rate was 60.0 (IQR 60.0-60.0) and postoperative estimated glomerular filtration rate was 60.0 (IQR 56.0-79.0). Among this cohort, there were 15 (32.6%) patients who underwent RUR for management of flank pain (Table 2). There was a median improvement of 10.0 (IQR 0.8-15.7) minutes in clearance half time and a negligible improvement of 0.4% (IQR -0.7-1.4) in renal split function within this subgroup. One (6.7%) patient had recurrent flank pain postoperatively and had worsening clearance half time and renal split function after RUR.

Table 1: Effects on renal function and drainage after ureteroplasty for proximal and middle ureteral strictures

<table>
<thead>
<tr>
<th>Variables</th>
<th>Number of patients (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative median creatinine (IQR)</td>
<td>0.96 (0.8-1.1)</td>
</tr>
<tr>
<td>Postoperative median creatinine (IQR)</td>
<td>0.95 (0.8-1.3)</td>
</tr>
<tr>
<td>Preoperative median estimated glomerular filtration rate (IQR)</td>
<td>60.0 (60.0-60.0)</td>
</tr>
<tr>
<td>Postoperative median estimated glomerular filtration rate (IQR)</td>
<td>60.0 (56.0-79.0)</td>
</tr>
<tr>
<td>Median timing of renal scan (months) (IQR)</td>
<td>5.1 (4.0-7.1)</td>
</tr>
<tr>
<td>Median improvement in renal split function on affected side (%) (IQR)</td>
<td>0.4 (-2.6-5.0)</td>
</tr>
<tr>
<td>Percent improvement in renal split function (%)</td>
<td>52.7</td>
</tr>
<tr>
<td>Median improvement in T1/2 on affected side (minutes) (IQR)</td>
<td>8.8 (0.0-15.9)</td>
</tr>
<tr>
<td>Percent improvement in T1/2 on affected side (%)</td>
<td>71.7</td>
</tr>
</tbody>
</table>

Table 2: Effects on renal function and drainage after ureteroplasty in subgroup with flank pain

<table>
<thead>
<tr>
<th>Variables</th>
<th>Number of patients (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median improvement in renal split function on affected side (%) (IQR)</td>
<td>0.4 (-0.7-1.4)</td>
</tr>
<tr>
<td>Percent improvement in renal split function (%)</td>
<td>66.7</td>
</tr>
<tr>
<td>Median improvement in T1/2 on affected side (minutes) (IQR)</td>
<td>10.0 (0.8-15.7)</td>
</tr>
<tr>
<td>Percent improvement in T1/2 on affected side (%)</td>
<td>80.0</td>
</tr>
</tbody>
</table>

Conclusions: Renal scans may be employed to evaluate surgical success following RUR. Overall, there was an improvement in median clearance half time in patients who underwent RUR for surgical management of proximal and middle ureteral strictures. In the short term, renal split function remains unchanged after surgical intervention.

Funding: None.

MP33-08  Robot-assisted buccal mucosa versus lingual mucosa graft ureteroplasty for long ureteral stricture: A prospective comparison of surgical outcome and oral morbidity
Kunlin Yang1, Xuesong Li1, Yichen Ying1, Zhihua Li1, Yiming Zhang1, Xiang Wang1, Xinfei Li1, Shubo Fan1, Chang Meng1, Bing Wang1, Peng Zhang2, Jing Liu3, Chen Huang1, Hongjian Zhu1, Liqun Zhou1
1Department of Urology, Peking University First Hospital, Institute of Urology, Peking University, National Urological Cancer Center, 2Department of Urology, Emergency General Hospital, 3Department of Urology, Beijing Jiangong Hospital

Presented By: Kunlin Yang, MD

Introduction: To prospectively compare robot-assisted buccal mucosa graft ureteroplasty (RU-BMG) and lingual mucosa graft ureteroplasty (RU-LMG) regarding surgical outcome and donor-site morbidity.

Methods: From May 2020 to July 2023, 77 patients treated with RU-LMG (n = 37) or RU-BMG (n = 40) were enrolled. Patient-reported oral health-related quality of life (OHRQoL) was longitudinally evaluated by Oral Health Impact Profile-14 (OHIP-14) before surgery, and 1, 3, 6, 9 and 12 months postoperatively.

Results: The RU-LMG group had longer stricture length (3.9±1.4 cm vs. 3.0±1.1 cm;p = 0.001), longer width of grafts (4.0±1.3 cm vs. 3.3±0.8 cm;p = 0.005) and wider width of grafts (1.5±0.2 cm vs. 1.4±0.3 cm;p = 0.005). The mean follow-up time was relatively 30±8.4 months after RU-LMG and 11.7±3.37 months after RU-BMG (p < 0.001). The success rate was 100.0% (37/37) in RU-LMG and 97.5% (39/40) in RU-BMG (p = 1.000). Respectively 35.1% and 40.0% of patients reported donor site morbidity after RU-LMG and RU-BMG (p = 0.660). In the early postoperative period, lingual mucosa graft (LMG) harvesting was associated with more problems with eating and drinking, and buccal mucosa graft (BMG) harvesting was associated with more oral tightness. Late oral discomfort due to foreign body sensation only prolonged after BMG harvesting. There were significant modifications in total OHIP-14 and most domains postoperatively compared with the baseline. No between-group difference with OHRQoL changes was found between the two groups (p = 0.127).

Conclusions: Both RU-BMG and RU-LMG are feasible, valid and safe with satisfied mid-long-term surgical and oral outcomes. LMG or BMG harvesting may cause different oral morbidity characteristics. Assessing OHRQoL of patients benefits us in monitoring postoperative oral recovery and selecting suitable surgical strategies.

Funding: This study was supported by grants from the National High Level Hospital Clinical Research Funding
(Youth Clinical Research Project of Peking University First Hospital) (2023YC16).

MP33-09 Recurrent stenosis after robotic ureteral reconstruction – a single-institution descriptive series
Zev Leopold, Daria Harlamova, Brain W. Chao, Randall A. Lee, Matthew Lee, Daniel D. Eun
1Philadelphia College of Osteopathic Medicine, 2Temple University Hospital

Presented By: Zev Leopold, MD

Introduction: Ureteral strictures are increasingly managed robotically with excellent short- and intermediate-term outcomes. However, little is known regarding recurrent stenosis after robotic ureteral reconstruction (RUR). We characterized our institutional series following RUR.

Methods: We performed a retrospective review of patients from 05/2012 to 04/2024 undergoing RUR at a single institution. Inclusion criteria were (1) postoperative imaging suggestive of recurrent obstruction or (2) additional procedures for recurrent obstruction such as hardware replacement or additional reconstructive surgeries. Follow-up included 3–6-month postoperative nuclear medicine renal scans (NMRS) after ureteral stent removal.

Results: Of 450 total RUR procedures performed, 37 patients (8.2%) with median follow-up of 19.0 months (IQR: 9.0–63.0) met inclusion criteria. Strictures were found to be iatrogenic in 12 patients (32.4%), 4 (10.8%) received prior abdominopelvic radiation, and 22 (59.5%) had prior attempted repair via endoscopic, open, or robotic procedures. 34 patients (91.8%) underwent a hardware-free NMRS at a median of 3.0 months (IQR: 2.6–5.1) postoperatively. Chi-squared analysis showed no significant difference in the presence of obstruction on initial postoperative NMRS and flank pain (p = .37). 5 patients (13.8%) failed RUR based on imaging or pain (definition 1) alone at a median of 2.0 months (IQR: 1.0–6.0). 32 patients (88.9%) failed RUR based on the need for additional intervention at a median of 3.0 months (IQR: 1.0–7.5) such as balloon dilation/ureterotomy (22, 59.5%), hardware (8, 21.6%), repeat RUR (18, 48.6%), and nephrectomy (4, 10.8%). At last follow-up, 17 patients (45.9%) kept their renal unit with a patent ureter.

Conclusions: In our series, failure following RUR was typically diagnosed within one year of surgery. Although most patients required additional intervention for recurrent stenosis, RUR remains an effective treatment option.

Funding: None.

MP33-10 Beyond restoration: Enhancing lives through long-term urogenital reconstruction: A comprehensive follow-up study
George Shaker, James Henderson
1North Tees and Hartlepool NHS trust

Presented By: George Shaker, MRCS

Introduction: Urogenital reconstruction procedures are essential for individuals with congenital anomalies, traumatic injuries, cancer, or gender affirmation surgeries. While short-term outcomes of these procedures have been extensively studied, limited research focuses on the long-term functional outcomes and quality of life of urogenital reconstruction patients. This study aims to evaluate the functional outcomes and assess the impact on the quality of life in patients who underwent urogenital reconstruction procedures, providing valuable insights for improved patient care and postoperative management.

Methods: A retrospective cohort study of 120 patients (71 male, 49 female; mean age: 42.5 years) was conducted. Surgical indications included congenital anomalies (n = 64) and gender affirmation (n = 42). Functional outcomes were evaluated through patient-reported data and clinical assessments. Quality of life was measured using SF-36 and urogenital function questionnaires.

Results: Functional Outcomes: Urinary Continence: At the final follow-up (92%) of patients reported satisfactory urinary continence, indicating minimal or no urinary leakage. Sexual Function: Among the gender affirmation group, 78% of patients reported improved sexual function, with enhanced sexual satisfaction and comfort. Genital Appearance: Urogenital reconstruction significantly improved genital appearance for 85% of patients, contributing to improved body image and self-esteem. Quality of Life (SF-36 scores): Physical Functioning: The mean SF-36 score for physical functioning increased from 52.8 ± 8.7 at baseline to 78.5 ± 6.3 at the final follow-up (p < 0.001). Bodily Pain: The mean SF-36 score for bodily pain improved from 43.2 ± 9.1 at baseline to 79.6 ± 5.8 at the final follow-up (p < 0.001). Social Functioning: The mean SF-36 score for social functioning increased from 45.9 ± 7.6 at baseline to 82.1 ± 7.2 at the final follow-up (p < 0.001). Emotional Well-being: The mean SF-36 score for emotional well-being improved from 37.5 ± 6.9 at baseline to 80.3 ± 7.9 at the final follow-up (p < 0.001).

Conclusions: This long-term follow-up study demonstrates that urogenital reconstruction procedures lead to notable improvements in functional outcomes and quality of life for patients. Our findings suggest that urogenital reconstruction plays a crucial role in restoring physical, psychological, and...
social well-being in affected individuals. The low incidence of long-term complications emphasizes the safety and effectiveness of these procedures. However, further research is needed to explore the long-term impact on patient satisfaction and identify factors that influence successful outcomes. Understanding the functional outcomes and quality of life in urogenital reconstruction patients can guide healthcare professionals in providing comprehensive and patient-centered care throughout the postoperative period.

**Funding:** No funding.

**MP33-11 To retrospectively compare the efficacy and safety between balloon dilation and robotic assisted laparoscopic ureter reconstruction in treating holmium laser-related ureter stricture**

Chao Cai1, Yongda Liu

1The First Affiliated Hospital Of Guangzhou Medical University, 2The First Affiliated Hospital of Guangzhou Medical University

Presented By: Chao Cai, MD

**Introduction:** The incidence of ureteral stricture following holmium laser is becoming more common. Robotic assisted laparoscopic (RALP) ureter reconstruction has a higher success rate. However, balloon dilation (BD) also has a satisfying outcome for the short length (≤ 2 cm), with quicker recovery. To retrospectively compare the efficacy and safety between BD and RALP-ureter reconstruction in treating holmium laser-related ureter stricture.

**Methods:** Retrospectively reviewed the information of patients with holmium laser-induced ureteral stenosis. They were treated with RALP or BD from February 2016 to October 2021. The primary purpose was to compare the surgical success rate between two groups. The inclusion criteria was as follows: (1) Patients aged ≥ 18; (2) American Society of Anesthesiology (ASA) scores of 1-2; (3) Single-site ureteral stricture with short length (< 2 cm); (4) Follow up for more than 18-month.

**Results:** 104 patients were enrolled. 42 patients received BD and 62 patients received RALP. In the BD group, 11 patients (26.19%) required nonsteroid analgesics, of which 2 patients (4.76%) had postoperative fever. In the RALP group, 39 patients (62.90%) required nonsteroid analgesics and no patients got fever. All in two group did not need blood transfusion. RALP group had longer postoperative hospital stay [1 (1-3) days vs 6 (5-7) days] and higher surgery cost. Success rate at 3 months after removing DJ stent was 50% in BD group and 95.2% in RALP group (p < 0.001). Of note, success rate deceased during follow-up but the slope of BD group was steeper. Success rate in RALP group at 24 months was much higher than BD group (91.9% vs 42.9%, p < 0.001). In the RALP group, BMI (OR) = 1.26, p = 0.037 and stenosis length (OR) = 1.26, p = 0.037 were identified as independent risk factors for re-operation by multivariate logistic regression analysis.

**Conclusions:** For ≤2 cm ureter stricture following holmium laser lithotrispy, RALP ureter reconstruction offered better long-term outcome, but longer hospital stay and higher surgery cost.

**Funding:** None.

**MP33-12 Retrospective single centre analysis of long term follow up and outcomes of Laparoscopic Vs Robot assisted Pyeloplasty**

Harshit Tayal1, Abhishek Singh1, Nirmaya Pathak1, Arvind Ganpule1, Mahesh Desai1, Ravindra Sabnis1

1Muljibhai Patel Urological Hospital, Nadiad, Gujarat, India

Presented By: Harshit Tayal, MBBS, MS

**Introduction:** Historically, open pyeloplasty was the standard treatment for Pelviureteric Junction obstruction (PUJO). During the last four decades, minimally invasive treatment modalities for PUJO have been in spotlight. In this study, we aim to compare long term functional and surgical outcomes of Laparoscopic pyeloplasty(LP) and Robotic assisted pyeloplasty(RP).

**Methods:** Retrospective analysis and follow up of patients with PUJO, who underwent RP or LP during the period from 2010 to 2015 was done. Epidemiologic, radiological, perioperative and follow-up data was analysed. Patients were evaluated in preoperative period using CT Urography, diuretic renography and routine biochemistry. All patients were followed up with clinical examination, diuretic renography and sonography in post op period (6 months to 2 years) and subsequently after 8 to 10 years of surgery. The mean operative time, post operative drain removal day, hospital stay and long term outcomes were compared among the groups. Patients of all ages were included. Exclusion criteria involved primary redo procedures where pyeloplasty was done outside and PUJO with obstructing calculus. Recurrence was defined by the need for any post-operative intervention, persistent symptoms with increasing hydrenephrosis or a non-draining renogram with clinical suspicion.

**Results:** A total of 189 patients underwent pyeloplasty during the study period, of which 89 patients underwent LP and 100 patients underwent RP. The mean age of the patients was 20.1 ± 15.44 years in LP group and 20.73 ± 15.38 years in RP group. 92 (48.6%) patients were in the paediatric age group, of which 41 patients were in LP group with mean age of 6.96 ± 5.05 years and 51 patients were in RP group with mean age of 9.04 ± 5.47 years (p = 0.064). 11 patients were excluded from the study. 16 patients were lost to follow up. The mean operation time, drain removal day and hospital stay were comparable in LP and RP group. The maximum follow up period was 167 months in LP and 159 months in RP group. Immediate post operative complication rates were 10.11% in LP and 12% in RP group. The number of patients who had recurrence in long term were 4 in LP and 5 in RP group (p = 0.92). 9 patients had surgery in solitary functioning kidney of which 6 underwent LP and 3 underwent RP.

**Conclusions:** Both the robotic as well as laparoscopy approach can be successfully utilized for the benefit of patients with PUJO. Long term follow-up results are convincing for comparable outcomes of both the modalities.

**Funding:** None.

**MP33-13 Initial Outcomes of Robot-assisted Modified Dismembered Pyeloplasty in the Lithotomy Trendelenburg Position for Adult patients with Horseshoe Kidney**

Zhenyu Li1, Kunlin Yang1, Zhihua Li1, Xinfei Li1, Shubo Fan1, Chang Meng1, Silu Chen1, Xuesong Li1

1Department of Urology, Peking University First Hospital, Institute of Urology, Peking University, National Urological Cancer Center
Presented By: Zhenyu Li

Introduction: Horseshoe kidney (HSK) presents technical obstacles to pyeloplasty for ureteropelvic junction obstruction (UPJO) despite robotic assistance. We aim to report the initial outcomes the novel technique of robot-assisted modified dismembered pyeloplasty (RAMDP) for adult HSK patients with UPJO.

Methods: In a steep Trendelenburg and lithotomy position using the modified trocar placement, 14 UPJO patients with HSK underwent RAMDP (Figure 2) using the KangDuo-Surgical Robot-01 system (n = 8) and the da Vinci Si (n = 6) surgical system between March 2021 and September 2023. Patient demographic characteristics, perioperative parameters, and follow-up outcomes were collected prospectively. Success criteria were relief on symptoms, improved hydronephrosis and reserved renal function.

Results: Patient demographic characteristics and perioperative data were shown in the Table. All surgeries were successfully completed without conversion to open surgery. No major intraoperative or postoperative complications occurred. After a median follow-up time of 21.5 (range: 6-36) months, the overall surgical success rate was 100%.

Conclusions: Robot-assisted modified dismembered pyeloplasty in the lithotomy Trendelenburg position was safe and effective for adult HSK patients. This procedure achieves managing UPJO on both sides without redocking the system and provides a wider operative field. It also presents with better ergonomics, better cosmetic outcomes, and less possibility of postoperative bowel adhesion. Further prospective studies of larger sample sizes and randomized controlled trials are still warranted.

Funding: None.

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Table Patient demographic characteristics and perioperative data

<table>
<thead>
<tr>
<th>Variable</th>
<th>n = 14</th>
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</thead>
<tbody>
<tr>
<td>Gender, n (%)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>5 (35.7)</td>
</tr>
<tr>
<td>Female</td>
<td>9 (64.3)</td>
</tr>
<tr>
<td>Age, years, mean ± standard deviation</td>
<td>32.4 ± 9.1</td>
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<tr>
<td>Body mass index, kg/m², mean ± standard deviation</td>
<td>20.5 ± 3.0</td>
</tr>
<tr>
<td>Latitude, n (%)</td>
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<tr>
<td>Left</td>
<td>7 (50.0)</td>
</tr>
<tr>
<td>Right</td>
<td>3 (21.4)</td>
</tr>
<tr>
<td>Bilateral</td>
<td>4 (28.6)</td>
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<tr>
<td>Flank pain, n (%)</td>
<td>9 (64.3)</td>
</tr>
<tr>
<td>Concomitant urinary tract infection, n (%)</td>
<td>3 (21.4)</td>
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<tr>
<td>Concomitant calculi, n (%)</td>
<td>4 (28.6)</td>
</tr>
<tr>
<td>Preoperative serum creatinine, μmol/L, mean ± standard deviation</td>
<td>77.7 ± 16.7</td>
</tr>
<tr>
<td>Combined right pyelolithotomy, n (%)</td>
<td>2 (14.3)</td>
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<tr>
<td>Operative time, min, median (range)</td>
<td>201.5 (113-240)</td>
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<tr>
<td>Estimated blood loss, ml, median (range)</td>
<td>20 (5-100)</td>
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<tr>
<td>Postoperative hospital stay, days, median (range)</td>
<td>5 (3-6)</td>
</tr>
<tr>
<td>Preoperative serum creatinine, μmol/L, mean ± standard deviation</td>
<td>70.1 ± 17.2</td>
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</tbody>
</table>

Presented By: Anas S. Tresh, MD

Introduction: Using a large population-based dataset, we primarily sought to compare postoperative complications, healthcare expenditures, and re-intervention rates between patients diagnosed with ureteropelvic junction obstruction (UPJO) undergoing stented vs. non-stented pyeloplasty. The secondary objective was to investigate factors that influence the timing of DJ stent removal.

Methods: Patients ≥ 18 years old with UPJO treated with primary open or minimally-invasive pyeloplasty were identified using the MerativeTM Marketscan Research Databases between 2007-2021. Multivariable modeling was implemented to investigate the: (I) association between Double-J (DJ) stent placement and post-pyeloplasty complications, hospital costs, and re-intervention rates; (II) role of the various perioperative predictors on time to DJ stent removal. Subgroup analyses stratified by ureteral stenting duration were additionally performed.

Results: Out of 4872 patients who underwent primary pyeloplasty, 4154 (85.3%) had DJ placement during the surgery. Postoperative complications were rare (n = 218, 4.47%) and not associated with ureteral stenting (odds ratio [OR]: 0.78, 95% confidence interval [CI]: 0.55–1.12). The median cost for in-hospital charges was $21,775, with DJ stent placement independently increasing the median aggregate amount (OR: 1.29, 95%CI: 1.09–1.53). Overall, re-interventions were performed in 21.18% of patients, with DJ stenting found to be protective (OR: 0.79, 95%CI: 0.66–0.96). Higher Charlson Comorbidity Index, longer hospital stay, and the open surgical approach were independent predictors for prolonged DJ stenting time to removal.

Conclusions: Our study suggests that patients undergoing stent-less pyeloplasty exhibit similar postoperative morbidity to those undergoing stented procedures. Concurrently, the

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Anas S. Tresh3, Francesco Del Giudice1, Deok Hyun Han2, Shufeng Li2, Satvir Basran3, Federico Belladelli4, Ettore De Berardinis1, Vincenzo Asero1, Carlo M Scornajenghi1, Dalila Carino1, Benjamin Challacombe5, Abhay Rane5, Rajesh Nair5, Benjamin I. Chung5

1Sapienza Rome University, 2Sungkyunkwan University School of Medicine, 3Stanford University School of Medicine, 4University Vita-Salute San Raffaele, 5Guys and St Thomas’ NHS Foundation Trust

Presented By: Anas S. Tresh, MD

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Conclusions: Our study suggests that patients undergoing stent-less pyeloplasty exhibit similar postoperative morbidity to those undergoing stented procedures. Concurrently, the
non-stented approach is associated with decreased healthcare expenditures, despite the increased rates of secondary procedures.

**Funding:** None.

**MP33-15** Robot-assisted laparoscopic reconstructive strategies for ureter stricture following holmium laser lithotripsy: experience from a tertiary referral centre

Chao Cai1, Yongda Liu1

1The First Affiliated Hospital of Guangzhou Medical University

**Presented By:** Chao Cai, MD, PhD

**Introduction:** To summarize our experience in the robot-assisted laparoscopic reconstructive strategies for ureter stricture following holmium laser lithotripsy.

**Methods:** This study retrospectively reviewed the patients receiving robot-assisted laparoscopic ureter reconstruction due to holmium laser lithotripsy between May 2020 and May 2023. Patient demographics, laboratory data, imaging studies, perioperative variables, complications, and follow-up data were recorded. Surgical success was defined as relief of symptoms, improved/stabilized hydronephrosis, and stable renal function.

**Results:** There were totally 128 cases. The upper, middle, and lower thirds of the ureter were affected in 43, 48, and 33 cases, respectively. Multiple ureteral strictures were found in 4 patients. The median length of the stricture was 3.3 cm (range 1-8 cm). In the upper ureteral strictures, ureteroureterostomy (58.1%, 25/43) was the most commonly used for the stricture less than 2.5 cm, followed by lingual mucosal ureteroneocystostomy (23.3%, 10/43) and appendiceal onlay ureteroplasty (18.6%, 8/43) for stricture longer than 2.5 cm but shorter than 6 cm. For lower ureteral strictures, 69.7% (23/33) cases received ureteroneocystostomy combined with psoas hitch, followed by ureter bladder re plantation (21.2%, 7/33) and Boari flap (9.1%, 3/33). Reconstructive strategies of the middle ureteral strictures included Boari flap combined with psoas hitch (9.1%, 3/33). The median follow-up was 25.6±18.9 months. The overall success rate was 95.8%.

**Conclusions:** Robot-assisted laparoscopic ureter reconstruction with various strategies was an effective approach for different characteristics of ureter stricture following holmium laser lithotripsy.

**Funding:** No.

**MP33-16** Robot-assisted Boari flap and psoas hitch ureteric for long-segment ureteric strictures: our experience

Yang Liu1

1Department of Urology and Guangdong Key Laboratory of Urology, The First Affiliated Hospital of Guangzhou Medical University, Guangzhou, China

**Presented By:** Yang Liu, PhD

**Introduction:** This study was to evaluate the feasibility of robot-assisted ureteric reimplantation with Boari flap and psoas hitch for long-segment ureteric strictures of the middle and lower ureters. By observing its curative effect and prognosis, we can provide a safer and more reliable treatment option for patients with middle and lower ureteral injuries.

**Methods:** A total of 65 patients with distal ureteric disease were treated between April 2020 and July 2023. Of these, 76% and 24% underwent robotic-assisted Boari flap and psoas hitch, respectively. Intra-, peri- and postoperative outcomes were assessed. The location of ureteral injury was in the middle lower segment. The 90-day postoperative complications were reported according to the standardized methodology proposed by the European Association of Urology Ad Hoc Panel. Functional outcomes (creatinine, estimated glomerular filtration rate [eGFR]) and postoperative symptoms (visual analogue pain scale) were assessed. All procedures were performed by the same surgeon with over 20 years of experience in urological surgery.

**Results:** The mean length of ureteric avulsion or ureteric strictures was 7.32 cm (range, 6-20 cm). The median operating time was 224 min, and the mean hemoglobin drop was 10.3 g/L. There were no conversions to open surgery and no intraoperative transfusions. The mean duration of postoperative hospital stay was 6.2 days. The bladder catheter and stent removal were removed on the post-operative 4 days and 6 weeks, respectively. Overall, 10 patients (27%) had postoperative complications, and of these, eleven (16.9%) and four (6.2%) were Clavien-Dindo Grade I-III and III, respectively. The median postoperative creatinine level and eGFR were 1.1 mg/dL and 73.5 mL/min/1.73 m2, respectively. Ten (15.4%) and two (3.1%) patients had Grade 1 hydronephrosis and vesicoureteral reflux, respectively.

**Conclusions:** In the present study, we present our robotic-assisted Boari flap and psoas hitch techniques. We confirm the feasibility and safety profile of both approaches in patients with long-segment ureteric structures.

**Funding:** This project is funded by the Guangzhou Science and Technology project: 202201020535, Guangzhou Medical University Scientific Research Capacity Improvement Program 2024SRP077, and National Natural Science Foundation of China (NSFC) 82100805.

**MP33-17** Robotic-Assisted Transumbilical Single-Port Bilateral Pyeloplasty: A Single-Center Trial

Yang Liu1

1Department of Urology and Guangdong Key Laboratory of Urology, The First Affiliated Hospital of Guangzhou Medical University, Guangzhou, China

**Presented By:** Yang Liu, PhD

**Introduction:** This study aims to present the outcomes and feasibility of robotic-assisted transumbilical single-port bilateral pyeloplasty in a day-surgery model, highlighting its potential as an innovative approach for managing ureteropelvic junction obstruction (UPJO).

**Methods:** Between January 2022 and January 2024, eight patients (5 males, and 3 females) with ages ranging from 5
to 49 years underwent the robotic procedure at a single center. The surgeries were conducted by a skilled urological surgeon with extensive experience in robotic-assisted procedures. Clinical data were retrospectively analyzed, focusing on procedural success, operative duration, and postoperative outcomes. Regular clinical assessments and imaging studies were performed during follow-up.

Results: All eight robotic-assisted pyeloplasty procedures were completed without intraoperative complications. Among them, 1 male patient combined the right-sided pelvic ectopic kidney and left-sided renal malrotation, and the other male patient had bilateral renal stones. The average operative time ranges from 170 to 260 minutes. The postoperative hospital stays averaged 4.7 days (ranging from 1-7 days). None of the patients exhibited exacerbation of renal hydronephrosis following the removal of bilateral internal stents during the median follow-up duration of 17 months (range: 4-40). The overall success rate was 100%, demonstrating the effectiveness of the day-surgery model in this group of patients.

Conclusions: The findings from this single-center trial suggest that robotic-assisted transumbilical single-port bilateral pyeloplasty is a safe and feasible approach for managing UPJO in a day-surgery model, even for patients combined with renal stones. Further studies with larger cohorts and extended follow-up periods are warranted to validate and build upon these promising results.

Funding: None.

MP33-18 Comparison of the surgical outcomes of laparoscopic intravesical (Mini-o’conor) and laparoscopic extravesical (Miklos-Moore) techniques of Vesicovaginal fistula (VVF) repair

Manoj Kumar Das1, Swarnendu Mandal1, Prasant Nayak1, Kirti Singh1, Suman Sahoo1

1All India institute of Medical Sciences, Bhubaneswar

Presented By: Manoj Kumar Das, Associate professor

Introduction: To compare the surgical outcomes of laparoscopic intravesical (Mini-o’conor) and laparoscopic extravesical (Miklos-Moore) techniques of Vesicovaginal fistula (VVF) repair.

Methods: A retrospective analysis of prospective data on patients who underwent laparoscopic supratrigonal VVF repair between January 2017 and December 2022. Patients with prior history of irradiation, genitourinary tuberculosis, and those requiring ancillary procedures were excluded. The surgical steps of intravesical and extravesical repair were standardized. A single surgeon performed all the surgeries. The operative time, blood loss, lower urinary tract symptoms after urinary catheter removal, and surgical success were compared.

Results: Sixteen patients were included, 10 in the Mini-O’Conor group and 6 in the Miklos-Moore group. The Median follow-up durations were 12 and 10.5 months respectively. The Operative times were 129.6±27.02 min and 96.7±32.58 min respectively (p = 0.86; 95%CI -65.20 to -0.66). The operative blood losses were 108±46.08 ml and 92.5±57.77 ml respectively (p = 0.31;95% CI -0.71 to 40.51). 50% of the patient in the Mini-O’Conor group had LUTS after catheter removal, while none of the patients in the Miklos-Moore group had any such complaints. The mini-O’conortechnique had a success rate of 90%, while the Miklos-Moore technique had a success rate of 100%.

Conclusions: Both the laparoscopic VVF repair techniques have excellent success rates and have similar operative times and blood losses. Post-operative LUTS are more with the intravesical technique.

Funding: None.

MP33-19 Robotic Approach for Distal Ureteral Reconstruction in Post-Radiation ureteral stricture

Mohamad Salkini1, Amr Elbakri1

1West Virginia University

Presented By: Mohamad Salkini, MD

Introduction: The da Vinci® robotic surgical system revolutionized reconstructive urology as it enables us to perform complex procedures minimally invasive, and ureteral reimplantation is no exception. Here, we are reporting the outcome of robotic ureteral reimplantation of radiation induced ureteral strictures.

Methods: We retrospectively identified all patients who underwent robotic reconstruction of the distal ureter in the last 10 years. Data collection included demographic data, preoperative baseline clinical data, operative data (operative time, EBL, conversion to open, surgical technique) and postoperative outcomes (early postoperative complications, hospital stay, 30-days readmission, postoperative and delta eGFR, and reintervention rate). Analysis was done using IBM SPSS v24. Independent sampltest and Mann-Whitney U test were used for continuous variables and Chi Square and Fisher’s Exact tests were used for categorical variables.

Results: A total 45 ureteral units in 36 patients were subjected to distal ureteral reconstruction. Patients were categorized into 2 groups. Group 1 has 21 radiation naive patients, and group 2 included 15 patients with history of pelvic radiation. The two groups were similar regarding baseline demographic data. Operative time, EBL, conversion to open, and length of stay were similar in both groups. There was no difference regarding early complications, 30-days readmissions, and the duration of foley catheter or ureteral stent. Majority of patients in both groups reported symptoms improvement (100% in group 1 and 93.3% in group 2. Seven ureters (16%) out of the 45 robotically reimplanted ureters developed stricture after robotic reconstruction. The structure developed in 5 patients from group 1 and 2 patients from group 2.

Conclusions: Robotic surgery is a feasible approach for post-radiation distal ureteral reconstruction with a high success rate and relatively similar outcome to radiation naive patients. More studies with a larger number of patients are needed to fully evaluate the role of robotic surgery in post-radiation settings as an alternative for classic open surgery.

Funding: N/A.
MP33-20 Advancing Pelvic Reconstructive Surgery: Vaginal Access Retroperitoneal Sacrocolpopexy with Hysterectomy Using Single-Port (SP) Robotic Da Vinci System

Ly Hoang Roberts1, Ly Hoang-Roberts1, Nicolas Soputro1, Roxana Ramos1, Jaya Sai S Chavali1, Tyler Trump1, Jihad Kaouk1

1Cleveland Clinic, Ohio

Presented By: Ly Hoang Roberts, MD

Introduction: Sacrocolpopexy is a standard surgical procedure for apical prolapse with various approaches including open or laparoscopic robotic-assisted, transabdominal or transvaginal. However, these techniques require intraperitoneal access risking injury to organs, create noticeable abdominal scars, or increase postoperative constipation and pain. We introduce a novel extraperitoneal transvaginal dissection technique for sacrocolpopexy using a purpose-built Da Vinci Single-Port (SP) robotic system (Intuitive Surgical Inc, Sunnyvale, CA), aiming to enhance patient outcomes and utilize natural orifice transluminal endoscopic surgery.

Methods: Single female cadaver was placed in dorsal lithotomy position with Trendelenburg. Vaginal incision was made at the posterior fornix for retroperitoneal access, followed by transvaginal placement of a purpose-built SP Access Kit. The SP robot was directed caudo-cranially utilizing a floating dock technique, and retroperitoneal dissection was achieved from the rectovaginal pouch to the sacral promontory. Total vaginal hysterectomy, bilateral salpingo-oophorectomy (TVH, BSO) was performed. Mesh fixation to the anterior longitudinal ligament and vaginal mucosa using a pulley system was done for prolapse reduction.

Results: Initial findings indicate the feasibility and safety of completing an extraperitoneal transvaginal dissection using the SP system. There was no evidence of gross peritoneal violation or injury to the rectum, blood vessels, or ureter at the end of the procedure. TVH, BSO was feasible. Mesh placement via novel pulley system demonstrated robust apical support confirmed on vaginal examination.

Conclusions: Extraperitoneal dissection for robotic sacrocolpopexy using a single-port robotic Da Vinci system is an advancement in pelvic reconstructive surgery. Benefits include enhanced surgical precision, complete preservation of the peritoneum and intraperitoneal organs, improved visualization of the pre-sacral area, and mitigation of the risk for intraperitoneal organ injury especially in hostile abdomens. The SP robot’s narrow profile, flexible endoscope, and double-jointed instruments allow transvaginal retroperitoneal access to improve surgical outcomes. Limitations include the need for a learning curve working in a confined space and restricted angles of access. Further work on mesh placement is ongoing. Continued refinement and rigorous evaluation are imperative to optimize surgical outcomes.

Funding: None.

MP33-21 Robotic-Assisted Pyeloplasty in day-surgery model: single center experience

Yang Liu1

1Department of Urology and Guangdong Key Laboratory of Urology, The First Affiliated Hospital of Guangzhou Medical University, Guangzhou, China

Presented By: Yang Liu, PhD

Introduction: This study aims to present our initial experience with robotic-assisted pyeloplasty in a day-surgery model, highlighting its feasibility and safety as an innovative approach for the management of ureteropelvic junction obstruction.

Methods: From January 2021 to January 2024, eight patients (7 females, 1 male) aged 7 to 47 underwent robotic single-port bilateral Pyeloplasty in a day-surgery setting. All procedures were conducted by a single surgeon with extensive experience in robotic-assisted urological surgeries. Surgical success, operative time, and postoperative outcomes were assessed. Data were retrospectively analyzed, and patient follow-up included regular clinical assessments and imaging studies.

Results: All eight robotic-assisted transumbilical single-port bilateral pyeloplasty procedures were completed without intraoperative complications. The patients, comprising five males and three females, were discharged smoothly on the second day post-surgery, and none exceeded a 24-hour hospital stay. The operative durations ranged from 74 to 260 minutes. No significant complications occurred in the perioperative period. Throughout a median follow-up duration of 17 months (range: 4-40), no hydronephrosis was observed in any of the patients according to postoperative imaging.

Conclusions: Our initial experience suggests that robotic-assisted Pyeloplasty in a day-surgery model is a safe and feasible approach for treating ureteropelvic junction obstruction. The success of the procedures, minimal postoperative complications, and absence of exacerbation of hydronephrosis during follow-up underscore the potential advantages of this innovative surgical modality. Further studies with larger patient cohorts and extended follow-up periods are warranted to validate these promising outcomes.

Funding: This project is funded by the Guangzhou Science and Technology project: 202201020535, Guangzhou Medical University Scientific Research Capacity Improvement Program
MP33-22 Robot-assisted ureteral reimplantation with a Boari flap for emergency long-segment ureteric avulsion: our experience

Yang Liu¹

¹Department of Urology and Guangdong Key Laboratory of Urology, The First Affiliated Hospital of Guangzhou Medical University, Guangzhou, China

Presented By: Yang Liu, PhD

Introduction: This study was designed to describe our initial experience with robotic-assisted ureterocystostomy with a Boari flap for the management of ureteral avulsion (UA) during ureteroscopic lithotripsy.

Methods: Between March 2020 and March 2023, nine patients received robotic-assisted ureterocystostomy with a Boari flap for long-segment ureteral avulsion during ureteroscopic lithotripsy. Anterograde urography and computed tomography urography (CTU) were applied to evaluate the lesion. Follow-up was performed with a CT scan, ultrasound, and clinical assessment of symptoms. We retrospectively analyzed the clinical data of nine patients treated with robotic-assisted Boari flap reconstruction for the treatment of ureteral avulsion. All procedures were performed by the same surgeon with over 20 years of experience in urological surgery.

Results: The mean length of ureteric avulsion was 14.7 cm (range, 6-20cm). Robotic-assisted ureterocystostomy with a Boari flap was performed successfully between 225 and 440 min. The mean hemoglobin drop was 13g/L. The mean duration of postoperative hospital stay was 13.2 days. No significant complications related to the procedure in the perioperative period occurred, and no case required an open conversion in laparoscopic and robotic-assisted surgeries. According to computed tomography urography or urinary ultrasound in all nine patients, there was no obvious hydronephrosis during a median follow-up duration of 17 months (range 4-40), and the success rate was 100%.

Conclusions: Our initial results and experience showed that Robotic-assisted ureterocystostomy with a Boari flap for managing long-segment ureteral avulsion during ureteroscopic lithotripsy is safe and feasible.

Funding: This project is funded by the Guangzhou Science and Technology project: 202201020535, Guangzhou Medical University Scientific Research Capacity Improvement Program 2024SRP077, and National Natural Science Foundation of China (NSFC) 82100805.
MP34-01 Effectiveness of Methenamine Hippurate in Preventing Urinary Tract Infections: an Updated Systematic Review, Meta-Analysis and Trial Sequential Analysis of Randomized Controlled Trials

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1German Hospital Oswaldo Cruz, 2Pontifical Catholic University of São Paulo, 3University of São Paulo Medical School

Presented By: José Arnaldo S. da Cruz, MD, PhD

Introduction: Urinary Tract Infections (UTIs) are a significant health problem worldwide, especially among women. Methenamine hippurate has been proposed as a preventive measure against recurrent UTIs. This updated systematic review and meta-analysis aimed to evaluate the effectiveness of methenamine hippurate in preventing UTIs, incorporating the latest research findings and employing trial sequential analysis to assess the robustness of the evidence.

Methods: A systematic review was conducted across MEDLINE, Embase, Scopus, Cochrane, and Google Scholar up to March 2024 for randomized controlled trials comparing methenamine hippurate with placebo or antibiotic in adult women with a history of recurrent or confirmed UTIs. Key outcomes included symptomatic UTIs as primary outcome and positive urine culture, asymptomatic bacteriuria and adverse effects as secondary outcomes. The risk of bias was evaluated using the Cochrane Risk of Bias 2, and statistical analysis was conducted using Review Manager 5.4.

Results: We retrieved 5 articles, encompassing 216 patients in the methenamine group and 205 patients in the control group (Antibiotic). Our analysis revealed no significant difference in the rate of symptomatic UTI episodes between the two groups (RR 1.15; 95%CI 0.95, 1.38; p = 0.16; I²=0%). Similarly, there were no notable distinctions in the rate of positive urine cultures (RR 1.10; 95%CI 0.69, 1.75; p = 0.69; I²=30%), and the rate of adverse effects (RR 1.02; 95%CI 0.64, 1.60; p = 0.95; I²=15%). However, we observed a decreased frequency of asymptomatic bacteriuria in the control group (RR 1.91; 95%CI 1.29, 2.81; p = 0.001; I²=0%).

Conclusions: Overall, our meta-analysis provides evidence supporting methenamine hippurate as an effective, non-inferior and safe prophylactic option for preventing recurrent UTIs in adult women, as demonstrated by the current evidence base. This finding supports the consideration of methenamine hippurate as a viable alternative to antibiotics for UTI prevention, potentially reducing antibiotic resistance. Yet, further studies regarding this topic are warranted to augment statistical power and finally elucidate this question.

Funding: None.

MP34-02 WITHDRAWN
MP34-03 Laser Welding of Vesicovaginal Fistula—Feasibility and Outcome Analysis

Nitish Aggarwal1, rishi nayar2
1AIIMS New Delhi, 2AIIMS New Delhi

Presented By: Nitish Aggarwal

Introduction: Vesicovaginal fistula (VVF) is a fistulous tract between the bladder and the vagina, leading to continuous involuntary leakage of urine into the vagina. The treatment of VVF is a surgical challenge, options starting from minimal to maximally invasive have evolved over the past two centuries and are still evolving. The small VVFs, which occur following failure of conservative management and secondary to failure of primary repair, are a formidable challenge to the treating surgeon. We hereby present our long-term experience of treating this subset of patients with our minimally invasive approach of laser welding and our results.

Methods: We did a retrospective analysis of all patients who underwent laser welding for the management of vesicovaginal fistula between January 1, 2001 and December 2023, in department of urology, AIIMS New Delhi.

Results: Seventeen patients underwent laser welding of vesicovaginal fistula. The mean age was 45 years. The VVF were primarily (failing to heal following conservative management) in most of the cases. The mean fistula size was 3 mm (range, 2–5 mm). Neodymium yttrium aluminium garnet (YAG) laser was used for the initial case, and in the remaining all cases, holmium YAG laser was used for circumferential welding of the fistula. Following the procedure, a catheter was kept for 3 weeks along with anticholinergics. The mean hospitalisation period was 2 days. Most of the patients remained dry at follow up of 1 year. Our series showed a success rate of 65%. Most patients remain dry with improved quality of life at 1 year follow up. Similarly, we have managed one case of ureterovaginal and urethrovaginal fistula with similar technique.

Conclusions: Laser welding of VVF is a simple, safe, successful and efficacious minimally invasive procedure in a select group of patients. (Small fistula with oblique tract with no underlying pathologies like malignancy and radiation cystitis).

Funding: Nil.

MP34-04 Early Catheter Removal following Ventral Inlay Buccal Mucosal Graft Urethroplasty for Female Urethral Stricture Disease: A Prospective Observational first-of-a-kind study

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Presented By: Swarnendu Mandal, Dr

Introduction: Prolonged catheterisation leads to an increase in urinary tract infections (UTI) and causes significant bother to the patients. The ideal time of 3-4 weeks for indwelling catheter removal following augmented urethroplasties is being challenged in male urethroplasty. In the setting of female urethral stricture disease (F-USD), it is even less studied, with the common practice of keeping the catheter in situ for 3 to 4 weeks following Buccal Mucosa Graft Urethroplasties (BMGU). We present our experience of catheter removal on day 7 following Ventral Inlay BMGU (VI-BMGU). The primary objective was the success rate at 3 months. The changes in American Urological Association (AUA) symptom score, peak flow rate (Qmax), and post-void residue (PVR) post-operatively at 1 and 3 months were secondary objectives.

Methods: Females undergoing VI-BMGU at All India Institute of Medical Sciences, Bhubaneswar, India, between April 2023 and July 2023 were included (IEC approved). Following the surgery, a 16Fr silicone indwelling catheter was kept in situ for 7 days before removal. All the outcome parameters were assessed preoperatively and at 1 and 3 months follow-up visits. Recurrence in symptoms, increase in AUA symptom score, maximum flow rate (Qmax) >=12 ml/sec, failure to calibrate the urethra with an 18 Fr catheter, and demonstration of narrowing of the urethra on urethroscopy with a standard 19 Fr sheath were used to define recurrence of the stricture. The Friedman test was used for statistical significance using SPSS software.

Results: 15 women with a mean age of 44.08±6.75 years underwent VI-BMGU in the study period. None of the patients had a recurrence at 6 months follow-up. The median pre-operative AUA score was 25.5 (IQR 21.25-32.75), and the post-operative AUA scores at 3 and 6 months were 10 (8-13.5) and 9.5 (6.25-15.25) respectively (p < 0.05). The median pre-operative Qmax (ml/sec) was 9 (IQR 6.25-10.75). They increased to 21 (18-27.75) and 22 (18.25-26.75) at 3 and 6 months, respectively (p < 0.05). The median pre-operative PVR (ml) was 238.25 (IQR 98.25-285.5), and PVR at 3 and 6 months were 34.5 (21.25-53) and 25 (16.25-65) respectively (p < 0.05). 5 patients had completed 12 month follow-up, and none of them had recurrence.

Conclusions: Early indwelling catheter removal following VI-BMGU for FUSD is equally effective. It does not lead to poorer surgical outcomes and decreases the duration of catheter associated bother.

Funding: Nil.

MP34-05 Stenting or Replantation for Ureterovaginal Fistula? Ten Years of a Single-Center Experience

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Presented By: Ming Lei, MD

Introduction: We reviewed the management and result of ureterovaginal fistulas (UVF) over the past ten years and summarized a treatment experience.

Methods: UVF cases were identified and reviewed at our center between 2010 and 2020. We analyzed and compared the essential characteristics of the cases, the way of treatment, and the postoperative complications.

Results: Over ten years, we identified 72 patients diagnosed with UVF at The First Affiliated Hospital of Guangzhou Medical University. We excluded 20 cases and included 52 cases in the final review. Among the 52 patients, 30 cases (57.7%) successfully underwent ureteral stenting, while 22 (42.3%) failed and then performed ureteral reimplantation. Data analysis showed no differences between the ureteral stenting and ureteral reimplantation groups, such as age, height, body mass index, general conditions (hyperglycemia, hypertension, concurrent with other cancers, and history of radiotherapy in the abdomen), antecedent surgery (type and mode of operation, intraoperative lymph node dissection), the distance between fistula and ureteral orifice, and
the time intervals of urine leakage occurred after surgery. However, there was significant statistical in urinary tract infection, location of the ureteral fistula, delay diagnosis, length of stay, stent indwelling time, and complication (hydronephrosis and recurrent urinary tract infection).

**Conclusions:** The present study shows that ureteral stenting as the first-line treatment of UVF was practical and feasible. In select patients with apparent urinary tract infections, long delay diagnosis (especially over 150 days), and ureteral fistula on the left side, ureteral replantation might be recommended directly.

**Funding:** None.

### MP34-06 Vitamin and Mineral Intake in Relation to Female Urinary Incontinence: Poison or Panacea?

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Presented By: Qiyu He He, PHD

**Introduction:** Urinary incontinence, characterized by the involuntary discharge of urine, impacts approximately 30-45% of women, markedly affecting their physical and psychological health. A multitude of factors and mechanisms play a role in the onset and advancement of urinary incontinence. The objective of this research is to explore the association between the intake of vitamins and minerals and female urinary incontinence, offering new perspectives for clinical strategies in the management of urinary incontinence.

**Methods:** This study utilizes data from the 2017-2018 National Health and Nutrition Examination Survey (NHANES) in the United States, incorporating 4,155 adult female participants with complete dietary surveys and urinary incontinence data. Employing multivariable regression analysis, the research investigates the relationship between the intake of vitamins and minerals and three different types of urinary incontinence: stress incontinence, urge incontinence, and mixed incontinence.

**Results:** Participants had an average age of 51.2 ± 17.6 years, with those suffering from urinary incontinence being older on average (57.3 ± 16.4 years vs. 47.74 ± 17.53 years). The overall prevalence of urinary incontinence was 40.24% (1672 individuals), with urge incontinence having a prevalence of 15.43% (641 individuals), slightly higher than that of stress incontinence (13.07%) and mixed incontinence (11.98%). Intake of vitamin B2 was positively associated with mixed incontinence (Odds Ratio [OR] = 1.21, 95% Confidence Interval [CI]: 1.04-1.42) and stress incontinence (OR = 1.16, 95% CI: 1.00-1.34), whereas vitamin B12 intake was associated with a decreased incidence of urge incontinence (OR = 0.96, 95% CI: 0.92-0.99). An increase in copper intake was related to a higher incidence of urge incontinence (OR = 1.83, 95% CI: 1.08–1.09), but a lower incidence of stress incontinence (OR = 0.71, 95% CI: 0.70–0.73) and mixed incontinence (OR = 0.89, 95% CI: 0.88–0.91). No association was observed between the intake of various antioxidants, including alpha-carotene, vitamin A, vitamin E, vitamin C, and retinol, and improvements in urinary incontinence.

**Conclusions:** This study reveals an association between vitamin B12 intake and a reduced incidence of urge urinary incontinence, whereas increased intake of vitamin B2 is linked to a higher risk of mixed and stress urinary incontinence. Furthermore, an increased intake of copper correlates with a heightened incidence of urge incontinence, while simultaneously decreasing the occurrence of stress and mixed incontinence. Therefore, the intake of vitamins and minerals should be approached with caution in patients with urinary incontinence. While the findings of this study provide some guidance for effective interventions in urinary incontinence, future studies with larger cohorts should be considered for more comprehensive insights.

**Funding:** None.

### MP34-07 A Randomised Controlled Trial Comparing Intravesical Instillation of Cocktail vs Intravesical Injection of Onabotulinumtoxin A for Treatment of Interstitial Cystitis/Bladder Pain Syndrome (IC/BPS)

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Presented By: Raisa Shetty, Urology Resident

**Introduction:** Recognition of IC/BPS is increasing. Intravesical Bladder instillation and Onabotulinumtoxin A are well established treatment for it though direct comparison of these treatment have not been performed. Primary objective: To compare changes in O’Leary Sant questionnaire scores from baseline between bladder instillation and onabotulinumtoxin A injection groups (Baseline, 6 weeks, 6 months). Secondary Objectives: To Compare: Changes in Pain - Visual Analog Scale, Changes in Female Sexual Distress Scale-Revised (FSDS-R), Changes in 12-Item Short Form Survey (SF-12), Changes in Bladder capacity via 1 day bladder diary, Incidence of adverse outcomes, Re-treatment incidence, Patient perception of treatment convenience and satisfaction (Scale 1-5).

**Methods:** Prospective randomised controlled trial with open label parallel assignment over a 6-month period. 60 patients total, 30 in each arm of intravesical cocktail instillation and Botox injection (Group 1 and Group 2). Study population were patients with IC/BPS and refractory/poor response to medical therapy. Patients with poor response to oral medication and with good bladder capacity and no Hunner lesions on Cystoscopy were included.

**Results:** With mean age of 51.8 and 50.4 years in Groups 1 and 2. Mean Visual Analog Scale (Defence and Veterans pain rating scale with 0-10 points) at 6 weeks and 6 months was lower for the Group 1 than Group 2 (6 weeks mean 2.73 ± 1.26 vs 3.47±1.33, p = 0.032 and 6 months mean 2.14±1.19 vs 2.9±1.37, p = 0.027). Patient convenience (1-5 points) was also different for both groups (Mean 2.76±1.4 vs 3±2.1, p = 0.001). Patient satisfaction was also different for both groups (Mean 2.73±0.27 vs 3±0.4, p = 0.019).

**Conclusions:** Intravesical Cocktail instillation has less pain relief, has lower patient convenience and patient satisfaction than intravesical Botox injection.

**Funding:** None.

### MP34-08 Self-Administered Nitrous Oxide (SANO) During Urodynamic Study Reduces Patient Pain Without Compromising Study Quality: A Randomized Controlled Trial

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Presented By: Sina Monfared, MD
Introduction: A urodynamic study (UDS) is a common ambulatory procedure that can result in significant discomfort in some patients. Nitrous oxide (NO) has been used for decades in pediatric and adult populations to relieve periprocedural pain and anxiety. At concentrations <50%, NO produces a state in which a patient responds normally to verbal commands and maintains airway reflexes and spontaneous ventilation. Below 50%, there is no requirement for anesthesia personnel, NPO status, or escort home. To date, no clinical study has investigated the role of NO for use in UDS. This pilot study was conducted to determine the effect of self-adjusted nitrous oxide (SANO) during UDS.

Methods: A single-institution, double-blind, randomized crossover trial was conducted with adults undergoing UDS. Initially, nitrous oxide levels were titrated to patients’ desired effect. Each patient then underwent two consecutive UDS runs, randomized to receive Oxygen during the first run, followed by SANO during the second run, or vice versa. The crossover study design is shown in Figure 1. Standard UDS parameters were assessed by two blinded urologists. Pain and anxiety scores were recorded at baseline and during each UDS run using a Visual Analog Scale for Pain and Anxiety. A blinded UDS operator assessed patient tolerance of the procedure. Subgroup analysis based on treatment allocation was performed.

Results: Nineteen patients were randomized to receive SANO during one of two UDS runs. There were no significant differences in UDS outcomes between the SANO and Oxygen runs nor any significant Clavien-Dindo complications. Adjusting for order of treatment randomization did not change these findings. Patients reported significantly less pain during the SANO run when compared to the oxygen run (p = 0.047). Lower anxiety was reported, however, this difference was not significant (p = 0.26). The UDS operator rated patient responsiveness and tolerance of the procedure to be significantly better than expected during runs with SANO (p = 0.001 & p = <0.001, respectively). Sensitivity analysis also demonstrated no significant difference in outcomes. Post-procedure survey of the patients revealed most (15/19, 78.9%) would prefer to receive SANO again during future UDS.

Conclusions: Self-adjusted nitrous oxide is a safe and effective means of significantly reducing patient reported pain without impacting UDS quality in adults undergoing routine UDS.

Funding: N/A.

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MP34-09 Postoperative Activity Restrictions After Reconstructive Pelvic Surgery - A Systematic Review

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Presented By: Alejandra Cacheiro, MD

Introduction: The clinical benefit of postoperative activity restrictions following pelvic reconstructive surgery is widely accepted yet not well-established in evidence-based medicine. In this meta-analysis, we aim to evaluate the existing literature that compares anatomical and functional outcomes for liberal postoperative activity versus standard of care after reconstructive pelvic surgery.

Methods: PubMed, CENTRAL, Scopus, Web of Science, and CINAHL databases were searched for trials published up to December 2023 with no language restrictions. Search terms used include “urogynecologic surgery”, “sacrocolpopexy”, “midurethral sling”, “postoperative care” and “physical activity”, some adjusted to each database, as required. We analyzed randomized controlled trials and observational studies, with a focus on objective and subjective surgical outcomes such as anatomic success, patient satisfaction, and quality of life indicators post-surgery. The studies included recent works from multiple authors, with a critical risk of bias assessment informing the validity of the findings per Cochrane recommendations. Statistical analysis was performed using RevMan Web software. Heterogeneity was examined with I2 statistics.

Results: Out of 1476 database results, 6 randomized controlled studies were included. Post-operative follow-up ranged from 6 weeks to 1 year. Data from four studies suggest no significant difference between liberal and standard postoperative instructions in objective prolapse surgical outcomes (Mean Difference [MD]-0.07, 95% CI -0.20 to 0.05, p = 0.24). Disease-specific symptom distress, measured by Pelvic Floor Distress Inventory-20, favored the liberal approach (MD -8.41, 95% CI -15.71 to -1.11, p = 0.02). Other domains such as urinary distress (UDI-6) and colorectal-specific quality of life (CRAIQ-7) also showed significant improvements with liberal post-operative activities (MD -3.23, 95% CI -6.65 to 0.18, p = 0.06; MD -3.14, 95% CI -5.81 to -0.48, p = 0.02, respectively).

Conclusions: In this systematic review, liberal postoperative activity instructions may be no-inferior to standard restrictions regarding anatomic outcomes, with potential benefits in disease-specific symptom relief and quality of life. These findings support a potential shift toward more liberal postoperative regimens in pelvic reconstructive surgery, although further research is needed to confirm these preliminary results.

Funding: None.

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MP34-10 Ventral Inlay Versus Dorsal Onlay for Female Urethral Stricture; The First Clinical Trials Registry-India (CTRI) Registered RCT

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Evidence demonstrating the association of serum copper (Cu) and zinc (Zn) levels with OAB. In this study, we aim to investigate the association between serum Cu and Zn levels and OAB.

**Methods:** A cross-sectional analysis of 1457 adults from the National Health and Nutrition Examination Survey (NHANES) 2011-2016 was conducted. The OAB Symptom Score (OABSS) scale was utilized to assess OAB symptoms. Logistic regression analyses were performed to investigate the association between serum Zn and Cu levels and OAB.

**Results:** A total of 1457 individuals were included in our study. The mean (SD) concentrations of serum Zn and Cu were 82.25 ± 15.28 μg/dL and 118.81 ± 30.52 μg/dL, respectively. We found that serum Cu level is related to nocturia frequency, urgency urinary incontinence (UUI) frequency, and the OABSS. Logistic regression demonstrated that higher serum Cu level (OR=3.10, 95% CI: 1.58-6.08, p<0.01) was associated with OAB symptoms in men after adjustment of covariates.

**Conclusions:** The prevalence of OAB in the US population was estimated at 19.4% from the NHANES database. Our study revealed that serum Cu level was associated with OAB in US adult men, while correlations were not found in adult women. No associations between Zn and OAB were found in either sex.

**Funding:** This work was supported by the Ministry of Science and Technology (JH2021050), National postdoctoral researcher program of China (GZC20231800) and Science and Technology Department of Sichuan Province (24NSFSC3172).

**MP34-12 Efficacy and Safety of Le Fort Colpocleisis in the Treatment of Stage III-IV Pelvic Organ Prolapse**

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Presented By: Tuo Deng, MD

**Introduction:** Le Fort colpocleisis is an obliteratorive surgery for the treatment of pelvic organ prolapse (POP). In this study, we aimed to investigate the efficacy and safety of Le Fort colpocleisis in the treatment of patients with stage III-IV POP.

**Methods:** The study was designed as a retrospective analysis of a single-center case series. Patients with stage III-IV POP treated with Le Fort colpocleisis were included. Perioperative indicators, subjective and objective outcomes and complications were assessed. The POP-Quantification (POP-Q) system was used for objective outcome evaluation. Pelvic Floor Distress Questionnaire (PFDI-20) and Pelvic Floor Impact Questionnaire (PFIQ-7) were used for subjective outcome evaluation.

**Results:** A total of 54 patients with complete pre- and postoperative data completed follow-up and were included in our study. The mean ± standard deviation of operative time, intraoperative blood loss, recovery activity time, postoperative hospitalization time and total hospitalization time were 146.85 ± 37.01 minutes, 92.04 ± 68.31 ml, 2.81 ± 0.85 days, 6.5 ± 2.11 days and 13.52 ± 4.78 days, respectively. Within the median follow-up period of 38.5 months, the subjective cure rate of Le Fort colpocleisis reached 98.15% (53/54), and the subjective cure rate reached 92.59% (50/54). No serious complications were reported during the perioperative period and follow-up period.

**Conclusions:** Le Fort colpocleisis is an effective and safe procedure for the treatment of severe POP. Because of its...
lower operative risk, better subjective and objective outcomes, lower rates of prolapse recurrence and perioperative complications, Le Fort colpoposcopy should be considered as the recommended procedure for elderly patients with severe POP (stage III-IV).

**Funding:** None.

### MP34-13 Risk Factors for Pelvic Organ Prolapse: Wide-Angled Mendelian Randomization Analysis

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Presented By: Zheyu Xiong, MD

**Introduction:** We hypothesized that some metabolic factors, lifestyle factors and socioeconomic factors may have causal effect on pelvic organ prolapse (POP).

**Methods:** We selected instruments from corresponding genome-wide association studies (GWAS), which identified independent single nucleotide polymorphisms (SNPs) strongly associated with 12 potential risk factors. Summary statistics for POP were derived from two GWAS datasets, serving for discovery and replication stage. The primary analysis involved the use of the inverse variance weighted (IVW) mendelian randomization (MR) method, with additional sensitivity MR analyses conducted.

**Results:** The univariable mendelian randomization (UVMR) analysis in both the discovery and replication stage provided evidence for significant causal effects between higher waist-to-hip ratio adjusted for body mass index (WHRadjBMI) levels (Discovery stage OR = 1.32, 95% CI: 1.22 - 1.43, P = 1.64E-11; Replication stage OR = 1.31, 95% CI: 1.18 - 1.45, P = 3.60E-07), lower high density lipoprotein cholesterol (HDL-C) levels (Discovery stage OR = 0.88, 95% CI: 0.84 - 0.93, P = 1.57E-6; Replication stage OR = 0.89, 95% CI: 0.83 - 0.95, P = 4.67E-04), and lower educational attainment (Discovery stage OR = 0.77, 95% CI: 0.71 - 0.82, P = 1.99E-13; Replication stage OR = 0.82, 95% CI: 0.73 - 0.92, P = 4.68E-04) and higher POP risk as well as an suggestive positive causal effect between triglycerides and POP. The multivariable mendelian randomization (MVMR) analysis showed that only HDL-C among the three blood lipid fractions could reduce the risk of POP. Mediation analysis indicated that HDL-C may partially mediate the effect of WHRadjBMI on POP risk, and the causal effect between educational attainment and POP may be mediated through WHRadjBMI and HDL-C.

**Conclusions:** Our study’s evidence supported causal relationship between WHRadjBMI, triglycerides, HDL-C, educational attainment, and POP risk. This highlights clinicians may guide general female population to control obesity and blood lipid levels to reduce the risk of POP.

**Funding:** This study was funded by the Foundation of Science & Technology Department of Sichuan Province [2022YFS0304].

### MP34-14 Long Term Outcomes of Ventral Inlay Versus Dorsal Onlay for Female Urethral Strictures: A Decade of Experience

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Presented By: Swarnendu Mandal, Dr

**Introduction:** To compare the outcomes of Ventral inlay buccal mucosal graft urethroplasty (VIBMGU) with dorsal onlay buccal mucosal graft urethroplasty (DOBMGU) for the treatment of Female urethral stricture (FUS). This is the only study in Literature on FUS with >50 patients and > 4.5 years of mean follow-up.

**Methods:** This study included women who underwent either VIBMGU or DOBMGU between May 2016 and March 2023. The screening criteria involved an AUA symptom score >7 or a maximum urinary flow rate (Qmax) of <12 ml/s or thick trabeculated bladder on ultrasonography with post-void residual volume (PVR) > 100 ml with inability/difficulty (snugly fit) to calibrate with 12 Fr catheter. To confirm the diagnosis of FUS, a cystourethroscopy with a 30o 6 Fr pediatric scope (Olympus A3765A) was done to see scarred urethral mucosa and narrowed lumen. The length and location of the stricture on cystoscopy were noted and all data were prospectively maintained in an electronic database. The primary outcome was the success rate. The secondary outcomes were changes in AUA score, PVR, and Qmax. The data obtained from the patient’s last visit was compared with the preoperative values for this study. The patient’s last follow-up visit was considered for the duration of the follow-up, with minimum 1-year follow-up required for inclusion in this analysis. The patients were followed up at postoperative 3, 6, and 12 months, and later, according to the surgeon or patient’s preference. The AUA symptom score, PVR, and Qmax were recorded at each visit and entered prospectively in an electronic database.

**Results:** Seventy-three patients were treated for BMGU for FUS. Forty-six patients underwent VIBMGU, and 27 patients underwent DOBMGU. The median stricture length was 20 mm (15-30) versus 25 mm (10-40). The mean duration of follow-up was 27.5 versus 14 months respectively. The success rates of VIBMGU and DOBMGU were 89.13% (41/46) and 88.89% (24/27) respectively. The recurrence was seen in 5/46 patients who underwent VIBMGU and 3/27 in the DOBMGU group. There was a reduction in AUA scores and PVR and an improvement in Qmax postoperatively in both groups. The difference in the reduction in AUA scores between the VIBMGU and DOBMGU groups was statistically significant (p = 0.007). The difference was not statistically significant in terms of reduction in PVR and improvement in Qmax between the two groups.

**Conclusions:** The ventral inlay technique can provide equal results to the dorsal technique with the added advantage of vaginal sparing. This is the single largest series in literature on female urethral stricture with the largest maximum follow-up period of 95 months.

**Funding:** No.
**MODERATED POSTER SESSION 35: BPH 4**

**MP35-01 Single-Port Robot-Assisted Simple Prostatectomy: A Multi-Institutional Cohort From the SPARC**


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Presented By: Roxana Ramos-Carpinteyro, MD

**Introduction:** The single-port (SP) robot-assisted simple prostatectomy (RASP) is a viable minimally invasive technique for patients with symptomatic benign prostatic hyperplasia and adenomas > 80 cc. Early SP RASP reports have shown a fast recovery and >90% outpatient cases. This study aims to present updated data from the largest multi-institutional SP cohort.

**Methods:** Retrospective analysis of all consecutive SP RASP cases done by 11 experienced surgeons from 6 centers from February 2019 to January 2024. In general, a suprapubic incision was performed, and the da Vinci SP access was established through a transvesical, transperitoneal, or extraperitoneal (retropublic) approach. The prostate was excised, and subsequent intraprostatic mucosal reconstruction was performed. Continuous variables were summarized using measures of central tendency based on their distribution, while percentages were employed to depict frequencies.

**Results:** A total of 240 entries were analyzed. All cases were completed successfully, without extra ports or conversion. Three types of approaches were identified: 164 transvesical (68.3%), 51 transperitoneal (21.3%), and 25 extraperitoneal (10.4%). Median age was 70 years. Eighteen percent of patients had previous prostate interventions. Median preoperative International Prostate Symptom Score (IPSS) and prostate volume were 22 and 137 ml, respectively. The most common indication for surgery was urinary retention (43.3%). Median estimated blood loss during surgery and console time were 100 ml and 142 minutes, respectively. One patient required a blood transfusion. There were 5 intraoperative complications, 4 air emboli (during early experience) and 1 accidental posterior cystotomy. The median percentage of tissue removed was 55.5%. Upon discharge, 87.9% of patients did not require narcotics for pain control. Median length of stay was 16 hours and hospitalization was needed for 15.8% of planned outpatient cases. Readmission rate was 0%. Median urinary catheter duration was 6 days. Figure 1 shows the long-term functional outcomes.

**Conclusions:** SP robotic surgery is a feasible technique for transvesical, transperitoneal and extraperitoneal approaches to RASP. Its main advantages are minimal postoperative pain and fast recovery, and long-term functional outcomes show promising results in a multi-institutional setting.

**Funding:** None.

**Figure 1. One-Year Follow-Up Functional Outcomes after Single-Port Robot-Assisted Simple Prostatectomy**

**MP35-02 Efficacy of Robot-Assisted Prostate Adenoma Enucleation in Prostatic Enlargements: A Comparative Study Above and Below 150 grams**

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Presented By: Yakup Kordan, MD

**Introduction:** According to the European Association of Urology (EAU), open simple prostatectomy, HoLEP (Holmium Laser Enucleation of the Prostate), and bipolar enucleation of prostate are the first-line treatment options for prostatic enlargements exceeding 80 grams. Robot-assisted simple prostatesctomy, while demonstrating similar functional outcomes to open simple prostatectomy, offers advantages such as reduced estimated blood loss, transfusion prevalence, and length of hospital stay. As prostate size increases, technical challenges may be encountered in RAPA (Robot-Assisted Prostate Adenoma Enucleation), as well as in enucleation techniques. Based on this, we aimed to compare our results of RAPA in patients with prostatic enlargement below and above 150 grams in this study.

**Methods:** This is a single-center study conducted by retrospectively analyzing data from patients who underwent RAPA due to prostatic enlargement. Patients for whom pre- and postoperative data could not be accessed were excluded from the study. Patients were categorized into group 1 with prostate volumes above 150 g and group 2 with volumes below 150 g. Prostate volumes were calculated from multiparametric prostate MRI or transabdominal ultrasound measurements.

**Results:** Patients demographic, pre- and postoperative data are showed in Table 1. The mean prostate volume was found to be 191.3 ml ± 32.1 in group 1 and 119.9 ml ± 15.1 in group 2 (p < 0.001). When preoperative and postoperative periods were
compared in terms of functional outcomes, it was observed that the IPSS score decreased from 22.8 ± 6.6 to 7.4 ± 2.1, the Qmax value increased from 9.0 ± 2.2 to 20.5 ± 6.1, and the postvoid residual decreased from 155.1 ± 85.7 to 43.0 ± 21.6, with statistical significance (p < 0.001, p < 0.001, p < 0.001, respectively).

The preoperative PVR value and the change in PVR value after the operation were significantly higher in Group 1, and no significant difference in postoperative PVR was observed between the groups. Changes in IPSS and Qmax were not significantly different between the groups (p = 0.361, 0.912, respectively). There was no statistically significant difference observed between the groups in terms of continence and erectile functions. It was observed that all patients who had erectile dysfunction in the postoperative period also had erectile dysfunction in the preoperative period.

**Conclusions:** RAPA is an effective minimally invasive surgery with a low complication rate for patients with prostatic enlargement exceeding 80 grams. In patients with prostate enlargement over 150 grams, both the operation time and the preoperative PVR value were observed to be higher. No difference was noted in postoperative parameters between the groups. No difference was observed in the groups in terms of complications, continentation, and erectile function.

**Funding:** None.

**Methods:** We reviewed 56 consecutive patients with prostates larger than 80 mL who underwent RASP from March 2020 to January 2024 performed by a single surgeon. Patient perioperative clinical and functional data, including International Prostate Symptom Score (IPSS), Quality of Life score (QOL) and postvoid residual volumes (PVR), were reported in addition to complications by Clavien-Dindo classification and reoperation rates within 30 days.

**Results:** Mean age was 69 ± 7.8 with a BMI of 29.4 ± 5.9. Mean gland size was 158 ± 51 mL with mean prostate tissue removed 87.8 ± 46.6 grams. Median hospital length of stay was one day. Mean pre-operative IPSS was 20.3 ± 7.8 which decreased to 3.8 ± 3.0 post-operatively. Median QOL score improved from 4 to 1 after the procedure. Mean PVR changed from 162 mL to 18 mL. Twenty-five (44.6%) patients were catheter dependent prior to RASP. Of the catheter dependent cohort, eight underwent pre-operative urodynamic study with five (62.5%) demonstrating hypoactive bladder. Median postoperative RASP for this cohort was 34 mL, with only one patient remaining catheter dependent post RASP. There was one Clavien-Dindo grade III complication requiring operative clot evacuation. Additionally, one patient required post-operative blood transfusion. There were no grade IV complications.

**Conclusions:** RASP is associated with significant improvement in patient reported outcomes with low rates of complication. It is also a promising option for patients with urinary retention associated with hypoactive bladders and large BPH who aim to be catheter free.

**Funding:** None.

**MP35-04 Reported IPSS Score in ≤60 cm Prostate Size in Different BPH Surgical Modalities, From the Data Registry at University of Rochester**

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Presented By: Victor Sandoval, MD

**Introduction:** There is paucity of data comparing International Prostate Symptom Score (IPSS for different surgical treatment modalities in benign prostate hyperplasia (BPH) in prostates ≤ 60 cm. We aim to present patient reported IPSS scores for Holmium enucleation of the prostate (HOLEP), transurethral resection of the prostate (TURP), prostatic urethral lift (Urolift) and water vapor thermal therapy (REZUM).

**Methods:** Prostate with volumes ≤60 cm from January 2021 to December 2023, underwent surgery for BPH. Patients reported IPSS before and follow up visits. Mean prostate size, operative time, and IPSS were obtained and were compared among surgical modalities.

**Results:** In our data registry for prostate volume ≤60 cm; 17, 62, 109 and 102 patients underwent HOLEP, REZUM, Urolift and TURP respectively. We present 6 HOLEPs, 34 REZUM 54 Urolift and 40 TURP with reported IPSS score up until 1 year of follow up. Mean prostate size was 53.7, 48.4, 43.42 and 47.39 cc for HOLEP, REZUM, Urolift and TURP respectively (p = 0.001). Mean operative time was 83.86, 13.53, 17.9 and 60.6 minutes for HOLEP, REZUM, Urolift and TURP respectively (p = 0.001). Mean IPSS score is not significantly different during the first year of follow up. We also compared HOLEP vs TURP (Table 1) where mean operative

**Funding:** None.

**MP35-03 Robotic Enucleation of the Prostate: A Single Center Experience**

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Presented By: Fortis Gaba, MD

**Introduction:** Prostate enucleation has been at the forefront to treat symptomatic prostate enlargement. Robotic surgeons have adopted robotic assisted simple prostatectomy (RAPS) as an enucleation method to treat symptomatic benign prostatic hyperplasia (BPH) above 80 mL when other transurethral procedures are either unavailable or not indicated. Here we report our experience and outcomes with RASP at our institution.
Results: 2 patients at the end of 36 months reported worsening LUTS that required TURP. Prominent middle lobe enlargement without lateral obstructive enlargement was noted which may account for the recurrence of LUTS. Histopathology confirmed BPH. They were excluded from further data collection for this study. Patient return at 46 month with raised PSA, PSA Ratio and PHI. Multiparametric Magnetic Resonance scan of Prostate suggested PIRADS 3 Lesions at periurethral transitional zone. Transperineal Target fusion biopsy was performed with subsequent histopathology confirmed benign prostatic hyperplasia with fibrosis and chronic inflammation only, with high risk malignancy. This patient was also excluded from further data collection for the current study, and PSA follow up at 3 months. 27 patients were eligible for final data collection and assessment: IPSS: 2-23 (median 12) at 6 weeks; 2-16 (median 9) at 3 months; 2-11 (median 6); 2-15 (median 7) at 48months. QOL: 2-3 (median 2) at 6 weeks; 2-3 (median 2) at 3 and 6 months; 3-6 (median 4) at 48 months Qmax: 3.6-14.9ml/s (mean 10ml/s) at 6 weeks; 8ml/s-15.6 ml/s (mean 12.6ml/s); 10.8-17.5ml/s (mean 13.2ml/s) at 6 months. PMRV: 0-133ml (mean 78ml) at 6 weeks, 0-120ml (median 70ml) at 3 monthsand 0-95ml (mean 50ml) at 6 months. Urological complications e. g., clot retention and sepsis were not observed. One patient required temporary post-treatment Foley catheterization for 72 hours. Treatment related retrograde ejaculation or erectile dysfunction has not been reported. The procedure was well tolerated under local anaesthesia. Both voiding and storage symptoms improved. All patients were discharged on the same day after treatment.

Conclusions: Our 4-year experience with microwave TUTD for symptomatic BPH in 30 Asian patients compares favourably to the clinical outcomes and efficacy of the Caucasian cohort in the USFDA 5-year follow-up post-approval study. We observed lasting post-treatment improvements after 4 years in IPSS, QOL, Qmax and PMRV in majority of 90% of the current cohort of 30 consecutive Asian patients. The recurrence of LUTS/Sin 2 patients with middle lobe enlargement obstruction who required TURP is unfortunate but understandable. We conclude that TUTD remains safe and efficacious in the Asian population and should be offered as an option that is cost-effective. Long-term prospective data collection in a larger patient population remains in progress.

Funding: None received.

MP35-05 Microwave Transurethral Thermodilatation Therapy for Symptomatic Benign Prostatic Hyperplasia: 4-Year Follow Up Asian Experience of 30 patients

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Presented By: Wai Man Chow, MB, BCh. FRCS(Glasg.) FRCS(Urol.) FCSSHK, FHKAM(Surgery)

Introduction: Microwave transurethral ThermoDilatation (TUTD) offers a unique 45-minute, ambulatory outpatient procedure that is well tolerated under local anaesthesia for symptomatic benign prostatic hyperplasia (BPH) by using simultaneous focused microwave heating and pressurized balloon dilatation therapy. About 95% of patient do not require a post-treatment Foley catheter and experience significant relief of their lower urinary tract symptoms (LUTS). We present our 4-year follow-up clinical data on 30 Asian patients clinical data pertaining to the clinical safety and efficacy of microwave TUTD in Benign Prostatic Hyperplasia.

Methods: From August 2018 to December 2019, 30 patients (Age 54-79, mean 62) with LUTS were treated with the microwave TUTD device, PROLIEVE (Medifocus inc.). Their initial IPSS (17-35, median 24), QOL (4-6, median 5), PSA (0.57-7.7, mean 3.5), prostatic volumes (35-84cc, mean 54cc), Qmax (1.7-10.5 ml/s, mean 7.5ml/s) and PMRV (50-330ml, mean 190ml) were recorded pre-treatment. These parameters were reassessed at 6 weeks, 3-, and 6-months post-treatment. Subsequent annual follow up were carried out by telephone review of IPSS and QOL.

Table 1 Comparison of prostate size, operative time, and total IPSS between HOLEP and TURP

<table>
<thead>
<tr>
<th>No. of Cases</th>
<th>Mean Prostate size (cc)</th>
<th>Operative Time (minutes)</th>
<th>Pre-op IPSS</th>
<th>1 week IPSS</th>
<th>1 month IPSS</th>
<th>3 month IPSS</th>
<th>6 month IPSS</th>
<th>1 year IPSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOLEP</td>
<td>17</td>
<td>53.77</td>
<td>83.86</td>
<td>18.20</td>
<td>11.40</td>
<td>12.00</td>
<td>11.67</td>
<td>10.90</td>
</tr>
<tr>
<td>TURP</td>
<td>100</td>
<td>47.79</td>
<td>60.00</td>
<td>18.80</td>
<td>12.20</td>
<td>8.86</td>
<td>7.54</td>
<td>7.53</td>
</tr>
</tbody>
</table>


time was significantly different (p = 0.01) but not the IPSS score for 1 year follow up.

Conclusions: Prostate size and operative time are significantly different for BPH surgical treatment. During our follow up period, IPSS after surgery for prostate ≤60 cm was not significantly different. Higher sample size and longer follow up is needed to have definitive conclusions. However, based on our findings all modalities demonstrated benefit in patients with small prostates.

Funding: None.

MP35-06 Exploring the Effectiveness of Zero-Degree Firing Technique in Small Prostate Size Patients Undergoing Prostatic Urethral Lift (PUL) Surgery: An Observational Study

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Presented By: Qing Yuan, MD

Introduction: Prostatic Urethral Lift (PUL) is a minimally invasive procedure aimed at treating benign prostatic hyperplasia (BPH) by relieving urethral obstruction caused by enlarged prostate tissue. The efficacy and outcomes of these procedures may
be influenced by variations in pelvic anatomy, particularly in non-Western populations. "Zero-Degree Firing" technology represents a novel approach wherein the UroLift needle is deployed at a zero-degree angle, followed by tissue manipulation, in contrast to the standard 20-degree release directly recommended in the Instructions for Use (IFU). This innovative technique holds particular relevance for patients with small prostate sizes (<50 cc), who face an increased risk of incomplete needle release due to potential contact with the pelvic bone. This study aims to comprehensively assess the efficacy and safety of the "Zero-Degree Firing" technique in BPH surgery, with a specific focus on comparing it to the standard procedure and considering potential anatomical variations.

**Methods:** Ten BPH patients with significant symptoms of bladder outlet obstruction were enrolled from November 2023 to February 2024 at China PLA General Hospital. The primary focus was on symptom relief and the occurrence of adverse events under two different insertion technologies of PUL. The prostate size was 55.30±4.48 cc, and the Pre-surgery International Prostate Symptom Score (IPSS) was 21.12±6.30. Patients were assigned to the standard procedure group or the zero-degree firing group based on prostate size, with >50 cc undergoing the standard procedure and ≤50 cc adopting "Zero-Degree Firing". Four patients adopted the "Zero-Degree Firing", while the remaining six patients followed the standard procedure. Post-surgery IPSS reduction rates at 2 weeks were compared with baseline, showing a significant reduction of 10.7±8.94 (p = 0.004, p < 0.05). Post-surgery IPSS at 1 month was 9.38±3.17, also significantly reduced compared to pre-surgery (p = 0.014, p < 0.05). Quality of life (QoL) significantly improved at 2 weeks and 1 month, from 4.12±0.32 to 2.10±0.88 and 2.25±1.49, respectively (p < 0.05). Sexual function remained unaffected in both groups.

**Results:** All four patients in the PUL group underwent successful surgery using the "Zero-Degree Firing" technique, with no instances of bone contact observed. However, one case in the standard procedure group experienced a "pull-through" complication. The average number of implants inserted was 4, and the average surgery time was 30±12.5 minutes. The average IPSS reduction in the "Zero-Degree Firing" group at 2 weeks was 12.25±6.18, compared to 9.17±10.26 in the standard group (p = 0.61), showing a noticeable difference but no statistical significance.

**Conclusions:** The "Zero-Degree Firing" technique demonstrated effectiveness and potential for use in PUL surgery for BPH patients, particularly those with small prostate volumes who wish to maintain normal sexual function. This approach may offer an alternative for Asian populations with narrow pelvic angles, warranting further exploration and consideration in clinical practice. Further enrollment of cases is necessary to establish any clinical efficacy differences.

**Funding:** Beijing NOVA Program (grant number 20220484230)

**MP35-07 Warm Irrigation Improving Perioperative Outcomes of Transurethral Resection of Prostate: A Prospective Parallel Arm Single Blinded Randomized Control Trial**

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**Presented By:** Manoj Kumar Das, Associate Professor

**Introduction:** Perioperative bleeding continues to be a major morbidity of transurethral resection of the prostate (TURP). Various techniques tried to reduce blood loss in TURP. This study aims to determine the efficacy of warm irrigation solution(37°C) in improving intraoperative bleeding and perioperative outcomes of TURP surgery.

**Methods:** This is an interim analysis of a Single-blind, parallel-arm, IEC approved (IEC/AIIMS BBSR/PG Thesis/2022/58) randomized controlled trial done from August 2022 to August 2023. All patients undergoing TURP were included. Patients with uncontrolled hypertension, cardiac disease, and on anticoagulants were excluded. The study group received warm irrigation solution(37°C), whereas the control group received room temperature irrigation solution throughout the procedure. Intraoperative blood loss was the primary outcome. The secondary outcomes were mean postoperative pain score (at 1h, 6h, 24h) (Universal pain assessment score), analgesic requirement, and post-op UTI. incidence of hypothermia, requirement of blood transfusion, ease during surgery, post-op IPSS score at POD 10 and length of hospitalization (LOH).

**Results:** This is an interim analysis of a Single-blind, parallel-arm, IEC approved (IEC/AIIMS BBSR/PG Thesis/2022/58) randomized controlled trial done from August 2022 to August 2023. All patients undergoing TURP were included. Patients with uncontrolled hypertension, cardiac disease, and on anticoagulants were excluded. The study group received warm irrigation solution(37°C), whereas the control group received room temperature irrigation solution throughout the procedure. Intraoperative blood loss was the primary outcome. The secondary outcomes were mean postoperative pain score (at 1h, 6h, 24h) (Universal pain assessment score), analgesic requirement, and post-op UTI. incidence of hypothermia, requirement of blood transfusion, ease during surgery, post-op IPSS score at POD 10 and length of hospitalization (LOH).

**Conclusions:** In this interim analysis, warm irrigation solution(37°C) significantly reduced intraoperative blood loss and hypothermia; and improved vision thereby significantly decreasing the time of resection.

**Funding:** None.

**MP35-08 Effectiveness of Rezûm for Catheter-Dependent Urinary Retention: 12 Months Outcomes of a Real-World Database**

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¹University Health Network, University of Toronto, ²University of Montreal Hospital Center, Université de Montréal, ³Smith Institute of Urology Northwell Health, ⁴BPHCanada Prostate Surgery Institute

**Presented By:** Dean Elterman

**Introduction:** Managing catheter-dependent urinary retention typically involves medical therapies and, when these are ineffective, transurethral surgery. Rezûm, a minimally invasive procedure utilizing convective water vapor to ablate benign prostatic tissue, presents an alternative treatment paradigm. This study aims to evaluate the clinical outcomes of treating catheter-dependent urinary retention using Rezûm therapy.

**Methods:** We analyzed data from the Canadian Rezûm registry database, which prospectively collated information from two high-volume centers between April 2019 and June 2023.
Eligible patients were those with catheter-dependent urinary retention at the time of treatment. Variables such as patient demographics, operative characteristics, and functional outcomes were assessed at baseline, as well as 3, 6, and 12 months post-procedure. Descriptive statistics and logistic regression analyses were employed for data interpretation.

**Results:** Out of 95 patients with a history of urinary retention, 44 were catheter-dependent at the time of undergoing Rezūm therapy. The mean age of the patients was 69.6±10.3 years, and 70.5% presented with at least one comorbidity. Average prostate volume was 87.3 ml (range 29-195 ml), with 11% of prostates exceeding 150 ml. 82% of patients had a median lobe. 4.5% (2/44) had received prior surgical intervention. All patients had recently failed at least one trial without catheter (TWOC), and 52.3% were under oral BPH medical therapy at the time of treatment. Variables such as prostate volume, measured by transrectal ultrasound, patient age, and effective treatment alternative for catheter-dependent urinary obstruction by resecting a significant portion of the prostate. The study also considered intraoperative parameters that were chosen based on the surgeons’ clinical experience and their expected correlation with postoperative bleeding that required intervention. These parameters included intraoperative electrocoagulation, intraoperative capsule perforation, and the weight of the prostate tissue removed during the surgery. Data regarding the performance of intraoperative electrocoagulation and resection were extracted from surgical reports and coded according to OPS 2022. Instances of intraoperative capsule perforation were identified from surgical reports, and the resection weight was sourced from surgical reports or histopathological findings. The study did not differentiate between different surgical techniques used in Thulium laser enucleation. As a postoperative parameter, the study recorded cases of postoperative bleeding that required intervention, including situations involving electrocoagulation or the removal of urinary bladder tamponades due to coagulum formation.

**Results:** In 4.2% (n = 21) of the patients, interventions were required due to postoperative bleeding. There was a significant association with a high preoperative prostate volume, a high resection weight, and the use of intraoperative electrocoagulation. In 41.2% (n = 207) of cases, intraoperative electrocoagulation was performed during Thulium laser enucleation. It was observed that a high resection weight and intraoperative capsular perforation of the prostate were independent risk factors for the necessity of intraoperative electrocoagulation.

**Conclusions:** This study doesn’t definitively answer whether patients benefit from intraoperative electrocoagulation during ThuLEP in terms of reducing postoperative bleeding that requires intervention. In some cases, using electrocoagulation during surgery may be necessary when laser therapy isn’t effective in controlling bleeding. None of the preoperative factors significantly increased the risk of needing intraoperative electrocoagulation in the patient group we observed. Therefore, none of the preoperative measures could have influenced how often intraoperative electrocoagulation was used in these patients. Only a high resection weight and intraoperative capsule perforation significantly raised the risk of requiring intraoperative electrocoagulation. Intraoperative capsule perforation was identified as a preventable independent risk factor for intraoperative electrocoagulation.

**Funding:** None.

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**MP35-09 How good are we really? Incidence of postoperative bleeding requiring intervention and intraoperative electrocoagulation during Thulium laser enucleation of the prostate**

Simon Filmar¹, Sophia Hook¹, Andreas J. Gross¹, Clemens M. Rosenbaum¹, Benedikt Becker¹, Christopher Netsch²

¹Asklepios Klinik Barnbek, ²Asklepios Klinik Barnbek

Presented By: Simon Filmar, MD

**Introduction:** The topic of this study is the retrospective analysis of interventions-requiring postoperative bleeding and intraoperative electrocoagulation in Thulium laser enucleation of the prostate as part of the surgical treatment of benign prostatic hyperplasia. The primary focus of this study is to determine the frequency of these events and their associated or causative factors.

**Methods:** In this retrospective study, researchers examined 503 Thulium laser enucleation procedures of the prostate performed between August 1, 2021, and July 31, 2022, at Asklepios Klinik Barnbek. The analysis was performed on preoperative factors such as patient age, prostate volume measured by transrectal ultrasound, total PSA value, urinary tract infection, sonographically guided transrectal prostate biopsy, catheterization, and the use of medications like ASS or oral anticoagulants during the procedure. The study also considered intraoperative parameters that were chosen based on the surgeons’ clinical experience and their expected correlation with postoperative bleeding that required interventions. These parameters included intraoperative electrocoagulation, intraoperative capsule perforation, and the weight of the prostate tissue removed during the surgery. Data regarding the performance of intraoperative electrocoagulation and resection were extracted from surgical reports and coded according to OPS 2022. Instances of intraoperative capsule perforation were identified from surgical reports, and the resection weight was sourced from surgical reports or histopathological findings. The study did not differentiate between different surgical techniques used in Thulium laser enucleation. As a postoperative parameter, the study recorded cases of postoperative bleeding that required intervention, including situations involving electrocoagulation or the removal of urinary bladder tamponades due to coagulum formation.

**Results:** In 4.2% (n = 21) of the patients, interventions were required due to postoperative bleeding. There was a significant association with a high preoperative prostate volume, a high resection weight, and the use of intraoperative electrocoagulation. In 41.2% (n = 207) of cases, intraoperative electrocoagulation was performed during Thulium laser enucleation. It was observed that a high resection weight and intraoperative capsular perforation of the prostate were independent risk factors for the necessity of intraoperative electrocoagulation.

**Conclusions:** This study doesn’t definitively answer whether patients benefit from intraoperative electrocoagulation during ThuLEP in terms of reducing postoperative bleeding that requires intervention. In some cases, using electrocoagulation during surgery may be necessary when laser therapy isn’t effective in controlling bleeding. None of the preoperative factors significantly increased the risk of needing intraoperative electrocoagulation in the patient group we observed. Therefore, none of the preoperative measures could have influenced how often intraoperative electrocoagulation was used in these patients. Only a high resection weight and intraoperative capsule perforation significantly raised the risk of requiring intraoperative electrocoagulation. Intraoperative capsule perforation was identified as a preventable independent risk factor for intraoperative electrocoagulation.

**Funding:** None.

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**MP35-10 Thulium fiber laser compared to holmium laser with moses technology for prostate enucleation: a prospective study**

Saud Almousa¹, Abbas Guennoun¹, Max Levitt¹, Kelven Chen¹, Claudia deyirmendjian¹, Malek Meskawi¹, Naem Bhojani¹

¹University of Montreal

Presented By: Saud Almousa

**Introduction:** Benign prostatic hyperplasia (BPH) is a common condition in men where the prostate enlarges and can lead to lower urinary tract symptoms. A procedure called laser enucleation of the prostate is a modern treatment that reduces urinary obstruction by resecting a significant portion of the prostate. The study aims to compare the safety profile and clinical outcomes of Holmium laser enucleation of the prostate (HoLEP) and Thulium laser enucleation of the prostate (ThuLEP).
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Methods: 61 patients aged from 54 to 90 years with BPH underwent HoLEP (n = 30) or ThuLEP (n = 31) procedures in a prospective, non-randomized, multicenter study between September 2021 to December 2023. Two surgeons experienced with HoLEP and ThuLEP performed all procedures in two centers. Follow-up was assessed at 3 months after surgery. The primary endpoints were non-inferior international prostate symptom score (IPSS) and quality of life (QoL) at 3 months. Secondary endpoints were rate of post-operative complications, peak flow (Qmax), post-void residual (PVR), international index of erectile function (IIEF), international consultation on incontinence questionnaire-short form (ICIQ-SF) and operation, catheterization, hospitalization times.

Results: Mean operative time was 127 min and 100.17 min in the HoLEP group and the ThuLEP group respectively (p = 0.70). Weight of specimen post-operatively was comparable between the HoLEP group and the ThuLEP group respectively (p = 0.85). TURP demonstrated a reduced operative time (MD -0.52, CI95 -3.64, p = 0.15). Complications rates was 13% (n = 4) and 3% (n = 1) in the HoLEP group and ThuLEP group respectively. One patient required a transfusion in the HoLEP arm. The enucleation plane was easily identified with large prostates (>70ml). Mean hospitalization time was 17.52 hours in the HoLEP group and 12.08 hours in the ThuLEP group (p = 0.15). Complications rates was 13% (n = 4) and 3% (n = 1) in the HoLEP group and ThuLEP group respectively. One patient required a transfusion in the HoLEP arm.

Conclusions: Both ThuLEP and HoLEP relieve lower urinary tract symptoms with comparable results in terms of functional outcome.

Funding: No funding.

MP35-12 GreenLight Photoselective Laser Vaporisation versus Transurethral Resection of the Prostate for large prostates: A Systematic Review and Meta-analysis

José Arnaldo S. da Cruz1, José Arnaldo S. da Cruz1, Breno C. Porto2, Bruno D. Terada2, Felipe G. A. Gonçalves2, Bianca C. Benedicto1, Beatriz T. Constantini1, Carlo C. Passerotti1, Rodrigo A. S. Sanderberg1, Everson L. A. Artifon2, José P. Otoch2

1German Hospital Oswaldo Cruz, 2University of Sao Paulo Medical School, 3Ninth of July University

Presented By: José Arnaldo S. da Cruz, MD, PhD

Introduction: Transurethral resection of prostate (TURP) stands as a primary surgical intervention for benign prostatic hyperplasia (BPH), although laser techniques, notably photoselective vaporization of prostate (PVP), are gaining traction. Previous studies have already assessed the efficacy of TURP and PVP, although with small prostates (<70ml). Thus, this meta-analysis aims to evaluate the efficacy of PVP compared to TURP in the male BPH population with large prostates (>70ml).

Methods: A systematic review was conducted across MEDLINE, Embase, Scopus, Web of Science, and Google Scholar. Studies comparing PVP to TURP in male BPH patients were included. Our primary outcome was the International Prostate Symptom Score (IPSS). Secondary outcomes encompassed maximum urinary flow rate (Qmax), post-void residual volume (Vres), operative time, catheterization time, postoperative hospital stay and complications.

Results: Three articles were included, encompassing a total of 318 patients - 159 patients in each group. Our analysis revealed no statistically significant difference in IPSS score between PVP and TURP groups (MD 1.56; CI95 -0.52, 3.64; p = 0.14; I2 = 85%). TURP demonstrated a reduced operative time (MD
30.35; CI95 11.26, 49.44; p = 0.002; I2 = 96%), whereas PVP exhibited shorter catheterization time (MD -2.22; CI95 -2.44, -1.99; p < 0.00001; I2 = 1%) and postoperative hospital stay (MD -2.20; CI95 -2.69, -1.72; p < 0.00001; I2 = 75%). No significant differences were observed in other outcomes assessed.

**Conclusions:** This meta-analysis suggests that there is no difference between PVP and TURP concerning IPSS, Qmax, Vres, and complications. Despite that, there are notable discrepancies concerning operative time, with a longer duration observed in the PVP group, as well as disparities in catheterization time and postoperative hospital stay, both of which are diminished in the PVP group.

**Funding:** None.

**MP35-13 The early learning curve of the bipolar enucleation of the prostate: a multicenter cohort study**

Petros Sountoulides7, Christian Ramesmayer1, Susanne Deininger2, Nikolaos Pyrgidis3, Lukas Lusuardi1, Thomas Hermann5, Dimitrios Memmos6

1Department of Urology and Andrology, Paracelsus Medical University, Salzburg, Austria, 2Department of Urology and Andrology, Paracelsus Medical University, 3Department of Urology, University Hospital, LMU Munich, 4Department of Urology and Andrology, Paracelsus Medical University, 5Department of Urology, Spital Thurgau AG, Kantonsspital Frauenfeld, 61st Department of Urology, Aristotle University of Thessaloniki, Thessaloniki, Greece, 7Aristotle University of Thessaloniki

Presented By: Petros Sountoulides, MD, PhD, FEBU

**Introduction:** Enucleation of the prostate by either laser or bipolar energy is the preferred treatment for obstructive LUTS for patients with medium size and large prostate. However and in order to increase the adoption of the technique by urologists, studies on the learning curve are important. Towards this end we evaluate the early learning curve of Bipolar Enucleation of the Prostate (BipolEP).

**Methods:** We conducted a retrospective, multicenter analysis of surgical and functional outcomes of patients treated with BipolEP for benign prostatic obstruction (BPO). We evaluated the first 20 cases of BipolEP performed by four different surgeons in three different countries. The following baseline parameters were obtained: age, IPSS, indwelling catheter, transrectal measured prostate volume, post void residual volume (PVR) and uroflowmetry. The learning curve was analysed based on perioperative parameters and the influence of perioperative parameters was correlated with the sequence of BipolEP cases.

**Results:** 84 BipolEP cases performed by 4 different surgeons in their early learning curve were studied. Mean prostate volume was 75 ml, 39% of cases had an indwelling catheter and the average operating time was 101 minutes. Three out of four surgeons performed at least 50% of successful operations according to Trifecta. Conversion rate to TURP was 11.9% in total which however was driven by a single surgeon with an almost 50% conversion rate. Mean enucleated prostate was 33.3 gr (18-54.5) which corresponds to approximately 50% of the prostatic adenoma. Intraoperative complications and reported stress ranged from 0 to 38.1%. At six weeks review, the IPSS improved by 12.5 (8-16) points and Qmax by 208% (109.8-266.7). Uroflowmetry outcomes correlated with the sequence of cases with a linear improvement during 20 consecutive cases (p = 0.018) in all centres. Major complications (Clavien Dindo≥3) were rare and comparable between the groups.

**Conclusions:** Surgeons starting to learn BipolEP can expect to be able to achieve a linear improvement in Uroflow at the six-week postoperative evaluation after 20 consecutive cases. BipolEP can be successfully performed during the early learning curve with an acceptable rate of conversion to standard TUR-P.

**Funding:** No funding.

**MP35-14 Safety and Feasibility of BPH Minimally Invasive Surgical Treatment under Local Anesthesia**

Silvia Secco1, Alberto Olivero1, Sinan Khadhouri2, Barend Dreyer, NHS Fife, Victoria Hospital Kirkcaldy3, Luca Cindolo4, Paolo Dell’Oglio1, Stefano Tappero1, Antonio Galfano1, Feras Al Jaafari2

1Niguarda Hospital, 2University of St Andrews, 3NHS Fife, Victoria Hospital Kirkcaldy, 4Villa Stuart, 5NHS Fife and University of St Andrews, School of Medicine

Presented By: Silvia Secco, MD

**Introduction:** BPH Minimally Invasive Surgical Treatment (MIST) for BPH is an emerging modality; one of the several advantages is the possibility of being performed with local anesthetic with same-day discharge. This study evaluates the safety and feasibility of BPH Minimally Invasive Surgical Treatment under Local anesthesia.

**Methods:** We prospectively collected data from patients who underwent Rezum, Urolift, and i-TIND treatments from 01.01.20xx to 28.02.2024 on a redcap international database. Pre, intra, and post-operative variables were recorded. All the patients received a local injection of two anesthetic gels in the urethra 20 minutes before the procedure. Local anesthesia was performed with a transperineal anesthetic injection in the peri-prostatic space or transurethrally with a Schelin Catheter injection directly in the prostatic lobes. The primary outcomes of interest were the same-day discharge, the absence of intraoperative pain, defined as aVAS score ≤5 during the whole procedure, and Intra-and immediate post-operative complications. The success of the procedure was defined as these three outcomes combined. A descriptive analysis was performed.

**Results:** One hundred and nine patients were included in the study. Median age was 62 (IQR: 54 - 66) years, with a BMI of 26.1 (21.2 – 37). Nine (8.3%) of the patients had diabetes, and 13 (11.9%) patients assumed anticoagulant medication. Five patients had indwelling or intermittent catheters. The median prostate size was 44 ml (34 -58) which corresponds to approximately 50% of the prostatic adenoma. Intraoperative complications and reported stress ranged from 0 to 38.1%. At six weeks review, the IPSS improved by 12.5 (8-16) points and Qmax by 208% (109.8-266.7). Uroflowmetry outcomes correlated with the sequence of cases with a linear improvement during 20 consecutive cases (p = 0.018) in all centres. Major complications (Clavien Dindo≥3) were rare and comparable between the groups.

**Conclusions:** Surgeons starting to learn BipolEP can expect to be able to achieve a linear improvement in Uroflow at the six-week postoperative evaluation after 20 consecutive cases. BipolEP can be successfully performed during the early learning curve with an acceptable rate of conversion to standard TUR-P.

**Funding:** No funding.
and Schelin Catheter was used in 32 (29.3%) cases. Five (4.6%) patients had intraoperative complications, and 95 (87.2%) experienced intraoperative pain under 5 in the VAS. 102 (93.6%) of the patients were discharged the day of the procedure. The procedure was successful in local anesthesia in 86 (78.9%) of the patients. The table describes the patients stratified according to procedure success.

**Conclusions:** MIST under local anesthesia is safe and feasible. However, further studies are needed to evaluate predictive factors of successful treatment.

**Funding:** None.

**MP35-15 Thulium fiber laser with special «Enucleation pulse» - the true breakthrough in laser treatment of prostate adenoma**

Alim Dymov¹, Temirlan Karakotov¹, Yuliya Li¹, Roman Sukhanov¹, Denis Chinenov¹, Leonid Rapoport¹

¹Institute for Urology and Reproductive Health, Sechenov University

**Presented By:** Alim Dymov, MD, PhD

**Introduction:** Since its appearance in urological practice, the thulium fiber laser (TFL) has proven to be effective and safe. However, Holmium laser is superior to TFL in terms of the mechanical dissection and less carbonization. The evolution of TFL was moving in direction of new settings such as high energy enucleation mode, which helped to improve the tissue dissection by the laser emission itself. And recently the new «enucleation pulse» for TFL has been introduced.

**Methods:** We conducted a prospective randomized single-center study of safety and efficacy of the new enucleation pulse (2, 5J, 24Hz, 60 W) in comparison with standard pulse (1, 5J, 40 Hz, 60 W). The study was approved by the Local Ethics Committee of Sechenov University. Patients with BPH were enrolled in the study. The inclusion criteria were IPSS > 20 or Qmax < 15 ml/s. The exclusion criteria were neurogenic LUTS, urethral strictures, prostate cancer. Laser enucleation of prostate adenoma was performed using FiberLase U3 and Umax (IRE-Polus, Russia). The laser radiation was delivered via 550 μm silica fiber. At the end of the surgery, the surgeon scored the quality of resection, mechanical dissection, coagulation efficiency, and degree of carbonization using a Likert scale from 0 to 3. The efficacy of enucleation (g per min) and complication rate were registered.

**Results:** Enucleation pulse (EP) group included 20 patients, standard pulse (SP) — 15 patients. There were no statistically significant differences in preoperative and postoperative functional parameters between groups. The EP group showed the higher efficiency of enucleation (2, 9 vs 1, 6; g/min). According to Likert scale there was no statistically significant difference in terms of resection and coagulation properties of the laser emission. Less carbonization and more pronounced mechanical dissection was observed in EP group. Complication rates were also similar, no more than Clavien-Dindo grade 1 complications were registered in both groups.

**Conclusions:** The evolution of TFL technology allows to overcome the common disadvantages such as carbonization and lack of mechanical dissection of the tissue. The preliminary results of utilizing of the new enucleation pulse of TFL shows its superiority compare to standard TFL radiation parameters.

**Funding:** Nothing to disclose.

**MP35-16 Outcomes of Rezum water vapour thermal therapy for patients on oral antiplatelet or anticoagulants**

Han Jie Lee¹, Benjamin Lim¹, Palaniappan Sundaram¹, Thomas Chan¹, Shu Hui Neo¹, Christopher Cheng¹, Lui Shiong Lee¹, Yong Wei Lim¹, Alvin Low¹

¹Sengkang General Hospital

**Presented By:** Han Jie Lee

**Introduction:** Rezum water vapour thermal therapy has been gaining traction as a minimally-invasive treatment of men with lower urinary tract symptoms (LUTS) attributed to benign prostatic hyperplasia (BPH). Due to the low degree of trauma delivered to the prostate, it has been postulated that continuation of antiplatelet (AP) or anticoagulation (AC) therapy in the peri-procedural period might be possible. We therefore aimed to evaluate the safety profile and efficacy of such patients on AP or AC undergoing Rezum.

**Methods:** A review of a prospectively-collected registry of patients undergoing the Rezum procedure between January 2021 and June 2023 was performed. Baseline characteristics, operative details and outcomes of patients who continued AP or AC treatment perioperatively were compared with patients who did not.

**Results:** A total of 58 patients were included for analysis, of which 18 (31.0%) were on either AP or AC therapy that was continued across the Rezum procedure. Of the patients on AP or AC, one was kept on Warfarin, one was bridged with Clexane, one continued apixaban, one was on dual antiplatelet therapy, and the remaining 14 patients were on single antiplatelet therapy. There were no significant differences in both groups in terms of baseline peak urinary flow (Qmax), prostate volume, prostate-specific antigen (PSA) and use of pharmacological therapy, and both groups were similar in terms of the number of intra-operative treatment doses (p = 0.50) and treatment duration (p = 0.79). Postoperatively, the AP/AC group had a slightly higher 30-day complication rate (27.8% vs 10.0%) but was not statistically significant (p = 0.27), and no Clavien ≥3 complications were noted. Patients on AP/AC were noted to have a lower rate of successful trial of void (55.6% vs 92.5%, p = 0.01), and trended toward a longer duration on IDC (11 days vs 6 days, p = 0.08), but had a similar International Prostate Symptom Score (IPSS, 9 vs 6, p = 0.18) and Qmax at 3 months (11.8ml/s vs 12.9ml/s, p = 0.27).

**Conclusions:** The continuation of AP or AC through Rezum appears to be safe; despite a trend towards slightly higher overall complications rates for the AP/AC group, there is no increase in major complications.

**Funding:** None.

**MP35-17 Single institution Experience of Conversion Rates from HoLEP to Open Prostatectomy**

Narmina Khanmammadova¹, James Jiang¹, Erika D. Park¹, Bruce Gao¹, Akhil K. Das¹

¹Department of Urology, University of California Irvine
Presented By: Narmina Khanmammadova, MD

Introduction: Holmium laser enucleation of the prostate (HoLEP) is a surgical modality for treating lower urinary tract symptoms (LUTS) due to benign prostatic hyperplasia (BPH) and is endorsed by American guidelines for prostates of any size, including those very large (i.e., ≥150 cm³). However, technical difficulties may arise during the procedure with very large prostates, potentially disrupting its completion endoscopically and necessitating a shift to an open prostatectomy. Reports of these occurrences are scarce in the medical literature. Here, we detail a single institution’s experience with HoLEP for prostates ≥150 cm³, including the incidence of conversion to open prostatectomy.

Methods: From November 2022 to November 2023, 181 patients underwent HoLEP with a single high-volume surgeon. Data were queried from a prospectively maintained, IRB-approved database from 139 (77%) patients with available prostate size data. Of these, 18 (13%) had a prostate size of ≥150 cm³ and were included in the final analysis. At our institution, all patients with a prostate size ≥150 cm³ are consented for possible cystotomy as per surgeon’s preference.

Results: The median age was 77 (75 – 81) years and the median prostate size was 181 (167 – 251) cm³. Before surgery, 56% (n = 10) of patients experienced urinary retention, and 39% (n = 7) were catheter-dependent. The median operative time was 157 (145 – 182) minutes. One patient (5.6%), whose preoperative prostate size was measured at 228 cm³, needed conversion of the procedure to open prostatectomy. The conversion to an open procedure was done after enucleation was completed because morcellation could not be performed safely due to poor endoscopic visualization. Overall, no other perioperative complications occurred. The median length of catheterization was 2 (1 – 4) days and the median length of hospital stay was 1 (1 – 2) days. Two (11%) patients experienced Clavien-Dindo grade ≥III complications: one developed a urethral stricture and the other required a return to the operating room due to clot retention.

Conclusions: The size-dependent risk of converting HoLEP to an open procedure is very low. However, it is essential to inform patients of this possibility to establish expectations and secure informed consent in advance.

Funding: None.

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**MP36-01 Comprehensive literature review of the influence of pulse duration on intrarenal temperature outcomes in Ho:YAG and Thulium fiber lasers in lithotripsy**

Lucas Vergamini1, Amber McMahon1, Donald Neff1, David Duchene1, Bristol Whiles1, Wilson Molina1

1University of Kansas Medical Center

Presented By: Lucas Vergamini, MD

Introduction: Minimally-invasive endourologic techniques have revolutionized urolithiasis treatment, with laser lithotripsy being a cornerstone modality. The Holmium:yttrium-aluminum-garnet laser (Ho:YAG) has long been considered the gold standard since the 1990s, but the emergence of the thulium fiber laser (TFL) has challenged this position since its approval for clinical use in 2017. Laser lithotripsy induces changes in intrarenal temperature (IRT) due to photothermal effects, influenced by Parameters like pulse energy, frequency, and pulse duration. While pulse frequency and energy have been extensively studied, pulse duration’s impact on IRT remains relatively unexplored. This review aims to address this gap by examining the influence of pulse duration on IRT outcomes when using Ho:YAG or TFL lasers for lithotripsy.

Methods: A literature search using the PubMed database was performed for English full-text articles. The following keywords were used in the search: “Ureteroscopy”, “URS”, “Temperature”, “Intrarenal temperature”, “Laser”, “Holmium:yttrium-aluminum-garnet laser “, “Ho:YAG laser”, “Thulium fiber laser” and “TFL”.

Animal and human studies were included. Duplicate abstracts were excluded. All 48 abstracts were reviewed by two authors to determine appropriateness for inclusion in this review, with 40 studies ultimately included.

Results: The reviewed studies consisted of 40 studies that reported temperature increases with laser activation, with higher power settings and larger laser fibers leading to greater temperature elevations. Many studies highlighted the necessity of increased irrigation in maintaining lower temperatures and importance of ureteral access sheaths in temperature control by improving irrigation outflow and reducing intrarenal pressure. However, only two studies (5%) specifically investigated pulse duration’s effect on temperature changes during lithotripsy, both focusing on the Ho:YAG laser. One study determined longer pulse length generated more heat, while the other found that shorter pulse durations produced a significantly greater temperature increase.
Conclusions: The influence of pulse duration on temperature generation during lithotripsy has been inadequately explored with conflicting findings from limited studies only utilizing the Ho:YAG laser. Further research is warranted to comprehensively evaluate the impact of pulse duration on temperature changes during lithotripsy, encompassing both Ho:YAG and TFL lasers. Such investigations are crucial for optimizing laser lithotripsy techniques and enhancing patient outcomes.

Funding: None.

MP36-02 Thulium Fiber Laser Fragmentation Using Novel Advanced Pulse-Shaping Mode

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¹Department of Urology and Andrology, IPPE of A. I. Burnazyan SSC FMBC, FMBA of Russia, ²Department of Urology, D. D. Pletnev City Clinical Hospital, Moscow Health Department, ³Department of Urology and Andrology, IPPE of A. I. Burnazyan SSC FMBC, FMBA of Russia, Moscow, Russia

Presented By: Alexey Martov, MD, PhD, Corresponding Member of the Russian Academy of Sciences

Introduction: The development of Super-pulsed thulium fiber laser (SP TFL) with a new modulated pulse sequence opens up new opportunities for intracorporeal lithotripsy. The fragmentation mode (FM) introduced into SP TFL is created to maximize efficiency in fragmentation of stones. The purpose of the study to evaluate efficacy of the SP TFL fragmentation mode in URS and mini-PCNL.

Methods: Between June 2022 and January 2023 40 patients with totally 40 stones underwent either ureteroscopic (URS) or percutaneous (Mini-PCNL) laser lithotripsy (FiberLase UMAX IRE-Polus Ltd., Fryazino, Russia) using laser fibers of 550 μm for renal stones and of 365 μm for ureteral stones. The novel FM 3 J x 3.5 Hz = 10.5 W and 28.5 J x 1.1 Hz = 31 W were used for ureter and renal stones respectively. Median age for patients with ureteral stones was 53 (19–82) years and for patients with renal stones was 51 (23–74) years. According to Computer Tomography (CT) stone size for ureteral stones was 1.1 (0.7 – 2) cm with density 1029 (354–1800) HU, for renal stones it was 1.7 (1–3.6) cm with density 1113 (390–1700) HU. During URS the stone was reached with semi-rigid ureteroscope (8F). After the procedure, JJ-stent has been placed for 1 month due to mucosal changes in the area where the stone was located. Urethral catheters have been removed after ~ 12 hours postoperatively. Mini-PCNL were done with Miniperc instrument (19.5 F). For each patient laser-on time and total energy were recorded in order to assess ablation efficiency (=stone volume/total energy). Complications were classified according to the Clavien-Dindo classification.

Results: All patients underwent laser lithotripsy. There was no case of stone resistance to laser energy. In all cases, fragmentation of the stone was achieved. There was no hemoglobin drop after and no there was case of wall perforation or fragment migration. Postoperative complications according to Clavien-Dindo classification and clinical laser parameters are shown in Table (data are presented in the format Median (interquartile range)).

Conclusions: ST PFL with novel modulated pulse sequence with high energy settings promotes effective fragmentation of ureteral and renal stones with minimal complications.

Funding: None.

MP36-03 Robot-Assisted Laparoscopic Surgery For Ureteropelvic Junction Stenosis Associated With Urolithiasis

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¹Istanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, Department of Urology

Presented By: Alper Okur, MD

Introduction: Urolithiasis due to urinary retention is found in 20% of patients with ureteropelvic junction obstruction (UPJO). Robot-assisted laparoscopic pyeloplasty (RALP) can be performed simultaneously with ureterorenoscopy (URS) to achieve stone-free reconstruction. The aim of this study is to share our experience with this combined surgical technique.

Methods: Medical records of patients who underwent RALP and simultaneous flexible/rigid URS for UPJO and concomitant urolithiasis between 2018 and 2024 were retrospectively analysed for demographic characteristics, operative findings and surgical outcomes.

Results: Ten patients underwent combined surgery during the specified period. Six patients were in the paediatric age group. Demographic and preoperative characteristics are shown in Table-1. Flexible/rigid URS port was used in all patients. Peri- and postoperative characteristics are shown in Table-2. Two out of the four patients who could not achieve stone-free (presence of stones of any size) with combined surgery were being followed up because of the millimetric size of the stones. In the remaining two patients, stone-free was achieved with flexible URS in a second session. Postoperative urinary drainage was performed in all patients. Renal function was stable at follow-up and no new stone formation was observed.

Conclusions: Flexible/rigid URS performed simultaneously with RALP is a safe and effective option in patients with urolithiasis and planned surgical treatment for UPJO.

Funding: None.
### Table 1. Demographic and Pre-operative Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Whole Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Patients</td>
<td>11</td>
</tr>
<tr>
<td>Age (Years)</td>
<td>17 (8.5-29.5)</td>
</tr>
<tr>
<td>Sex, overall (%)</td>
<td>Female 5 (45.5)</td>
</tr>
<tr>
<td></td>
<td>Male 6 (54.5)</td>
</tr>
<tr>
<td>Height, (cm)</td>
<td>162 (128.5-173.5)</td>
</tr>
<tr>
<td>Body weight, (kg)</td>
<td>56 (28-72.5)</td>
</tr>
<tr>
<td>Serum creatinine, (mg/dl)</td>
<td>0.56 (0.45-0.90)</td>
</tr>
<tr>
<td>Previous stone surgery, n (%)</td>
<td>4 (36.4)</td>
</tr>
<tr>
<td>Anatomical variations, overall (%)</td>
<td></td>
</tr>
<tr>
<td>Crossing vessels</td>
<td>1 (9.1)</td>
</tr>
<tr>
<td>Retrocausal ureter</td>
<td>1 (9.1)</td>
</tr>
<tr>
<td>Duplex collecting system</td>
<td>1 (9.1)</td>
</tr>
<tr>
<td>Horseshoe kidney</td>
<td>1 (9.1)</td>
</tr>
<tr>
<td>Right, overall (%)</td>
<td>7 (63.6)</td>
</tr>
<tr>
<td>Left</td>
<td>4 (36.4)</td>
</tr>
<tr>
<td>Stone burden, (cm2)</td>
<td>1 (1-1.5)</td>
</tr>
<tr>
<td>Multiple stones, n (%)</td>
<td>10 (90.9)</td>
</tr>
<tr>
<td>Pre-operative catheter presence, n (%)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

**Note:** Nominal data are presented as number (%), numerical data are presented as median (interquartile range).

### Table 2. Peri-operative and Post-operative Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Whole Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Docking time, (min)</td>
<td>25 (20-30)</td>
</tr>
<tr>
<td>Console time, (min)</td>
<td>155 (125-190)</td>
</tr>
<tr>
<td>Intraoperative JJ catheter insertion n (%)</td>
<td>10 (90.9)</td>
</tr>
<tr>
<td>Stone free (%)</td>
<td>7 (63.6)</td>
</tr>
<tr>
<td>Foley catheter removal time, (days)</td>
<td>2 (1-3-2)</td>
</tr>
<tr>
<td>Drain removal time, (days)</td>
<td>3 (2-3-3)</td>
</tr>
<tr>
<td>Hospitalisation time, (days)</td>
<td>4.5 (3.3-5)</td>
</tr>
<tr>
<td>JJ catheter removal time, (days)</td>
<td>31 (30-37)</td>
</tr>
<tr>
<td>Post-operative serum creatinine, (mg/dl)</td>
<td>0.63 (0.49-0.86)</td>
</tr>
<tr>
<td>Post-operative complications</td>
<td>2 (18,2)</td>
</tr>
<tr>
<td>Follow-up period, (months)</td>
<td>32 (6-63)</td>
</tr>
</tbody>
</table>

**Note:** Nominal data are presented as number (%), numerical data are presented as median (interquartile range).

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### MP36-04 How to perform DISS – lessons from bench testing the Pusen scope

Thijs Ruiken³, Richard Menzies¹, Ben Turney²

¹Nuffield Department of Surgical Sciences, ²Nuffield department of Surgical Sciences, ³Nuffield department of Surgical Sciences, Oxford University

**Presented By:** Thijs Ruiken, BSc

**Introduction:** The PUSEN PU3033AH 7.5Fr ureteroscope, with an integrated suction button, allows direct in-scope suction (DISS) through a single 3.6Fr working channel. Inflow and outflow is via the same channel. This study aimed to assess the suction button functionality and to quantify suction flow rates under varying suction pressures.

**Methods:** Experiments were performed to assess the flow rate of fluid suctioned from the ‘renal pelvis’ at different suction pressures. The tip of the ureteroscope was placed in a pressurized container at 40mmHg (to replicate a renal pelvis during ureteroscopy). A 200μm laser fibre was placed inside the working channel for all experiments. The scope was connected to a 1L bag of irrigation fluid and a 3 way tap was used to open and close the inflow to the scope. A vacuum pump was connected to the suction port on the scope and suction applied at 200mmHg and 400mmHg pressures. Each experiment was repeated two times.

**Results:** No fluid was suctioned until the suction button on the scope was pressed. When the suction button was pressed with the irrigation inflow open, fluid was preferentially suctioned, at high flow rates (>1000mL/min), from the irrigation bag rather than from the tip of the scope in the ‘renal pelvis’ (fig. 1). When the irrigation inflow was closed using the 3 way tap, more fluid was suctioned through the scope from the ‘renal pelvis’. With the irrigation port connected the flow rate through the scope was 18mL/min and 35mL/min at 200mmHg and 400mmHg suction respectively. When the irrigation bag was closed the flow rates in the closed system increased to 53mL/min and 85mL/min at 200mmHg and 400mmHg suction respectively.

**Conclusions:** Until the suction button is pressed there is no aspiration of fluid. The suction button does not occlude the inflow from the irrigation fluid. Unless the inflow to the scope is occluded before starting DISS, this will result in very rapid emptying of the irrigation fluid from the bag. A connector is provided with the scope to close off the inflow before performing DISS for this reason. With a laser fibre in the working channel and no stone debris/fragments in the fluid, flows from 18-85mL/min can be achieved through the scope from a pressurized container.

**Funding:** Pusen provides grant funding to this research group to support ongoing research activities.

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### MP36-05 Intraoperative 100% stone-free rate with a flexible and navigable suction access sheath: how reliable is this result? A EULIS and Global FANS group study

Ee Jean Lim⁶, Khi Yung Fong¹, Daniele Castellani², Olivier Traxer¹, Bhaskar Somani⁴, Vineet Gauhar³

¹National University of Singapore, ²Azienda Ospedaliero Universitaria delle Marche, ³Sorbonne University Tenon hospital, ⁴University Hospital Southampton, ⁵Ng Teng Fong General Hospital, ⁶Singapore General Hospital

**Presented By:** Ee Jean Lim

**Introduction:** This study aims to determine whether 100% intraoperative stone-free rate (SFR) with the flexible and navigable suction access sheath (FANS) in retrograde intrarenal surgery (RIRS) truly impacts postoperative SFR as measured by non-contrasted CT (NCCT) imaging within 30 days of surgery.
Methods: We performed a review of our multicentre prospectively maintained database of patients who underwent flexible ureteroscopy done with FANS alongside holmium laser (HL) or Thulium fibre laser (TFL) from Aug 2023-Jan 2024. Baseline and perioperative characteristics such as stone number, size and location on CT. Post-procedure, on-table visual inspection of the entire pelvicalyceal system and entire ureter along with a retrograde pyelogram to document assessment of intraoperative SFR [1][FK2]. Intraoperative 100% SFR was defined as the absence of any stones or dust post laser lithotripsy during on-table visual inspection of the pelvicalyceal system and ureter. Postoperative SFR included patients with zero residual fragments (RF) or a single RF ≤2mm on NCCT.

Results: 394 patients were analysed. Median age was 49 years with 59.1% males. Median total operative time was 49 minutes. Postoperative NCCT identified zero RF in 57.4% and overall stone freedom at 30 days in 97.2%[1] (n = 383). These 383 patients were divided into 2 groups: those with intraoperative 100% SFR (n = 202, 53%) and those without (n = 181, 47%). Age differed significantly between the groups (median 46 vs 51 years, p = 0.026), as did stone volume (median 1021 vs 1500 mm³, p < 0.001). Intraoperatively, scope size ≥28 French (48% vs 37%, p = 0.039), operative time (45 vs 55 min, p < 0.001), use of TFL (54% vs 36%, p = 0.001) and deployment of a postoperative double-J stent (71% vs 87%, p < 0.001) were significantly different. Postoperative outcomes were comparable, with no cases of persistent hematuria or sepsis.

Conclusions: In this contemporary cohort of FANS in RIRS no cases of persistent hematuria or sepsis.

Funding: NIL.

MP36-06 High-Power versus Low-Power Laser Settings During Endoscopic Stone Disease Management: A Systematic Review

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1Department of Urology, Rio University Hospital

Presented By: Panagiotis Kallidonis, MD, MSc, PhD, FEBU

Introduction: High-power (HP) lasers, which are characterized by increased pulse energy and pulse frequency characteristics, can accomplish faster stone ablation rates. However, optimal laser settings during endoscopic stone disease management still represents a debatable issue. The purpose of this systematic review is to summarize all existing evidence regarding the comparison of HP versus low-power (LP) laser settings during different endoscopic lithotripsy procedures.

Methods: Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Guidelines, PubMed, Scopus and Cochrane databases were systematically screened, from inception to 29 January 2024. The search strategy used the PICO (Patients, Intervention, Comparison, Outcome) criteria. All endoscopic laser lithotripsy surgical approaches were included, including ureteroscopy (URS), retrograde intrarenal surgery (RIRS), percutaneous nephrolithotomy (PCNL) and transurethral lithotripsy for bladder stones. Pediatric patients were also included.

Results: In total, 10 studies met the inclusion criteria and were included in final qualitative synthesis. Although most studies were retrospective in design, two prospective and three randomized clinical trials (RCT) were also included. In most studies total operative time (OT) was shorter for the HP group, except two studies, in which OT was equivalent between the two groups or shorter for the LP group. Mean fragmentation time was homogeneously significantly shorter in the HP group. Stone-free rates (SFR) ranged from 59.0% to 100% for the LP group and from 78.9% to 100% for the HP group. Auxiliary procedures rates ranged from 3.0% to 68.6% for the LP and from 3.8% to 57.8% for the HP group. Retreatment rates ranged from 2.4% to 26.8% for the LP group and from 1.3% to 17.2% for the HP group. Total complication rates were higher for the LP group in six studies, equivalent between the two groups in one study and higher in the HP group in one study.

Conclusions: HP laser lithotripsy is a safe and efficient approach for URS, RIRS, PCNL and cystolithotripsy in both the adult and the pediatric setting. HP laser settings were associated with significantly shorter total operative time, while some studies reported also better SFR in the HP groups. Complication rates were comparable between the two groups. The implementation of more RCTs comparing HP and LP laser lithotripsy in different stone settings is of outmost importance, so that better conclusions can be drawn.

Funding: This research did not receive any funding.

MP36-07 Comparative Analysis of Artificial Intelligence AI(ChatGPT) Diagnosis and Management versus Urologist Consultation in Endourology

Haresh Thummar3, Nisha T.1, Keya T.2
1Vedanta, 2GCS, 3ZHV

Presented By: Haresh Thummar, MD

Introduction: The integration of artificial intelligence (AI) tools like ChatGPT in healthcare has raised interest in its potential role in assisting with diagnosis and management decisions. This study aims to compare the diagnostic accuracy and management plans generated by ChatGPT with those provided by a qualified urologist in a cohort of 25 endourology patients. Using a Likert scale, patient satisfaction and perceived effectiveness of ChatGPT versus urologist consultation will be evaluated.

Methods: This prospective study involved 25 endourology patients who first received a diagnosis and management plan from ChatGPT, followed by a real-time consultation with a qualified urologist. ChatGPT provided initial recommendations based on patient-reported symptoms and history, while Dr. conducted a face-to-face evaluation and formulated a personalized diagnosis and treatment plan. Patients rated their satisfaction and confidence in diagnosis and management plans using a Likert scale (1-5), with 1 indicating low satisfaction/confidence and 5 indicating high satisfaction/confidence. Data were analyzed to compare scores between ChatGPT and urologist consultation groups.

Results: Preliminary analysis revealed that patients rated their satisfaction and confidence significantly higher with the urologist consultation compared to ChatGPT. The average Likert scale score for satisfaction with the diagnosis was 4.2 (±0.8) for
urologist consultation versus 3.1 (±0.9) for ChatGPT (p < 0.001). Similarly, satisfaction with the management plan was rated higher for the urologist (4.4 ±0.7) compared to ChatGPT (3.3 ±0.8) (p < 0.001). Furthermore, qualitative feedback highlighted concerns regarding the interpretability and depth of recommendations provided by ChatGPT compared to the nuanced evaluation and personalized approach offered by the urologist.

**Conclusions:** In this comparative study, while ChatGPT demonstrated potential utility in offering initial diagnostic insights and management suggestions for endourology patients, urologist consultation was preferred and perceived as more effective by patients. The personalized nature of consultation, direct interaction, and expertise of the urologist contributed significantly to higher patient satisfaction and confidence levels. These findings emphasize the supplementary role of AI tools like ChatGPT in healthcare, particularly as aids to assist clinicians, rather than substitutes for expert medical consultation. Future research should focus on refining AI algorithms and integrating them effectively into clinical workflows to maximize their benefits while ensuring patient-centered care and satisfaction.

**Funding:** None.

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**MP36-08 Impact of vacuum-assisted suction access sheath (V-SAS) on stone free rate and post-operative infection in Percutaneous Nephrolithotomy for complex staghorn renal calculi? A prospective analysis**

Dr. Jaisukh Kalathia, Dr. Vineet Gauhar, Dr. Kaushal Patel, Dr. Arvind Valiya, Dr. Ayush Khetarpal, Dr. Giriraj Vala, Dr. Kuldeep Aggarwal, Dr. Prathan Joshi

Ng Teng Fong General Hospital, Nephron Kidney Hospital, Valiya Kidney Hospital, Khetarpal Hospital, KIMS, Wellness Hospital, Zydus Hospital, Fortune Urology clinic

Presented By: Dr. Jaisukh Kalathia, MD

**Introduction:** Studies have proven that PCNL with vacuum-assisted access sheath (V-SAS) improves stone-free rate (SFR) and reduced operative time compared to traditional access sheath. But its role in PCNL for complex staghorn calculi has not enough evidence that has been published.

**Methods:** Between June 2023 to March 2024, 238 patients underwent PCNL. Out of these 64 patients with large complex staghorn calculi who underwent PCNL using V-SAS were included in the study. Both sources of energy lithotripter and Holmium laser were used. Pre-operative patients’ basic demographics including radiological investigations, stone characteristics, urine cultures, intra-op parameters (maneuverability of V-SAS), SFR (post-op CT scans), post-operative infection, blood transfusions, requirement of auxiliary procedures and length of hospitalizations were prospectively analyzed.

**Results:** Mean age was 42.2 years with 38 male and 26 female patients. Average length of the complex staghorn (partial/com- plete) calculi included was 4.6 ± 2 cm with secondary stones. Baseline mean haemoglobin and serum creatinine were 11.6 % and 1.2 mg/dl respectively. 52 (81%) patients were operated under regional while 12 (19%) patients required general anesthesia. Mean operative time was 52.4 ± 14 minutes. Average V-SAS time was 32 ± 12 min. Post-operative average drop in haemoglobin was 1.2 %. Total 51 (79%) patients were completely cleared of calculi based on post-op CT Scan while remaining 13 (21%) with residual calculi required auxiliary procedures.

Urosepsis was seen in only 5 (7%) patients which were managed conservatively. Average length of hospital stay was 3.5 days with no peri-operative mortality.

**Conclusions:** The usage of V-SAS in complex staghorn renal calculi signiﬁcantly improves SFR, operative time and post-operative infection eventually reducing auxiliary procedures. It should be considered an ideal alternative to traditional access sheath.

**Funding:** None.

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**MP36-09 Bilateral RIRS using Flexible and Navigable Access Sheath Ache (FANS) in patients with renal stones.**

Stefi Kar Kei Yuen, Vineet Gauhar, Nariman Gadzhiev, Vigen Malkhasyan, Satyendra Persaud, Daniele Castellani, Yiloren Tanidi, Azimjon N Tursunkulov, Mohamed Elshazly, Chu Ann Cha, Boyke Soebhali, Mehmet Ulker Goke, Saeed Bin Hamdi, Anil Shrestha, Bhaskar Somani

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Presented By: Stefii Kar Kei Yuen

**Introduction:** To assess the immediate peri and postoperative outcomes of same sitting bilateral RIRS (SSBR) using FANS in patients with renal stones.

**Methods:** Prospectively acquired data of 115 adult patients undergoing SSBR in 14 global centers between November 1st2023 to March 10th2024 was analyzed to assess intraoperative, perioperative and 30-day post operative stone free and clinical outcome. Stone volume, location, multiplicity and density were not a contraindication for enlisting.

**Results:** Results are tabulated.
Conclusions: To our knowledge this is the first global study where in SSBR with FANS has the best odds of rendering a single stage 100% SF when Stone Volume is less than 1500mm³ irrespective of stone dimension, multiplicity. A 86.5% bilateral SFR with no reported sepsis in a reasonable operative time is achieved showing much promise in changing RIRS outcomes.

Funding: Nil.

MP36-10 Surgeon Operative Experience With the Novel 7.5 French Pusen 3033A compared to the Olympus URF-V2 Retreresocopes: A Pilot Study
Juan Sebastian Arroyave Villada1, Micah Levy1, Chih Peng Chin1, Charles Nguyen1, Aaron Walt1, Daniel Cohen1, Esther Kim1, Daniel Wang1, Christopher Connors1, Francesca Larenas1, Modasser Awan1, Caner Dinlenc1, Michael Palese1, Aaron Walt2, Daniel Cohen1, Esther Kim1, Daniel Wang1, Christopher Connors1, Francesca Larenas1, Modasser Awan1, Caner Dinlenc1, Michael Palese1
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Presented By: Juan Sebastian Arroyave Villada, BS

Introduction: With many flexible ureteroscopy (fURS) devices on the market, it is important to understand the factors that are desirable to surgeons. We prospectively analyzed performance variables between the novel, slimmer, 7.5 Fr Pusen (Pu3033A) and the 8.4 Fr Olympus (URF-V2R) scope. Methods: Using prospective block randomization, patients with indications for fURS between January-November 2022 received either the Pu3033A or the URF-V2R. Post-operatively, scope deflection was measured with and without a retrieval basket in the working channel, and surgeons subjectively rated maneuverability and visibility on a 5-point Likert Scale. Other subjective perioperative findings and scope malfunctions and failures were reported. Results: 50 patients were enrolled (25 vs. 25). There were no differences in patient demographics, preoperative and perioperative parameters or postoperative complications. Without an instrument, the Pu3033A had greater positive (294.3 vs. 243.5) and negative (294.0 vs. 242.0) deflection. With an instrument, the Pu3033A also had greater positive (277.8 vs 228.3) and negative (277.8 vs. 228.9) deflection (all p < 0.001). Though both manufacturer specifications report similar ex-vivo deflection (-270/275 to -270/275), the Pu3033A exceeded this by over 20 degrees bi-directionally, while the URF-V2R underperformed by almost 30 degrees bi-directionally. In-vivo, there was no difference in surgeon ratings for maneuverability (4.88 vs. 4.80, p = 0.624), however, the Pu3033A was noted to have worse overall visibility (3.88 vs. 4.84, p = 0.001), possibly attributed to the use of an early generation monitor which was subsequently upgraded. There were no differences in scope malfunction or failure rates. In four cases with strictures or tortuous ureters, the Pu3033A’s slim diameter and greater deflection was reported to have improved the surgeon’s operative experience.

Conclusions: The 7.5 Fr Pusen Pu3033A is the slimmest single use ureteroscope on the market. The combination of its slim diameter and its strong deflection range may provide surgeons with a superior operative experience, especially for diagnostic indications and in those with challenging anatomy. Funding: Was partially funded by Zhuhai Pusen Medical Technology Co., Ltd.

MP36-11 Performance of UrologiQ AI in triaging, detection, quantification and localization of calculi in 3D NCCT KUB scans
Abhijith Yenikekaluva1, Syed Furqan Azeez1, Apeksha Sakegaonkar1
1Biocliq Technologies Private Limited, 2Biocliq Technologies Limited
Presented By: Abhijith Yenikekaluva

Introduction: To assess the performance of UrologiQ AI in the triage of 3D NCCT KUB scans in a clinical setting, focusing on the detection, quantification, and localization of urinary calculi. Methods: A retrospective cross-sectional analysis was conducted using 95 3D NCCT KUB scans obtained from a diagnostic center for algorithm testing. UrologiQ employs AI algorithms to classify CT KUB scans as either calculus-positive or calculus-negative and also detects, measures (in terms of volume), and locates urinary calculi within these scans. The scans were processed using the UrologiQ AI algorithm, and the results were documented. Stone masks were generated using ITK snap, and volume measurements were recorded. A radiologist with degrees bi-directionally, while the URF-V2R underperformed by almost 30 degrees bi-directionally. In-vivo, there was no difference in surgeon ratings for maneuverability (4.88 vs. 4.80, p = 0.624), however, the Pu3033A was noted to have worse overall visibility (3.88 vs. 4.84, p = 0.001), possibly attributed to the use of an early generation monitor which was subsequently upgraded. There were no differences in scope malfunction or failure rates. In four cases with strictures or tortuous ureters, the Pu3033A’s slim diameter and greater deflection was reported to have improved the surgeon’s operative experience.

Conclusions: The 7.5 Fr Pusen Pu3033A is the slimmest single use ureteroscope on the market. The combination of its slim diameter and its strong deflection range may provide surgeons with a superior operative experience, especially for diagnostic indications and in those with challenging anatomy. Funding: Was partially funded by Zhuhai Pusen Medical Technology Co., Ltd.
Results: Using dusting settings, the maximum recorded temperatures were 42.3 degrees Celsius (no irrigation, no sheath), 37.3 degrees Celsius (with irrigation but no access sheath) and 36.2 degrees Celsius (with irrigation and access sheath). In fragmenting mode, the maximum recorded temperatures were 52 degrees Celsius (no irrigation, no sheath), 43.1 degrees Celsius (with irrigation but no access sheath) and 42.9 degrees Celsius (with irrigation and access sheath).

Conclusions: In certain conditions (no irrigation, more watts) temperature may increase to dangerous levels. However, in closer to real-life settings (with irrigation and especially when ureteral access sheath are employed) the magnitude of this effect is limited, rendering the flexible intrarenal laser lithotripsy a reasonably safe procedure.

Funding: None.
MP36-14 Endovascular complication of DJ stent: A literature review

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Presented By: Pankaj Maheshwari, MCh, FRCS

Introduction: DJ stent placement is a commonly performed endourological procedure. Although stent placement is a safe procedure, it can have complications like infection, encrustation, migration and stent fragmentation. Stent migration is often ante-grade or retrograde in the pelvi-calyceal system. Rarely migration can be extrarenal in the vascular system.

Methods: A compilation of all case reports published about the endo-vascular complication of DJ stent was performed. A total of 22 case reports were identified between 2002 till date in English literature.

Results: Endovascular complications have been reported in 10 men and 12 women between the age range of 29 to 75 years. In 19 patients (86%) this complication happened during management of urolithiasis. Nine patients (40%) had associated infection and needed stent placement in emergency. Nearly 80% (17 out of 12) happened on right side and only 22% on left. More patients (15 of 22) had endovascular migration on retrograde stent attempt. In most patients (18 of 22) fluoroscopy was not used to monitor stent placement. Only two patients (9%) presented with a vascular emergency while rest were all diagnosed on a pre-stent removal radiologic evaluation. Management of the migrated stent was by open surgery in four patients, endourologic removal 13 (four were also controlled with interventional radiology support), endourologic removal in four & one patient needed laparoscopic removal. There are no reports of renal or life loss due to endovascular migration of the stent.

Conclusions: Endovascular migration of a DJ stent is rare complication. This commonly happens when the stent placement is performed in emergency for an obstructed stone with infection without access to fluoroscopic control. Interestingly this complication is more common on right side. Usually this complication is diagnosed on pre-stent removal evaluation and most patients can be managed by endourologic management often controlled with endovascular means. This complication usually would not lead to renal or life loss.

Funding: None.

MP36-15 Exploring Evolving Strategies in the Management of Upper Urinary Tract Stones: A Population-Centric Retrospective Cohort Study in the Adult Israeli Demography

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Presented By: Dor Golomb, MD

Introduction: There is a mounting curiosity surrounding the dynamics of surgical interventions in urolithiasis. Various studies have endeavored to examine the frequency and trends in surgical modalities like ureteroscopy (URS), percutaneous nephrolithotomy (PCNL), and shock wave lithotripsy (SWL). The primary goal is to discern shifts in surgical methodologies and formulate specific strategies for urolithiasis management. In this study, our aim was to evaluate the trends and incidence of surgical interventions among adults with upper urinary tract stones in Israel.

Methods: A retrospective, population-based cohort study utilizing administrative databases held at Clalit Health Services, to identify all adults (≥18 years) who underwent their first surgical treatment for upper tract urolithiasis. Descriptive statistics were used to summarize baseline patient demographics and surgical trends were analyzed using the Cochrane-Armitage test for trend.

Results: Between 2003-2020, 36,624 adult patients were treated surgically for upper tract urinary stones. Mean age was 53.6 years (SD16.1). During the period investigated, the number of insured by Clalit Health Services increased by 25% and the total number of surgically treated stones increased by 98.7%. By type of procedure: URS increased by 351%, percutaneous PCNL increased by 67%, while the number of SWL declined by 79%. The number of procedures per 100,000 population grew from to 37.5 in 2003 to 58.05 in 2022. The percentage increase in total number of surgical procedures was 103% and 90% in males and females, respectively.

Conclusions: Our findings reveal significant increases in the total number of surgically treated stones over the investigated period. Notably, this increase far outpaced the growth in the number of individuals insured by Clalit Health Services. Further research and interventions are warranted to explore the underlying factors driving these trends and to develop targeted approaches for prevention, early detection, and minimally invasive treatment of upper urinary tract stones in Israel.

Funding: None.

MP36-16 Exploring the Economic Landscape of Ureteric Stones: Impact of Age and Gender on Direct Healthcare Costs

Dor Golomb1, Amit Shemesh1, Orit Raz1, Hanan Goldberg2, Amir Cooper1

1Assuta Ashdod University Hospital, 2State University of New York, Upstate Medical University
A thorough review of the literature was conducted

Methods:

tripsy for treatment of bladder stones.

review is aimed at assessing the ef

ques with the use of laser is being widely adapted. This systematic

tion, infections, foreign bodies or neurogenic voiding dysfunction.

Comparative analyses were performed on various cost rates in relation to different stone parameters, patient clinical presentations, laboratory results, and personal histories of urolithiasis.

Results: From January 2018 to January 2020, 805 patients underwent abdominal CT scans at a single institution’s ED and were diagnosed with ureteric stones. Among them, 773 patients met the inclusion criteria, with 78% (609) being males and 22% (169) females. The mean ages for males and females were 49.4 (SD 14.4) and 51.6 (SD 15.7), respectively (p = 0.08). Treatment costs exhibited an inverse relationship with age, amounting to 4, 025, 5, 116, 6, 058, and 9, 225 US dollars (USD) in the 18-30, 31-50, 51-70, and over 70 age groups, respectively. Female gender was associated with higher treatment costs, averaging 6, 831 USD, compared to 5, 450 USD in males (p = 0.03). However, there were no significant differences between genders in terms of the type of surgical procedure (p = 0.4) or hospital stay duration (p = 0.1).

Conclusions: Age and gender exerted a significant impact on treatment costs, revealing that advanced age and female gender were both correlated with higher direct treatment costs in the care of ureteric stones.

Funding: N/A.

MP36-17 Safety and efficacy of laser lithotripsy for treatment of bladder calculi: Evidence from a systematic review of literature

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1University Hospital Southampton NHS Trust

Presented By: Mahir Akram, Core surgical trainee MBBS, MRCS

Introduction: Despite a reduction in the incidence of bladder stones in developed countries over the past few years they still continue to account for 5% of all urinary tract calculi. Contributing factors towards their formation include bladder outflow obstruction, infections, foreign bodies or neurogenic voiding dysfunction. This necessitates the need for an effective treatment modality, and with advances in medical technology, minimally invasive techniques with the use of laser is being widely adapted. This systematic review is aimed at assessing the efficacy and safety of laser lithotripsy for treatment of bladder stones.

Methods: A thorough review of the literature was conducted using appropriate search terms up to March 2024. Only original comparative studies written in English for patients with bladder stones treated with laser were considered with inclusion criteria being reviews in last 20 years with at least 10 patients. This review has been registered in PROSPERO.

Results: From 2021 until now, 18 patients underwent transurethral marsupialization of renal sinus cysts. According to contrast-enhanced multispiral computed tomography (MSCT) the average size of the cysts was 71.5 ± 14 mm, pyelocaliceal ectasia was detected in 7 patients, 9 patients had stones in the pelvicalyeal system (PCS). All patients underwent rigid ureterorenoscopy (URS) with retrograde ureteropyelography (UPGR) with wide dissection of the

MP36-18 Endoscopic Transurethral Marsupialization of Large Renal Sinus Cysts Using a Thulium Fiber Laser

Alexey Martov1, Andronov Andrey1, Sergey Dutov1, Stanislav Serikov1, Alexey Martov2

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Presented By: Alexey Martov, MD, PhD, Corresponding Member of the Russian Academy of Sciences

Introduction: In clinical practice, minimally invasive methods for the treatment of renal sinus cysts are actively used, demonstrating high efficiency, as well as a minimal risk of postoperative complications, however, the criteria for their selection remain the subject of scientific debate. The aim of this study was to evaluate the effectiveness of endoscopic transurethral marsupialization of renal sinus cysts > 50 mm in size.

Methods: From 2021 until now, 18 patients underwent transurethral marsupialization of RSCs. According to contrast-enhanced multispiral computed tomography (MSCT) the average size of the cysts was 71.5 ± 14 mm, pyelocaliceal ectasia was detected in 7 patients, 9 patients had stones in the pelvicalyeal system (PCS). All patients underwent rigid ureterorenoscopy (URS) with retrograde ureteropyelography (UPGR) with wide dissection of the
walls of the pelvis and cyst. The thulium fiber laser FiberLase U-MAX (IRE-Polyus, Russia) was used as an energy source (365 μm fiber, continuous or pulsed radiation mode 1 J × 10 Hz = 10 W). The operation was completed by drainage of the kidney using two JJ stents for a period of 4-6 weeks.

**Results:** In the postoperative period, 1 case of pyelonephritis was noted, which required adjustment of antibacterial therapy. The results of control ultrasound of the kidneys and urinary tract 3-4 days after surgery showed that all patients achieved 50-70% regression of RSCs. After 4-6 weeks, patients underwent control URS with UPGR to visualize the PCS and to reveal residual cavity and stones. Internal stents were removed from 9 patients. For 9 patients with stones in the PCS, contact laser nephrolithotripsy was performed using a disposable Innovex ureterorenoscope and FiberLase U-MAX laser. All patients experienced relief from clinical symptoms. Residual cavities were identified in 4 patients (less than 15 mm in diameter) according to the control MSCT. No enlargements of the PCS or concrements were detected.

**Conclusions:** The effectiveness and safety of transurethral marsupialization in treating large RSCs of the kidneys has been confirmed. The use of minimally invasive interventions reduces the risk of intra- and postoperative complications, even in comorbid patients who are constantly receiving anticoagulant therapy. Further study will enable the determination of patient selection criteria, postoperative kidney drainage duration, the frequency and total duration of patient monitoring.

**Funding:** None.

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**MP36-20 WITHDRAWN**

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**MP36-19 Transperitoneal Transvesical Laparoscopic Repair of Vesicovaginal Fistulae: Experience of a Tertiary Care Centre in Northern India**

Vishwajeet Singh¹, Jitender Yadav¹, Mohammad Rehan Akhtar¹

¹King George’s Medical University

Presented By: Vishwajeet Singh, MCh

**Introduction:** To present experience of treating supratrigonal vesicovaginal fistulae by laparoscopic technique and their follow-up.

**Methods:** Between 2014 and December 2022, 48 cases of supratrigonal fistulae were repaired by laparoscopic transperitoneal transvesical technique with interposition flap. The obstetric fistula was present in 28 and gynecologic fistula in 20 patients. Single supratrigonal fistula was present in 46 patients and in 2 patients there were 2 fistulae lying side to side. The vaginal opening was closed as single layer interrupted suture and cystotomy closed as single layer continuous suture by 3-0 polygalactin. The omentum was used as interposition flap in all except 2 cases in whom postero-superior vesical fold of peritoneum was used. The open conversion was required in 2 cases. The urethral catheter was removed in 3 weeks following a micturating cystogram.

**Results:** The mean fistula size was 1.2 cm (range 0.8-2.5 cm). Open conversion was performed in 2 cases of whom one had excess carbon-dioxide retention and cardiac arrhythmia and in another case due to malfunction of instruments. All patients were continent following the catheter removal. The median follow-up is 34 months. None developed any complication related to laparoscopic repair till last follow-up.

**Conclusions:** Laparoscopic repair of supratrigonal vesicovaginal fistulae is an effective and safe minimally invasive treatment with excellent result.

**Funding:** Internal funding

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**MP36-21 Study on the long-term results of laparoscopic repair of vesicouterine fistula conducted at a tertiary care center in northern India**

Vishwajeet Singh¹

¹King George’s Medical University

Presented By: Vishwajeet Singh, MS

**Introduction:** Vesicouterine fistula (VUF) is an uncommon cause of female genitourinary fistula. It accounts for 1–4% of all urogenital fistulas. The majority of these fistulas result from a lower segment cesarean section (LSCS). VUF is becoming more common as cesarean section rates rise. Historically, open surgical repair has been the preferred therapeutic method. However, laparoscopic VUF repair is a minimally invasive method, and only a few case studies with short-term follow-up have been published. This study presents long-term effects of laparoscopic VUF repair.

**Methods:** Following permission by the Institutional Review Committee, a retrospective analysis of patients who underwent laparoscopic VUF repair between 2017 and 2022 was conducted. Nine patients had a history of LSCS, three of whom had experienced prolonged obstructed labour and one who had undergone dilatation and curettage for medical termination of...
pregnancy. All patients had ultrasounds of their kidneys, ureters, and bladders, as well as hysterosalpingography (HSG) in four cases and a contrast enhanced computed tomography scan.

Results: The most prevalent presentation was cyclical menstrual bleeding through urine (menouria) in 9 of 10 patients, followed by amenorrhea in 7 and vaginal leaking in 3 cases. The patient’s median age was 28.3 years (range, 22-37), with a median post-operative follow-up of 2.3 years (range, 1-4). All patients received transperitoneal laparoscopic VUF repair with positive results (Table 1). The average operating time was 158.7±16.9 minutes (range, 135-186 minutes), with a median blood loss of 100 mL (range, 50-210 mL). All patients were told not to become pregnant for a year after laparoscopic surgery. Three patients conceived during follow-up, and all delivered normal babies via LSCS.

Conclusions: Laparoscopic VUF repair is a safe and effective minimally invasive treatment that results in a successful pregnancy over time.

Funding: None.
VIDEO SESSION 1: ONCOLOGY: PROSTATE, BLADDER, AND MISCELLANEOUS CANCERS

V1-01 WITHDRAWN

V1-02 Peritoneal Flap with Bladder Suspension after Radical Prostatectomy with Pelvic Lymph Node Dissection

Ji Hae Park¹, Mann Patel¹, Kevin Chua¹, Benjamin Lichtbroun¹, Alain Kaldany¹, Sai Khrisnaraya Doppalapudi¹, Vignesh Packiam¹, David Golombos¹, Thomas Jang¹, Saum Ghodoussipour¹, Ji Hae Park¹, Sammy Elsamra¹

¹Rutgers Robert Wood Johnson Medical School

Presented By: Ji Hae Park, MD

Introduction and Objective: While pelvic lymphadenectomy improves staging of prostate cancer during radical prostatectomy, it is associated with increased risk of complications such as symptomatic lymphoceles which sometimes require additional percutaneous or laparoscopic intervention. Peritoneal flaps mitigate the risk of lymphoceles by allowing drainage of lymphatic fluid intraperitoneally where it can be absorbed. Bladder suspension techniques have been shown to aid urinary continence. Here, we present our novel peritoneal flap, where we perform both a peritoneal flap and bladder suspension with the potential to aid incontinence.

Methods: We present two different methods of peritoneal flaps. We initially used the peritoneal interposition flap where the lateral aspects of the redundant peritoneum that usually covers the preperitoneal space are brought to the most dependent portion of the pelvis and fixed to the lateral bladder wall. In our second technique, we bring the lateral edges of the peritoneum together and tack this up to the anterior abdominal wall to aid in both continence and prevention of lymphocele formation.

Results: For our peritoneal interposition flaps, we take the lateral edges of the peritoneum overlying the bladder and secure

| Table 1. Patient Characteristics and Continence Status at 3 months |
|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                | Age | Gleason Score | pT Stage | Prostate Size | Lymphocele Formation | Pad Use at 3 Months |
| Patient 1       | 70  | 3+4           | pT3aN0Mx | 51 g          | No               | 0               |
| Patient 2       | 68  | 4+3           | pT3aN0M0 | 35 g          | No               | 0               |
| Patient 3       | 73  | 3+4           | pT3bN0Mx | 69.4 g        | No               | 0               |

*Of note, this patient has stress urinary incontinence with Valsalva
V1-03 Navigating robotic retroperitoneal lymph node dissection for post chemotherapy non-seminomatous testicular cancer residual retroperitoneal mass

Gabriel Carreno Galeano

1University of Louisville, Department of Urology. Urology resident PGY-3.

Presented By: Gabriel Carreno Galeano, MD

Introduction and Objectives: In our approach, we utilize the DaVinci Xi for multi-quadrant surgery, making it ideal for Stage I testicular cancer. Literature is limited, but our experience confirms the safety of post chemotherapy RPLND despite desmoplastic challenges.

Methods: Our patient, a 32-year-old male, underwent a right radical orchiectomy for pT2 non-seminomatous testicular cancer. CT scans unveiled pulmonary metastases as well as a 6.9 cm retroperitoneal mass. After three cycles of Bleomycin, Etoposide, and Cisplatin, his post chemotherapy CT scan revealed a 2 cm residual retroperitoneal mass. The patient was placed supine. Using a modified Hasson technique, we introduced a 12 mm trocar into the left upper quadrant, followed by another 5 mm in the left lower quadrant. To ensure precise access to the retroperitoneum, we position four additional 8 mm trocars in an oblique straight setup for optimal triangulation. Finally, the DaVinci Xi docks perpendicular to the patient from the left, targeting the upper abdomen.

Results: A full template dissection was performed, encompassing the right lumbar group, which includes the presacral, paracaval, and retrocaval nodes, the interaortocaval and left lumbar group consisting of paraaortic, paraaortic, and retroaortic nodes. Throughout the dissection, we encountered severe desmoplastic reactions at various junctures. An inadvertent cavotomy occurred and was promptly repaired using a 4-0 Prolene suture. The inferior mesenteric artery (IMA) was encased by a cluster of nodes that posed challenges for safe isolation and resection. Consequently, a decision was made to clip and divide the IMA. The procedure was completed without significant complications, with an estimated blood loss of approximately 100 cc. The postoperative course was uneventful, and the patient was discharged the following day. Final pathology results indicated extensive necrosis and treatment effect without evidence of recurrence. The patient has since returned to his baseline health status and resumed his professional activities.

Conclusion: In our technique, we were able to create a peritoneal flap and perform bladder suspension simultaneously. We find this revised technique technically simpler, and it has potential to prevent lymphoceles and improve continence.
cancer. Nevertheless, each modality presents specific technical limitations, particularly when treating anterior lesions. Herein, we present step-by-step fusion-guided treatment techniques for anterior prostate cancer lesions, using irreversible electroporation (IRE) and focal cryotherapy (CRYO).

Methods: In this video, two patients who were diagnosed with localized anterior prostate cancer lesions are presented. The first case is a 69-year-old man with favorable intermediate-risk disease and a 21mm PIRADS-5 anterior prostate lesion who underwent IRE. The second case is an 81-year-old man with unfavorable intermediate-risk disease and a 24mm PIRADS-5 anterior prostate lesion who underwent partial gland CRYO. The treatment modality was selected based on the surgeon’s expertise and shared decision-making.

Results: MRI/Ultrasound fusion imaging was used to visualize the index lesions, needle placement planning, and treatment monitoring. The IRE was performed using 5 electrodes which created 3 treatment triangles. Double freeze-thaw technique was used for CRYO. Both surgeries were accomplished without intraoperative complications. The treatment success was ensured using post-procedure contrast-enhanced ultrasound demonstrating a lack of enhancement on the treated side. Operative time was 58 minutes for IRE and 146 minutes for CRYO. No 90-day complications were reported. PSA values showed a significant decrease postoperatively and both patients reported favorable urination and erection after surgery.

Conclusions: IRE and CRYO are both acceptable focal therapy modalities in patients with anterior prostate cancer lesions. MRI/Ultrasound fusion imaging can optimize real-time treatment planning and monitoring.

V1-06 Endoscopic Resection of an Enteroanastomotic Tumor Recurrence After Radical Cystectomy: A Novel Approach Using Bipolar Resection
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1Mayo Clinic

Presented By: Kelly Lehner, MD

Introduction: Upper tract urothelial carcinoma (UTUC) after radical cystectomy is a relatively uncommon occurrence, with reported rates in the literature ranging from 0.8% to 6.4%. For low-grade, noninvasive disease, endoscopic tumor resection provides an effective nephron-sparing management approach, although the ability to effectively carry out laser ablation may be limited by tumor size. In this video, we present a novel management technique for relatively large volume UTUC recurrence in a 53-year-old male who previously underwent radical cystectomy and creation of an ileal conduit.

Methods: Our patient had a history of low grade and high grade Ta and failed multiple courses of intravesical management prior to cystectomy. At the time of cystectomy, papillary tumor was noted in the distal left ureter, and was able to be resected with negative margin prior to ureteral implantation into the conduit. Three years later, during routine surveillance, he was found to have papillary tumor recurrence in the ureters, renal pelvices, and at the site of the ureteroenteric anastomasis. Biopsy revealed low grade, noninvasive tumor. Due to bulky tumor size at the ureteroenteric anastomasis, this area proved difficult to manage with endoscopic laser ablation alone. The patient strongly desired a kidney sparing approach.

Results: Due to tumor size, an alternative approach was sought to achieve complete tumor resection. In this video, we demonstrate a novel technique of using a bipolar resectoscope to perform endoscopic tumor resection through an ileal conduit. Cutting loop electrocautery was used to resect a 4-cm tumor emanating from the left ureteral orifice into the ileal conduit. Total resection time was 29 minutes. There was no concern for injury to the stoma, ileal conduit, or ureteral anastomasis, confirmed with intraoperative loopogram and retrograde pyelogram.

Conclusion: For bulky urothelial tumors accessible within an ileal conduit, tumor resection with a bipolar resectoscope offers a safe, feasible, and efficient method of kidney sparing UTUC management.

V1-07 Robot-Assisted Retroperitoneal Lymph Node Dissection (RPLND) for Management of Large Retroperitoneal Masses
Nafee Ullah2, Michael Raver1, Katerina Lembrkova1, Max Drescher1, Mubashir Billah1, Mutahar Ahmed1
1Hackensack Meridian Department of Urology, 2Hackensack Meridian School of Medicine

Presented By: Nafee Ullah, BA

Introduction: We present a Robotic-Assisted Retroperitoneal Lymph Node Dissection (RPLND) for a 7.8 cm retroperitoneal mass. Robotic RPLNDs offer an efficacious and minimally invasive alternative to traditional open approaches minimizing length of stay and adverse outcomes. This video demonstrates our institutional steps to complete Robotic-Assisted RPLNDs for the management of post-chemotherapy testicular cancer metastases.

Methods: A 28-year-old male with a history of metastatic Stage IIIA mixed germ cell tumor of the left testicle, previously treated with four cycles of chemotherapy following a left radical inguinal orchietomy, presented with a 7.8 cm left retroperitoneal mass. The patient elected to undergo a multi-port robotic-assisted left RPLND for the management of the retroperitoneal mass.

Results: Operative time of the procedure was 176 minutes with an estimated blood loss of 100 mL. Robotic trocars were placed along the course of a pfannenstiel incision. Drains, including a Foley catheter and a Jackson-Pratt (JP) drain, were utilized postoperatively and removed on postoperative day 1. Tissue removed during the surgery included the retroperitoneal mass, interaortocaval lymph nodes, paraaortic lymph nodes, and paracaval lymph nodes. The mass was identified as a cystic teratoma, primarily composed of mature tissue, exhibiting focal hemorrhagic degenerative changes and degenerative epithelial atypia, suggesting a favorable response to chemotherapy. The patient’s length of stay post-procedure was 29 days complicated by a pleural and pericardial effusion and a patent foramen ovale.

Conclusion: Robotic-Assisted RPLNDs are a minimally invasive, viable option for the management of retroperitoneal masses in patients with testicular cancer. Larger studies are warranted to corroborate the adverse effects and oncologic outcomes profile of this approach.
**V1-08**  
Robotic radical prostatectomy with Bladder Tuck and urethral suspension: Outcome on lymphocele reduction

Naveen Pokala, Hunter Kraus, Dominic Barresi, Glendon Markollari  
1University of Missouri, 2University Of Missouri, 4University of Missouri

Presented By: Naveen Pokala, MD FRCS

Lymphoceles are the most common complications after pelvic lymph node dissection with a reported incidence of up to 48%. Majority of these are asymptomatic. 2-15% of the lymphoceles will present with abdominal pain, LUTS, fevers, lower extremity swelling or DVT and might need drainage.

In this video we describe a simple technique to intra-peritonealize the pelvic node dissection with a simple bladder tuck. We also describe our technique for urethral suspension at our institution.

**V1-09**  
Robot Assisted Suprapubic Tube Placement, a Complex Case with Multiple Prior Surgical and Radiologic Intervention

Victor Sandoval, Carl Ceraolo, Kirolos Meilika, Guan Wu  
1University of Rochester, Department of Urology

Presented By: Victor Sandoval, MD

**Introduction and Objective:** Suprapubic catheterization provides an alternate method to drain the bladder. In complex pelvic anatomy, risk for visceral perforation can be high and deadly. Robot assisted laparoscopic suprapubic catheter tube placement (RAL SPT) has been described in conjunction with robot prostatectomy. To our knowledge, there is paucity of reports for a RAL SPT placement by IR also failed as there was no safe window due to overlying bowel on the pelvis. (Fig. 1) Given the complexity of the new robotic system. This video demonstration solidifies the role of advanced robotic systems in improving surgical outcomes and performance in urology.

**Methods:** A 73-year-old diabetic man, BMI 33.97 kg/m², surgical history of robotic radical prostatectomy followed by salvage radiotherapy. Developed urinary incontinence, underwent artificial urinary sphincter placement. Was complicated by the pump retracting proximally unreachable for the patient, making him incontinent. Developed radiation induced cystitis, requiring hyperbaric oxygen treatment. A first suprapubic tube placement (SPT) attempt under Interventional Radiology (IR) failed as the bladder was continuously empty and contracted. A permanent urethral foley catheter (FC) was placed under cystoscopy which partially alleviated patient symptoms. Patient had a buried penis, which made FC exchange highly difficult. A second attempt SPT placement by IR also failed as there was no safe window due to overlying bowel on the pelvis. (Fig. 1) Given the complexity of urine continence a RAL SPT placement was suggested.

**Results:** The robot was placed similar to a prostatectomy. An 8-mm trocar was pushed through the SP tube site and into the bladder dome. A 20 French Silicon Foley catheter was inserted in the channel created by the 8-mm trocar. The bladder entrance area was enforced with 3-0 V-lock suture to prevent leakage. The adventitial layer was created by the 8-mm trocar. The bladder entrance area was enforced with 3-0 V-lock suture to prevent leakage. The adventitial layer was created by the 8-mm trocar. The bladder entrance area was enforced with 3-0 V-lock suture to prevent leakage. The adventitial layer was created by the 8-mm trocar.

**Conclusion:** Robotic assisted suprapubic catheterization technique can be implemented in patients with very high risk for bowel perforation, where all other non-surgical measures have failed.

**V1-10**  
DaVinci 5 Robot-Assisted Radical Cystectomy

Mubashir Billah, Mubin Rahman, Michael Raver, Katerina Lembrikova, Max Drescer, Mubashir Billah, Mutahar Ahmed  
1William Carey University College of Osteopathic Medicine, 2Hackensack Meridian Health

Presented By: Mubashir Billah, MD

**Introduction and Objective:** We report the application of the DaVinci Generation 5 robotic system in performing a robot-assisted radical cystectomy. This is the world’s first performed robotic radical cystectomy with the generation 5 robot. The DaVinci 5 provides many key enhancements including improved instruments, higher fidelity visualization, greater surgeon control, rapid onboarding, improved articulation, integrated insufflation, and more.

**Methods:** The procedure was performed on a 77-year-old female diagnosed with muscle invasive bladder cancer. The key steps matched our institutional steps to multiport radical cystectomy.

**Results:** The surgery was completed in 130.1 minutes without intraoperative or immediate postoperative complications. The patient’s postoperative recovery was uneventful with pelvic and JP drains removed on postoperative days 1 and 4, respectively. The patient was discharged on postoperative day 6. No complications were noted during the postoperative period, and the patient reported satisfactory outcomes at the follow-up.

**Conclusions:** The DaVinci Generation 5 robotic system for robotic assisted radical cystectomy is a feasible and effective surgical approach for muscle invasive bladder cancer. The generation 5 system allows for rapid onboarding while enabling all the benefits of the new robotic system. This video demonstration solidifies the role of advanced robotic systems in improving surgical outcomes and performance in urology.

**V1-11**  
Female pelvic-organ preserving Robotic assisted radical cystectomy-Point of technique

Victor Coelho, Abhishek Singh, Aruj Shah, Arvind Ganpule, Ravindra Sabnis, Mahesh Desai  
1University of Rochester, Department of Urology

Presented By: Victor Sandoval, MD

**Introduction and Objective:** Presented By: Victor Sandoval, MD

**Methods:** A 73-year-old diabetic man, BMI 33.97 kg/m², surgical history of robotic radical prostatectomy followed by salvage radiotherapy. Developed urinary incontinence, underwent artificial urinary sphincter placement. Was complicated by the pump retracting proximally unreachable for the patient, making him incontinent. Developed radiation induced cystitis, requiring hyperbaric oxygen treatment. A first suprapubic tube placement (SPT) attempt under Interventional Radiology (IR) failed as the bladder was continuously empty and contracted. A permanent urethral foley catheter (FC) was placed under cystoscopy which partially alleviated patient symptoms. Patient had a buried penis, which made FC exchange highly difficult. A second attempt SPT placement by IR also failed as there was no safe window due to overlying bowel on the pelvis. (Fig. 1) Given the complexity of urine continence a RAL SPT placement was suggested.

**Results:** The robot was placed similar to a prostatectomy. An 8-mm trocar was pushed through the SP tube site and into the bladder dome. A 20 French Silicon Foley catheter was inserted in the channel created by the 8-mm trocar. The bladder entrance area was enforced with 3-0 V-lock suture to prevent leakage. The adventitial layer was created by the 8-mm trocar. The bladder entrance area was enforced with 3-0 V-lock suture to prevent leakage. The adventitial layer was created by the 8-mm trocar.

**Conclusion:** Robotic assisted suprapubic catheterization technique can be implemented in patients with very high risk for bowel perforation, where all other non-surgical measures have failed.
VIDEO SESSION 1

1Muljibhai Patel Urological Hospital, Nadiad, 2Resident Urology Muljibhai Patel Urological Hospital, NADIAD, 3Muljibhai Patel Urological Hospital, Nadiad, 4Muljibhai Patel Urological Hospital, NADIAD, 5Resident Urology: Muljibhai Patel Urological Hospital, NADIAD

Presented By: Victor Coelho, MS DNB

**Aim:** To demonstrate an approach for organ-sparing robot assisted radical cystectomy in a woman

**Materials and methods:** Radical cystectomy (RC) is the primary treatment for localised muscle invasive bladder cancer and high-risk non-muscle invasive bladder cancer that does not respond to appropriate endovesical therapy. Traditionally, RC in women involves hystero-adnexectomy and resection of the anterior vaginal wall. Vaginal sparing strategies have evolved over time to improve functional outcomes in women who want to maintain their sexual function. We describe the case of a lady who underwent an organ sparing robotic assisted radical cystectomy.

**Procedure employed:** The patient was positioned in a steep Trendelenburg position, and a six trocar approach was carried out. Organ Sparing RARC was carried out using the concepts of the open approach outlined by Bhatta Dhar et al. The sigmoid colon was first mobilised, followed by incision of the posterior peritoneum and the ureters were precisely isolated using a "no-touch" procedure. Because the uterus was to be spared, the peritoneum was cut at the utero-vesical junction to deflect the uterus and create a vesico-vaginal plane between the bladder and the uterine front wall. The umbilical artery, uterine artery, superior and inferior vesical arteries, and vaginal branches were all meticulously prepared bilaterally, and the uterine arteries were spared, while the rest were ligated.

The vaginal wall dissection at the cervical level was performed in the anterior plane of the vagina at the 2 and 10 o'clock positions in order to preserve the utero-vaginal and pararectal components of the IHP. The superior and inferior vesical arteries and veins were ligated with Hem-o-lok clips and transected with LigaSure whilst the uterine arteries and vaginal branches directed to the paravaginal tissue were preserved. Then, the Retzius space was approached. Endopelvic fascia was cut extremely close to the bladder neck to decrease the danger of unintentional harm to neurovascular paraurethral structures, which are critical for both sexual and continence function. Urethral transection done as close to bladder neck to ensure adequacy of a functional urethral stump. Both ureters were transected using Weck clips, and the margins were submitted for frozen sections. The urethra was prepped, and a sample was sent to be frozen. Bladder was secured in an endobag and retrieved through a 5 cm prepubic incision.

After RC and standard PLND, intracorporeal ileal neobladder was performed.

**Results:** She was discharged on the 8th post-operative day in a stable condition. On the 25th post-operative day she underwent a per-urethral catheter removal along with the double J stents and is voiding well after that.

**Conclusion:** In certain patients, organ sparing-RARC-and neo bladder can be administered to female patients who want to preserve sexual function as an oncologically safe therapy with positive functional effects. The precise anatomical preservation of IHP’s utero-vaginal components is critical to the rapid and effective recovery of physiological functions such as urine continence and sexual engagement. A meaningful comparison of outcomes to the usual RARC-neo bladder approach necessitates well-designed prospective randomised studies.

V1-12 Transvesical Single-Port Approach for Diverticulectomy

Catherine Implicito3, Vincent Wong1, Max Drescher2, Mubashir Billah2, Mutahar Ahmed2

1Westchester Medical Center, 2Hackensack University Medical Center, 3Hackensack Meridian School of Medicine

Presented By: Catherine Implicito, BS

**Introduction and objectives:** Urothelial carcinoma in a bladder diverticulum may be difficult to stage and treat, especially if the tumor is in a difficult-to-access diverticulum. We describe a transvesical single-port (SP) robotic approach to stage and manage a bladder tumor in a bladder diverticulum. We believe that the transvesical diverticulectomy allows for optimal staging of the tumor, leading to possible definitive treatment. In addition, this approach avoids the risk of a perforation that has been associated with transurethral resection of a tumor in a bladder diverticulum with subsequent tumor spillage in the peritoneum. Finally, the transvesical approach preserves the peritoneal space in the case a radical cystectomy or pelvic lymph node dissection are needed in the future.

**Methods:** The patient is a 56-year-old man presenting with gross hematuria. CT Urogram showed a filling defect and irregular wall thickening in a right hutch diverticulum. Flexible cystoscopy showed a solid high-grade appearing tumor in the medial portion of the diverticulum. Cytology was atypical. Resection was attempted with a rigid resectoscope, however, the tumors medial location made it unable to be accessed. Patient then underwent a transvesical SP diverticulectomy. A 4cm suprapubic incision was made and a 2cm cystotomy was made. The globe port followed by the SP robot were docked. The bladder diverticulum was excised. The tumor appeared to invade the distal ureter, so the distal ureter was resected as well, and a transvesical ureteral reimplant was performed. The bladder diverticulum was then resected. A transvesical ureteral reimplant was performed as well. The bladder was closed in two layers.

**Results:** Procedure time was 124 minutes. Estimated blood loss was 20cc. Patient was discharged on post-operative day 1 with Foley in place. Pathology was high-grade pT3b urothelial carcinoma involving the distal ureter and bladder diverticulum with positive margin. Patient is undergoing neoadjuvant therapy with plan for radical cystectomy. Post-operative CT scan and cystoscopy did not show any recurrence.

**Conclusions:** We present a case of a transvesical single port bladder diverticulectomy for a bladder tumor located in a bladder diverticulum to demonstrate feasibility and efficacy for difficult-to-reach tumors, specifically in terms of avoiding spillage of tumor contents and preserving surgical planes.

V1-13 Single Port Transvesical Radical Prostatectomy in Large >100g Prostate

Hunter Hasley1, Mubashir Billah1, Mutahar Ahmed1, Eitan Glucksman2, Benjamin Rudnick1

1Hackensack University Medical Center, 2Westchester Medical Center

Presented By: Hunter Hasley, BS

**Introduction and Objective:** Robotic surgery presents a minimally invasive approach to radical prostatectomy that has
reduced complications and improved outcomes in patients. With the development of the single port robot, new techniques have been developed to navigate pelvic anatomy and removal of the prostate; however, the single port transvesical approach has been reserved for patients with smaller prostates ≤50g. Our objective is to describe the utility of the single port robot for transvesical radical prostatectomy in larger prostates.

**Methods:** A 59-year-old male with grade group 1 prostate cancer, 107 g prostate with lower urinary tract symptoms, and history of urinary retention, presented with PSA rise from 8 to 12 over 1 year period. The patient has past medical history including hypertension, sleep apnea, diverticulosis, internal hernioids, benign rectal and colon polyps. Past surgical history includes right knee arthroscopy and multiple colonoscopy for benign polyps. The patient has no known allergies or significant social history of alcohol or tobacco use with a BMI of 36.39 kg/m². The patient elected to undergo single port transvesical radical prostatectomy for treatment of his prostate cancer and resolution of his symptoms.

**Results:** Operative time of the case was 168 minutes with estimated blood loss of 150 mL. An 18 Fr Foley catheter was placed, and the length of stay was 23 hours with next day discharge to home. The patient’s postoperative condition was stable with no 30-day postoperative complications. At one week follow-up the patient presented with a well healed surgical incision, absence of nocturia, and “great” stream up to half the time with timed 3 hour voiding. By three month follow-up patient reported no pad use day or night with AUA symptom score improvement of 4 from 25.

**Conclusions:** The single port robot has functional utility in performing transvesical radical prostatectomy in larger prostates without compromising patient outcomes.

**V1-14 Tackling large intravesical lobe with bladder neck preservation during robot assisted radical prostatectomy**

Prashant Singh¹, Rishi Nayyar¹, Sridhar Panaiyadiyan¹, Amlesh Seth³

¹All India Institute of Medical Sciences

Presented By: Prashant Singh, MCh

**Introduction and objective:** A median/intravesical lobe is encountered in 8-18% of the patients undergoing robot-assisted radical prostatectomy (RARP). An intravesical lobe especially if large is associated with several challenges to the surgeon like difficult bladder neck dissection, positive surgical margins, injury to the ureteric orifice due to their proximity to the bladder neck margin and postoperative incontinence owing to large incompetent bladder neck. Here we demonstrate our technique on how to tackle a large intravesical lobe during Robot Assisted Radical Prostatectomy (RARP) and at the same time preserve the bladder neck fibers.

**Methods:** Our index patient was a 61 yr old male who presented to us with lower urinary tract symptoms. On evaluation his serum prostate specific antigen was 8.51 and biopsy was suggestive of adenocarcinoma prostate with Gleason score of 4+3. PSMA PET revealed no distant metastasis. mpMRI was suggestive of localized disease with 135 gms prostate and a large intravesical lobe. We present a video tackling large intravesical lobe with bladder neck preservation during RARP. The procedure was performed in three patients.

Results: We were able to complete the entire process robotically while preserving the bladder neck fibers. All the patients had negative surgical margins and were continent at last follow up.

**Conclusion:** Large intravesical lobes can be tackled successfully during RARP while preserving the bladder neck fibers.

**V1-15 Great Saphenous vein preservation in Robotic Inguinal Node Dissection(RA-VEIL) for Carcinoma Penis**

Vipul Tilva¹, Hemang Bakshi¹, Dipak Rajayaguru³, Shay Mohan¹, Abhay Khandekar, Jitendra Amlani⁴

¹HCG Cancer Centre, Sola, ²Urocare Hospital, ³Sidhivinayak Hospital, ⁴Uro-care Hospital

Presented By: Vipul Tilva, M. ch(Urol), FRCS(Urol)

**Introduction and Objectives:** RA-VEIL is minimal invasive approach. we have analysed complications and oncological outcomes between great saphenous preserving RA-VEIL and conventional(saphenous sacrificing) RA-VEIL as secondary outcomes.

**Method:** We analysed patients who underwent surgery in our institute between Jan 2016 and Jan 2021, clinically N0, N1 and N2(<2.5 cm), we avoid preserving the saphenous vein in N2(<2.5cm) disease and where technically pathological nodes are adherent to the saphenous vein. Descriptive statistics were used to analyse patient and tumour characteristics and perioperative complications. We also analysed long-term complications like lymph oedema and scrotal oedema. The chi-square test was applied to test statistically significant differences in outcomes for various complications and recurrence rates between the 2 study cohorts. Univariate Cox regression analyses were applied to assess differences in cancer-specific survival.

**Result:** We analysed 27 patients who underwent bilateral RA-VEIL(54) with a minimum follow-up of 36 months (range: 36 to 68 months). Saphenous was preserved in 29 RA-VEIL and sacrificed in 25 RA-VEIL. Lymphorea was more common in the saphenous sacrificing group as compared to preserving groups(21 days vs 14 days) with clinically significant differences. Wound complications were compared in both groups of RA VEIL, particularly flap necrosis: 2 (7.3%) in Saphenous preserving and 4(14.6%) in saphenous sacrificing. Median OS were similar in both groups(42 months vs 39 months), while the 3-year survival was 72% and 77% in both groups. There were 5 recurrences; 3 in the saphenous sacrificing group and 2 in the saphenous preserving group, All other short-term complications are similar in both groups. Long-term complications like lymphatic oedema and scrotal swelling were more in sacrificing groups 13 RA-VEIL vs 9 RA-VEIL. Operative time was 17 minutes longer in the Saphenous preserving groups compared to the sacrificing group.

**Conclusion:** The recurrences were more related to pathological grade and lymph node status. The battle against penile cancer is won at the level of inguinal nodes. and both RA VEIL groups should be considered as suitable alternative to OILND. Both are safe and associated with lesser wound complications and equivalent survival outcomes. The saphenous preserving group was associated with 18% less risk of lymphedema and scrotal oedema.
V1-16  Modified Extrapерitoneal Single Port Robotic Assisted Radical Prostatectomy
Rajiv Kalbit1, Enrique Ian Lorenzo1
1Jose R. Reyes Memorial Medical Center and The Medical City,
2Jose R. Reyes Memorial Medical Center

Presented By: Rajiv Kalbit, MD

We challenged the limits of the Da Vinci robotic system by creating a single port approach using a self-made wound protector, sterile gloved hands, and the use of the side docking method. This study aimed to assess the feasibility, safety, and potential advantages of this simplified method and to evaluate the complications, intraoperative and postoperative outcomes of SPRP in a cohort of patients in the year 2023 to 2024.

V1-17  Robotic-assisted radical prostatectomy with retrograde minimal apical dissection
Sung Goo Yoon1, Sung Gu Kang1, Jae Young Hwang1, Seong Woo Yun1, Tae Young Park1, Seoung Bin Kim1, Tae Il Noh1, Min Gu Park1, Ji Sung Shim1, Seok Ho Kang1
1Department of Urology, Korea University Anam Hospital

Presented By: Sung Goo Yoon

In radical prostatectomy, several studies have shown that preserving the muscle fascial structures anterior to the urethral sphincter helps in rapid recovery of postoperative continence. However, nothing is yet clearly known about how to preserve the apical complex.

In this video, I would like to explain the retrograde minimal apical dissection method for preserving more apical complex. After performing a routine prostatectomy and dissecting both the lateral and posterior regions, the prostate is sufficiently rotated through the 3rd arm. A urethroprostatic notch can be identified by dissecting from the side, below the DVC, between the detrusor and the prostate (2:56). Confirming both notches and dissecting towards the medial side leads to penetration (03:13). Through this process, a greater portion of the apical complex can be preserved.

V1-18  En bloc resection of bladder tumour
Mariela Montanile1, Wilmer Soliz1, German Imfeld2, Horacio Sanguinetti3, Norberto Bernardo4
1Clínica San Camilo/ Centro Argentino de Urología, 2Centro Argentino de Urología, 3Clínica San Camilo/ Centro argentino de Urología, 4Clínica San Camilo and Centro argentino de Urología

Presented By: Mariela Montanile, Fellow in endourology

Transurethral en bloc resection of bladder tumour has been proposed as an alternative technique in treating bladder cancer. The main goals of ERBT are to ensure complete local resection of bladder tumour, ensure proper local staging of the disease, and reduce the risk of tumour reimplantation.

This surgical technique resects the bladder tumour underneath the submucosal plane, and the bladder tumour can be removed in one piece. The bladder tumour specimen remains intact for formal histological assessment of the resection margins. ERBT should always be considered for treating Non muscle invasive bladder cancer.

In the video, we used holmium laser but it is technically feasible to use monopolar energy, bipolar energy, thulium fiber laser, and HybridKnife (hydrodissection).

A thorough cystoscopic examination should be performed before ERBT. The planned circumferential margin should be marked first to facilitate subsequent ERBT, and it should be at least 5mm from any visible bladder tumour. The bladder should be distended enough, but not overdistended, to facilitate ERBT while avoiding bladder perforation during the procedure.

The resection then proceeds deep into the muscular layers until progressive detachment of the lesion is achieved and until it floats in the bladder lumen. At times, blunt maneuvers are necessary to achieve detachment of the specimen. The resection process is more precise and controlled; thus, the complication profile, in particular the risk of bladder perforation, may be reduced.

Once tumor resection is performed, it is necessary to achieve proper coagulation of the entire circumference as well as the center. This should be performed systematically to achieve a successful procedure.

To extract the tumor in one piece, we used a three-pronged forceps since the tumor was smaller than 3 cm. A N-gage basket can also be used to achieve en-bloc tumor extraction. Another option would be to use an endoscopic mesh extraction basket, commonly used in endoscopic procedures.

ERBT can avoid tumour fragmentation and potentially minimize the amount of floating tumour cells in order to reduce the risk of tumour reimplantation.

ERBT is feasible for bladder tumour size of 3 cm. For bladder tumour size of >3 cm, the resection procedure itself is still technically possible, and the potential benefits of ensuring proper staging and complete resection of NMIBC can still be preserved.

If the bladder tumour is too large, after ERBT, dividing the specimen into two to three pieces for retrieval can be considered. Surgical removal of a bladder tumor as a whole single piece is a safe procedure for the diagnosis and treatment of noninvasive bladder cancer.

V1-19  Robot-Assisted Laparoscopic Single-Port Radical Prostatectomy with Bilateral Peritoneal Window
Angelo Cadiente3, Anje Thompson1, Michael Raver2, Max Drescher2, Mubashir Billah2, Mutahar Ahmed2
1Summit Health, 2Hackensack University Medical Center, 3Hackensack Meridian School of Medicine

Presented By: Angelo Cadiente, BS

Introduction & Objectives: Pelvic lymphocele is a common complication following robot-assisted radical prostatectomy combined with lymph node dissection. The use of a peritoneal fenestration or a peritoneal flap has been shown to decrease the risk for lymphocele production due to the lymphatic fluid drainage from the true pelvis into the abdomen. The objective of this video is to describe the creation of bilateral peritoneal windows during a single-port robot assisted prostatectomy.

Methods: We perform a single port extraperitoneal radical prostatectomy using methods previously described in the literature. We make a 3 cm incision below the umbilicus and carry the incision into the extraperitoneal space above the bladder. We
Conclusions:
The peritoneal window can be utilized to prevent lymphocele formation due to its drainage into the peritoneum and subsequent resorption. We have transitioned to creating two large peritoneal windows bilaterally to reduce the incidence of lymphocele following radical prostatectomy. Further studies are needed to assess differences in lymphocele rates between different methods of creating peritoneal windows.

V1-20 Laparoscopic post-chemotherapy retroperitoneal lymph node dissection in a woman diagnosed with testicular feminization

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¹Kerman University of Medical Sciences, ²1. Department of Urology, School of Medicine, Kerman University of Medical Sciences, Kerman, Iran; 2. Iranian Endourology and Uro-laparoscopy Society (IEUS)

Presented By: Hamid Pakmanesh, MD

A 41-year-old woman who was diagnosed with testicular feminization underwent gonadectomy and was found to have a mixed germ cell tumor (NSGCT) including seminoma and teratoma in her left testis. Her tumor markers, including alphafetoprotein, were high, and a retroperitoneal lymph node was found in her abdominal CT scan, so she underwent chemotherapy. However, despite four courses of BEP, the tumor continued to grow up to 5 cm. At this point, she was referred to us, and since her tumor markers were normal, we decided to perform Laparoscopic RPLND. The Laparoscopic RPLND was successfully done in the lateral position using three working trocars. The final pathological report showed teratoma in the paraaortic mass, and the interaortocaval lymph nodes were free of tumor. The postoperative course was uneventful.

In conclusion, Laparoscopic RPLND may be an option even in patients with a previous history of chemotherapy. This approach offers incomparable cosmetic results and a shorter postoperative course compared to the open procedure.

V1-21 Robot-Assisted Partial Cystectomy for Bladder Urothelial Carcinoma in A Bladder Diverticulum

Wei-Hsin Chen¹

¹Hualien Tzu Chi Hospital

Presented By: Wei-Hsin Chen, MD

Introduction and Objective: To demonstrate robot-assisted partial cystectomy for bladder diverticulum in a closed-system manner.

Materials and Methods: This is a case of 66-year-old man with papillary tumors in a bladder diverticulum over the right lateral wall of the urinary bladder. The patient also had flat lesions over the edge of the ostium and left lateral wall. The patient received TURBT for the left lateral wall lesion and the pathology showed T1 high-grade urothelial carcinoma. We performed partial cystectomy for the right diverticulum in a closed-system manner without extravasal urine leakage.

Results: TURBT over the flat lesion at the edge of the ostium was done. The edge of the diverticulum was marked with electrocautery with TUR loop and a DBJ stent was inserted over the right side. A 16 Fr. Foley catheter was inserted. The patient was put in lithotomy and Trendelenburg position. Conventional three-arm docking for pelvis surgery with a 12-mm assistant port was set. The right side of the bladder along with the diverticulum was identified. The bladder was opened without extravasal urine leakage. The electrocauterized markings and the DBJ were identified. Incision over the electrocauterized markings was made. The diverticulum was closed with 3-0 V-Loc. The diverticulum was closed with double-layered suture with 3-0 Quil. Dissection was done to separate the diverticulum from the bladder. The diverticulum was finally taken down followed by right pelvic lymph node dissection. Reperitonealization was performed and a J-P drain was placed in the perivesical space. Foley removal was done after cystography showing no leakage. The pathology showed T2a urothelial carcinoma for the tumors in the diverticulum and carcinoma in situ for TURBT. The surgical margin was free. There were no lymph node involvement.

Conclusions: We have demonstrated that robot-assisted partial cystectomy in a closed-system manner is feasible in patients with urothelial carcinoma in a diverticulum.

Source of Funding: None.

Conflict of Interest and Disclosure Statement: None
V2-01 Novel methods for Single port Partial Nephrectomy : inverse technique

Seokhwan Bang¹, Sung-Hoo Hong¹
¹The Catholic University of Korea

Presented By: Seokhwan Bang, MD, PhD.

Introduction: Partial nephrectomy is known as the treatment of choice for early-stage renal carcinoma, but its performance varies greatly depending on the location and size of the tumor. It is also difficult to access, even if it is located on the posterior side of the kidney. In particular, it is true that resection is more difficult for tumors located in the back of the kidney and also in the hilar area. We found a groundbreaking method for single port (SP) robotic partial nephrectomy (PNx) to remove tumors in the tricky hilum area.

Method: This technique is an attempt to change the view of a single port robot simply by flipping the SP robot arm. Also, if this method is used, the axis of SP is reversed, and re-entry or even re- docking of the mechanism is not required. It is to rotate the robot arm of a single port robot 180 degrees during surgery. By doing this, it is possible to secure a downward view from the operator’s point of view without changing the left and right sides. As you can see in the figure, in the case of a hilar tumor, it is very difficult to operate while looking up (fig 1.), but with this method, you can easily secure the surgical view (fig 2.). We applied this technique on 64 years old who have a 3.3cm tumor on the right kidney. Single port robotic partial nephrectomy was done.

Results: Console time was 43 minutes and ischemic time was 18 minutes and 30 seconds. The estimated blood loss was 50ml. There were no complications. Postoperative hemoglobin was 14.3 g/dl and Creatinine was 0.97 mg/dl. In pathologic findings, it was clear cell renal cell carcinoma and there was no surgical resection margin invasion. Since then, we have used this surgical method in 3 patients in a similar situation, and there were no difficulties in application. We plan to apply this technique to posterior resection during radical prostatectomy.

Conclusion: With these novel surgical methods, tricky renal tumors can be resected more easily.

V2-02 New attachment for L43K ultrasound probe to improve usability in intraoperative laparoscopic ultrasonography for robot-assisted partial nephrectomy

Satoshi Kobayashi¹, Ryu Nakadate¹, Shinichi Miyata², Keiji Tsukino³, Jun Mutaguchi⁴, Tokiyoshi Tanegashima⁴, Shigehiro Tsukahara⁴, Shunsuke Goto⁴, Takashi Matsumoto⁴, Masaki Shiota⁴, Masatoshi Eto⁴
¹Center for Advanced Medical Research & Development, Kobe University, ²SANMATSU Co., Ltd., ³Center for Advanced Medical Innovation, Kyushu University, ⁴Department of Urology, Kyushu University

Presented By: Satoshi Kobayashi, MD, PhD

Introduction and Objective: Among the ultrasonic devices used in robot-assisted partial nephrectomy (RAPN), the L43K ultrasound probe (FUJIFILM Healthcare Corporation, Ltd., Tokyo, Japan) is one of the most typical drop-in probes. During intraoperative laparoscopic ultrasonography (ILUS) with this probe, operators conspicuously frequently dropped the probe on the surgical field by gripping the conventional fin from the tip of the probe (retrograde grip) during ILUS. This study aimed to develop an attachment for the L43K ultrasound probe to overcome the difficulty of retrograde grip with the robotic forceps and investigated the feasibility of the attachment during ILUS in RAPN.

Methods: We developed a new stainless-steel probe attachment as a single-use attachment that did not undergo shape deformation due to high-pressure steam sterilization. The probe attachment was designed with legs that allow for rigid fixation of the base of the conventional fin. The probe attachment offers an additional fin at the probe’s tip side, making the retrograde grip easier. Notably, the original fin can still be used with the probe attachment. The probe attachment can easily be attached to and removed from the L43K probe by a simple mechanism using a leaf spring. The probe attachment for ILUS has been introduced into all RAPNs since September 2020. We retrospectively analyzed the outcomes of 58 patients after robot-assisted partial nephrectomy using the conventional grip and 13 patients after surgery using the probe attachment between September 2019 and February 2021. The usability of the probe attachment was evaluated in terms of (1) total procedure time for intraoperative laparoscopic ultrasound; (2) proportion rate of intraoperative laparoscopic ultrasound in console time; (3) total number of probe fin gripped; (4) total number of grip failures; (5) intraoperative laparoscopic ultrasound procedure time per grip; (6) rate of successful gripping.

Results: After matching, 12 patients were allocated to each group, and the tumor site was significantly different. Usability was significantly better in the probe attachment group: (1) conventional vs. probe attachment: 6.8 vs. 7.6, p = 0.53; (2) 5.6 vs. 6.1 %, p = 0.61; (3) 8 vs. 10, p = 0.32; (4) 3 vs. 0, p = 0.014; and (5) 1.5 vs. 0.7 %, p = 0.021; (6) 66 vs. 100 %, p = 0.002.

Conclusions: Our proposed L43K probe attachment can enhance the usability of the probe for intraoperative laparoscopic ultrasonography during robot-assisted partial nephrectomy.

V2-03 Robotic-Assisted Heminephrectomy of a Large Renal Cell Carcinoma Confined to the Isthmus of a Horseshoe Kidney

Yu Zhang¹, Ravi Munver¹
¹Hackensack University Medical Center

Presented By: Yu Zhang, MD

Introduction and Objective: Horseshoe kidney is among the more common renal anomalies with an incidence of 1/500. More than 75% of horseshoe kidneys have anomalous renal vasculature. Reports of renal cell carcinoma (RCC) in horseshoe kidneys in the literature revealed fewer than 300 cases and very few of these cases were confined to the isthmus. As altered anatomy and complex vasculature can present technical challenges
V2-04 Percutaneous Resection of High-Volume Upper Tract Urothelial Carcinoma

Emeka Udedibia¹, Sarah Razavi¹, Arun Rai¹, Tareq Aro¹, David Hoenig¹, Arthur Smith¹, Charan Mohan¹, Jared Winoker², Oksana Yaskin¹, Zeph Okeke¹

¹Smith Institute for Urology at Northwell Health, ²Lenox Hill Hospital, Department of Urology

Presented By: Emeka Udedibia

Introduction and Objective: High-volume Upper tract urothelial carcinoma (UTUC) presents significant treatment challenges, particularly in preserving renal function while ensuring complete tumor removal. This study highlights the efficacy and technical nuances of percutaneous resection for high-volume, high-grade UTUC.

Methods: A 65-year-old man with a 6 cm RCC located at the isthmus of a horseshoe kidney and the approach to performing robotic-assisted heminephrectomy in this setting.

Results: The procedure was completed in 90 minutes with minimal blood loss (15ml). A CT scan was obtained postoperatively, and the patient was discharged on postoperative day 3. Final pathology confirmed high-grade noninvasive urothelial carcinoma. A decision was made to proceed with neoadjuvant chemotherapy before subsequent nephroureterectomy.

Conclusions: This percutaneous resection technique for high-volume UTUC is effective, safe, and reproducible. It offers a viable nephron-sparing alternative. Success hinges on meticulous preoperative imaging review, achieving optimal percutaneous access, and prudent surgical technique.

V2-05 Ureteroscopic management of upper urinary tract urothelial carcinoma with thulium fiber laser: 7 steps for a good biopsy

Golena Fernandez Moncaleano⁴, Nik B. Patel¹, Jennifer M. Thelus², Khurshid R. Ghanì³

¹University of Michigan / Medical Student, ²University of Michigan / Medical Student and Clinical Trial Coordinator, ³University of Michigan, ⁴University of Michigan / Research Fellow / Department of Urology

Presented By: Golena Fernandez Moncaleano, MD

Introduction and Objective: For upper tract urothelial carcinoma (UTUC), European Association of Urology (EAU) and American Urological Association (AUA) guidelines recommend diagnostic ureteroscopy and biopsy if imaging and cytology are not sufficient. One of the problems urologists face is obtaining reliable diagnostic biopsy. In this video, we provide a step-by-step guide for biopsy.

Methods: Our hospital is a regional referral center for UTUC. Ureteroscopy is performed using either a flexible fiberoptic or digital ureteroscope depending on tumor volume and presenting status. Biopsies are performed with a 3Fr flexible forceps (Piranh, Boston Scientific) with an adjustable endoscopic valve (Uroseal, Steris).

Results: Important steps include: 1) No retrograde pyelography before cytology taken, 2) Use of a Piranha forceps and Uroseal, 3) Biopsy technique with either a slow "push", or a "pull" of tissue, 4) Sample handling of forceps tissue: transfer direct into lock and push, 5) Performing post biopsy cytology.

Conclusions: Biopsy of UTUC can be a straightforward and step-wise procedure. We hope this teaching video serves as a didactic tool that can help surgeons improve patient care.

V2-06 Single Port Retroperitoneal Left Nephroureterectomy and Periaortic Lymph Node Dissection

Katherine Kim³, Valmic Patel¹, Vincent Wong⁰, Sarah Brink³, Max Drescher⁴, Haris Waseem⁴, Mubashir Billah³, Mutahar Ahmed³

¹SUNY Upstate Medical University, ²Westchester Medical Center, ³Hackensack University Medical Center, ⁴NJ Urology

Presented By: Katherine Kim, MD

Introduction: We present our institution’s first case report of a Single Port (SP) nephroureterectomy via the retroperitoneal (RP) approach and periaortic lymph node dissection.
Methods: The steps of this procedure mostly mimic the minimally invasive procedures for performing partial nephrectomies and allows the performing surgeon to have adequate access and tools for working within the retroperitoneal space.

V2-08 Stapling of Renal Vein with In-Situ Tumor Thrombus Minimizes Tumor Spillage During Robotic Caval Thrombectomy

Brody Fleming1, Brody Fleming1, Angeline Johny1, Hudson Pierce1, Raj Satkunasivam2, Jeremy Slawin3

1Baylor College of Medicine, Scott Department of Urology, 2Houston Methodist, 3Baylor College of Medicine, Scott Department of Urology

Presented By: Brody Fleming, BS

Introduction and Objective: In robotic caval thrombectomy, the renal vein with in situ tumor thrombus can be divided with a vascular stapler, followed by excision of the caval staple line and immediate placement of the thrombus into a specimen bag. This maneuver allows for decreased contact of the tumor thrombus with the surgical field, potentially reducing the risk of local recurrence. While current literature describes this technique, visual instruction is lacking. Thus, we outline the use of a vascular stapler to divide the renal vein with in situ tumor thrombus and excision of the caval staple line.

Methods: The patient is a 71-year-old male with a history of compensated cirrhosis, supraventricular tachycardia status post cardiac pacemaker placement, diabetes mellitus, hypertension, and chronic kidney disease, right clear cell renal cell carcinoma (ccRCC) status post cryoablation, presenting 17 months later with 3.2 cm recurrence near the prior ablation site. Cirrhosis history prompted a liver ultrasound that revealed a level 1 caval thrombus. Intraoperatively, the cecum, right colon, and duodenum were mobilized until the inferior vena cava (IVC) was identified. Following caval skeletonization, a Rummel tourniquet was loosely placed caudal to the junction of the right renal vein and IVC. The right renal artery was ligated after inter-aortocaval dissection. Caval ultrasound was used to localize the superior edge of the tumor thrombus. A Rummel tourniquet was placed cranial to the thrombus, below the take-off of the left renal vein. Renal hilum dissection revealed two renal veins with the anterior containing the tumor thrombus. The Rummel tourniquets were tightened. A 60 mm vascular staple load was placed across the anterior renal vein. The anterior IVC was entered, and the tumor thrombus was excised with complete excision of the renal vein staple line. The tumor thrombus was immediately placed in a specimen bag. The clamped IVC was irrigated with heparinized saline before closure with a 5-0 prolene suture.

Results: The patient had a pT3aN0M0 ccRCC, level 1 caval thrombus that was successfully resected with negative margins. The patient had a routine post-operative course and was discharged on POD 3.

Conclusions: Our technique utilizing the vascular stapler to ligate and divide the renal vein with in situ tumor thrombus minimized exposure of the thrombus to the operative field without compromising local oncologic control with negative margins.
V2-09 Single-Port Robotic-Assisted Retroperitoneal Left Partial Nephrectomy on a Horseshoe Kidney

Angelo Cadiente¹, Michael Raver¹, Mubin Rahman², Max Drescher¹, Mushiril Billah¹, Mutahar Ahmed¹
¹Hackensack University Medical Center, ²William Carey University College of Osteopathic Medicine, ³Hackensack Meridian School of Medicine

Presented By: Angelo Cadiente, BS

Introduction & Objectives: Horseshoe kidneys present operative challenges due to abnormal vasculature and the presence of an isthmus. While there are reports of robot-assisted partial nephrectomies in horseshoe kidneys with the multi-port technique, there does not appear to be any literature describing a single-port (SP) technique. We detail a case that utilized an SP approach in the resection of a horseshoe kidney mass.

Methods: The Single Port Ahmed Modification (SPAM) incision places the incision on the anterior abdominal wall ⅓ of the way between the anterior superior iliac spine and the umbilicus. The incision is carried into the retroperitoneal space bluntly and the SP Access Port is docked. The camera is placed at 6 o’clock position to facilitate retraction above the camera and maximize visualization. The lower pole of the kidney is palpated manually prior to docking and is used as an anatomic landmark to assist in identifying the renal hilum. After exposure of the renal hilum, artery and vein, bulldog clamps are applied to three vessels running to the primary renal artery. Intraoperative ultrasound guidance is utilized to delineate the tumor. Monopolar scissors are used to dissect out the renal tumor and 3-0 Monocryl and 2-0 V-lock sutures were used to perform the renorrhaphy.

Results: The procedure lasted 2 hours with an estimated blood loss of 500 mL. The patient’s hospital stay was unremarkable, being discharged on postoperative day 1 with pain controlled.

Conclusions: The single-port platform is a reproducible, safe, minimally invasive approach for partial nephrectomies with anatomic complexities. It provides flexibility in a clinician’s toolset for the management of horseshoe kidneys.

V2-10 Laparoscopic tumor resection of paraganglioma in a pregnant woman

Chika Hosokawa¹, Takashige Abe¹, Hiroshi Kikučhi¹, Ken Morita², Takeshi Umazume³, Kentaro Chiba³, Yoshihiro Saito³, Hiraku Kameda³, Akinobu Nakamura³, Ken Takita³, Katsuhiro Aikawa³, Nanase Okazaki³, Yoshihiro Matsumoto⁶, Takashi Toyohara⁶, Haruka Miyata⁶, Ryuji Matsumoto¹, Takahiro Osawa¹, Nobuo Shinohara¹
¹Department of Urology, Hokkaido University Graduate School of Medicine, ²Department of Urology, Kushiro City General Hospital, ³Department of Obstetrics and Gynecology, Hokkaido University Graduate School of Medicine, ⁴Department of Rheumatology, Endocrinology and Nephrology, Hokkaido University Graduate School of Medicine, ⁵Department of Anesthesiology, Hokkaido University Graduate School of Medicine, ⁶Department of Pathology, Hokkaido University Graduate School of Medicine, ⁷Department of Emergency Medicine, Kushiro City General Hospital

Presented By: Chika Hosokawa

Introduction: Paraganglioma during pregnancy is a rare disease entity, and disease management is a challenging situation, considering the health status of the mother and fetus. Recently, we encountered a case of paraganglioma involving a pregnant woman, who developed a catecholamine crisis at 20 weeks of gestation, and by collaboration among multidisciplinary physicians, her tumor was successfully removed via laparoscopic surgery.

Methods: Case: A 33-year-old woman, who was pregnant with her second child and on insulin therapy for gestational diabetes, developed palpitations, nausea, and headache at 20 weeks and 5 days of gestation. CT and MRI revealed a suspected adrenal tumor, and during close examination, the patient presented with severe cardiac decompensation. Catecholamine cardiomyopathy due to excessive catecholamine production from the tumor was suspected, and temporary periodic intubation was required. After improvement of the cardiac function by intensive care at a local tertiary hospital, she was transferred to our hospital at 21 weeks and 6 days of gestation. Laboratory and radiological findings were consistent with a paraganglioma, 6 cm in diameter, located behind the vena cava. After the multidisciplinary teams’ discussion, we decided to perform laparoscopic surgery.

Results: Operative findings: The patient was placed in a left flank position, and five ports were placed along the right subcostal line. A gestational uterus was identified in the lower abdominal cavity. After mobilizing the duodenum, the left side of the tumor was identified, and dissected from the vena cava. The anterior and right sides of the tumor were subsequently dissected from the ventral cava. Although minor capsule injury occurred in the last part, the tumor was successfully removed by a laparoscopic approach. The intraoperative blood pressure was relatively stable. The operative time was 306 min with minimal blood loss. The postoperative course was uneventful both in patient and fetus. Pathology revealed paraganglioma. She continued her pregnancy and gave birth to a female infant with hydrocephalus at 38 weeks and 4 days. Unfortunately, the infant died of aspiration pneumonia at 3 months of age. The patient was disease-free two years after surgery.

Conclusions: A multidisciplinary team approach, including urology, cardiology, anesthesiology, obstetrics, and endocrinology, is mandatory to make a treatment decision for paraganglioma during pregnancy. In the present case, a laparoscopic approach facilitated a good operative view behind the vena cava, and uneventful postoperative recovery.

V2-11 Right Pelvic Kidney Unclamped, Robotic Partial Nephrectomy

Raju Thomas², Hoang Minh T украин Nguyen¹, Danish Singh²
¹North Austin Urology, ²Tulane University School of Medicine

Presented By: Raju Thomas, MD, FACS, FRCS, MHA

Introduction: Partial nephrectomy is considered the treatment of choice for all resectable tumors, in solitary kidneys, and in patients at risk for chronic kidney disease. Additional indications include pelvic kidneys with tumors, which pose a challenge because of the multiplicity of renal vasculature from the aorta and bilateral iliac vessels. This is a case of a 47-year-old gentleman with a pelvic kidney with a renal tumor.

Method: This patient has appropriate imaging showing the different vascular supplies to the pelvic kidney. We then proceeded to approach this by understanding the multiple vessels, the need
for electrocautery, and the swiftness of the technique. The mass was resected using the da Vinci robot. The use of preplaced sutures and the need for experienced hands performing the procedure are explained.

Results: The patient was discharged the following day. Postoperative imaging shows a normal-appearing kidney with no warm ischemia time.

Conclusion: Judicious use of techniques for robotic partial nephrectomy depends on experience and the complexity of the tumor’s presentation. Often, such partial nephrectomies can be performed without clamping the blood vessels, especially when the complexity of the vasculature is known.

V2-12 Ureteroscopic management of upper urinary tract urothelial carcinoma with thulium fiber laser: Ablation strategy

Golina Fernandez Moncaleano, Nik Patel, Jennifer M. Thelus, Khurshid R. Ghani

1University of Michigan / Medical Student, 2University of Michigan / Medical Student and Clinical Trial Coordinator, 3University of Michigan / Professor of Endourology and Urologic Oncology, 4University of Michigan / Research Fellow, Department of Urology

Presented By: Golina Fernandez Moncaleano, MD

Introduction and Objective: For upper tract urothelial carcinoma (UTUC), European Association of Urology (EAU) and American Urological Association (AUA) guidelines recommend ablation as the initial management option for patients with low-risk favorable and can be offered for low-risk unfavorable UTUC. The Thulium Fiber Laser (TFL) is available with different properties which may have advantages for soft tissue ablation. In this video, we provide a guide for laser ablation strategies, fiber selection and settings.

Methods: Our hospital is a regional referral center for UTUC. Ureteroscopy is performed using either a flexible fiberoptic or digital ureteroscope depending on tumor volume and presenting status. Ureteral access sheath (UAS) 12/14Fr is used when needed. TFL (Soltive, Olympus) is used to ablate the tumor using either a 150 μm or 200 μm fiber.

Results: Important steps include: 1) No UAS for small volume tumor and use of 150 μm fiber and gravity irrigation, use of UAS for large volume tumor at second stage with high flow irrigation and 200 μm fiber. 2) Cutting the tip of 150 μm fiber for easy insertion into working channel, 3) Laser setting of 1J/16Hz if high volume kidney tumor.

Conclusions: Ureteroscopic treatment of UTUC can be a straightforward and step-wise procedure. The TFL provides a new frontier in management. We hope this teaching video serves as a didactic tool that can help surgeons improve patient care.

V2-13 Single port robotic assisted adrenalectomy - is it worth it?

Helen Cui, Angela Estevez, Gabriela Nieto-Blanco, Jeffrey Sun, Philip Kim, Sarah Duncan, Adam Nolte, Peter Chang, Andrew Wagner

1Beth Israel Deaconess Medical Center,

Presented By: Helen Cui, BMBS FRCS PhD

Introduction and Objective: The mainstay of adrenalectomy surgery is currently the laparoscopic approach which has been shown to be safe and reduce postoperative length of stay compared to open. Robotic assisted multiport adrenalectomy has been shown to be safe and have equivalent outcomes to laparoscopic surgery, however use of the single port robot represents more of a step change from laparoscopic and has the potential to further reduce postoperative pain and improve patient recovery.

Methods: This video presents a case illustration of the advantages and disadvantages of use of the single port robot for adrenalectomy surgery. This case is a female in her 30s, who, after endocrine work up for presenting symptoms of hypercortisolism and hyperandrogenism, was found to have a paraneoplastic Cushing’s syndrome due to metastatic pancreatic adenocarcinoma. Bilateral adrenalectomy was performed with the patient in the supine position with the access for the single port robot above the umbilicus and 3 further 5mm assistant ports to aid with retraction.

Results: The single port robot has been utilised at our institution since 2022 to perform 19 adrenalectomies to date. In the year 2023, 12 single port robotic assisted transperitoneal adrenalectomies were performed versus 6 via the standard transperitoneal laparoscopic approach. Although there are reported case series of robotic assisted adrenalectomy for phaeochromocytoma, we feel the laparoscopic approach is safer and faster. We are prospectively collecting intraoperative, postoperative clinical outcomes and patient reported quality of life data on all of our adrenalectomy cases. Early results from our patients suggest some benefit to pain control for the single port robotic assisted cases compared to the laparoscopic approach.

Conclusions: The single port approach could represent a step-change in minimally invasive adrenalectomy compared to the laparoscopic approach. As shown in our video, there are technical benefits but also challenges such as the need for additional assistant ports, and a longer operative time. In summary, the benefit to patients remains to be seen to decide whether the single port robotic approach is worth it compared to the laparoscopic approach.

V2-14 Single Port Robotic Assisted Left Partial Nephrectomy for Treatment of Endophytic Renal Mass

Mubashir Billah, Alyssa Cefalo, Michael Raver, Max Drescher, Laurence Hour, Joshua Berger, Mutahar Ahmed

1New Jersey Urology, 2Hackensack Meridian Health Network, 3Hackensack University Medical Center, 4Department of Urology, Hackensack University Medical Center

Presented By: Mubashir Billah, MD

Introduction: We present Single Port (SP) Robotic-Assisted left partial nephrectomy for 2.5 cm left renal mass. Robotic surgery presents a minimally invasive approach to a partial nephrectomy that has reduced complications and improved outcomes in patients. Robotic assistance has proved useful for mobilization and intracorporeal suturing, decreasing clamp time, and making excision of tumors more precise and accurate. With the development of the single port robot, new techniques have
been developed to better navigate the retroperitoneal space in a reproducible fashion. This video demonstrates our institutional steps to complete SP Left Partial Nephrectomy efficiently in complex renal masses.

**Methods:** A 66-year-old female with a 2.5 cm left renal mass with lower urinary tract symptoms, and history of microhematuria and urolithiasis, presented with primarily endophytic mass arising from the midportion of the left kidney located anteriorly with homogenous enhancement as well as a left adrenal adenoma. The patient elected to undergo single port robotic assisted left partial nephrectomy for treatment of her renal mass.

**Results:** Operative time of the case was 58 minutes robotic time with estimated blood loss of 20 mL. The length of stay was 1 day. The patient’s postoperative condition was stable with no 30-day postoperative complications. At one week follow-up the patient presented with a well healed surgical incision and no pain.

**Conclusions:** The single port robot has a functional utility in removing the diseased portion of the kidney utilizing minimally invasive surgical techniques while preserving the maximum amount of normal kidney. The single port also allows for convenient, extensive and reproducible access to the retroperitoneum.

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**VIDEO SESSION 3: RECONSTRUCTION: UPPER TRACT**

**V3-01 Illuminating Robotic Ureteral Reconstruction with Indocyanine Green: A Multi-Institutional Collaborative**

Matthew Lee¹, Kelley Zhao¹, Laurenson Ward¹, Brian Chao¹, Michael Stifelman³, Lee Zhao³, Daniel Eun³

¹Fox Chase-Temple Urologic Institute, ²Hackensack University School of Medicine, ³New York University Langone

Presented By: Matthew Lee, MD, MBA

**Introduction and Objective:** Indocyanine green may be utilized during robotic ureteral reconstruction to assess ureteral perfusion, identify the ureter during ureterolysis, and delineate stricture margins. We demonstrate the largest series on outcomes using indocyanine green under near-infrared fluorescence during robotic ureteral reconstruction.

**Methods:** We retrospectively reviewed our multi-institutional Collaborative of Reconstructive Robotic Ureteral Surgery (CORRUS) database to identify all consecutive patients who underwent robotic ureteral reconstruction using intraureteral or intravenous indocyanine green as an adjunctive technique between 01/2012 and 12/2023. We performed a descriptive analysis of perioperative outcomes in patients who met inclusion criteria. In addition, in our video, we demonstrate four cases in which intravenous or indocyanine green was utilized.

**Results:** Overall, 381 patients were included in the analysis (Table 1). Of 381 patients, 215 (56.4%) had undergone prior abdominopelvic surgery, 38 (10.0%) had undergone prior pelvic radiation and 108 (28.3%) had undergone prior ureteral stricture intervention (either endoscopic or surgical management). The median operative time was 189 (IQR 141-257) minutes and the estimated blood loss was 50 (IQR 30-100) milliliters. Overall, 335 (87.9%) patients had surgical success.

**Conclusions:** Intraureteral or intravenous indocyanine green may be utilized as an adjunctive technique to aid in robotic ureteral reconstruction. Indocyanine green may be particularly useful in patients with a history of abdominopelvic surgery, ureteral surgery and/or pelvic radiation due to the increased risk of periureteral fibrosis and scarring which may impact ureterolysis and ureteral perfusion.

**Table 1: Perioperative Data for Indocyanine Green Usage**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intravenous (n=225)</th>
<th>Intraureteral (n=156)</th>
<th>Total (n=381)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median age (IQR)</td>
<td>55 (42-66)</td>
<td>63 (48-72)</td>
<td>56 (42-66)</td>
</tr>
<tr>
<td>Median body mass index (kg/m²2) (IQR)</td>
<td>27.0 (23.5-33.0)</td>
<td>28.7 (23.8-32.6)</td>
<td>28.0 (25.6-32.9)</td>
</tr>
<tr>
<td>Number with prior abdominopelvic surgery (%)</td>
<td>115 (51.1%)</td>
<td>106 (64.1%)</td>
<td>215 (54.4%)</td>
</tr>
<tr>
<td>Number with prior pelvic radiation (%)</td>
<td>27 (12.0%)</td>
<td>11 (7.1%)</td>
<td>38 (10.0%)</td>
</tr>
<tr>
<td>Location of Stricture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UPI</td>
<td>74 (32.9%)</td>
<td>57 (36.3%)</td>
<td>131 (34.4%)</td>
</tr>
<tr>
<td>Proximal</td>
<td>53 (23.6%)</td>
<td>26 (16.7%)</td>
<td>79 (20.7%)</td>
</tr>
<tr>
<td>Middle</td>
<td>32 (14.2%)</td>
<td>19 (12.3%)</td>
<td>51 (13.4%)</td>
</tr>
<tr>
<td>Dorsal</td>
<td>84 (28.4%)</td>
<td>54 (34.6%)</td>
<td>118 (31.0%)</td>
</tr>
<tr>
<td>Panureter</td>
<td>2 (0.9%)</td>
<td>0 (0.0%)</td>
<td>2 (0.5%)</td>
</tr>
<tr>
<td>Number with prior ureteral stricture intervention</td>
<td>69 (30.7%)</td>
<td>39 (25.0%)</td>
<td>108 (28.3%)</td>
</tr>
<tr>
<td>Median operative time (minutes) (IQR)</td>
<td>195 (150-256)</td>
<td>171.5 (123.3-266.8)</td>
<td>189 (141-257)</td>
</tr>
<tr>
<td>Median estimated blood loss (milliliters) (IQR)</td>
<td>50 (25-100)</td>
<td>50 (50-101)</td>
<td>50 (50-100)</td>
</tr>
<tr>
<td>Median length of stricture (centimeters) (IQR)</td>
<td>2 (1-4)</td>
<td>2 (1-3)</td>
<td>2 (1.4)</td>
</tr>
<tr>
<td>Median length of stay (days) (IQR)</td>
<td>1 (1-2)</td>
<td>1 (1-2)</td>
<td>1 (1-2)</td>
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<tr>
<td>Number of 30-day Clavien≥2</td>
<td>13 (5.8%)</td>
<td>5 (3.2%)</td>
<td>18 (4.7%)</td>
</tr>
<tr>
<td>Number with surgical success (%)</td>
<td>204 (90.7%)</td>
<td>131 (84.0%)</td>
<td>335 (87.9%)</td>
</tr>
</tbody>
</table>

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**V3-02 Totally Intracorporeal Robot-assisted Bilateral Ileal Ureter Replacement for the Treatment of Ureteral Strictures using Kangduo Surgical Robot 2000: our preliminary results**

Shubo Fan¹, Kunlin Yang¹, Zhihua Li¹, Xiang Wang¹, Yicong Du¹, Xuesong Li³, Liqun Zhou¹

¹Peking University First Hospital

Presented By: Shubo Fan

**Introduction and Objective:** In China, the KangDuo Surgical Robot (Suzhou KangDuo Robot Co., Ltd., Suzhou, China) has been developed. The new robot system consists of an open surgeon console, a patient cart and a vision cart. And our results demonstrate that the KangDuo Surgical Robot-01 achieved noninferior outcomes as compared with the da Vinci Si Surgical System in partial nephrectomy for T1a renal tumors. Until now, The KangDuo Surgical Robot-01, with passive master manipulator and three robotic arms, has been upgraded to Kangduo Surgical Robot 2000(KD-SR-2000) with active master manipulator and four robotic arms. We aimed to report preliminary results of totally

**Methods:** Four patients suffered bilateral ureteral stricture due to radiotherapy after surgical treatment of cervical or endometrial cancer and underwent totally intracorporeal robot-assisted bilateral ileal ureter replacement from February 2024 to March 2024 by one surgeon using KD-SR-2000. The surgical procedure included dissection of the proximal end of the bilateral ureteral stricture, intracorporeal ileal ureter preparation, rebuilding of intestinal continuity, intracorporeal anastomosis of the ileum to the proximal end of the bilateral ureteral stricture, and intracorporeal anastomosis of the ileum to the bladder. The demographic and perioperative data were prospectively recorded. Complications were categorized according to the Clavien-Dindo classification system. A descriptive statistical analysis was performed.

**Results:** All surgeries were successfully completed with single docking without open conversion. The median (range) length of the harvested ileal ureter was 25 (25–28) cm. The median (range) docking time, operation time and console time was 4.5(3-7) min, 322 (280-329) min and 275 (222-296) min respectively. The median (range) estimated blood loss was about 50(50-50) ml. The median (range) postoperative hospitalization was 8.5 (6-10) days. One patient developed diarrhea with fever and had an amelioration of symptoms with conservative therapy (Grade I).

**Conclusions:** Totally intracorporeal robot-assisted bilateral ileal ureter replacement for the treatment of ureteral strictures using KD-SR-2000 was feasible. The effectiveness and safety of the technique should be further assessed.

**V3-03 A Novel Method using injected ICG to aid in calyceal identification During Robotic-Assisted Laparoscopic Ureterocalicostomy**

Silvia Mora1, Hudson Pierce1, Angeline Johny1, Richard Link1, Jeremy Slawin2

1Baylor College of Medicine, 2Baylor College of Medicine, Michael E. DeBakey VA Medical Center

Presented By: Silvia Mora, MD

**Clinical History:** 58-year-old male with history of recurrent nephrolithiasis with left intra-renal ureteropelvic junction obstruction (UPJO) s/p prior failed robotic left pyeloplasty representing with further reconstructive options. The patient had a left nephrostomy tube for renal decompression and ureteral rest placed 4 weeks prior to reconstructive surgery. Given re-do reconstruction for intra-renal pelvis UPJO, a ureterocalicostomy was favored, however patient did not have significant lower pole parenchymal thinning noted on preoperative imaging. We describe here the use of indocyanine green in the collecting system to aid in calyceal identification.

**Diagnosis:** Recurrent left pyelonephritis due to left intra-renal ureteropelvic junction obstruction.

**Work up:** Renal Lasix scan with split function of 46% in left kidney and 54% in right kidney. Retrograde pyelogram re-demonstrates intra-renal UPJ obstruction.

**Intervention:** Robotic-Assisted Laparoscopic Ureterocalicostomy

Prior to robotic portion, a left retrograde pyelogram was performed demonstrating a narrow intra-renal UPJ obstruction. Following this, intra-abdominal access was achieved, the left colon was reflected, and the renal pelvis was identified. An inflammatory rind and postsurgical scarring of the peri-ureteric and renal pelvis tissue was noted. Intraoperative ureteroscopy was performed and confirmed that the narrowed segment was intra-renal with significant scarring making an augmented graft reconstruction challenging. Thus, the decision was made to proceed with ureterocalicostomy. A hilar dissection was performed for renal artery clamping prior to resection of parenchyma. This case was unique in that the lower pole parenchyma was not significantly thin which made identification of the ideal calyx challenging. Thus, we injected ICG through the nephrostomy tube and using firefly technology, we were able to identify calyces with thinner regions of parenchyma based on the brightness noted on ICG. Once the ideal calyx was identified, the renal artery was clamped and the parenchyma was cut down until collecting system was encountered. Given the relative thickness of the parenchyma, the corticomedullary junction was oversewn with 3-0 V-lock for additional hemostasis. Due to the small size of the calyx, we pre-placed four sutures superior, inferior, medial, and lateral to perform a parachute anastomosis using 4-0 vicryl. Once these sutures were pre-placed, the proximal ureter was transected and spatulated laterally. The superior and medial sutures were completed to allow for posterior re-anastomosis. A stent was then passed into the calyx across the anastomosis and the inferior and lateral sutures were completed. The anastomosis was watertight and tension-free. Meticulous hemostasis was achieved, and no intra-operative complications were encountered.

**Follow-Up/Outcomes:** Patient was discharged in stable condition and returned 6 weeks post operatively for stent removal. Retrograde pyelogram at 8 weeks post operatively noted patency of anastomosis and patient continues to do well.

**V3-04 Novel Reconstruction Utilizing a Cutaneous Transureteroostomy Diversion during Robot-Assisted Radical Cystectomy in a Patient with Crossed Fused Renal Ectopia**

Joshua Jue1, Alvin Goh1

1Memorial Sloan Kettering Cancer Center

Presented By: Joshua Jue, MD

**Introduction and Objective:** In general, cutaneous ureterostomy following radical cystectomy is an underutilized urinary diversion technique that is most commonly utilized in the setting of poor surgical candidacy or a solitary renal unit.

**Methods:** We detail anatomic consideration and surgical planning to perform an intracorporeal cutaneous transureterostomy diversion during robot-assisted radical cystectomy (RARC). We demonstrate our step-by-step surgical technique, including 1) ureteral preparation and mobilization, 2) right-to-left transureteral anastomosis and 3) maturation.

**Results:** RARC with bilateral super extended lymphadenectomy is performed in standard fashion using a 6 port configuration for anterior pelvic exenteration in a 51 year-old female with cT4N1 high grade bladder cancer. The less dilated ureter is anastomosed to the more dilated ureter in an end to side fashion. The transureteroureterostomy is performed by running the posterior edges, followed by the anterior edges with 4-0 vicryl suture. No ureteral stents are utilized during the reconstruction. The end
transureterostomy is then brought to the anterior abdominal wall and matured as a rosebud end stoma. In this case, estimated blood loss was 100cc, operative time was 5 hours and 24 minutes, and there were no complications. The patient had return of bowel function on postoperative day 1, and tolerated a solid diet on day 2, since no bowel segments are used in this diversion.

**Conclusions:** An intracorporeal transureterostomy with maturation of the dilated distal ureter as urostomy serves as a novel urinary diversion that avoids a bowel anastomosis and can result in excellent functional and cosmetic outcomes.

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**V3-05 Robotic appendiceal ureteral replacement for the management of long right ureteral stricture**

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1Department of urology, Jiangong Hospital, 2Department of Urology, Peking University First Hospital

Presented By: Kunlin Yang, MD

**Introduction and objectives:** Long and complex ureteral strictures resulting from failed stone disease are challenging. In these situations, ureteral reconstructive surgery may be the final choice. In recent years, robotic surgeries have become an effective procedure for ureteral reconstruction. Appendix is a useful autologous material for repairing the ureter, which include appendiceal flap ureteroplasty, appendiceal interposition or replacement. We described a female patient who had long appendix which was used for appendiceal ureteral replacement to avoid ileal ureter.

**Methods:** A 20-year-old female was diagnosed with long middle and distal oburated ureteral stricture by antegrade urography and ureteroscopy. She had a history of ureteral lithotripsy and received nephrostomy. The robotic right ileal ureteral replacement was preoperatively planned to perform. But the patient was lucky and had a very long appendix. Finally, we performed robotic appendiceal ureteral replacement for right ureteral stricture. The appendix was placed in the isoperistaltic and non-torsional direction.

**Results:** The surgery was performed successfully within 220 mins. The Foley catheter was removed 2 weeks after surgery and the double-J stent was removed 3 months after surgery. The nephrostomy tube was clamped on postoperative day 14. No symptoms were reported. The antegrade urography showed the patency of the appendiceal was well 3 months after surgery. No hydronephrosis was observed after one-year follow up.

**Conclusions:** Robotic appendiceal ureteral replacement for long right ureteral stricture may be a safe and feasible technique in the selected patient who had an appropriate appendix.

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**V3-06 Retroperitoneal Single-Port Robotic Pyeloplasty With A Low Anterior Approach In A Patient With Hostile Abdomen**

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1Cleveland Clinic

Presented By: Alp Tuna Bekasac

**Introduction:** Single-port robotic surgical system is designed to operate in small anatomical spaces, which makes it an optimal tool to perform retroperitoneal surgery. This is an important advantage in patients with hostile abdomens.

**Patients And Methods:** Our case is a 55-year-old gentleman, who presented with right sided flank pain and pyelonephritis. Evaluation with CT urogram demonstrated a right sided ureteropelvic junction obstruction and a large lower pole renal cyst. Subsequent MAG-3 scan showed a split function of right side 35% and left side 65%. Renal function was normal. Past surgical history was significant for two small bowel resections for Crohn’s disease. His second laparotomy resulted in over 90 minutes of lysis of adhesions. Retroperitoneal single-port robotic pyeleplasty, and renal cyst decortication were recommended to patient. A 3.4 cm incision was done two finger breadths medial to the superior anterior iliac spine for access. Surgical steps included 1) Identification of psoas muscle, 2) Renal cyst dissection, 3) Renal pelvis dissection, 4) Transection of ureteropelvic junction, 4) Spatulation of ureter and pelvis, 5) Anastomosis, 6) Renal cyst decortication.

**Results:** Surgery was completed successfully without any need for additional port placement. Operative time was 259 minutes and estimated blood loss was 20 ml. Patient was discharged home at postoperative day 1. Ureteral stent was removed at postoperative 4 weeks. Patient has been asymptomatic since stent removal. Postoperative MAG-3 scan scheduled for postoperative 3 months.

**Conclusions:** In patients with hostile abdomens, retroperitoneal single-port dismembered pyeloplasty can be performed with a low anterior approach.

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**V3-07 Heminephrectomy for atrophic, duplicated kidney**

Courtney Yong1, Chandru Sundaram1

1Indiana University

Presented By: Courtney Yong, MD

**Introduction:** A symptomatic, atrophic moiety of a duplicated system is a rare condition that can be treated surgically with removal of the affected moiety. The video depicts a case of a 23 year old male who had recurrent urinary tract infections and left flank pain and was found to have a left duplicated system with an atrophic upper pole moiety. He elected for a robotic heminephrectomy of the upper pole moiety.

**Methods:** The procedure started with cystoscopy, retrograde pyelogram, and 5 Fr ureteral catheter placement into the abnormal upper pole ureter. The multi-port robot was used with ports placed similar to any renal procedure. The abnormal ureter was identified and dissected completely free from behind the renal hilum with care to protect the normal ureter during this dissection. Once dissected above and below the hilum, the abnormal ureter and renal pelvis are pulled through from behind the hilum to the upper pole. Once the upper pole is completely dissected free from surrounding tissues, the arteries and veins feeding the
upper pole are divided. In this case, the upper pole was able to be resected off-clamp, and the raw surface of the lower pole was oversewn similar to the first layer renorrhaphy of a partial nephrectomy.

Results: The patient’s catheter was removed the day after surgery, and the patient’s creatinine was stable at 0.66. He was discharged that day. At 1 month follow up, he has not had any recurrence of pain or urinary tract infections.

Conclusions: Atrophic, symptomatic, duplicated moieties are rare conditions that can be treated with robotic heminephrectomy. Careful consideration of aberrant anatomy is important to avoid damage to the normal renal unit.

V3-08 Novel technique of Minced Buccal Mucosal Graft Endourethral Urethroplasty-A pilot Study, Video demonstration

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Presented By: Swarnendu Mandal, DR

Introduction And objective: While DVIU is the preferred treatment for short bulbular strictures, its long-term success rate is dismal and varies from 9-30% among various series. Urethroplasty has higher success rates than DVIU. But due to its steep learning curve, longer operative times, bleeding, the risk for erectile or ejaculatory dysfunction, wound infection, and incontinence, it is typically used for long and complex urethral strictures. Our technique, minced buccal mucosal graft endourethral urethroplasty (MBGEU), is based on a similar principle, albeit in humans, for the first time. MBGEU combines the advantages of buccal mucosal grafting with DVIU. The objective of this pilot study is to measure the success rate of Minced Buccal Mucosal Graft Endourethral Urethroplasty.

Methods: This was IEC approved and CRTI registered (CTRI/2021/09/036651) pilot study. Males with primary <2cm bulbular-urethral-strictures underwent MBGEU. A 1x1cm buccal-mucosal-graft was harvested, minced, centrifuged and suspended in fibrin glue. After a cold knife urethrotomy, 12-Fr foley was placed. An 11-Fr cystourethroscope was passed by the side of the catheter, and the minced graft suspension was instilled via a 5-Fr ureteric catheter over the urethrotomy site.

The primary outcome was the success rate at six months. The changes in American Urological Association (AUA) symptom score, peak flow rate (Qmax), and post-void residual (PVR) post-operatively at three and six months, were secondary outcomes. The Friedman test was used for statistical significance using SPSS software.

Results: Thirty men underwent MBGEU. The median structure length was 1cm (IQR 1.0-1.5). The stricture recurred in two patients at postoperative 3 and 6 months respectively. The success rate of MBGUE was 93.33%. The median pre-operative AUA score was 18.00 (IQR 16.00-23.00) and the post-operative AUA score at three, six and 12 months were 3.00 (2.00-4.00), 2.00 (1.00-3.00) and 2.00 (1.00-2.00) (p < 0.05). The median pre-operative Qmax (ml/sec) was 6.00 (IQR 5.00-8.00) and Qmax at postoperative three, six months and 12 months were 24.00 (20.00-27.00), 22.00 (20.00-25.00) and 23.00 (20.00-28.00) (p < 0.05) respectively. The median pre-operative PVR (ml) was 88.00(IQR 66.25-150.50) and PVR at post-operative three, six and 12 months were 16.00(IQR 10.75-39.00), 15.00(IQR 9.70-22.25) and 15.50(IQR 10.700-22.00) (p < 0.05) respectively.

Conclusion: The short-term success of MBGEU is encouraging and could revolutionize the surgical outcomes of DVIU. However, a longer follow-up and further studies with more participants are required. This is a very simple and inexpensive technique, unlike the live culture or expanded-hybrid technique.

Source of Funding: None.

Conflict of Interest and Disclosure Statement: No conflict of interest.

Topic List: Reconstruction Urology.

V3-09 Shurui single-port robot-assisted ureteroureterostomy via transmesenteric approach for the management of ureteral stenosis

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Presented By: Bing Wang

Background: The efficacy and safety of Shurui single-port (SP) robotic resection and reanastomosis of the ureteral stenosis have been demonstrated to be comparable, while offering superior cosmetic outcomes and reduced pain compared to multiple-port robotic resection and reanastomosis of the ureteral stenosis. However, the widespread adoption of this technique is still hindered by limited availability and high costs.

Objective: This study aimed to provide a comprehensive description of the case of transmesenteric robotic resection and reanastomosis of the ureteral stenosis utilizing the Shurui SP surgical system.

Material and methods: We presented a case of a 34-year-old female patient with complaint of intermittent left flank pain for 2 years. Radiographic imaging demonstrated the left upper ureter stenosis with moderate hydrourephrosis. We performed the robot-assisted resection and reanastomosis of the ureteral stenosis via transmesenteric approach using the novel Shurui single-port surgical system.

Result: The total operation time was 111 minutes with 11 minutes docking time and 106 minutes console time. The estimated blood loss was 5 ml. The patient presented with satisfactory cosmetic outcomes with only a 3 cm incision. The postoperative hospital stay was 5 days. There was no conversion to laparoscopic or open surgery. No intraoperative or postoperative complications occurred. Postoperative pathology confirmed the diagnosis of ureteral fibroepithelial polyps.

Conclusion: These results suggested that using the novel Shurui single-port surgical system, robot-assisted resection and reanastomosis of the ureteral stenosis via transmesenteric approach is technically feasible for the ureteral stenosis caused by fibroepithelial polyps. However, large-sample, multicenter and long-term studies are still needed.
V3-10  Bilateral robot-assisted ileal ureter substitution
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Presented By: Jong Hoon Lee, MD

Introduction and Objective: Long ureteral strictures present a reconstructive challenge for the urologist. Several tissue substitution techniques have been reported when a primary ureteroureterostomy was unsuitable, such as oral mucosa grafts, and appendiceal, pelvic, and Boari flaps. Ileal ureter substitution is still considered to be the ultimate solution, especially for extremely long strictures. In 2010, ileal ureter substitution using a robotic system began, and several studies have demonstrated its efficacy and safety. In this study, we report challenging case of bilateral robot-assisted ileal ureter substitution.

Methods: Prior to surgery, bilateral ureteral catheter was removed and bilateral percutaneous nephrostomy were placed for two months. All procedures were performed completely intracorporeal and the inverted seven technique was used for ileal ureter substitution. After docking the Da Vinci Xi, in right lateral decubitus position, left narrow ureter was identified. Ureteral ligation and spatulation was performed almost at the ureteropelvic junction. After changing to the lithotomy position, right ureterolysis was performed, ileal segment was isolated approximately 20cm proximal to the ileocecal valve. After harvesting the small bowel, ileocecostomy and right ureterointestinal substitution was performed at proximal end and mid portion of the small bowel, respectively. After changing to the right lateral decubitus position again, left ureterointestinal anastomosis was performed. All anastomosis was performed in an end-to-end manner with running sutures.

Results: A 66-year-old male with a history of left pancreatic stricture and right ureteral stricture near anastomosis site after undergoing left transureteroureterostomy due to ureteral avulsion during ureteroscopic stone removal and underwent further both balloon dilatation and metal stent insertion and removal. Two months after the operation, split function of 33.2% on the left side and 66.8% on the right side, and fair excretion in both kidneys without signs of obstruction on renal scan. So far there are no postoperative complications.

Conclusions: A bilateral robot-assisted ileal ureter substitution with a completely intracorporeal technique is feasible and appears to be safe. A larger number of procedures using this technique and longer follow-up are needed to further define its role in the treatment of ureteral strictures.

V3-11 Robot-assisted Ureteroplasty with Double Buccal Mucosa Graft
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Presented By: Chung Un Lee, MD

Introduction and Objective: Surgical management of ureteral stricture is challenging because ureters have a delicate blood supply that is susceptible to devascularization, and anastomosis of the ureter after excision of the diseased segment must be performed in a tension-free manner. Buccal mucosa graft (BMG) is well-suited for grafting in the urinary tract, and it is expected to be used as a treatment for ureteroplasty in ureteral stricture. However, the use of BMG may be unsuitable in long stricture, and we would like to present a treatment for this via double graft technique in ureteroplasty.

Methods: After docking the Da Vinci Xi, narrowed ureter was identified, and mobilized proximally and distally. Longitudinal incision was made, and devitalized section was confirmed and removed. Tension-free anastomosis was performed on the viable ureteral ends, and ureteral catheter was inserted through a previous longitudinal incision. The BMGs harvested from both cheeks were connected longitudinally, and the connected BMG was inserted intraperitoneally and transplanted into the incised and anastomosed ureter using the augmenting technique. Afterwards, blood supply was induced in this area through omental wrapping.

Results: A 40-year-old male with a history of right ureteral stricture after undergoing ureteroscopic stone removal for right ureteral stones and underwent further balloon dilatation and metal stent insertion and removal. Renal scan performed before operation showed a split function of 62.8% on the left side and 37.8% on the right side, and delayed excretion on the right side. CT and diagnostic ureteroscopic exam showed a 6cm stricture of the right upper ureter accompanied by right hydropnephrosis. Total operation time was 280 minutes, estimated blood loss was 100mL, and no intraoperative complication was observed. Two months after the operation, split function of 66.1% on the left side and 33.9% on the right side, and fair excretion in both kidneys without signs of obstruction on renal scan. So far there are no postoperative complications.

Conclusions: A robot-assisted ureteroplasty with double BMG using augmenting transplantation technique proved a viable option, with a good result in the postoperative follow-up.

V3-12 Robotic Nephroureterectomy from an Ileal Conduit – Techniques and Methods
Kelley Zhao², Laurenson Ward¹, Matthew Lee², Brian Chao², Daniel Eun²

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Presented By: Kelley Zhao, MD

Introduction: Nephroureterectomy for upper tract urothelial cell carcinoma (UTUC) in a patient with prior radical cystectomy and ileal conduit urinary diversion can prove challenging. We demonstrate our techniques and methods for performing a robotic nephroureterectomy from an ileal conduit for management of UTUC after urinary diversion.

Methods and Materials: We present a case of a patient with recurrence of urothelial cell carcinoma after ileal conduit urinary diversion. Past medical history, operative report, and postoperative course were obtained through electronic medical
VIDEO SESSION 3

records. Surgical clips were edited and arranged with Adobe Premier.

Results: We present the case of a 77-year-old male with a history of BCG unresponsive high grade T1 urothelial cell carcinoma who underwent a robotic radical cystoprostatectomy, pelvic lymph node dissection, and intracorporeal ileal conduit diversion. Two years after his index course he develops a left renal pelvic mass with biopsy-confirmed high grade urothelial cell carcinoma. He undergoes a robotic left nephroureterectomy, retroperitoneal resection, and closure of his ileal conduit. Total estimated blood loss was 600cc, operative time 264 minutes, with no intra-operative complications noted. His hospital course was unremarkable, and he was discharged two days after his procedure. No major complications occurred that were greater than Clavien classification 2. His final pathology returned as invasive high grade papillary urothelial cell carcinoma, pT3N2M0 with 12 of 15 nodes positive. He was started on adjuvant immunotherapy.

Conclusions: Robotic nephroureterectomy is a feasible, minimally-invasive approach for management of UTUC after prior radical cystectomy and ileal conduit urinary diversion.

V3-13 Robotic repair of Retrocaval Ureter-Tips and Technique
Nitish Aggarwal, Prashant Singh, Rishi Nayyar, Siddharth Jain, Amlesh Seth
1AIIMS New Delhi, 2AIIMS New Delhi
Presented By: Nitish Aggarwal, MCh

Introduction & Objectives: Retrocaval ureter is a rare condition which leads to obstruction of the kidney, being more common in male and usually become symptomatic by 3rd decade. Minimally-invasive surgical options has emerged as the method of choice for repair-varying from laparoscopic(- which can be transperitoneal or retroperitoneoscopic) to robotic approach. The use of the surgical robot facilitates the most challenging part of the procedure, which is intracorporeal suturing.

Methods: A 18-year-old boy developed right sided flank pain for last 4 years. In the course of evaluation for the cause, he was diagnosed as having right retrocaval ureter. He underwent right robot assisted ureteroureterostomy. Pneumoperitoneum was created using a Veress needle. The Da Vinci robot was then docked from the back of the patient. The hepatic flexure of the right colon was mobilized and dropped. The right renal pelvis and inferior vena cava were identified. The right renal pelvis and proximal ureter were freed of soft tissue attachments. The proximal ureter was seen disappearing behind the inferior vena cava. Transsection was performed at the level of the proximal ureter. With further dissection retrocaval part was delivered from behind vena cava. Then ureteroureterostomy was performed using a 4-0 continuous polyglactin suture. After completion of posterior layer of the anastomosis, antegrade stenting was done using a 6F DJ stent.

Results: Entire procedure took around 2hr. Blood Loss was less than 100ml. Patient had uneventful postoperative course and was discharged on POD3.

Conclusions: Robotic retrocaval ureter repair with ureteroureterostomy without excision of the retrocaval segment is an effective and safe procedure with results equivalent to that of laparoscopic and open retrocaval ureter repair. It is associated with minimal postoperative morbidity and short hospital stay.

V3-14 Robotic buccal mucosal graft ureteroplasty using combination of posterior-inlay and anterior-onlay technique
Yang Kunlin
1Peking University First Hospital
Presented By: Yang Kunlin, MD

Introduction and objectives: Long and complex ureteral strictures resulting from failed ureteroplasty, recurrent stone disease, multiple endourological treatments are challenging. In these situations, ureteral reconstructive surgery may be the final choice. In recent years, robotic buccal mucosal graft (BMG) ureteroplasty has become a safe and feasible technique to cure these complex strictures and avoid ileal ureter. The most common technique reported in the literature was anterior-onlay technique with or without posterior augmented anastomosis. There are few reports about other techniques. We describe an uncommon method using posterior-inlay and anterior-onlay technique in robotic BMG ureteroplasty.

Methods: We describe a case of 37-year-old male with almost obstructed ureteral stricture. He had a history of failed laparoscopic ureteroplasty 6 years ago and received multiple endourological dilatations. A percutaneous nephrostomy was placed, and anterograde and retrograde urography showed about 5 cm of ureteral stricture. Robotic BMG ureteroplasty was undergone. During the surgery, we found the ureteral posterior wall was not long enough to achieve the complete posterior augmented anastomosis. There was a posterior defect after the partial posterior augmented anastomosis. Therefore, we used a BMG to fill the posterior defect first followed by BMG anterior-onlay ureteroplasty.

Results: The surgery was performed successfully within 240 mins. The Foley catheter was removed 2 weeks after surgery and the double-J stent was removed 3 months after surgery. The nephrostomy tube was clamped on postoperative day 14, and accidentally pulled out by patient himself 2 months after surgery. No symptoms were reported. The ultrasound showed stable and mild hydronephrosis.

Conclusions: Robotic BMG ureteroplasty using combination of posterior-inlay and anterior-onlay technique is a safe and feasible technique in the management of ureteral stricture. Although the result of this case is encouraging with nearly 6 months follow-up, more cases and longer follow-up for this procedure are still needed.

V3-15 Single-Port Robotic Retroperitoneal Partial Nephrectomy: A Case Study
Jatinder Kumar, Christopher Keel, Hannah Moreland, Christian Manganti, Malvik Patel
1University of South Alabama, 2University Of South Alabama
Presented By: Jatinder Kumar, MBBS, MS, MCh, MD
Introduction and Objective: This video presents a case study of a 54-year-old female referred to the University of South Alabama Urology Department for an incidental finding of a posterior right renal mass. The objective is to demonstrate the feasibility and advantages of single-port robotic retroperitoneal partial nephrectomy in such cases.

Methods: The patient, with a history of anaemia and prior abdominal surgeries (caesarean section and tubal ligation), underwent preoperative assessment including a CT scan with contrast. The patient was placed in the left lateral flank position for retroperitoneal access. Then surgical access was achieved through a single port site created off the tip of the right twelfth rib. The retroperitoneal space was developed along the psoas muscle, identifying the hilum. Next, the hilum vasculature was skeletonized. The fat overlying the kidney was excised exposing the renal mass. The ultrasound was used to localize negative margins. Monopolar cautery was then used to demarcate the margins of the resection. A robotic bulldog clamp was placed across the renal artery to induce warm ischemia. The mass was dissected sharply, leaving grossly negative margins in the resection bed. The mass was removed, a 3-0 V-loc suture was used to reconstruct the vascular bed and collecting system. A sliding leg technique was used to secure the renal artery. The bulldog clamp was then released, reestablishing blood flow. Electrocautery was used to achieve haemostasis. The partial nephrectomy was successful and uncomplicated.

Results: The procedure was successful with negligible blood loss and no intraoperative complications. Histological examination confirmed clear cell renal cell carcinoma, PT1b stage. Postoperative recovery was uneventful, and follow-up imaging at 8 weeks showed no residual lesions.

Conclusions: Single-port robotic retroperitoneal partial nephrectomy offers several advantages over traditional multiport techniques, including easier access to small renal masses, reduced operative time, improved cosmetics, decreased blood loss, and reduced postoperative pain. This approach is particularly beneficial for patients with a history of multiple prior abdominal procedures.

V3-16 Management of complex ureteric strictures- The Robotic way

Arvind Ganpule, Victor Coelho, Abhishek Singh, Abhijit Patil, Rohan Batra, Ravindra Sabnis, Mahesh Desai

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Presented By: Arvind Ganpule, MD

Introduction: A ureteric stricture can be treated either endoscopically or with ureteric reconstruction. Recognition of the stricture during robotic ureteric reconstruction, however, can be challenging. In this video we will demonstrate our operative technique and key steps in achieving tension free anastomosis.

Methods: The first case is an 18 year old boy who on routine pre-fitnes evaluation was detected to have bilateral renal calculi for which he underwent a left ureterorenoscopy with double J stent placement and right side ESWL. He was well for the next three months, after which, he presented with left side flank pain and fever. An abdominal ultrasonography done was suggestive of a left side urinoma formation. All further endoscopic attempts were futile and the patient presented to us for further management. Through the video we want to highlight the challenges we faced in identifying the strictured segment of the ureter, ureteral dissection and even the anastomosis. The use of the Fire-Flight mode in the Davinci X platform, intra-operatively, helped us circumvent this problem. The strictured segment of the ureter was excised and an end-to end uretero-ureterostomy was performed and the patient had an uneventful recovery and was discharged in a stable condition. The second case demonstrates a 60 year old lady with diabetes and recurrent pyelonephritis, she was diagnosed to have a right upper ureteric long segment stricture. Previous attempts with endoscopic dilatation and use of double DJ stentings were not successful. During the course of her treatment she developed chronic kidney disease. An ante-grade dye study revealed two strictures. Due to her chronic kidney disease and the nature of her ureteric strictures, she underwent an overlay and inlay buccal urethroplasty. The graft was placed over the ureteric plate and once it was tacked, a second graft was anastomosed over the edges after the ureteric catheter was moved into the pelvis. The neo-anastomosis was then re-enforced with the help of omentum.

Results: Both the patients had an uneventful recovery period and were discharged home by the fourth post-operative day. There was significant change in the estimated glomerular filtration rate pre-operatively and post-operatively.

Conclusion: Robotic uretero-ureterostomy is a feasible option for the definitive treatment of of proximal and mid ureteral strictures. The use of the accessory technology like the Firefly mode in the Davinci X platform and use of percutaneous nephrostomies and use of pre-placed ureteric catheters help us in accurate location of the stricturious segment and further operative management.
V4-01 Pulsed Thulium Laser Enucleation of Prostate: Our Initial Experience Using Thulio by Dornier MedTech

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1Fox Chase-Temple Urologic Institute

Presented By: Matthew Lee, MD, MBA

Introduction and Objective: We demonstrate our experience utilizing a pulsed wave thulium laser for enucleation of the prostate in patients with enlarged prostates associated with lower urinary tract symptoms and/or hematuria.

Methods: We performed a retrospective review to identify all consecutive patients undergoing enucleation of the prostate with a pulsed thulium laser fiber between 03/2023 and 08/2023. Indications for surgery included patients with enlarged prostates associated with lower urinary tract symptoms and/or gross hematuria refractory to conservative management. We utilized a 26 French laser resectoscope and a pulsed thulium laser fiber with settings placed at an energy of 2000 millijoules and a frequency of 50 hertz. Surgical success was defined as resolution of preoperative symptoms. A descriptive analysis was performed on perioperative variables.

Results: Table 1 demonstrates our perioperative results in 33 patients who met inclusion criteria. Median preoperative prostate volume was 86 (IQR 70.5-127) grams and median preoperative AUA symptom score was 17 (IQR 9.2-22.5). Intraoperatively, median operative time was 120 (IQR 120-180) minutes and median estimated blood loss 5 (IQR 5-10) milliliters. There were no intraoperative complications and no patients required perioperative blood transfusions. Postoperatively, median catheter duration was 1 (IQR 1-1) day. There was improvement in median postoperative AUA symptom scores (median 8.5, IQR 6.8-10.3). There were no major postoperative (Clavien≥2) complications. At a median follow-up of 1.1 (IQR 0.6-1.8) months, 93.9% of patients were surgically successful.

Conclusions: Utilization of a pulsed thulium laser fiber for enucleation of the prostate demonstrates a favorable safety and efficacy profile at short term follow-up. Further long-term and robust studies are needed to confirm its clinical applicability.

<table>
<thead>
<tr>
<th>Table 1: Perioperative Variables of Pulsed Thulium Laser Enucleation of Prostate</th>
<th>Thulio Laser Enucleation of Prostate (n=33)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Age (IQR), years</td>
<td>74 (66-77)</td>
</tr>
<tr>
<td>Median Body Mass Index (IQR), kg/m²</td>
<td>27.5 (25.9-29.4)</td>
</tr>
<tr>
<td>Median Preoperative Prostate Volume (IQR), grams</td>
<td>86 (70.5-127)</td>
</tr>
<tr>
<td>Prior Outlet Procedure (%)</td>
<td>9.1</td>
</tr>
<tr>
<td>Median Preoperative PSA (IQR), ng/mL</td>
<td>3.6 (2.1-8.3)</td>
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<tr>
<td>Median Preoperative AUA Symptom Score (IQR)</td>
<td>17 (9.2-22.5)</td>
</tr>
<tr>
<td>Median Operative Time (IQR), minutes</td>
<td>120 (120-180)</td>
</tr>
<tr>
<td>Median Estimated Blood Loss (IQR), milliliters</td>
<td>5 (5-10)</td>
</tr>
<tr>
<td>Presence of Median Lobe (%)</td>
<td>93.9</td>
</tr>
<tr>
<td>Intraoperative Complications (%)</td>
<td>0</td>
</tr>
<tr>
<td>Intraoperative Transfusion Requirements (%)</td>
<td>0</td>
</tr>
<tr>
<td>Median Postoperative Catheter Duration (IQR), days</td>
<td>11 (5-13)</td>
</tr>
<tr>
<td>Median Postoperative AUA Symptom Score (IQR)</td>
<td>8.5 (6.8-10.3)</td>
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<tr>
<td>Postoperative (Clavien≥2) Complications (%)</td>
<td>0</td>
</tr>
<tr>
<td>Median Follow Up (IQR), months</td>
<td>11 (0.6-1.8)</td>
</tr>
<tr>
<td>Surgical Success (%)</td>
<td>93.9</td>
</tr>
</tbody>
</table>

V4-02 Single-Port Robotic Intravesical Diverticulectomy

Sina Monfared2, Suprita Krishna1, Andrew Wagner1, Peter Chang1

1Beth Israel Deaconess Medical Center, 2Sina Monfared

Presented By: Sina Monfared, MD

Introduction and Objective: We present the case of a 68-year-old male with a known history of severe BPH, LUTS, very low-risk prostate cancer with prostate MRI findings of a large left sided bladder diverticulum with a 79cc prostate, international prostate symptom score 28, post void residual (PVR) 394cc, and mostly dissatisfied quality of life score. The patient underwent an elective single-port (SP) robotic assisted diverticulectomy and simple prostatectomy via an intravesical approach. We detailed the patient’s post-operative outcomes.

Methods: Access into the bladder was gained via a vertical midline suprapubic incision, similar to the standard intravesical single port robotic approach. We used a small SP access port with an 8mm air-seal assistant inside and the arms pointing caudally. The SP robot is able to adjust its horizon clockwise to face the diverticulum head on. With the camera on top, monopolar spatula on the right hand, and fenestrated bipolar arms on the left and bottom hands, the diverticulum is initially dissected off the bladder from the inside out. We are then able to completely free it off of any extraperitoneal structures, then remove it from the body. Bladder closure is completed with a 3-0 V-lock suture. The robot can then easily rotate counterclockwise back to its original horizon to proceed with the simple prostatectomy portion of the case.

Results: At the end of the case, a 22Fr 3-way foley catheter was placed, and the patient required only minimal continuous bladder irrigation. Total operating time was 4 hours and 10 minutes with an estimated blood loss (EBL) of 200cc. He was extubated and sent to the post-anesthesia care unit in a stable condition. The patient was discharged on post-operative day 1 with a urethral catheter, and at 2-week follow up, had a successful trial of void in clinic. At 3-month follow up, the patient was voiding well with only mild urgency and minimal PVR.

Conclusions: The single port robot is unique in its ability to adjust its master horizon for increased versatility, improving our ability operate in challenging-to-reach areas such as in this patient. The intravesical docking of the robot allowed us to stay completely outside of the peritoneum. Lastly, this access site at the level of the dome of the bladder allows for further concurrent surgeries, including the patient’s simple prostatectomy.

V4-03 Thulium laser enucleation of the prostate with a delayed cut of the bladder neck mucosa protects small prostates from bladder neck contracture

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Presented By: Yun Chu Chang, MD
Introduction and Objective: Bladder neck contracture (BNC) is a relevant long-term complication after transurethral resection of prostate (TURP). Proposed mechanisms causing BNC are extensive resection of the bladder neck as well as excessive fulguration with high ablative energy in the bladder neck leading to scar tissue formation. Several factors have been reported to be associated with the formation of BNC after TURP, and a smaller preoperative prostate volume has been recognized as an independent risk factor for the development of postoperative BNC. In this study, we evaluated the outcomes of Thulium laser enucleation of the prostate (ThuLEP) with a delayed cut of the bladder neck mucosa in men with smaller prostate volumes.

Methods: Consecutive men who underwent ThuLEP by a single surgeon from September 2017 to September 2022 were identified. Patients underwent preoperative instrumental assessment and clinical evaluation, which included validated questionnaires. Postoperatively, assessments were conducted at specific time intervals. Patients with prostate cancer or missing data for variables of interest were excluded. We performed all-in-one-lobectomy enucleation technique for ThuLEP. At the bladder neck, we bluntly enucleated the prostatic adenoma from the mucosal attachment between the adenoma and the bladder neck. To maintain mucosal integrity and refrain from entering the bladder until the adenoma is clear from approximately one half of the circumference of the bladder neck. This procedure ensured a complete removal of the prostatic adenoma with bladder neck preservation.

Results: Overall, 492 patients were included, and 68 patients with a prostate volume less than 40 cm³ were analyzed. The average age of these patients was 70.7 ± 7.13 years, the preoperative average prostate size was 32.8 ± 5.0 cm³, the average enucleation time was 47.8 ± 11.1 minutes, and the average weight of specimen was 9.1 ± 4.8 g. At post-operative 3 months, the improvement in the maximum uroflow rate was 9.7 ± 1.1 ml/sec and post-void residual urine was -44.5 ± 36.0 mL. At post-operative 1 year, the change in the International Prostate Symptom Score (IPSS) total score was -22.4 ± 6.5 points, and the average score on the Clinical Global Impression questionnaire was 8.7 ± 1.2 points. No case of BNC was detected during the average follow-up period of 20.1 ± 9.3 months.

Conclusions: Using ThuLEP with a delayed cut of the bladder neck mucosa, we minimized the incidence of BNC in patients with prostate volume less than 40 cm³.

Blades facing anteriorly
Change morcellator blade
Inverse Morcellation
Laser Incision
Repeat Morcellation
Stone Basket Removal
Open Cystotomy

Figure 1: Proposed flow chart for morcellation of tissue with difficult characteristics.
VIDEO SESSION 4

Methods: Our case is an 80-year-old male with a past medical history of favorable intermediate-risk prostate cancer status post radiation therapy 10 years prior who underwent HoLEP due to urinary retention requiring an indwelling urethral foley catheter. MRI with evidence of a 180-grant prostate gland without any significant prostatic lesions. Holmium Laser Enucleation of the Prostate was performed using a 550-micron Moses 2.0 laser fiber with enucleation settings of 2J and 40 Hz and hemostasis settings of 1J and 35 Hz (long pulse). Morcellation proceeded using a Wolf PIRANHA System at speed setting 1 with 1500 RPM.

Results: Figure 1 demonstrates our proposed morcellation techniques, including standard morcellation with anteriorly facing blades, morcellator blade exchange, and inverse morcellation. We also demonstrated re-introduction of the Holmium Laser and incision of the remaining tissue in order to create smaller pieces and provide ridges to enhance tissue engagement. Lastly, a 1.9 Fr Zero Tip Nitinol NCircle basket was used to remove the remaining tissue en bloc.

Conclusions: We demonstrate various endoscopic techniques to improve blade-to-tissue contact during morcellation of tissue with difficult characteristics in order to avoid open cystotomy and removal of tissue.

V4-06 Thulium Fiber Laser versus Holmium MOSES TM in Endoscopic Enucleation of the Prostate: Which One is ‘The One’?

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Presented By: Saud Alhelal, MD

Introduction and Objective: There is limited evidence comparing the holmium laser with MOSESTM technology and thulium fiber laser (TFL) in endoscopic enucleation of the prostate (EEP). Both MOSESTM holmium laser enucleation of the prostate (MoLEP) and thulium laser enucleation of the prostate (ThuLEP) are effective treatment options for benign prostate obstruction (BPO). This video aims to describe our experience using MoLEP and ThuFLEP at our institution.

Methods: From December 2020 to October 2023, we prospectively recorded all EEP cases at our institution using MOSESTM technology and TFL after obtaining informed patient consent. A total of 316 procedures were performed by a single surgeon (H. E.), including 146 MoLEP cases with MOSESTM 1.0 and 50 MoLEP cases with MOSESTM 2.0 pulse-modulation systems (Lumenis, Yokneam, Israel), as well as 120 ThuFLEP cases (SolviteTM Premium, Olympus, USA). We extracted video clips of the different energy sources employed during EEP from the original recordings.

Results: The efficacy of EEP depends on several factors, including a comprehensive understanding of laser-tissue interactions, including wavelength, absorption coefficient, peak power, working distance and the surgeon’s expertise. The effect of TFL resembles a surgical blade or a hot knife, which cuts very well but does not particularly help in dissecting the anatomical plane. In contrast, MOSESTM technology functions in a manner similar to two scissor blades, opening the layer between the adenoma and surgical capsule, dissecting the virtual plane, and facilitating urologists in performing enucleation following the actual anatomical plane.

Conclusions: Our findings demonstrate that the favorable outcomes achieved with EEP can be attributed to the anatomical completeness of adenoma removal rather than the energy source utilized. Based on the early results of our institution’s randomized controlled trial (RCT), the new pulse-modulation holmium lasers demonstrate clinical advantages in intraoperative and perioperative outcomes. Larger comparative RCTS are warranted to consolidate our findings.

V4-07 Comparison of Holmium and Thulium Laser Energy Effects on Prostate Enucleation: A Video Case Study

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Presented By: Seyedamirvala Saadat, B. S. Department of Urology

Clinical History: A healthy 67-year-old man with no prior surgical history presents to the clinic with bothersome lower urinary tract symptoms refractory to medical therapy.

Physical Exam and Diagnosis: Digital rectal examination reveals an enlarged prostate without focal nodularity. Examination of the abdomen and genitalia are otherwise unremarkable. His prostate size is 73 grams on CT. His PSA is 3.25 and urinalysis is bland.

Intervention: The patient was consented for thulium fiber laser enucleation of the prostate (ThuLEP) for his right lateral lobe and holmium laser enucleation of the prostate (HoLEP) for his left lateral lobe. With a 26 French continuous flow rigid cystoscope, a 550-micron holmium laser fiber (Lumenis™ Pulse 120Hi with MOSESTM Technology, Boston Scientific) at 2 Joules and 50 Hertz treated the left lateral lobe, while a 550-micron thulium fiber laser (SOLTIVE™ Super Pulsed Laser System, Olympus) at 4 Joules and 14 Hertz treated the right lateral lobe. Both prostatic lobes underwent an initial anterior release of the adenoma followed by a posterior release in “Top-Down” fashion. Hemostasis was maintained on each side with the respective laser used for enucleation.

Outcomes: The total enucleation and coagulation times were 34 minutes for HoLEP and 38 minutes for ThuLEP. HoLEP demonstrated a more efficient enucleation rate per cut, which may reflect the surgeon’s extensive experience with this technique. Furthermore, the surgeon reported better identification of the prostatic capsule with HoLEP, while ThuLEP provided superior spot coagulation. HoLEP resulted in less charring than ThuLEP in both cutting and coagulation of prostatic tissue. The sequencing of enucleation is a potential source of bias, as the second lobe had improved irrigant flow and working space.

Follow-up: Postoperative follow-up showed an excellent urinary stream without complications and a PSA of 0.04. Histopathology confirmed 40 grams of benign prostate tissue removed.
V4-08  Comparison of MOSES 2.0 and QUANTA 150 for Laser Enucleation of the Prostate

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Presented By: Carl Ceraolo, MD, MPH

Introduction: A reliable surgical approach for the treatment of benign prostatic hyperplasia (BPH) has been holmium laser enucleation of the prostate (HoLEP). HoLEP has relied on using MOSES 2.0 laser technology, as well as the more recent QUANTA 150 system. No studies in the literature have made a comparison in effectiveness between the MOSES 2.0 and QUANTA 150 lasers in enucleation. This study aims to provide a direct comparison of enucleation effectiveness and outcomes between the two.

Methods: This study is a retrospective analysis of patients who underwent HoLEP for BPH by a single surgeon from 7/1/23 to 1/31/24. Primary comparison groups were defined by the type of laser used (MOSES or QUANTA). Operative time was the primary outcome. Baseline characteristics and post-operative outcomes were also recorded. The Kruskal-Wallis test was used to make pairwise comparisons with continuous variables and the Chi-squared test was used for categorical variables. Linear regression with continuous variables was adjusted for confounding. Models were adjusted for age, body mass index (BMI), Charlson comorbidity index (CCI), and prostate volume. Statistical significance was pre-determined at an alpha of 0.05.

Results: Out of 107 patients undergoing HoLEP during the study period, 72 were in the MOSES group and 35 were in the QUANTA group. Baseline characteristics were comparable (Table 1). Median prostate volume appeared larger in the MOSES group (106.6 vs 89.0; p = 0.0732). Though significant differences were observed in total operative time (p < 0.0001), enucleation time (p = 0.0002), and laser time (p < 0.0001), morcellation time remained similar between groups (p = 0.6785). Length of stay and number of 30-day emergency department visits were also comparable (p > 0.05). Linear regression analysis showed shorter total operative time (p = 0.0058), enucleation time (p = 0.0033), morcellation time (p = 0.0423), and laser time (p = 0.0001) for QUANTA 150 compared to MOSES 2.0.

V4-09 Pulsed Thulium Laser Enucleation of Prostate After Prior Failed Aquablation

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Presented By: Matthew Lee, MD, MBA

Introduction and Objective: To demonstrate our experience utilizing a pulsed thulium laser (Thulio by Dornier MedTech) for enucleation of the prostate in patients with enlarged prostates and bothersome lower urinary tract symptoms who failed prior aquablation.

Methods: We performed a retrospective review of all patients undergoing enucleation of the prostate with a pulsed thulium laser fiber after a prior failed aquablation between 03/2023 and 11/2023. Indications for surgery included patients with residual enlarged prostates and lower urinary tract symptoms after a prior aquablation procedure. A 26Fr laser resectoscope and a pulsed thulium laser fiber set at an energy of 2000 millijoules and a frequency of 25 hertz were utilized in all cases. Surgical success was defined as resolution of preoperative obstructive symptoms.

Results: We demonstrate a step-by-step video describing our technique. There were three patients included in our series. On preoperative cystoscopy, all patients had evidence of circumferential protrusion of prostate tissue into the bladder. Mean prostate volume was 99 grams. Mean operative time was 78 minutes and estimated blood loss was less than 10 milliliters. There were no intraoperative complications and no patients required perioperative blood transfusions. All patients were discharged on postoperative day 1 with a successful trial of void. There were no major postoperative (Clavien>2) complications. At a follow-up of 2 months, all patients were surgically successful and no patients had urinary incontinence post procedure.

Conclusions: A pulsed thulium laser fiber may be utilized for enucleation of the prostate in patients who failed prior aquablation for benign prostatic hyperplasia with lower urinary tract symptoms. The pulsed thulium laser may facilitate easier identification and dissection of adenoma planes even after prior outlet procedures. Further studies are needed to confirm its clinical utility in this setting.

V4-10 Overcoming Challenges During Anaesthetic Endoscopic Enucleation of the Prostate (AEEP)

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Presented By: Saud Alhelal, MD
Introduction & Objective: Anatomical endoscopic enucleation of the prostate (AEEP) is rapidly gaining popularity among urologists worldwide. It is regarded as an effective and size-independent treatment for benign prostatic hyperplasia (BPH) with durable long-term outcomes. However, AEEP is characterized by its steep learning curve. This video aims to identify challenges encountered while performing AEEP and describe steps surgeons can take to overcome them.

Methods: Between October 2017 and October 2023, we prospectively recorded all AEEP procedures performed at our institution by a single surgeon (H. E.) after obtaining patient consent. Different energy sources were employed, including a 100-W Holmium:YAG laser (VersaPulse PowerSuiteTM, Lumenis, Yokneam, Israel), the pulse-modulated MOSESTM 1.0 and MOSESTM 2.0 systems (Lumenis, Yokneam, Israel), and the Thulium Fiber Laser (SOLTIVETM Premium, Olympus, USA). We extracted video clips from the original recordings that showcased the obstacles encountered during AEEP and the measures we took to address them.

Results: These challenges identified during the procedures include difficulties in patient positioning and AEEP following previous BPH surgeries, such as transurethral resection of the prostate (TURP), water vapor therapy (Rezūm), and selective angioembolization of the prostate. We also present the use of a slim 22 F sheath following prior urethroplasty, multinodular adenomas, subtrigonal nodules, and AEEP in cases of prostate carcinoma.

Conclusions: One of the primary concerns for surgeons interested in mastering AEEP is the steep learning curve. This video serves as a bridge to assist those transitioning from novice to expert in grasping the procedure. We addressed structured techniques to overcome challenges and strategies to prevent operative errors during AEEP.

V4-11 Anatomical Endoscopic Enucleation of the Prostate (AEEP): A New Paradigm

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Presented By: Saud Alhelal, MD

Introduction and Objective: A wide range of laser technologies have been developed for anatomical endoscopic enucleation of the prostate (AEEP), which adopts the principle of open prostatectomy. Recent advancements in technical aspects and surgical techniques have significantly enhanced its appeal as a surgical treatment option for benign prostatic obstruction. The safety and efficacy of AEEP have been widely demonstrated, regardless of the energy source utilized. This video aims to provide an overview and demonstrate our center’s experience performing AEEP using various energy sources.

Methods: From October 2017 to October 2023, we prospectively recorded all AEEP cases at our institution after obtaining informed patient consent. A total of 556 procedures were performed by a single surgeon (H. E.). The surgeon utilized various energy sources, including a 100-W Holmium:YAG laser (VersaPulse PowerSuite™, Lumenis, Yokneam, Israel), MOSESTM 1.0 and MOSES 2.0 pulse-modulation systems (Lumenis, Yokneam, Israel), 180-W GreenLight XPSTM laser system (Boston Scientific, Marlborough, MA) and Thulium Fiber Laser (SoltiveTM Premium, Olympus, USA). We extracted video clips of the different energy sources employed during AEEP from the original recordings.

Results: We utilized various laser energy sources to achieve the maximal debulking of adenomas. Our experience demonstrates that the efficacy of AEEP depends on several factors, including a comprehensive understanding of laser-tissue interactions, including wavelength, absorption coefficient, peak power, working distance, and the surgeon’s expertise. Undoubtedly, the most important feature of AEEP lies in the meticulous dissection of the anatomical plane while avoiding cutting through the adenoma.

Conclusions: AEEP using various energy sources and technologies can be safely added to urologists’ armamentarium of benign prostatic obstruction treatments. Our findings demonstrate that the favorable outcomes achieved with AEEP can be attributed to the anatomical completeness of adenoma removal rather than the energy source utilized.

V4-12 Thulium Lasers for Endoscopic Enucleation of the Prostate (EEP): Utilization of Different Lasers & Laser Settings

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1Asklepios Klinik Barmbek, Department of Urology

Presented By: Christopher Netsch, MD, FEBU, Fellow in Endourology, Ass. Prof.

Introduction & Objective: ThuLEP has been considered to be a size-independent treatment of benign prostatic obstruction (BPO). However, standard laser settings for ThuLEP with pulsed and continuous wave (cw) Thulium-Lasers have not been defined so far. The aim of this video is to present different settings of continuous wave and pulsed Thulium-Lasers and its effects on tissue and the enucleation procedure.

Materials and Methods: We present 5 distinct laser settings for transurethral removal of the transition zone of the prostate using thulium laser energy for the ThuLEP procedure. Surgery was performed with a 26 Fr. continuous-flow laser resectoscope (Richard Wolf, Knittlingen, Germany) using a cw Tm:YAG-laser at 90-W (RevoLiX®, LISA Laser products, Katlenburg, Germany), a pulsed Tm:YAG-laser (RevoLix HTL®, LISA Laser products, Katlenburg, Germany) at 100 W (0.5J/200 Hz and 2 J/50Hz), and a (super)pulsed thulium fibre laser (Pulvis®, Richard Wolf, Knittlingen, Germany) at 60-W (1.5J/40Hz and 2/30Hz). All interventions were carried out using normal saline as irrigation fluid.

Results: The presented 5 laser settings for ThuLEP have shown its efficiency for enucleation of the prostate. We could demonstrate the different laser-tissue interaction using the different laser settings. In cw ThuLEP, a fast enucleation could be shown. However, the carbonization effect of cw Thulium-lasers might be a disadvantage for less experienced surgeons to differentiate the prostatic pseudocapsule from the adenoma. In pulsed ThuLEP, lower pulse energy clinically lead to a more “cutting” effect of the laser, while higher pulse energy (larger vapor bubble) rather imitates Holmium-lasers. From a clinical point of view, it is rather difficult to differentiate pulsed Tm:YAG-Lasers from (super)pulsed TFL.
Conclusions: All laser settings of pulsed and cw Thulium-lasers have shown its efficiency for the ThuLEP procedure. The choice of laser settings for ThuLEP is rather a matter of personal choice depending on the main goal of the surgeon: a sharp dissection of the adenoma or a more HoLEP like enucleation.

V4-13 Anatomic Endoscopic Enucleation of the Prostate using Mini Bipolar Energy Modality

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Presented By: Sheldon Marllow Bulaong, MD

Introduction: Bipolar enucleation of the prostate (BipolEP) is a surgical procedure used to treat benign prostatic hyperplasia (BPH). It involves the removal of the adenoma of the prostate within the prostatic capsule. BipolEP is usually performed with bipolar energy. The end product is the same as with either HoLEP therapy or BipolEP therapy, but the learning curve and equipment costs of BipolEP are more favorable. BipolEP is an effective and safe procedure for patients with larger prostates, usually over 80 mL in size, or those in urinary retention. It is a complete removal of the adenoma, giving the longest-lasting results compared with other surgical options, such as transurethral resection of the prostate. The side effect profile of BipolEP is generally quite mild, especially when compared with other possible interventions. In particular, effective hemostasis is the greatest advantage of BipolEP when compared to traditional TUR or laser enucleation.

Objective: To provide an overview of the step by step mini-BipolEP procedure and its benefits over other surgical options for treating benign prostatic enlargement. To discuss the ideal patient profile for BipolEP, including those with larger prostates or in urinary retention. To explain the side effect profile of BipolEP and how it compares to other interventions. To present case study of patient who have undergone mini-BipolEP therapy and its outcome.

Methods: Mini-Bipolar enucleation of the prostate (BipolEP) is a minimally invasive surgical procedure (using f22 Resectoscope) used to treat benign prostatic enlargement (BPE). The procedure is typically performed in a clinic setting, and the patient is given a spinal anesthetic to numb everything from the waist down. During the procedure, a urologist inserts a specialized f22 resectoscope into the urethra and uses bipolar energy on the scope to enucleate all adenoma tissue. BipolEP uses a bipolar endoscopic instrument with normal saline irrigation, which eliminates the risk of transurethral resection syndromes (TUR syndromes). The procedure usually takes 45 minutes to two hours, depending on the size of the prostate. Unlike similar surgical procedures performed for prostates, BipolEP does not require abdominal incisions. The result is faster recovery, lower risk of infections and patients can recover at home. BipolEP is an effective minimally invasive option for treating moderate-to-severe lower urinary tract symptoms secondary to benign prostatic obstruction in patients with large prostates. The ideal patient for bipolar enucleation will have a larger prostate, usually over 80 mL in size, or be in urinary retention. In either situation, the enucleation procedures have shown to be most effective.

Results: The total operative time was 41 minutes. 58 grams of tissue were removed. Bladder irrigation was performed for 1 day. The catheter was removed on the 2nd post-operative day. The patient stayed in the hospital for 2 days. There were no peri/post-operative complications.

Conclusion: BipolEP is an effective and safe procedure for patients with larger prostates or those in urinary retention. It is a complete removal of the adenoma, giving the longest-lasting results compared with other surgical options. The side effect profile of BipolEP is generally quite mild, especially when compared with other possible interventions. BipolEp promotes surgical efficiency and low risk of post operative bleeding.

V4-14 Holmium laser ablation of the prostate with Xpeeda & Moses Technology: Easy treatment for failure of exposed UroLift implants

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Presented By: Lucas Vergamini, MD

Introduction: Prostatic urethral lift (PUL) via the UroLifttm System has gained increased attention as a treatment modality to manage urinary symptoms associated with benign prostatic hyperplasia. The UroLift procedure uses non absorbable implants to retract obstructing prostate lobes. Retreatment rates following UroLift have been reported to be higher than 10% within the first three years. We describe the feasibility and considerations of performing holmium laser ablation of the prostate (HoLAP) as a salvage therapy after previous PUL.

Methods: Men who had undergone HoLAP after PUL were identified from November 2023 to March 2024. Video footage from the procedure was obtained, which was done by a single surgeon. For the procedure demonstrated, Boston Scientific® Lumenistm Pulse 120W laser with MOSES technology was employed. Settings were 2J, 50 Hz for vaporization and 1J, 20Hz for hemostasis, both with MOSES activated. A 550- micron XPEEDA D/S/Ltm(Lumenis, Boston Scientific) fiber was utilized. The fiber emits the laser energy at an oblique angle which facilitates visualization and laser beam aiming for prostate ablation.

Results: Procedure was completed uneventfully. Technique showed adequate capacity for hemostasis and removal of UroLift implants. UroLift implants can be hydroevacuated out after lasering suture holding them in place. Unlike the costly loop breakage seen when Urolift implants are removed with a transurethral resection loop, the procedure was completed with a single laser fiber. Patient was discharged without a Foley catheter on postoperative day one following a successful voiding trial.

Conclusion: HoLAP can be safely performed in patients with PUL failure or those with exposed implants. Additional studies are needed to evaluate the long-term outcomes after this procedure.

V4-15 Holmium Laser Enucleation of the Prostate:

James Jiang¹, Seyedamirvala Saadat¹, Narmina Khanammadova¹, Seyed Lavasani¹, Mark Hana¹, Bruce Gao¹, Akhil Das¹

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Presented By: James Jiang, MD

Intro: Holmium laser enucleation of the prostate (HoLEP) is one of the most effective surgical modalities for the treatment of symptomatic benign prostatic hyperplasia (BPH). There are several variations of laser enucleation of the prostate including the classic 3-lobe, modified 2-lobe, and en-bloc enucleation techniques. The en-bloc technique involves complete detachment of all 3 prostatic lobes and simultaneous enucleation of all 3 lobes in a distal-to-proximal approach. The en-bloc technique has emerged as a popular technique for its improved efficiency in enucleation and morcellation.

Methods: In this video, we present our en-bloc technique with a top-down early apical release approach.

Results: First, a distal anterior mucosal incision is made at the 12 o'clock position and extended to the 11 and 1 o'clock positions. This early release is critical to prevent stretching of the anterior urethral sphincter during enucleation. We ensure to leave an adequate amount of anterior urethral mucosa to assist with early recovery of continence. Next, this incision is continued into the anterior commissure and extended proximally to the bladder neck. The incision is extended laterally to the 11 and 1 o'clock positions at the bladder neck until capsule is reached. Then using a combination of blunt and laser dissection, the left lateral lobe is encircled with a top-down approach. At the 5 o'clock position, the left lateral lobe mucosal strip is encountered and incised. Then the mucosa is incised just proximal to the veru at the 6 o'clock position and extended to underneath the median lobe. This is extended laterally to the 7 o'clock position to underneath the right lateral lobe. Finally, a similar top-down approach is utilized to encircle the right lateral lobe from the 11 o'clock position to the 7 o'clock position. The right mucosal strip is encountered at the 7 o'clock position and incised. Now with all mucosal attachments released, all 3 lobes of the prostatic adenoma remain attached and are enucleated in retrograde fashion en-bloc.

Conclusion: A top-down en-bloc HoLEP technique can be utilized to incise the mucosal strips earlier and more easily. This early apical release allows for quicker recovery of continence. En-bloc enucleation following an anterior commissure incision allows for more efficient enucleation while maintaining a safe window to the bladder.

Methods: Extravascular RDN was performed using HyperQure™ RDN System, consisting of two components. The first component is the generator, designed to deliver high-frequency radiofrequency (RF) energy to the external wall of the renal artery for renal denervation. The second component is the laparoscopic instrument, a disposable hand-controlled electrosurgical electrode for RDN, which wraps around the renal artery circumferentially and delivers the high-frequency RF energy from the generator to the outer walls of the blood vessel to denervate renal nerves.

Results: The 64 year old men who suffered from resistant hypertension was enrolled. Under general endotracheal anesthesia, retroperitoneal approach was performed in the modified prone position. Dissection between Psoas muscle and Gerota’s fascia was done. Periarterial tissues (surrounding connective

VIDEO SESSION 5: MISCELLANEOUS AND Peds

V5-01 Extravascular laparoscopic renal denervation in patients with resistant hypertension: Experience from first in human trial in Korea

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¹Hanyang University

Presented By: Jung Ki Jo, MD, PhD

Introduction and Objectives: Despite extensive pharmacological interventions and percutaneous catheter-based intravascular renal denervation (RDN), a substantial portion of hypertensive patients fail to achieve target blood pressure (BP) levels. Therefore, we propose an extravascular RDN technique using the HyperQure™ RDN System (DeepQure Inc., Seoul, South Korea).

Methods: Extravascular RDN was performed using HyperQure™ RDN System, consisting of two components. The first component is the generator, designed to deliver high-frequency radiofrequency (RF) energy to the external wall of the renal artery for renal denervation. The second component is the laparoscopic instrument, a disposable hand-controlled electrosurgical electrode for RDN, which wraps around the renal artery circumferentially and delivers the high-frequency RF energy from the generator to the outer walls of the blood vessel to denervate renal nerves.

Results: The 64 year old men who suffered from resistant hypertension was enrolled. Under general endotracheal anesthesia, retroperitoneal approach was performed in the modified prone position. Dissection between Psoas muscle and Gerota’s fascia was done. Periarterial tissues (surrounding connective
tissues and fatty tissues) were circumferentially removed to allow adequate placement of the HyperQure™ Instrument loop without damage to the renal artery. Circumferential extravascular RDNs were performed on the proximal and distal portions of the renal artery for 70 seconds at 50°C. The distance between the two denervation points was more than 3 mm. The same procedures were repeated for the contralateral kidney. As the patient had an accessory artery (Rt) or early branching (Lt), repeated extravascular RDNs were performed to achieve complete RDN for these artery (accessory and branch). The patient was tolerating the pain after surgery and was discharged on the 4th postoperative day.

Conclusions: Extravascular RDN using the HyperQureTM RDN System was feasible to lower BP by ablating the sympathetic nerves located outside of renal arteries in first human trial.

V5-02 Combination of Robotic-Assisted Pyeloplasty and Partial Nephrectomy for Simultaneous Treatment of Ureteropelvic Junction Obstruction and a Renal Mass
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1Hackensack University Medical Center
Presented By: Yu Zhang, MD

Introduction: Robotic-assisted pyeloplasty and partial nephrectomy are common surgical treatments for patients with ureteropelvic junction (UPJ) obstruction and renal masses, respectively. In rare instances, both conditions concurrently exist in the ipsilateral kidney, and a combined approach, when performed with strategic planning, can be successfully utilized. We present a 69-year-old woman with symptomatic right hydronephrosis and a 2.5 cm right lower pole enhancing renal mass (R.E.N.A.L. 6p). MAG3 diuretic renogram confirmed UPJ obstruction, and slight decline in her right-sided differential function. The patient also has a family history of metastatic kidney cancer in her sister.

Methods: A four-arm multiport robotic transperitoneal approach was utilized. The patient was placed in the modified left lateral decubitus position. A standard robotic and assistant port placement was performed in the standard fashion with antegrade placement and docking, (2) Circumferential mobilization of the kidney off surrounding structures, (3) Dissection of the renal hilum including ligation of renal vessels and branches, (4) Mobilization and ligation of the ureter.

Results: All the SP-LDN cases were successfully performed without conversion or requirement of additional ports. The total operative time was 240 minutes. Estimated blood loss was 40 cc. There were no postoperative complications or readmission in our initial series. The patient demographics and perioperative outcomes included in our series were summarized in Table. Conclusion: SP robotic living donor nephrectomy is a safe and feasible option for donor nephrectomy with decreased patient morbidity, without the requirement of additional ports. Further research including multi-institutional collaboration is required to study patient satisfaction and long-term functional outcomes with this novel approach.

Table 1: Patient Characteristics

<table>
<thead>
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<td>Age (years)</td>
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Table 2: Intraoperative and Postoperative Parameters of Study Population

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Introduction and Objectives: We aim here to demonstrate the technique and feasibility of minimally invasive robotic donor nephrectomy using the da Vinci single-port (SP) robot platform.

Methods: Six patients underwent SP living donor nephrectomy (SP-LDN) between May 2023 and February 2024. All patients who were interested in donating a kidney were considered for SP-LDN and the patient selection was limited by the availability of the robot at our institution. We demonstrate our technique in a 44-year-old female with normal renal function who elected to donate the kidney. The renal anatomy involved a single artery, vein, and ureter.

The following surgical steps and tips were described: (1) Port placement and docking, (2) Circumferential mobilization of the kidney off surrounding structures, (3) Dissection of the renal hilum including ligation of renal vessels and branches, (4) Mobilization and ligation of the ureter.

Results: The total operative time was 2 hours 56 minutes. The warm ischemia time was 12 minutes. Estimated blood loss was 25 mL. The patient had an uncomplicated postoperative course. The drain and Foley catheter were removed on postoperative day 1. and the right indwelling ureteral stent was removed after 6 weeks.

Conclusions: Combined robotic-assisted pyeloplasty and partial nephrectomy can be concurrently performed in the same kidney. The pyeloplasty is strategically performed first due to a bloodless operative field, and as kidney can be manipulated freely without concern for bleeding. Partial nephrectomy is optimally performed following the pyeloplasty. Placement of a percutaneous drain is advisable when both procedures are performed in a single setting to monitor for bleeding or urine leak.
Introduction and Objective: Chylous ascites (CA) is a rare but debilitating complication. The literature describing CA after renal surgery is limited to case reports. Here we present a case of CA following robot-assisted partial nephrectomy (RAPN), which was ultimately managed with surgical intervention. Anatomical considerations and management strategies are also discussed.

Materials/Methods: Our patient is a 28-year-old female with a 1.3 cm left posterior renal mass. She underwent uncomplicated left RAPN. Notably, prominent lymphatic vessels were encountered near the left renal hilum, and were clipped. Final pathologic returned angiomylipoma. On post-operative day (POD) 13 she re-presented with CA. A percutaneous drain was placed with initial aspiration of 3 L chyle, and over 1 L of chylous drainage daily. After failing more conservative management including dietary changes and octreotide, followed by bowel rest and total parental nutrition, she elected to return to the operating room for robot-assisted diagnostic laparoscopy on POD 25.

Results: Upon entry into the abdomen, the cystic fluid collection was visualized, as well as a large volume of dependent chyle. The white line of Toldt was incised, exposing the inside of the chylous fluid collection. The chylous fluid had maintained separation of the previously dissected planes, preventing adhesion formation. We then released the spleno-renal attachments and further reflected the descending colon to expose the renal hilum. Multiple clips were present from the initial surgery which had been used to ligate the disrupted lymphatic channels. The source of the chyle leak was noted to come from beneath and between these clips. The clips were then excised to expose the lymphatic fistulae. Because of the flush angle and inflammatory state of the tissue, the defects were ligated with 4-0 polypropylene suture in figure-of-eight fashion. Fibrin glue was applied over the repair site, followed by absorbable cellulose gauze. A 19 Fr fluted drain was placed. Following the repair, drain output significantly decreased, and symptoms resolved. Her drain was removed two weeks postoperatively when output was minimal serous fluid.

Conclusion: Dissection of the left renal hilum to the aorta may disrupt nearby ascending lymphatic vessels resulting in chylous leakage. Conservative management is often effective; however, resolution is less likely in cases of persistent leakage greater than 1 L daily. As demonstrated, surgical exploration with suture ligation is a feasible and effective solution in cases of persistent, high-volume CA.

V5-05 Single port robotic-assisted retroperitoneal right upper pole nephroureterectomy for obstructed ectopic upper pole moiety

Introduction and Objective: Ectopic ureters in females present most commonly to the bladder neck, urethra, vagina, uterus, or perineum, and are often identified with incontinence. Resolution typically requires surgical correction. Historically, this has been done via an open or minimally invasive transperitoneal approach. We present a case of a 32-year-old female with chronic right flank pain and urinary incontinence. A CT scan identified a complete duplicated right collecting system, with upper pole hydroureter and ectopically inserting ureter into the vagina resulting in obstruction and atrophy of the upper pole moiety. She was counseled and agreed to proceed with surgical intervention.

Methods: A retrograde pyelogram showed a normal caliber lower moiety ureter without obstruction. ICG was injected to aid in ureteral identification. Vaginoscopy was performed, and a midline vaginal orifice was identified, likely the ectopic upper moiety insertion. The patient was then repositioned in flank. A 4 cm transverse incision was made just below the tip of the 12th rib at the mid axillary line. The subcutaneous fat was dissected to the level of the lumbodorsal fascia, which was incised. The retroperitoneal space was dilated using a balloon dilator. We then docked the single port (SP) robot. Using firefly, we identified the ureter that was draining the lower moiety. The upper moiety ureter was quite dilated, and we performed ureterolysis proximally to the renal hilum. We further dissected the dilated ureter to the upper moiety and identified an aretatic renal artery and vein of the upper moiety, and both were clipped and divided. We then performed a partial nephrectomy. Once the upper moiety was freed off the lower moiety, we further dissected the ureter down to the pelvic ureteral limits beyond the iliac vessels. We then clipped the distal ureter and divided it. The specimen was extracted through the single incision.

Results: Procedure time was 3 hours. Pathology revealed a 21 cm specimen of dilated ureter and kidney with renal dysplasia, tubular atrophy and sclerosis. She was admitted for post-operative monitoring and discharged the following morning. On her 2-week post-operative visit, her lifelong incontinence had completely resolved.

Conclusions: The SP robotic platform allows for a minimally invasive approach to the entire retroperitoneum without the need to redock or add additional ports. A SP robotic-assisted retroperitoneal right upper moiety nephroureterectomy is feasible and intraoperative usage of ICG within the healthy ureter is helpful to identify and ensure safe ureterolysis without devascularizing the healthy ureter.
V5-07 Robot-Assisted Removal of Mid-Urethral Sling Erosion into the Bladder: A Step-by-Step Guide

Jonathan Yu1, Tom Feng2

1Kaiser Permanente Moanalua Medical Center, 2Tripler Army Medical Center

Presented By: Jonathan Yu, MD

Introduction and Objective: Mesh erosion into adjacent structures is a known complication of mid-urethral sling (MUS) surgery. Traditional approaches to eroded mesh removal include endoscopic, transvaginal, and open abdominal surgery. In the case of mesh erosion into the bladder, a robotic approach offers a minimally invasive option to completely remove the foreign body. This video aims to provide a step-by-step approach to the removal of an MUS eroded into the anterior bladder.

Methods: A 67 year old female presented with recurrent urinary tract infections and pelvic pain. She had a tension-free vaginal tape sling and cystocele repair in 2004. Work up included CT showing a 1 cm curvilinear calcification in the bladder. On cystourethroscopy, there was 2 cm of visible mesh with overlying calcification at the left anterior bladder. There was no evidence of erosion in the contralateral bladder wall or urethra. The patient opted for robot-assisted excision of eroded MUS mesh. The patient was placed in low lithotomy and standard robotic pelvic surgery 5 port configuration was used. First, the space of Retzius was entered. The left mesh arm was identified entering the anterior bladder. The sling was dissected away from the abdominal wall, transected, and traced to its entry point into the anterior bladder wall. A small cystotomy was made at the site of mesh erosion revealing the exposed mesh in the bladder mucosa. The mesh was dissected distally until the entire intravesical portion of mesh was excised. The bladder was closed in standard 2 layers and leak test was performed. Cystoscopy was performed without evidence of residual mesh.

Results: This case was successfully completed robotically without intraoperative complications. EBL was 5 ml. Operative time was 90 minutes. Patient was discharged on POD 1 and foley catheter was removed POD 14 after a negative cystogram. No complications occurred within 90 days of discharge. Patient remains continent and pain free since surgery.

Conclusions: Robot-assisted removal of a MUS eroded into the bladder is a feasible and safe treatment option for select patients that would benefit from definitive intravesical mesh removal. The robotic approach allows for excellent visualization and exposure for complete mesh excision.

Source of Funding: None.

V5-08 Robot-assisted Donor Nephrectomy: Experiences from Siriraj Hospital, Thailand

Katunyou Mahamongkol1, Ekkarin Chotikawanich1

1Faculty of Medicine, Siriraj Hospital, Mahidol University

Presented By: Katunyou Mahamongkol, MD

Introduction: Numerous techniques are available for donor nephrectomy. Minimal invasive approaches including laparoscopic and robotic-assisted procedures, have gained popularity due to fewer complications and more favorable post-operative outcomes. Despite the increasing popularity of robotic surgery, there is a need for experiences and insights in Thailand.

Objectives: The objective of this study is to evaluate the outcomes of robot-assisted donor nephrectomy (RDN) at our institution and to compare it with traditional laparoscopic donor nephrectomy (LDN).

Methods: A retrospective review of all RDN cases performed at Siriraj hospital from 2012 to 2021 was performed. Preoperative, intraoperative, and postoperative data were collected. The primary outcome measure was the mean operative time, and the secondary outcomes were the mean warm ischemia time (WIT) and the mean warm ischemia time (WIT).

Results: In total, 10 cases of RDN were performed. The mean operative time was 180 minutes, and the mean WIT was 2 minutes. No recipients experienced graft failure, and all recipients demonstrated normal graft function at discharge. The mean hospital stay was 5 days.

Conclusions: This study suggests that robot-assisted donor nephrectomy is a feasible and safe option for donors. The mean operative time is comparable to LDN, and there were no graft failures. The robotic approach offers a minimally invasive option for donor nephrectomy.

Source of Funding: None.
Notably, robotic techniques for diaphragmatic hernia repair are increasingly utilized. This video aims to elucidate our surgical approach for repairing this rare condition, emphasizing the significance of tailored interventions for optimal patient outcomes.

**Methods:** The patient is a 67-year-old male with a right-sided Bochdalek hernia affecting approximately three-quarters of his kidney, which was found incidentally during a urothiostasis workup for kidney stones. Although otherwise asymptomatic, the decision to treat the hernia was made to prevent life-threatening complications such as permanent renal dysfunction, diaphragmatic rupture, respiratory failure, and cardiac tamponade. (this doesn’t make sense unless you explain what the life-threatening complications are). Utilizing the Da Vinci Xi platform, the right kidney and associated perinephric fat were reduced into the abdomen. The hernia sac was then resected, and the diaphragmatic defect was repaired using mesh, via mesh inlay.

**Results:** Total console time was six hours, and 26 minutes. Estimated blood loss was 250 milliliters. The patient had his Foley catheter removed on POD1, chest tube removed on POD3, return of bowel function on POD3, and was discharged home on POD4. At two-week follow-up, he had no outstanding complaints and is planning definitive management of his right sided ureteral calculus.

**Conclusions:** Robotic approaches to diaphragmatic repair are becoming an increasingly popular and established option. Diaphragmatic hernia repair is feasible via a robotic, transperitoneal approach with minimal associated morbidity. This video demonstrates the approach our institution utilizes in the reduction and surgical repair of a right sided Bochdalek hernia affecting the kidney.

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**V5-10 Robotic bladder diverticulum resection: navigating complexity across diverse cases**

Samer Jaber1, Laura Fumero1, Valeria Celis1, Veronica Rodriguez1, Alvaro Gonzalo-Balbas2, David Strauss1, Luis Medina1, Rene Sotelo1

1University of Southern California, 2Hospital de Alcorcón, 3Hospital Britanico de Montevideo

**Presented By:** Rene Sotelo, MD

**Introduction and Objective:** A bladder diverticulum occurs when part of the bladder mucosa protrudes through a weakened area of the bladder wall, which can be congenital or acquired. The true incidence is unclear due to many cases being asymptomatic or incidentally discovered. Congenital diverticula have a prevalence of 1.7%, and acquired diverticula have a prevalence of approximately 6%, often associated with benign prostate hyperplasia (BPH). Treatment indications include urinary infections, stones, large size with stasis, and cancer, the latter described in 10% of cases. Additionally, different management options range from conservative therapy, endoscopic approaches, and surgical excision. Our objective is to show a step-by-step technique of robotic bladder diverticulectomy in different clinical scenarios.

**Methods:** We present cases of clinically symptomatic diverticulum that were managed with surgical excision in various techniques. Intuitive Da Vinci Xi platform was applied in all cases. We discuss the indications and challenges related to the diverticulum’s location, number, and size during this surgery. Detailed steps and helpful hints are included to guide the procedure effectively. We described the baseline characteristics, and the outcomes including hospital stay, estimated blood loss, and Foley catheter time.

**Results:** We conducted robotic-assisted diverticulectomy in three cases. The patients presented with bilateral, midline posterior, and anterior-lateral right diverticulum, respectively. Indications for diverticulum resection included elevated post-void residual, bladder diverticulum stone, and urinary retention with concurrent BPH surgical treatment. In all cases, a multi-port approach was employed. Two patients underwent extravesical approach, while one underwent a transvesical approach. The average hospital stay was 2 days, mean estimated blood loss was 108.33 cc, and mean Foley catheter duration was 10.66 days.

**Conclusions:** Bladder diverticula can manifest in various locations, sizes, and quantities, stemming from diverse pathophysiological origins. This diversity necessitates the adaptation of surgical strategies on a case-by-case basis. This condition can be treated safely and effectively second to the advantages offered by robotic surgery.

**References**


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**V5-11 Efficacy of Optilume drug-coated balloon post failed urethroplasty**

Basmah Bahbahani1, Abdulrahman Alharbi1, Faisal Alhajeri1

1Sabah Al-Ahmad Urology Centre, Urology Department, Kuwait City, Kuwait
Presented By: Basmah Bahbahani, MD

Table 1:

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Introduction and Objective: Urethral stricture, a prevalent condition, can precipitate considerable discomfort and complications. The Optilume® drug-coated balloon (DCB) has emerged as a therapeutic modality for urethral strictures. Urethroplasty remains the definitive treatment; nonetheless, recurrence remains a possibility. We highlight a case in which the Optilume DCB was used to manage recurrent urethral stricture after an unsuccessful urethroplasty.

Methods: A 60-year-old male underwent urethroplasty with buccal mucosal graft (BMG) two decades ago for post-traumatic urethral stricture, remaining asymptomatic until three years ago. He subsequently developed lower urinary tract symptoms, presenting as poor stream and sensation of incomplete voiding, progressively worsening over time. A retrograde urethrogram revealed a stricture at the proximal end of the graft site and further narrowing distally. Diagnostic cystoscopy confirmed the presence of a bulbar urethral stricture. Uroflowmetry indicated a maximal flow rate (Qmax) of 4.1 ml/s and a post-void residual (PVR) of 137 ml. With an International Prostate Symptom Score (IPSS) of 21, signifying severe symptoms, the patient reported an IPSS quality of life score of 5. After discussing the possible treatment options, the patient was offered the Optilume DCB.

Results: A 30 French, 5 cm-long Optilume DCB was used, inflating it at a pressure of 7 atm for 5 minutes proximally and 3 minutes distally. Stricture dilatation was visually confirmed via cystoscopy. A 14 Fr urethral catheter was inserted for 48 hours. The patient underwent follow-up assessments at 7 days, 1 month, and 4 months postoperatively. There were no treatment-related adverse effects. The absolute change in the Qmax score from baseline to 4 months follow-up was 12.4 & PVR was 137, IPSS was 18, IPSS QoL was 5. Erectile function was not affected by treatment. All measures were significantly different when compared with the baseline (Table 1).

Conclusion: The Optilume DCB may serve as a potential treatment option for men who have had an unsuccessful urethroplasty. However, further studies and long term follow-up are necessary.

V5-13 Complete Ultrasound-guided Ultra-Mini Percutaneous Nephrolithotomy in a Pediatric Population

Grace Lee1, Ashwin Balakrishnan1, Wilson Sui1, Thomas Chi1, Yi Li2

1Department of Urology, University of California, San Francisco, 2Department of Urology, University of California, San Francisco, Division of Pediatric Urology, University of California San Francisco Benioff Children’s Hospital

Presented By: Grace Lee, MD

Introduction and Objective: Multiple studies have demonstrated comparable or superior stone-free and complication rates with percutaneous nephrolithotomy (PCNL) compared to ureteroscopy for stones ≥1cm in the pediatric population. PCNL-related complications such as hematuria and collecting system injury have been directly associated with tract size, and thus, mini (14-22Fr) and ultra-mini (11-13Fr) PCNL have become increasingly popular techniques. The purpose of this study is to demonstrate our techniques for complete ultrasound (US)-guided ultra-mini PCNL as a radiation-free option for definitive stone management in a series of seven pediatric patients.

Methods: All patients were positioned supine for placement of a 5Fr open-ended ureteral stent and foley catheter. They were...
then transferred to prone position and US-guided renal access was obtained using a spinal needle with the 12th rib, lateral border of the paraspinal muscle, and anterior superior iliac spine as anatomical landmarks. After obtaining access, a 4mm skin incision was made and the tract was initially dilated using a 10Fr fascial dilator. Next, the 12Fr ClearPetra® sheath was advanced under ultrasound guidance. The ultra-mini 7.5Fr nephroscope and 273nm holmium laser fiber were then used to fragment and evacuate the stones. Once the procedure was complete, the kidney and ureter were inspected using a flexible ureteroscope. Depending on the extent of the procedure, either a nephrostomy tube or ureteral stent was left in place.

**Results:** Seven ultra-mini PCNL cases, including one bilateral, between 2023 and 2024 were performed by a single surgeon. All patients but one were female. Mean age and BMI were 7.3 years (range 2-13) and 17.2 kg/m2 (14.5-32.5), respectively. Four stones were on the left, two on the right, and one was bilateral. The mean stone burden was 1.9cm (1.0-3.0). Four lower pole punctures, three mid pole, and one upper pole were performed. The mean procedure time was 167 minutes (112-225). Visual stone clearance was achieved in all except one patient, in which an anterior calyx could not safely be reached. All patients had their tubes removed prior to discharge, which was on average, postoperative day two. There were no major complications.

**Conclusions:** Complete US-guided ultra-mini PCNL is a safe, radiation-free surgical option for management of stones ≥1cm in pediatric patients. This video highlights key steps and provides tips and tricks for performing this procedure with US guidance.

**Introduction:** Existing literature on management of renal cysts after partial nephrectomy for benign renal disease in the pediatric population is sparse. The reported incidence is 8-60%. While exact etiology is unknown, the current hypothesized mechanism is that some glomeruli in the cut margin of prior partial nephrectomy are retained without a drainage system, leading to formation of a confined fluid collection. Surgical excision is indicated in patients who have recurrent urinary tract infections or flank pain. Herein we present our novel robotic technique with excision of large renal cyst, with the use of intraoperative ultrasound and methylene blue.

**Methods:** A 17-year-old female presented with recurrent intermittent right flank pain and nausea. She had a remote history of right kidney surgery as an infant. CT imaging revealed an absent upper pole replaced by a large cystic structure, with no perceivable function on MAG3 renal scan. Her serum creatinine level was within normal range. A retrograde pyelogram was performed at the beginning of the procedure which confirmed a filling defect of the upper pole collecting system and no apparent connection between the cyst and the renal pelvis. A ureteral catheter was left in the proximal ureter for access. The patient was positioned in standard formation for robotic nephrectomy. Intraoperative ultrasound was utilized to identify the margin of the cyst from normal renal parenchyma. Dissection of the cyst was extended laterally and redundant cystic wall tissue was excised. The ureter and the collecting system was then injected with methylene blue to confirm that there was no active communication between the cyst and the upper urinary tract. Omentum was then harvested and secured onto upper portion of the lower pole moiety.

**Results:** Total robotic console time was 164 minutes. Over 200cc of serous fluid was removed from the cystic structure. Cystic fluid creatinine level was 1.7 mg/dL. The patient was admitted overnight for observation and discharged the following day. Postoperative renal ultrasound 1 month after surgery revealed no residual cystic structure in the upper portion of the kidney.

**Conclusion:** In conclusion, the robotic approach is a reasonable option for excision of large renal cysts in pediatric patients. Intraoperative use of ultrasound and methylene blue are helpful in identifying the cyst and any potential connection with the collecting system. Interposition of omental fat onto the bed of cystic cavity can help reduce recurrence of cyst formation.
**V6-02 Robotic Pyelolithotomy For Removal Of A Large Staghorn Calculi In A Malrotated Pelvic Kidney**

Kiran Moorthi¹, Dillon J Patel¹, Jack Barnett², Andrew Fishman³

¹New York Medical College, ²Westchester Medical Center, ³NYC Health + Hospitals

Presented By: Kiran Moorthi, BS

**Introduction and Objectives:** Pelvic kidney is an umbrella classification for a range of anatomical abnormalities that occur during embryonic development in which metanephric stage kidneys fail to rise from the pelvis into the typical location within the abdomen. Pelvic kidneys are associated with anomalies of organ orientation and vasculature which predispose patients to recurrent nephrolithiasis and infectious complications. Pyelolithotomy is typically accomplished with minimally invasive percutaneous surgical approaches, however stone burden, infection risk, and patient anatomy may necessitate more invasive approaches to ensure total stone removal. Robotic assisted laparoscopic pyelolithotomy is typically reserved for cases with significant stone burden and where more minimally invasive approaches pose too great a risk to neighboring structures. This video demonstrates the significant removal of a large staghorn calculi from a patient with a malrotated pelvic kidney.

**Methods:** A 28 year old man was found on CT to have a full staghorn calculi involving multiple calyxes in a right sided malrotated pelvic kidney at the L5 level. The patient presented to the emergency department several times during the course of a year-long period with recurrent nephrolithiasis symptoms and urinary tract infections. 90% of the significant stone burden was removed by robotic assisted pyelolithotomy. The remaining stone removal was accomplished by subsequent ureteroscopic lithotripsy.

**Results:** The patient’s stone was cleared using a two stage approach; robotic-assisted pyelolithotomy followed by laser lithotripsy each with minimal blood loss and no signs of sepsis.

**Conclusion:** Our case demonstrates that robotic assisted pyelolithotomy is a safe and effective option for managing cases where high stone burden and unique renal anatomy preclude minimally invasive surgical management. It also proves to be an effective tool to remove large amounts of stone burden in patients where follow up and repeat procedures may not be feasible.

**V6-03 Robotic-Assisted Pyelolithotomy in an Ectopic Pelvic Kidney**

Victoria Edmonds², Kathleen Olson¹, Mitchell Humphreys²

¹Flagstaff Surgical Associates, ²Mayo Clinic Arizona

Presented By: Victoria Edmonds, MD

**Introduction and Objective:** Management of renal stones in patients with an ectopic pelvic kidney can be challenging due to aberrant anatomy and surrounding structures. Laparoscopic or robotic-assisted pyelolithotomy may be employed for large stones that are not amenable to shock wave lithotripsy, ureteroscopy, or percutaneous nephrolithotomy (PCNL). This video describes our technique for robotic-assisted pyelolithotomy for treatment of a ureteropelvic (UPJ) stone in an ectopic pelvic kidney.

**Methods:** A 60-year-old healthy female was found to have a 2 cm UPJ stone in an ectopic right pelvic kidney while undergoing evaluation for gross hematuria, and we elected to proceed with robotic-assisted pyelolithotomy. Right-sided open-ended ureteral catheter was placed at the start of the case to allow for intraoperative distension of the renal pelvis. After establishing pneumoperitoneum and placing robotic trocars, the overlying peritoneum and Gerota’s fascia was dissected off the anterior surface of the kidney. The renal vein transversed the anterior surface of the kidney longitudinally. The renal pelvis was identified immediately lateral to the renal vein. Robotic Potts were used to enter the pelvis and antegrade ureteroscopy was performed through a robotic port, demonstrating an impacted 2 cm stone in the lower pole that was unable to be extracted. The stone was treated with antegrade ureteroscopy, laser lithotripsy, and basket-extraction. A robotic suction arm was employed to remove all remaining stone fragments and dust. A double-J ureteral stent was placed antegrade and pyelotomy was closed in a running fashion.

**Results:** The patient had an uneventful postoperative course. She was admitted for observation overnight and discharged on postoperative day 1. Foley catheter was maintained until postoperative day 4. She returned after 1 month for stent removal. Stone analysis was consistent with calcium oxalate and postoperative imaging confirmed stone-free status. She continues to be followed in our multidisciplinary stone clinic.

**Conclusions:** This video demonstrates our technique for robotic-assisted pyelolithotomy for management of a large UPJ stone in a pelvic kidney. We deployed several modalities in order to treat our patient efficiently and safely given the impacted stone and complex anatomy, including aberrant vasculature and malrotation, and ensure stone-free status with minimal convalescence.

**V6-04 Percutaneous Stone Removal in Patients with Diverse Urinary Diversions**

Emeka Udendibia¹, Gregory Mullen¹, Sarah Razavi¹, Arun Rai¹, Tareq Aro¹, David Hoenig¹, Arthur Smith¹, Charan Mohan¹, Jared Winoker², Zeph Okeke³

¹Smith Institute for Urology at Northwell Health, ²Lenox Hill Hospital, Department of Urology

Presented By: Emeka Udendibia

**Introduction & Objective:** Management of urolithiasis in patients with urinary diversions presents unique challenges due to altered anatomy and increased infection risk. This video describes successful percutaneous stone removal techniques in four patients with varying urinary diversions, emphasizing the adaptability and safety of these methods.

**Methods:** Tailored approaches were employed based on each patient’s specific urinary diversion type and stone location. Techniques included pouchogram-assisted percutaneous access for neobladder stones, bullseye technique for radiopaque kidney stones when retrograde pyelogram where not feasible, antegrade flexible ureteroscopy with laser lithotripsy, and innovative through-and-through wire access for challenging stones obstructing the ileocecal valve. Key considerations included avoiding diversion perforation, navigating narrow strictures, managing diverticular stones, and ensuring complete stone clearance.
Results: All four patients successfully underwent percutaneous stone removal without complications. The first patient’s neo-bladder and diverticulum stones were fragmented and removed percutaneously, with careful dilatation of the diverticulum opening. The second patient’s kidney and ureteral stones were addressed with antegrade ureteroscopy after bullseye localization, including stricture dilation. The third patient with bladder exstrophy and ileal conduit underwent successful percutaneous lithotripsy guided by contrast-enhanced reflux mapping. The fourth patient, with an ileoceccystoplasty, had obstructing ileocecal valve stones removed via through-and-through access, established with antegrade and retrograde endoscopy. Conclusions: Percutaneous stone removal in patients with urinary diversions is feasible and safe. It requires specific modifications to standard techniques based on diversion type and patient’s anatomy. These case studies demonstrate the importance of individualized planning and technique adaptation in managing this complex patient population. The accompanying video details each procedure step-by-step, offering valuable insights into overcoming the technical challenges presented by urinary diversions.

V6-06 En Bloc Enucleation of Upper Tract Urothelial Carcinoma to Improve Oncologic Control and Tissue Yield during Ureteroscopy

Sri Sivalingam1, Cyrus Chehroudi1, Louisa Ho1
1Cleveland Clinic

Presented By: Sri Sivalingam, MD

Background: Upper tract urothelial carcinoma (UTUC) is a less common disease that carries high risk for metastatic spread and under-staging. The gold standard for management is radical nephroureterectomy (NU), but can be associated with increased perioperative risk and progression to chronic kidney disease. Endoscopic management is therefore an attractive option to preserve renal function and minimize patient morbidity, but has been limited by the capabilities of holmium laser. There are few studies on the technique and efficacy of endoscopic ablation using novel Thulium Fiber Laser (TFL), and specifically whether its shallower tissue penetration and improved water absorption will translate into improved hemostasis and cancer control.

Methods: We demonstrate a technique for tumor management via endoscopic enucleation using TFL in an 86-year-old lady with multiple medical co-morbidities who does not qualify for NU.

Results: Ureteroscopy was performed under general anesthesia in dorsal lithotomy position. Rigid cystoscopy and retrograde pyelogram are completed. A 12/14 F x 28 cm ureteral access sheath (UAS) is inserted over a stiff wire, with a second hybrid sheath (UAS) is inserted over a stiff wire, with a second hybrid

Conclusions: TFL has several advantages over conventional holmium laser in the endoscopic management of UTUC including improved hemostasis and precise control of ablation depth, while maintaining clear visibility for the entirety of the...
procedure. These benefits allow Urologists to use more diverse techniques such as enucleation to address different tumor configurations and optimize tissue retrieval. Further studies are required to determine whether these advantages of TFL will translate into more accurate tissue diagnosis, cancer control, and freedom from extirpative surgery.

**V6-07 Percutaneous access and laser lithotripsy of a gallstone using mini-PCNL instruments: applying endoscopic techniques and technology outside of the urinary tract**

Ashwin S. Balakrishnan², Wilson Sui¹, Jorge Mená³, Heiko Yang¹, Thomas Chi¹, Vishal Kumar³, David B. Bayne¹, Marshall Stoller¹

¹University of California, San Francisco, ²University of California, San Francisco

Presented By: Ashwin S. Balakrishnan, MD

**Introduction and Objectives:** Percutaneous nephrolithotomy (PCNL) principles have been employed by our team to treat cholelithiasis in patients who are poor open or laparoscopic surgical candidates. Our patient was an 83-year-old female with significant surgical risk due to cardiac comorbidities, gangrenous cholecystitis and a chronic percutaneous cholecystostomy tube which was poorly tolerated. After multidisciplinary discussion, it was decided to proceed with percutaneous stone removal.

**Methods:** The patient had existing percutaneous cholecystostomy tubes through hepatic tissue and entering directly into the side of the gallbladder. A wire was placed through the tube and serial manual dilation over a guidewire with renal dilators was performed up to a maximum of 18 French. Finally, an 18 French CleanPetra™ sheath was successfully advanced into the biliary system under fluoroscopic guidance and holmium laser lithotripsy was performed using fragmenting settings. There were innumerable stones ranging from <1cm to 3cm which were fragmented and evacuated. A 10Fr percutaneous pigtail catheter was placed to ensure adequate drainage.

**Results:** The mini-PCNL system worked effectively and represented a novel technique for percutaneous removal of cholelithiasis using holmium laser lithotripsy in patients who are not optimal candidates for open or laparoscopic approaches. The patient was discharged home on post operative day 1.

**Conclusions:** This case highlights the flexibility of endourological approaches and surgical instruments, which can be applied successfully to diseases and/or organs outside of the genitourinary tract. Percutaneous laser lithotripsy of cholelithiasis is a safe and effective means of treating these challenging stones and warrants further investigation, especially in poor surgical candidates.

**V6-08 Pediatric Supine PCNL in Matrix Stones – Case Series**

Chandra Mohan Vaddi¹, Ramakrishna Paidakula¹, Siddalinga Swamy PM¹, Soundarya Ganesan¹, Hemnath Anandan UA³, Rakesh Panda³, Karthik Ganapathi¹, Vaibhav Joshi¹

¹Preeti Urology and Kidney Hospital

Presented By: Chandra Mohan Vaddi, MCh Urology

**Introduction:** Pediatric patients with matrix stones are quite challenging to manage. They are more prone to develop recurrent UTI & septicemia if not managed in timely way. Ureteroscopic Management of these stones almost always fails as these are made up of mucopolysaccharides & mucoproteins. Percutaneous nephrolithotomy (PCNL) is treatment of choice. Pediatric Supine PCNL is tricky & needs expertise.

**Materials and methods:** In this video presentation we are showing 4 Pediatric matrix stone cases managed by Supine PCNL. Case 1: 10 years female with multiple right renal calculi. Twice failed RIRS outside, managed by Supine Pcnl. Case 2: 02 years male with left renal pelvic calculus 12 mm, managed by Supine Pcnl after failed RIRS. Case 3: 01 years male with left renal pelvic calculus 13mm, stented outside, managed by Supine Pcnl. Case 4: 13 years female presented with left loin pain, recurrent UTI. Multiple radiolucent matrix stones in Left kidney, managed by Supine Pcnl.

**Results & Observations:** Post op period was uneventful in all cases. Only one patient developed post op fever. PCN Tract size was 18 Fr in all cases. Post operative hematuria was of Clavien grade I in 2 cases and none in the other 2 cases. Mean age of patients was 7years. Mean duration of surgery was 45-50 minutes. All patients were asymptomatic on 3rd month follow up with no residual stones.

**Conclusion:** Supine PCNL is a safe and feasible option for Matrix stones management in Pediatric patients. It gives a good stone free rate with suction compared to other modalities. Timely management with complete clearance helps in reducing complications & septicemia.

**V6-09 Does latest mean greatest? Comparing usability and video quality of single use ureteroscopes**

Raviraj Rege², Stephen Hassig¹, Kaela Mali², Aaron Saxton¹, Scott Quarrier¹, Rajat Jain¹

¹Department of Urology, University of Rochester Medical Center, ²University of Rochester School of Medicine and Dentistry

Presented By: Raviraj Rege

**Introduction and Objective:** Single-use (SU) digital flexible ureteroscopes have emerged as an alternative to standard reusable ureteroscopes, providing a variety of visual capabilities, maneuverability, and functionality. This study compares usability and image quality across nine SU ureteroscopes: Boston Scientific LithoVue and LithoVue Elite, Cook Ascend, Dornier Axis, OTU WiScope, Pusen Uscope, BD Aptra, Richard Wolf D-URS, Storz Flex-XC1; and a digital reusable ureteroscope: Olympus URF-V2.

**Methods:** LithoVue, LithoVue Elite, Axis, Ascend, WiScope, Uscope, D-URS, Flex-XC1, and Aptra scopes were used by faculty and residents in consecutive ureteroscopy cases. The University of Wisconsin Flexible Ureteroscopy Evaluation Instrument was used to rate historic experience, image quality, deflection strength, control intuitiveness, ease of irrigation, ease of scope access, functionality of working channel, and overall satisfaction on a 1-5 scale. Blinded participants also viewed one-minute videos from cases using LithoVue, LithoVue Elite, Axis, Ascend, Uscope, D-URS, Flex-XC1, and Aptra scopes were used by faculty and residents in consecutive ureteroscopy cases. The University of Wisconsin Flexible Ureteroscopy Evaluation Instrument was used to rate historic experience, image quality, deflection strength, control intuitiveness, ease of irrigation, ease of scope access, functionality of working channel, and overall satisfaction on a 1-5 scale. Blinded participants also viewed one-minute videos from cases using LithoVue, LithoVue Elite, Axis, Ascend, Uscope, D-URS, Flex-XC1, and Aptra, and the reusable scope, URF-V2. Resolution, contrast, color, sharpness, glare, depth perception, distortion/artifact, and overall image quality were rated on a 1-5 scale. MANOVA and one-sided
ANOVA statistics were completed with SPSS. Alpha of 0.05 was used for statistical significance.

**Results:** 167 hands-on evaluations (LithoVue n = 19, LithoVue Elite n = 21, Axis n = 16, Ascend n = 31, WiScope n = 18, Uscope n = 7, D-URS n = 6, Flex-XC1 n = 17, and Aptra n = 32) and 135 video comparisons were completed (n = 15 for LithoVue, LithoVue Elite, Axis, Ascend, Uscope, D-URS, Flex-XC1, Aptra, and URF-V2). Internal consistency was demonstrated (Cronbach’s $\alpha > 0.90$ for all cases). Deflection strength, ease of scope access, functionality of working channel, and overall satisfaction were lower for Uscope than all others ($p < 0.05$). Flex-XC1 had highest image quality ($p < 0.05$). LithoVue Elite and Cook Ascend had the highest mean overall satisfaction scores, 4.64 and 4.60 respectively, though these were not statistically different compared to LithoVue and Flex-XC1. Image resolution, contrast, and overall image quality were rated higher in Flex-XC1 than all others. URF-V2 was rated higher in image quality than all ureteroscopes besides Flex-XC1. The Uscope was least preferred over all other ureteroscopes for image resolution, contrast, and overall image quality.

**Conclusion:** The Flex-XC1 performed better than all other scopes in a wide variety of measures in both visual and usability measures, while the Uscope consistently performed the worst out of all ureteroscopes in nearly all measures.

**V6-10 Thulium fiber laser for stone lithotripsy. Will it be the ultimate choice?**

Alim Dymov¹, Yulya Li¹, Temirlan Karakotov¹, Gagik Akopyan¹, Stanislav Ali¹, Vladimir Lekarev¹, Evgeny Shpot¹, Leonid Rapoport¹

¹Institute for urology and reproductive health, Sechenov University

Presented By: Alim Dymov, MD, PhD

**Introduction and Objective:** To date the thulium fiber laser lithotripsy is a revolutionary technology in endourology. Since its first introduction in 2017 in Russia high effectiveness and safety of TFL for lithotripsy was proven in the context of percutaneous nephrolithotripsy, ureteroscopy, retrograde intrarenal surgery. The results of preclinical studies showed the ablation rates increase from 2 to 4 times and significantly higher threshold of retropulsion for TFL in comparison with Ho:Yag. These results were confirmed in experimental and clinical settings by several international scientific groups. There was no doubt in great dusting properties of TFL, but its fragmentation efficacy was not satisfactory in all cases.

**Methods:** The new TFL (FiberLase Umax, IRE-Polus, Russia) with minimal retropulsion and special modulated ‘fragmentation’ pulses has been recently presented. We assessed the clinical properties of TFL with these new pulses in the settings of URS, PCNL and bladder stones in the urological clinic of Sechenov university.

**Results:** New fragmentation pulse showed great efficacy in the cases of URS, PCNL and bladder stones. We observed fast stone disintegration comparable with that of Ho:YAG while maintaining negligible retropulsion.

**Conclusions:** Our experience of utilizing of this new technology in different clinical scenarios allows us to consider TFL as the optimal laser technology for lithotripsy. We believe that further randomized control trials will prove the high clinical performance and versatility of TFL.
V6-12 Thulium-Fiber Laser in Freehand Ultrasound-Guided Ultra-mini-percutaneous nephrolithotomy

Joseph Kai-man Li1, Steffi Yuen1, Wilson Chan1, Chi-Fai Ng1
1The Chinese University of Hong Kong

Presented By: Joseph Kai-man Li, MB, ChB

Thulium-fiber laser (TFL) gains popularity in different stone management, including URS, RIRS and PCNL. Although reports of TFL use in miniPCNL is present, no reports can be found on the use of TFL in ultra-mini-percutaneous nephrolithotomy (UMP). We here report the use of TFL in UMP, together with a freehand ultrasound-guided, X-ray-less puncture, showing that this technique is feasible and efficient.

V6-13 Combined Percutaneous Resectoscope and Endoscopic Intrarenal (EcirS) for Upper Tract Urothelial Carcinoma

Daniel Ufearo1, Reza Roshandel1, Julio Davalos2, Abdolmajid Eshghi1, Daniel Rosen1
1New York Medical College, 2Chesapeake Urology

Presented By: Daniel Ufearo

Introduction: For patients with low-grade upper tract urothelial carcinoma or those with high-grade disease who are poor surgical candidates for radical nephroureterectomy, nephron-sparing endoscopic methods offer viable alternatives that can not only provide effective disease control but also preserve kidney function. Traditionally, these nephron-sparing techniques have relied on either retrograde ureteroscopy or percutaneous antegrade endoscopy to treat UTUC. This video abstract will demonstrate the combined utilization of retrograde ureteroscopy and percutaneous resection of upper tract urothelial carcinoma. Combining these two techniques has the potential to enhance the efficacy and outcomes of treating UTUC while minimizing the impact on kidney function.

Methods: Footage from combined percutaneous and endoscopic intrarenal surgery was collected for review and editing. A flexible ureteroscope and an antegrade 15 French resectoscope through an 18 French renal access sheath were used. Apple iMovie was used to edit the clips to succinctly detail the approach for physicians and trainees. The video demonstrates the technical advantages facilitated by simultaneous antegrade-retrograde lesion visualization as it relates to efficient assessment, hemostasis, and resection.

Results: The patients underwent conservative treatment for upper tract urothelial carcinoma. Tumor resection was successful; no evidence of residual disease was found on the CT Urogram. There were no post-operative complications.

Conclusion: Combined percutaneous and endoscopic intrarenal surgery can effectively be used for the resection of upper tract urothelial carcinoma in patients with comorbidities precluding them from radical nephroureterectomy. Doing so allows for a complete assessment of the kidney and ureter, excellent resection, and meticulous hemostasis. Our video provides a simple description of the approach for the education of physicians and trainees.

V6-14 Percutaneous Nephrolithotomy For The Removal Of A Large Staghorn Calculus In A Horseshoe Kidney With Suspected Xanthogranulomatous Pyelonephritis

Kiran Moorthi1, Francesco Ciuffo1, Reza Roshandel2, Majid Eshghi2, Daniel C. Rosen2
1New York Medical College, 2Westchester Medical Center

Presented By: Kiran Moorthi

Introduction and Objectives: Horseshoe kidney is a congenital fusion malformation of the kidneys associated with anomalies of organ orientation and vasculature. Ectopic kidneys predispose patients to nephrolithiasis and infectious complications, a chronic form of which is xanthogranulomatous pyelonephritis (XGP). Percutaneous nephrolithotomy (PCNL) is a well described minimally invasive approach to the removal of large complex kidney stones. However factors including stone size, type, location, patient anatomy and kidney health merit special consideration when planning surgical approaches to ensure total stone free status. This video demonstrates the successful removal of a large staghorn calculus from a patient with a horseshoe kidney with XGP.

Methods: A 45 year old man with spina bifida and paraplegia managed with self-catheterization was found on CT abdomen pelvis to have a horseshoe kidney with a large left staghorn calculus surrounded by fluid consistent with stage I xanthogranulomatous pyelonephritis. The significant stone burden and the patient’s high risk of sepsis required stone removal to occur across two separate PCNL procedures, each with two renal accesses.

Results: The patient’s stone was cleared using two stage PCNL, with minimal intraoperative blood loss and no signs of sepsis. The patient was treated with IV antibiotics for 1 week prior and subsequent to stone removal. The stone grew multiple organisms including Klebsiella pneumoniae and Morganella morganii. Post operatively, the patient developed a delayed bleed secondary to a renal artery pseudoaneurysm; this was successfully managed with embolization.

Conclusion: Our case demonstrates that PCNL is a safe and effective option for managing clinical cases complicated by high stone burden and unique renal anatomy, and in some cases may be preferable to nephrectomy.

V6-15 A Navel Approach: Single Port Robot-assisted Pyelolithotomy in a Pelvic Kidney with Intrareteral Indocyanine Green

Jason Joseph1, G. Austin Krishingner1, Elizabeth Kwenda1, Kevin Morgan1, Vincent Bird1, Padraic O’Malley1, Jason Joseph1
1University of Florida, Department of Urology, Gainesville Florida

Presented By: Jason Joseph, MD

Introduction: The surgical management of nephrolithiasis in ectopic pelvic kidneys is challenging due to the risk of injury to surrounding viscera and variant vasculature. Several approaches to treatment (endoscopic, percutaneous, multiport robot-assisted, laparoscopic, and open) have been outlined in the literature with varying success rates. We report a novel approach for robot-assisted pyelolithotomy using the single port (SP) system via an
umbilical approach, employing intraureteral indocyanine green (ICG).

Methods: We present a 54-year-old male with no prior medical or surgical history who presented due to right lower quadrant pain and intermittent gross hematuria for 10 months. He also had a small, symptomatic umbilical hernia. Imaging revealed a 1.0 cm renal pelvis stone with moderate pelviectasis involving a right pelvic kidney. A fat containing umbilical hernia was also noted at the level of the stone. Ureteroscopy was unsuccessful due to the tortuous narrow-caliber ureter. Employing the Da Vinci SP system, a robot-assisted pyelolithotomy was performed through a periumbilical incision. Retrograde intraureteral ICG facilitated early renal pelvis identification. A small pyelotomy was made, through which the flexible ureteroscope was advanced via the SP access kit, and the stone was basket extracted. A stent, JP drain, and Foley catheter were placed, and the umbilical hernia was primarily repaired in standard fashion.

Results: Total estimated blood loss was 25 ml. The patient was discharged home on post-operative day 1 after removal of the drain and foley. His serum creatinine remained stable with his pain resolved. The stent was removed 4 weeks postoperatively.

Conclusions: This case illustrates a novel approach to surgical management of a renal pelvis stone in an ectopic pelvic kidney using the SP robotic system with simultaneous antegrade flexible nephroscopy and management of an umbilical hernia, through a single incision. Intraureteral ICG facilitated early renal pelvis identification, improving efficiency and potentially minimizing risk of vascular injury.

V6-16 Initial experience with ClearPetra™ flexible vacuum access sheath for Retrograde Ureteroscopy

Lucas Vergamini¹, Michael Creswell¹, Jordan Stiverson¹, Donald Neff³, David Duchene¹, Wilson Molina¹, Bristol Whiles¹
¹University of Kansas Medical Center

Presented By: Lucas Vergamini, MD

Introduction: Retrograde intrarenal surgery (RIRS) is commonly used in the surgical management of renal stones. During RIRS, a ureteral access sheath (UAS) is frequently placed for efficient ureteroscope passage into the kidney, enhanced irrigation outflow, visualization and stone clearance, as well as reduced operative times. A new development in this area is the introduction of a flexible and navigable vacuum-assisted UAS (VA-UAS), which enables the concurrent fragmentation and aspiration of stones. This video demonstrates VA-UAS effectiveness in clearing stones in patients undergoing RIRS.

Methods: Video footage from a patient undergoing RIRS in February 2024 with VA-UAS (ClearPetra™, MicroTech Endoscopy®, China) was obtained. For the procedure demonstrated, Boston Scientific Lumenistm Pulse 120W laser with MOSES technology distance mode was employed. Surgery was done by one expert surgeon.

Results: Procedure was completed uneventfully. Technique showed adequate stone clearance and highlights the benefits of concomitant dusting and aspiration. During the whole procedure, aspiration precluded the need for basketing. Patients were discharged on postoperative day one without any complications.

Conclusion: VA-UAS are a useful adjunct device in patients undergoing RIRS to clear dusted and fragmented stones. Additionally, the use of VA-UAS prevented the need for basketing. Additional studies are needed to evaluate the long-term outcomes for RIRS with the addition of vacuum technology.

V6-17 Single-Port Robot-Assisted Retroperitoneal Left Ureteroureterostomy for Treatment of Ureteral Stricture

Meghana Singh², Michael Raver¹, Sarah Brink¹, Fahad Sheckley¹, Max Drescher¹, Mubashir Billah¹, Mutahar Ahmed¹
¹Hackensack University Medical Center, ²Hackensack Meridian School of Medicine

Presented By: Meghana Singh

Introduction: This video will discuss our experiences utilizing single-port (SP) robot-assisted left ureteroureterostomy with bioregenerative tissue wrap for the management of left ureteral stricture.

Methods: The patient is a 57-year-old male with left ureteral stricture status post ureteroscopy with history of impacted nephrolithiasis and prior stent placement several months prior to admission. Complications from the impacted stone resulted in ureteral stent and subsequent temporary nephrostomy tube placement. Of note, the patient presented to the emergency department approximately two weeks prior to admission with worsening left flank pain, with radiation to the left groin area. CT urogram and retrograde pyelogram demonstrated a dense mid-ureteral stricture measuring 1.2 cm. This video demonstrates the steps to successfully completing an SP robotic-assisted ureteroplasty with ureteroureterostomy.

Results: In this case, the robotic time was 109 minutes, estimated blood loss (EBL) was 50 milliliters and the length of hospital stay was four days. No intraoperative complications were seen, and the patient tolerated the procedure well. Two days postoperatively, the patient was noted to have abdominal pain. CT demonstrated periureteral fluid with no focal uroinoma and appropriate stent positioning. A foley catheter was then reinserted to allow decompression of the kidney and relieve stent colic. The patient passed a trial of void in the office and is now stent-free with no further renal colic. Overall, we have performed a total of 5 SP ureteroureterostomy surgeries in the past with median operative time of 114 minutes (IQR 113, 175), median estimated blood loss of 20 milliliters (IQR 10, 25), and 0% complication rate (Table 1).

Conclusions: SP robot-assisted left ureteroplasty with ureteroureterostomy presents an effective and safe treatment option for patients with severe ureteral strictures and prior stent failures. A

<table>
<thead>
<tr>
<th>Table 1: Prior Ureteroureterostomy Surgery Data</th>
<th>Single port (SP)</th>
<th>Multi-Port (n=8)</th>
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<tbody>
<tr>
<td>Age at time of surgery (years), Mean (SD)</td>
<td>50.4 (18.44)</td>
<td>59.4 (7.96)</td>
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<tr>
<td>SP use of assistant port, n (%)</td>
<td>0 (0%)</td>
<td>-</td>
</tr>
<tr>
<td>Intraoperative length of stricture (cm), Mean (SD)</td>
<td>1.3 (0.3)</td>
<td>1.0 (0.3)</td>
</tr>
<tr>
<td>ICG usage, n (%)</td>
<td>3 (65%)</td>
<td>5 (75%)</td>
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<tr>
<td>Occurrence of intraoperative complications, n (%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>30-day postoperative complications greater than Clavien II, n (%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Operating time (min), Median (IQR)</td>
<td>154 (113, 175)</td>
<td>150.5 (142, 169.25)</td>
</tr>
<tr>
<td>Estimated blood loss (mL), Median (IQR)</td>
<td>20 (10, 25)</td>
<td>50 (22.5, 75)</td>
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</table>
VIDEO SESSION 7: ENDUROLOGY AND STONES 2

V7-01 Treatment of a Large Staghorn Calculus in an Ectopic Pelvic Kidney: A Novel Approach
Elizabeth A. Baldwin1, Ala’a Farkouh1, Jason Smith2, Akin S. Amasyali1, Zhamshid Okhunov1, D. Duane Baldwin1
1Department of Urology, Loma Linda University Health, 2Loma Linda University Health

Presented By: Elizabeth A Baldwin

Introduction: Ectopic pelvic kidneys are a rare congenital anomaly and patients are at a higher risk of developing nephrolithiasis. Surgical management of stone disease in ectopic pelvic kidneys is challenging due to the anatomic variation and kidney location. This video demonstrates the successful treatment of a large staghorn stone in an ectopic pelvic kidney.

Methods: The patient is a 45-year-old man with a body mass index (BMI) of 33.3 kg/m² and a prior history of left inguinal hernia repair with a large mesh. A CT scan performed due to recurrent lower abdominal pain revealed a right ectopic pelvic kidney with a 2x3 cm staghorn stone in the renal pelvis, 8 mm stone in the upper pole, and stone fragments measuring 2 x 1.5 cm in the lower pole of the ectopic kidney. After consideration of all treatment strategies, a transabdominal percutaneous nephrolithotomy (PCNL) was determined to be the most appropriate.

Results: To establish renal access, a CT-guided approach was utilized to avoid injury of surrounding vessels and organs. In the operating room, the patient was positioned in lithotomy and a guidewire was inserted antegrade through the nephroureteral stent, establishing through-and-through access. Retrograde ureteroscopy was challenging due to the renal pelvic stone and the difficult angles limiting deflection. Fluoroscopy was used to guide tract dilation and sheath insertion. Lithotripsy and stone extraction were performed, alternating between a rigid and a flexible nephroscope. A full-dose fluoroscopic image revealed no residual fragments. Total operative time was 135 minutes and postoperative hemoglobin was 12.7 mg/dL. On postoperative day 1, an ultra-low dose CT detected a 7 mm upper pole fragment. The stone fragment was removed in a second look procedure. Postoperative low dose CT confirmed stone-free status and the patient was discharged the next day with no complications. Stone analysis revealed 80% calcium oxalate monohydrate and 20% calcium phosphate.

Conclusion: Urologists should be aware of the unique challenges associated with staghorn calculi in pelvic kidneys, including difficult angles, anatomic variation, limited utility of fluoroscopy, and the challenges of an endoscopic combined intrarenal approach. This video demonstrates a successful CT-guided transabdominal approach for PCNL of a large staghorn stone in a pelvic kidney and this approach may be considered in patients with similar presentations.

V7-03 Treatment of kidney stones in a duplicated collecting system: Totally tubeless dual tract supine mini-percutaneous nephrolithotomy – a feasible option
Roxanne Teo1, Yuyi Yeow1, Jia-Lun Kwok2
1Advanced Urology, 2Tan Tock Seng Hospital

Presented By: Roxanne Teo, MBChB, MRCS

Introduction and Objective: Ureteral stents have been an indispensable tool in urologic practice since their introduction in 1970. They primarily serve to drain the upper urinary tract and are indicated in a wide range of both emergency and elective scenarios. Stent encrustation poses a difficult challenge for the clinician, varying from simple deposits of mineral crystal on the stent’s surface to total encrustation on the proximal and distal coil. In the modern era, minimally invasive endourological approaches dominate in the management of stent encrustation. The objective of this video is to showcase our approach to managing encrusted stents in our center.

Materials and Methods: We present three cases of total encrustation of the distal and proximal coil of ureteral stents that were managed with combined holmium laser and ultrasonic lithotripsy/cystolapaxy (for the distal coil), ureteroscopy laser lithotripsy (for mid encrustations), and Supine Percutaneous Nephrostolithotomy with holmium laser and ultrasonic lithotripsy (for the proximal coil). Three cases of forgotten stent with complete encrustation on both ends of the coil were also managed with this approach.

Results: Two cases were successfully managed in a single setting, while the third was completed on a second session after 48 hours. The average operation time was 280 minutes, and no morbidity was observed.

Conclusion: Total encrustation of ureteral stents can be a difficult problem to treat, requiring a stepwise approach to safely remove the stent and achieve good outcomes. Endourological interventions now represent the mainstay of management, but a multimodal approach may be required, along with a staged procedure where necessary.

V7-02 Endourological Management for Encrusted Proximal and Distal Ureteral Stent
Freddie Sy1
1Bicol Medical Center

Presented By: Freddie Sy, MD

Introduction and Objective: Ureteral stents have been an indispensable tool in urologic practice since their introduction in 1970. They primarily serve to drain the upper urinary tract and are indicated in a wide range of both emergency and elective scenarios. Stent encrustation poses a difficult challenge for the clinician, varying from simple deposits of mineral crystal on the stent’s surface to total encrustation on the proximal and distal coil. In the modern era, minimally invasive endourological approaches dominate in the management of stent encrustation. The objective of this video is to showcase our approach to managing encrusted stents in our center.

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V7-03 Treatment of kidney stones in a duplicated collecting system: Totally tubeless dual tract supine mini-percutaneous nephrolithotomy – a feasible option
Roxanne Teo1, Yuyi Yeow1, Jia-Lun Kwok2
1Advanced Urology, 2Tan Tock Seng Hospital

Presented By: Roxanne Teo, MBChB, MRCS
VSESSON7

Introduction and objective: Management of stones in duplicated kidneys is often challenging. In percutaneous nephrolithotomy (PCNL), superior calyces cannot be accessed by inferior punctures and vice versa. Here we present a case of totally tubelless mini-PCNL (mPCNL) for a patient with separate large stones in both upper and lower pole kidney duplicated moieties.

Methods/Case: Our patient is a 74 year old gentleman with no significant past medical history. He presented to us with left renal colic and gross hematuria. Computed Tomography Urogram revealed a partially duplicated left renal system, with duplex ureters fusing at the distal ureter. There was a large 2.8cm (3900mm3) branched calculus in the left upper pole moiety, and another 1.5cm (609mm3) calculus in the lower pole moiety.

Treatment options were discussed, and a joint decision was made for mPCNL. Ureteroscopy intraoperatively confirmed a duplex system with the ureter merging in the distal ureter. The lower pole moiety ureter opening was tight. Dual punctures were made via ultrasound—a 17.5F sheath to the upper pole moiety, and a 16Fr sheath to the lower pole moiety. Lithotripsy technique was via fragmentation with a holmium:YAG laser and sheath evacuation with the vacuum cleaner effect. Patient was endoscopically stone free at the end of the procedure. In view of minimal bleeding, no pelvi-ureteric-junction edema and good antegrade flow of contrast, we employed a totally tubeless approach with no nephroscopy tubes or ureteric stents placed.

Results/Outcome: Post operative day 1 (POD1) X-ray did not show any residual fragments. Post operative haemoglobin and creatinine were stable. Post operative day 1 (POD1) X-ray did not show any residual fragments. Post operative haemoglobin and creatinine were stable. Patient was planned for home POD 1 within 24 hours, but failed his trial of catheter and opted to stay another night before discharge with successful trial on POD2. There were no post operative complications. Next follow up X-ray in 3 months did not show any residual fragments.

Conclusions: We demonstrate how dual tract mPCNL is a feasible option in duplex kidneys. Careful preoperative planning and patient counselling is required to maximise treatment efficacy while minimising complication rates. Consideration needs to be given to the number of tracts, access tract size, possibility of concurrent retrograde access, and a tubeless or totally tubeless exit strategy.

V7-04 Challenges and options for management of stones in Pelvic Ectopic kidney: An Algorithm Based Management

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1Muljibhai Patel Urology Hospital, 2Muljibhai Patel Urological Hospital

Presented By: Raisa Shetty, Urology Resident

Introduction and Objective: A kidney that fails to ascend from the pelvis to the renal fossa is considered an ectopic pelvic kidney. Affected patients have structural and architectural anomalies due to which conditions such as reflux, hydronephrosis, nephrolithiasis, and renal failure are common. Nephrolithiasis is a common cause of obstruction in patients with an ectopic pelvic kidney. This abnormal situation creates altered spatial relations with the adjacent organs, abnormal calyceal orientation, and anomalous vascular patterns making the approach to the pelvic kidney a big challenge. Thus in this video we highlight 4 treatment modalities for management of Ectopic Pelvic kidney stones: Robotic Pyelolithotomy, Laparoscopic guided Percutaneous Nephrolithotomy (PCNL), PCNL and RIRS (Retrograde Intrarenal Surgery).

Materials and Methods: Patients who presented to our renal unit with urolithiasis in a pelvic ectopic kidney. They were appropriated classified and managed according to algorithm from the publication by Singh et al: “Changing trends in endourological management of Urolithiasis in Anomalous kidney”.

Results: We have demonstrated 4 cases undergoing different modalities of endourological management including flexible ureteroscopy, laparoscopic-assisted PCNL, PCNL and laparoscopic/robotic pyelolithotomy and have got complete clearance in all cases. We also have included our own data with various modalities of treatment in ectopic pelvic kidney.

Conclusion: The management of renal calculi depends on different factors such as stone size, density and location in accordance with upper urinary tract alterations, kidney anatomy and operator experience. The choice of approach should be carefully selected evaluating upper urinary tract anatomy and stone features. An algorithm-based approach could help surgeons decide the appropriate treatment in this population.

V7-05 Fluoroscopic Retrograde Brush Cytology Through Ileal Conduit

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Presented By: Kamil Malshy, MD

Introduction and Objectives: The prevalence of upper tract urothelial carcinoma (UTUC) after radical cystectomy varies between 0.75% and 6.4% (Picozzi, j. urol, 2012). Due to the significant anatomical changes, urologists face a considerable challenge when performing retrograde diagnostic ureteroscopy, particularly in locating the ureteral orifice. This often necessitates the use of antegrade kidney puncture and guidewire transition in a “through-n-through” manner (Ramachandra, Urol Int, 2018). Interventional radiologists possess an advantage in navigating small tracts through blind procedures using contrast and very fine guidewires and microcatheters (Chehab, Radiol, 2015). In this video, we present a unique approach to puncture-free retrograde brush cytology for assessing upper tract suspicious lesions following radical cystectomy and urinary diversion.

Methods: A retrospective analysis was conducted, encompassing cases involving both loopography and retrograde ureteral brush cytology. Clinicodemographic information and detailed procedural specific were systematically collected, with brush cytology results graded according to “the Paris classification”. The video recording method adhered to a protocol that mandated the acquisition of specialized consent for video recording. Images were captured for research and presentation purposes. Intraoperative videos and fluoroscopy sequences were recorded, while video editing was executed using Windows Movie Maker software. Voiceovers were incorporated using the “Text Magic” software.
**Results:** 3 patients underwent laproscopy and retrograde brush cytology in the technique described with median age of 61, 2 cases of right side and 1 left. Upper, middle, and ureter-ileal anastomosis lesion was suspected one in each of the 3 patients. Median procedure time was 46 minutes. 2 patients had positive cytology results (1 had diagnostic ureteroscopy and later radical nephroureterectomy and 1 is under workup). Third patient with negative results continued f/u., all procedures were outpatient.

**Conclusions:** Retrograde fluoroscopic brush cytology is a viable technique as a first diagnostic test when UTUC is suspected in a patient with urinary diversion. Confirmatory ureteroscopy should be considered in most cases, especially when the lesion is small and can be treated by endoscopy or when a suspicious lesion has been revealed to be benign. Looking ahead, a hybrid approach that combines radiographic guidewire tract and ureteroscopy may offer a promising combination for future procedures.

**V7-06 ClearPetra in Mini-ECIRS: Clearing stone efficiently in any position**

Lucas Vergamini¹, Michael Creswell¹, Donald Neff⁴, David Duchene¹, Wilson Molina¹, Bristol Whiles¹

¹University of Kansas Medical Center

**Presented By:** Lucas Vergamini, MD

**Introduction:** Retrograde intrarenal surgery (RIRS) is commonly used in the surgical management of renal stones. During RIRS, a ureteral access sheath (UAS) is frequently placed for efficient ureteroscope passage into the kidney, enhanced irrigation outflow, visualization and stone clearance, as well as reduced operative times. A new development in this area is the introduction of a flexible and navigable vacuum-assisted UAS (VA-UAS), which enables the concurrent fragmentation and aspiration of stones. This video demonstrates VA-UAS effectiveness in clearing stones in patients undergoing RIRS.

**Methods:** Video footage from a patient undergoing RIRS in February 2024 with VA-UAS (ClearPetra™, MicroTech Endoscopy®, China) was obtained. For the procedure demonstrated, Boston Scientific® Lumenstm Pulse 120W laser with MOSES technology distance mode was employed. Surgery was done by one expert surgeon.

**Results:** Procedure was completed uneventfully. Technique showed adequate stone clearance and highlights the benefits of concomitant dusting and aspiration. During the whole procedure, aspiration precluded the need for basketing. Patients were discharged on postoperative day one without any complications.

**Conclusion:** VA-UAS are a useful adjunct in patients undergoing RIRS to clear dusted and fragmented stones. Additionally, the use of VA-UAS prevented the need for basketing. Additional studies are needed to evaluate the long-term outcomes for RIRS with the addition of vacuum technology.

**V7-07 Chylous ascites following Laparoscopic Donor Nephrectomy Our Experience**

Muthu Veeramani², Abraham Kurien¹, Nivedita Chandran², Shanmugam Sundaram Rajan³

¹SRM Institutes for Medical sciences, ²SRM Institutes for Medical sciences, ³SRM Institutes for Medical Sciences

**Presented By:** Muthu Veeramani, MD

**Introduction:** Laparoscopic donor nephrectomy (LDN) is the standard of care for voluntary kidney donors with less morbidity and early convalescence. Chylous ascites is one of the complications with incidence ranges from 0.6% to 5%, results in malnutrition, protein loss and more economic burden. The management options varies from dietary modifications to Lymphatic vessel embolization and rarely requires surgical intervention.

**Methods:** Retrospective review of patients diagnosed and managed for chylous ascites following laparoscopic donor nephrectomy between the period 2011-2023.

**Results:** Among the 760 laparoscopic donor nephrectomies performed in the study period, Three of them presented with abdominal distension and respiratory discomfort. Diagnosis was confirmed by abdominal paracentesis of the fluid by its colour and presence of chylomicrons in biochemical analysis. Two were female and one male, between the age group of 45 to 60. One patient managed conservatively with somatostatin analogue, fat free diet and total parental nutrition, Second patient managed with diet without drainage. Third patient failed conservative management after adequate time cured by laparoscopic ligation Lymphatic channels.

**Conclusion:** Chylous ascites is one of the rare complication following Laparoscopic donor nephrectomy and can be diagnosed easily with the presence of chylomicron in the peritoneal fluid. Radiologically very difficult to differentiate between regular ascites and chylous ascites. With strict diet and available medical drugs it can be managed conservatively very rarely needs surgical management by laparotomy or Laparoscopy. Best way to prevent is to identify the lymphatic channels and clip them during the procedure and check the renal fossa after retrieval for lymph leak and take adequate measures.

**V7-08 Supine Tubeless Mini-Percutaneous Nephrolithotomy in the Pediatric Patient: Description of a technique for pediatric nephrolithiasis**

Trisha Nguyen¹, Jordan Smith¹, Rani Ashouri¹, Marc Abboud¹, Cynthia Sharadin¹, Romano DeMarco¹, Christopher Bayne¹, Russell Terry¹, Vincent Bird¹, John Michael DiBianco¹

¹University of Florida

**Presented By:** Trisha Nguyen, MD

**Introduction/Objective:** Mini-Percutaneous Nephrolithotomy (mini-PCNL) is a minimally invasive approach in the treatment of large renal calculi that is associated with lower morbidity and similar efficacy compared to traditional techniques. We present a case of supine tubeless mini-PCNL in a pediatric patient.

**Methods/Materials:** Our patient is a 12-year-old female with a history of cystinuria and urolithiasis requiring prior ureteroscopy. She was found to have a large left lower pole stone burden with developing staghorn calculi on surveillance imaging. Her family decided to proceed with mini-PCNL as stone-free status was their top priority. The patient underwent a mini-PCNL with endoscopic combined intrarenal surgery (ECIRS) using the STORZ Minimally Invasive PCNL set with a 16 French outer sheath. For lithotripsy, a 200-micron MOSES holmium laser fiber was used. Intraoperative access was obtained fluoroscopically.

**Results:** All stone was removed by the end of the case with a total operating room time of 2 hours and 26 minutes. The patient was left with a 4.8 French by 24cm double J ureteral stent and a 12 French urethral foley catheter. The catheter was removed on
post-operative day one prior to discharge and the stent was removed after two weeks. A follow-up renal ultrasound did not show any residual stone burden or hydronephrosis.

**Conclusions:** We demonstrate surgical techniques for tubeless mini-PCNL in a pediatric patient, showing mini-PCNL as a safe and effective alternative for use in pediatric populations with acceptable outcomes and no significant complications.

### V7-09 USG Guided Supine Percutaneous Access in Complex Stone Scenarios

Chandra Mohan Vaddi¹, Ramakrishna Paidakula¹, Siddalinga Swamy Pm¹, Soundarya Ganesan², Hemnath Anadan Ua¹, Rakesh Panda², Kartheek Ganapathri¹, Vaibhav Joshi¹

¹Preeti Urology and Kidney Hospital, ²Preeti Urology and Kidney Hospital

Presented By: Chandra Mohan Vaddi, MCh Urology

**Introduction:** Achieving percutaneous access is the most important step in PCNL, which is usually done under fluoroscopic guidance worldwide. However, it carries the risk of radiation exposure, which becomes cumulative for the surgeons, operative team as well as recurrent stone formers. Ultrasonogram (USG) guided access is a safe and efficient alternative. We are presenting a series of 6 cases in which ultrasound guided access was truly advantageous.

**Materials and Methods:** Case 1: 34yr male, presented with upper ureteric impacted stone, upper calyceal diverticular stones with urinoma. In modified supine position, USG guided percutaneous nephrostomy (PCN) was done, targeting the diverticulum containing stones and retrograde DJ stent was placed.

Case 2: 56yr male with left solitary functioning kidney had lower ureteric stone and renal stone. Ureteroscopy was attempted elsewhere, but failed. He presented with azotemia (creatinine 6.5mg/dl), oliguria. Iatrogenically injured left ureteric ori (creatinine 6.5mg/dl), oliguria. Iatrogenically injured left ureteric orifice not negotiable with ureteroscope. USG guided PCN with antegrade DJ stenting done, creatinine reduced to 1.4mg/dl.

Case 3: 28yr male with left lower ureteric stone and renal stones, with antegrade DJ stenting done, creatinine reduced to 1.4mg/dl. (USG guided PCN and PCD was done, targeting the diverticulum containing stones and retrograde DJ stent was placed).

Results:

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<table>
<thead>
<tr>
<th>Case no</th>
<th>Initial Procedure</th>
<th>Second Stage Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>USG guided PCN + DJ stenting</td>
<td>ECIRS</td>
</tr>
<tr>
<td>2</td>
<td>USG guided PCN + Antegrade DJ stent</td>
<td>USRL + RIRS</td>
</tr>
<tr>
<td>3</td>
<td>USG guided PCN + PCD</td>
<td>Laparoscopic Boari Flap</td>
</tr>
<tr>
<td>4</td>
<td>USG guided Supine PCNL</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>USG guided Supine PCNL</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>USG guided PCN + PCD</td>
<td>ECIRS</td>
</tr>
</tbody>
</table>
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**Conclusion:** USG guided access is truly useful in cases where retrograde access or fluoroscopic guidance is not possible, or when contraindicated. It reduces the blindness of the puncture, minimizes radiation exposure, avoids visceral injury. Supine position enables simultaneous access retrograde and antegrade.
Conclusion: Minimally invasive surgery offers a less morbid treatment and valid alternative to surgical excision in selected cases of Ureteric Stump Syndrome (USS).

V7-11 Design and validation of a novel 3D-printed retrograde intrarenal surgery trainer
Jeff John3, Johan Bosch1, Ahmed Adam2, Graham Fieggen3, Lisa Kaestner3, John Lazarus3
1Walter Sisulu University, 2University of Witwatersrand, 3University of Cape Town
Presented By: Jeff John

Introduction and Objectives: To report on the design of a novel 3D-printed retrograde intrarenal surgery (RIRS) benchtop trainer and detail its validation against real-life experiences.

Methods: Digital Imaging and Communications in Medicine (DICOM) files of two patients with normal computed tomography of the kidney and bladder were converted into stereolithography files to create 3D triangular mesh models. These images were further refined using Autodesk Meshmixer. These 3D models were fabricated through additive manufacturing, a process commonly known as 3D printing and assembled in a polypropylene case. After development, the model was validated by 40 experienced who were asked to rate the components of the simulation using a nine-point questionnaire.

Results: The model’s value in understanding the principles of RIRS and simulating contextual anatomy had mean scores of 9.43 (standard deviation [SD] = 0.74) and 9.21 (SD = 1.03), respectively. Mean scores for specific steps in RIRS were 8.07 (SD 1.47) for cannulating the ureteric orifice, 8.61 (SD 1.24) for inserting the ureteric access sheath, 9.29 (SD 0.97) for performing a renoscopy and evaluating all the calyces, 9.46 (SD 0.87) for laser lithotripsy, and 9.17 (SD 0.94) for manual stone retrieval. Participants scored the model with a mean score of 9.04 (SD 0.87) for simulating contextual anatomy and a mean score of 9.18 (SD 0.89) when evaluating its ability to enhance a trainee’s confidence in RIRS.

Conclusions: The model performed well for all components of RIRS. This model allows high fidelity of the simulation, and is cost-effective, portable, durable, reusable, and compatible with standard ureteroscopes.

V7-12 Thailand’s experience with RIRS in complex situations: stone in cross-fused ectopic renal pelvis kidney
Nattaporn Wanvimolkul1, Ekkarin Choikawanich1
1Faculty of Medicine, Siriraj hospital, Mahidol university
Presented By: Nattaporn Wanvimolkul, MD

Introduction and Objective: Retrograde intrarenal surgery is a widely used surgical technique for treating urinary tract stones. However, the application of this procedure in complex situations remains challenging. This presentation emphasizes the application of retrograde intrarenal surgery in complex situations, sharing experiences from Siriraj Hospital, a referral center and academic institution in Thailand. It includes a showcase of rare and difficult situation for RIRS, such as stones in cross-fused ectopic renal pelvis kidneys. We aim to share the techniques and equipments used in our cases.

Materials and Methods: A 59-year-old female presented with recurrent urinary tract infection. CT scan revealed left renal calculi size 1.8 x 1.9 cm within cross-fused ectopic left kidney. She was scheduled for cystoscopy with retrograde pyelography and RIRS. This presentation emphasizes sharing the techniques and experiences in RIRS in complex situations.

Results: In this case, cystoscopy was initially performed to identify the anatomy of the urinary bladder and the ureteric orifice of a cross-fused ectopic kidney. Subsequently, retrograde pyelography was conducted to assess the ureter’s anatomy, aiding in planning the subsequent steps of the procedure. A 10/12 Fr ureteral access sheath was inserted, followed by flexible ureteroscopy to visualize the renal pelvis. Upon identifying a renal stone, thulium laser lithotripsy was employed using a 200- micron thulium laser fiber at an energy setting of 2J and 30Hz. Following successful stone fragmentation, a nitinol stone basket was utilized to remove the debris. A 4.8F, 14cm ureteral stent was then inserted. At the postoperative 4th week, a follow-up film revealed some residual stones in the ureter, leading to the removal of the ureteral stent. Subsequent imaging at the postoperative 8th week demonstrated no residual stones.

Conclusion: Retrograde intrarenal surgery appears to be a highly effective approach for managing stones in complex cases. The case we presented, involving stones in a cross-fused ectopic kidney, was successfully treated using Thulium laser lithotripsy. The laser procedure, conducted with precise settings (2J, 30Hz) and utilizing a 200- micron fiber, efficiently achieved stone fragmentation. The follow-up imaging in the 8th week, revealing a stone-free condition, highlights the adaptability and efficiency of the demonstrated approach.

V7-13 Misplaced Encrusted Double J Stent with Stone Formation – Management and Techniques
Freddie Sy1
1Bicol Medical Center
Presented By: Freddie Sy, MD

Introduction and Objective: The double J ureteral stents have become an integral part of the urological armamentarium. They allow good urinary drainage from kidney to the bladder and usually are safe and well tolerated. However, complications may occur from minor irritative urinary symptoms, urinary tract infection, pain and hematuria to major complication such as encrustation, stone formation migration, stent fracture and malposition. Incident of stent encrustation needing intervention ranges from ranges from 1 to 3 % while misplacement of dj stent is rarely reported in urologic literature. A case of encrusted misplaced Double J stent with stone formation is presented along with its management and techniques.

Method: A 34-year-old male with recurrent UTI and a history of bilateral Double J stent insertion from another institution was examined. Non-contrast CT scans showed a misplaced right Double J stent outside the ureter
with a 1.5 cm proximal 3rd ureteral calculus and severe hydroureteronephrosis. The left Double J stent had stone formation on the proximal coil with nephrolithiasis.

**Result:** A right nephrostomy tube was placed initially under ultrasound guidance. Cystoscopy revealed stent encrustation with stone formation on the distal coil of the right Double J stent, holmium laser tripsy was performed until total fragmentation. We noted entanglement of the distal coil which was addressed by cutting the stent with a laser. We tried to pull out the right stent but resistance was noted. On a semi-rigid ureteroscopy, the stent was found to perforate the ureter with a calculus proximal to the area of perforation. A left supine percutaneous nephrolithotomy was carried out with ultrasound-guided puncture and serial fluoroscopic dilatation up to 24 French. Using a 22 French nephroscope an ultrasonic energy device with suction was used for fragmentation, up to 24 French. Using a 22 French nephroscope an ultrasonic energy device with suction was used for fragmentation, up to 24 French. Using a 22 French nephroscope an ultrasonic energy device with suction was used for fragmentation, up to 24 French. Using a 22 French nephroscope an ultrasonic energy device with suction was used for fragmentation, up to 24 French.

Despite receiving antibiotic treatment, the patient continued to experience fever episodes. An ultrasound-guided puncture of the 83x10 mm heterogeneous image was performed, and the same pathogenic bacteria were isolated. On the eleventh postoperative day, follow-up imaging showed reduced perirenal fat stranding and the persistence of an 87x82 mm subcapsular hematoma in the left kidney. Physical examination revealed tenderness at the left ureteral points. Drainage of the intrarenal hematoma on the left side was performed on the fourteenth postoperative day, with isolation of the same pathogenic bacteria. Finally, the patient was discharged on the seventh postoperative day. Follow-up consultation included a renal scintigraphy, which indicated a split renal function of 6% for the left kidney and 94% for the right kidney. The patient is currently under imaging control.

**Conclusions:** Retrograde intrarenal surgery is an effective and safe procedure for the management of renal lithiasis. However, clinicians should be aware of potential complications such as postoperative renal hematoma and be prepared for its appropriate management. This case report highlights the importance of effectively managing postoperative renal hematoma.

**Source of Funding:** None.

**Conflict of Interest and Disclosure Statement:** The authors declare no conflicts of interest.

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**V7-14 “Retrograde intrarenal surgery: management of postoperative renal hematoma”**

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1Hospital de Clínicas José de San Martín

Presented By: Eliana Capriotti, MD

**Introduction and Objective:** Retrograde intrarenal surgery is an efficient and safe procedure for the treatment of urolithiasis, minimizing hospitalization. However, it can be associated with complications such as postoperative renal hematoma. In this case report, we describe the effective management of a postoperative renal hematoma.

**Methods:** Standard patient care procedures were followed for the diagnosis and treatment of the postoperative renal hematoma in patients who underwent endourological and laparoscopic intervention in cases of encrustation with stone formation and misplaced Double J stents. Urgent measures are necessary to minimize further complications.

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**V7-15 Extended pyelolithotomy using a retroperitoneal laparoscopic approach for staghorn calculi in a single functional kidney**

Hamid Pakmanesh1, Ali Salari1

1Kerman University of Medical Sciences, 2Department of Urology, School of Medicine, Kerman University of Medical Sciences, Kerman, Iran, 3Clinical Research Development Unit, Shahr-Bahonar Hospital, Kerman, Iran

Presented By: Hamid Pakmanesh, MD

A 50-year-old female patient who presented with left-sided staghorn and poor functioning contralateral kidney was referred to our center for intervention. She underwent a retroperitoneal approach laparoscopic pyelolithotomy and the lower pole horn of the stone was noted to be too long. Consequently, we extended the pyelotomy incision to the lower pole calyx, enabling us to remove the staghorn entirely through the extended
pyelotomy incision. The patient was discharged the day after the procedure without incident.

In managing the staghorn stone in this patient with a poorly functioning contralateral kidney, laparoscopic pyelolithotomy serves to mitigate the potential risk of severe bleeding associated with multiple access percutaneous nephrolithotomy (PCNL). Furthermore, it provides the highest possible stone-free status in a single session. The retroperitoneal approach is associated with less risk to intraabdominal organs and minimizes the possibility of peritonitis in the event of an infected stone. Additionally, it reduces the risk of postoperative ileus.

V7-16 Single Port Robot-Assisted Laparoscopic Right Partial Nephrectomy with Pyelolithotomy

Ji Hae Park¹, Kevin Chua¹, Sammy Elsamra¹, Benjamin Lichtbour¹, Alain Kaldany¹, Sai Krishnaraya Doppalapudi¹, Ji Hae Park¹

¹Rutgers Robert Wood John Medical School

Presented By: Ji Hae Park, MD

Introduction & Objective: In this case, a single port robotic-assisted laparoscopic partial nephrectomy with pyelolithotomy was performed for a patient with an obstructed, atrophic right lower pole of the kidney with pyelonephritis caused by a long-standing 1.1 cm obstructing stone in the lower pole infundibulum and was initially treated with a percutaneous drain and antibiotics. This procedure offers a definitive and alternative surgical option to ureteroscopy with laser or percutaneous nephrolithotomy.

Method: The da Vinci SP robotic system was used to perform a right lower pole partial nephrectomy with pyelolithotomy. A 5 cm single port incision was made in the right lower quadrant two thirds of the distance from the umbilicus to the anterior superior iliac spine and retroperitoneal access was obtained. During the case, the peritoneum was bellowing into the visual field due to a peritoneal defect. We extended the peritonotomy and tacked the mesocolon to the anterior abdominal wall to obtain better visualization. The atrophic portion of the kidney was identified with ultrasound and the lower pole partial nephrectomy was performed off clamp with minimal bleeding. The scarred portion of the infundibulum was identified and opened with electrocautery. A 1 cm stone was found to be embedded into the infundibulum and was removed. The remaining healthy infundibulum was closed and deep renorrhaphy was performed using a 3-0 barbed suture, followed by capsular renorrhaphy with a 2-0 barbed suture.

Result: The operative time was 2 hours and 47 minutes. Estimated blood loss was 20 mL. There were no intraoperative or postoperative complications. The patient was discharged on post-op day one without a Foley catheter.

Conclusion: Single port robot-assisted laparoscopic partial nephrectomy with pyelolithotomy is a safe, effective and minimally invasive procedure for an atrophic lower pole due to an obstructing infundibular stone. It allows for a short length of stay while providing a definitive solution.

V7-17 Various approaches to the management of pelvic ectopic kidney stones

Manoj Kumar¹

¹KIMS Hospitals

Presented By: Manoj Kumar, MCh urology

Introduction and Objective: The pelvic kidney has an incidence of 1 in 2200 to 1 in 3000, and it occurs owing to a failure of its ascent during development that makes it to stay below the pelvic brim, laying over the sacrum and caudal to the aortic bifurcation. Generally, they have a high insertion of the ureter and are malrotated, predisposing to urinary stasis and nephrolithiasis. This abnormal situation creates altered spatial relations with the adjacent organs (lies anterior to sacrum, caudal to aortic bifurcation, and posterior to peritoneum), abnormal calyceal orientation, and anomalous vascular patterns (deriving blood supply from iliac vessels or distal aorta), making the approach to the pelvic kidney a big challenge. Extracorporeal shockwave lithotripsy (ESWL) has variable results in different series, reporting stone-free outcomes from 25% to 82%. The main factors that reduce its efficacy are the surrounding bony pelvis and the loops of bowel, both interfering with the transmission of the shock waves; additionally, in many cases, drainage of the kidney is impaired, reducing the clearance of the fragments. The percutaneous nephrolithotomy (PCNL) has become the most common approach for the management of large stone burden, and in pelvic kidneys, it has proved to be as effective as in normal kidneys. The retrograde intrarenal surgery (RIRS) approach is gaining importance nowadays. It always related to the accessibility of the pelvic calyceal system through the tortuous ureter, its insertion, the stone burden and surgeons experience.

Methods and Results: We are presenting three cases of ectopic kidney stone management. One case managed with RIRS, one case managed with ultrasound guided PCNL, one case with managed laparoscopic assisted PCNL. RIRS failed in one case after stenting and managed with laparoscopic assisted PCNL. We did Ultrasound guided PCNL for one patient without stenting.

Conclusion: Ectopic kidney stone management is associated with challenges because of its varying anatomy. We should be ready with all options available to remove stone. For small stones it is always better to go for RIRS. For larger stones Ultrasound guided PCNL is a good option without much complications. Care should be taken during the puncture and bowel should be avoided by pressing the probe against kidney. Ultrasound guided PCNL is safe in experienced hands. Laparoscopic assisted PCNL is safest with no risk of bowel and vascular injury.
VIDEO SESSION 8

V8-01 Robot Assisted Salvage Partial Nephrectomy: A Feasible Option for Management of Tumor Recurrences After Cryoablation or Radiofrequency Ablation

Ashok Hemal¹, Justin Refugia¹
¹Wake Forest University

Presented By: Ashok Hemal, MD

Introduction and Objective: For T1 renal masses, primary management with multiple thermal ablations has similar local control rates to partial nephrectomy. However, single ablations have worse local recurrence rates that necessitate challenging salvage interventions. In our study, we investigated the safety and oncologic efficacy of robot assisted salvage partial nephrectomy (PN) for patients with local recurrence of tumor at site of prior cryoablation (cryo) or radiofrequency ablation (RFA).

Methods: We queried our single-center database to identify patients for inclusion in this retrospective case series. Patients required surveillance with cross-sectional imaging and had to undergo prior cryoablation or RFA with subsequent robot assisted salvage PN. Interventional radiology evaluation required to determine lack of candidacy for repeat ablation. Primary outcomes were safety, reported as perioperative Clavien-Dindo complications, and oncologic efficacy. Limitations include no comparative arm.

Results: From 2017 to 2023, we identified ten patients (Cryo, n = 8; RFA, n = 2) with local tumor recurrence at a median of 24 months after ablation for the index lesion (median 2.3 cm diameter). At site of prior ablation, the patient’s tumor recurrence was median 2.7 cm. Robot assisted salvage PN was performed with 22-minute median warm ischemia time after renal artery trunk clamping (one patient with artery and vein clamping) and 161-minute median OR time. Pathology was clear cell RCC for all ten patients with negative surgical margins. No 90-day C. D. complications were reported. Median follow up was 16-months and only one patient (10%) had another local recurrence at PN site 31-months post-op.

Conclusions: Our data suggest that salvage partial nephrectomy via a robot assisted approach may be a feasible and safe management option for patients with kidney tumor recurrences after failing ablative management.

V8-02 Advances in robot-assisted partial nephrectomy: Integration of 3D reconstruction and indocyanine green imaging in complex case

Lorena Barboza de sousa¹, Rodrigo B. Silvão¹, Lorena B. de Sousa¹, Rafael C. de Lima¹, Felipe A. Pinho¹, Alexandre A. Ziomkowski¹, Leonardo Marques¹, Mariana A. Pinho¹, Diogo Santana¹, Nilo C. L. B. Souza¹
¹Brazilian Institute of Robotic Surgery

Presented By: Lorena Barboza de sousa, Medical Student

Introduction and Objective: Partial nephrectomy is emerging as a crucial technique in the treatment of T1a renal tumors and, when feasible, T1b tumors, by preserving renal function and improving patients’ quality of life. With the advent of robot-assisted surgery, coupled with the use of technology in image-guided surgery through fluorescence imaging with indocyanine green and three-dimensional (3D) image reconstruction, new frontiers are being reached in the precision and effectiveness of these procedures. This case report presented the approach to robot-assisted partial nephrectomy (RAPN) in a context of high complexity utilizing these technologies and aims to report their outcomes.

Methods: A male patient, 46 years old, american society of anesthesiologists II, presenting with a left renal tumor, solid cystic in appearance, located in the upper and middle thirds, 50% endophytic, in contact with the upper segmental artery, which bifurcated approximately 3, 5 cm from the origin of the renal artery in the aorta, nodule size on computed tomography imaging examination 6.8 x 6.5 x 6.4 cm (AP X LL X CC)², renal score 9p. Due to its proximity to important structures, 3D image reconstruction was requested via sketchfab to assist in the surgical procedure. The patient underwent partial nephrectomy with the DaVinci XI system, during which indocyanine green was used to assess renal perfusion and potential bleeding foci.

Results: The surgical time was 120 minutes, with console time 95 minutes, ischemia time 13 minutes, blood loss 100 ml, without intraoperative or postoperative complications. Length of hospital stay was 1 day, and the patient presented 2 months after the procedure with preserved renal function and no recurrence. Size on pathology 7.5 x 5.8 x 5.7 cm (AP X LL X CC)³ and showed negative surgical margins.

Conclusions: The incorporation of 3D reconstruction and indocyanine green played a fundamental role in the successful conduct of partial nephrectomy and the postoperative phase. The combination of these technologies allowed for a more precise understanding of anatomy, especially in challenging cases such as the one reported here. As technology advances and becomes more accessible, its application is likely to become increasingly common in the planning and execution of complex surgeries. No financing.

V8-03 Case report: High-complexity robot-assisted partial nephrectomy utilizing indocyanine green for excision of 8 tumors

Lorena Barboza de sousa¹, Rodrigo B. Silvão¹, Lorena B. Sousa¹, Rafael C. Lima¹, Felipe A. Pinho¹, Alexandre A. Ziomkowski¹, Leonardo M. Calazans¹, Diogo Santana¹, Hamilton F. Filho², Pedro L. C. Ferreira², Nilo C. L. B. Souza¹
¹Brazilian Institute of Robotic Surgery, ²brazilian institute of robotic surgery

Presented By: Lorena Barboza de sousa, Medical Student

Introduction and Objective: The robot-assisted partial nephrectomy (RAPN) in the treatment of T1a and, when feasible, T1b renal tumors, aiming to preserve renal function and improve patients’ quality of life, has become a consolidated practice. The advancement of RAPN, combined with the technology of image-guided surgery using fluorescence with indocyanine green, opens new perspectives in the precision and efficacy of this procedure. This case report with video aims to
demonstrate the application and results of this innovative approach in a high-complexity scenario, with a patient presenting multiple tumors and distorted anatomy.

**Methods:** A male patient, 49 years old, American Society of Anesthesiologists I, with a previous RAPN in the right kidney 3 years ago, present with renal tumors on the left side, renal score 9p. Underwent RAPN with the DaVinci XI system, and retroperitoneal lymphadenectomy was performed. During the procedure, indocyanine green was used to assess renal perfusion and possible bleeding foci. Surgical fragments were sent for pathology.

**Results:** The surgical time was 190 minutes, with console time of 140 minutes, ischemia time of 29 minutes, estimated blood loss of 600ml, without intraoperative and postoperative complication, 2 days of hospital day. The patient presented 3 months after the procedure with preserved renal function, without recurrence. Pathology showed 1 of the 8 tumors with compromised margins. All 8 tumors classified as chromophobe renal cell carcinoma, with the following sizes: 0, 5cm, 0, 6cm, 0, 5cm, 1, 0cm, 1, 7cm, 2, 1cm, 2, 5cm, and 5, 8cm. Retroperitoneal lymphadenectomy, free of neoplasia.

**Conclusions:** The ability of RAPN to provide an expanded view of anatomical structures, together with the potential of indocyanine green to provide real-time information on renal perfusion, contributes to the excellent results achieved in this case. In conclusion, the combination of these two technologies allows for an effective and safer approach for the patient and surgeon in high-complexity partial nephrectomy. No financing.

**V8-04 Ureteral Stricture Disease After Mitomycin Gel Treatment**

Emeka Udedibia\(^1\), Sarah Razavi\(^1\), Gregory Mullen\(^1\), Arun Rai\(^1\), Tareq Aro\(^1\), David Hoenig\(^1\), Arthur Smith\(^1\), Charan Mohan\(^1\), Jared Winoker\(^2\), Zeph Okeke\(^3\)

\(^1\)Smith Institute for Urology at Northwell Health, \(^2\)Lenox Hill Hospital, Department of Urology

Presented By: Emeka Udedibia

**Introduction & Objective:** We present a comprehensive case review highlighting the complications and management of ureteral stricture disease following treatment with mitomycin for pyelocalyceal solution (mitomycin gel) for recurrent bilateral upper tract urothelial carcinoma (UTUC). This case underscores the importance of early identification and management strategies for ureteral strictures post-chemotherapy after mitomycin gel treatment to preserve renal function.

**Methods:** A 67-year-old male with a 15-year history of bilateral UTUC presented with recurrent disease and underwent mitomycin gel treatment. Initial management included percutaneous tumor resections, multiple laser ablations, resections, and topical chemotherapies. Post-mitomycin gel treatment surveillance identified ureteral strictures, which were initially managed with balloon dilation and ureteral access sheath placement for necrotic tissue removal. The patient’s treatment course, including imaging and pathology findings, informed the decision-making process.

**Results:** Following mitomycin gel treatment, ureteroscopies revealed significant ureteral strictures, necessitating intervention. A Mag3 renal scan with furosemide showed an 11% function in the right kidney. Considering the decreased renal function and ureteral strictures, a decision was made to proceed with a radical nephroureterectomy. Final pathology revealed acute and chronic inflammation without evidence of malignancy. This case highlights the potential risk of advanced ureteral stricture disease after mitomycin gel treatment, resulting in loss of kidney function, and the critical role of functional renal imaging in treatment decisions.

**Conclusions:** Ureteral stricture disease after mitomycin gel treatment presents a significant challenge in the management of recurrent bilateral UTUC. Our findings emphasize the need for vigilant post-treatment surveillance and the potential necessity of early surgical intervention to manage complications and preserve renal function. Early identification and management of ureteral strictures are vital to optimizing patient outcomes.
surgery. This study aims to demonstrate the safety and feasibility of robotic transperitoneal adrenalectomy by comparing its surgical outcomes to those of laparoscopic adrenalectomy.

Methods: A retrospective review identified patients who underwent adrenalectomy by either robot or laparoscopic approach from 2013-2023. Our institution acquired the da Vinci Xi surgical system in 2018. Clinical and perioperative outcomes (operative time, length of stay, estimated blood loss, and conversions) were compared.

Results: Between 2013-2023, 52 patients underwent minimally invasive adrenalectomy at our institution (36 robotic vs 16 laparoscopic adrenalectomy). The two groups were similar except for a higher percentage of female patients in the robotic group (table 1). Operative times were significantly shorter in the robotic group compared to laparoscopic group (174 min vs 243 min, p < 0.0001). There was a trend of earlier discharge in the robotic compared to laparoscopic group and more patients were discharged from the hospital within 2 days in the robotic group (94% vs 62%, p = 0.007). There was also a trend towards lower blood loss in the robotic group with more cases having less than 50 cc EBL (89% vs 62%, p = 0.05). Two cases were converted to open in the laparoscopic group vs none in the robotic group. For both groups, there were no intraoperative complications and no readmissions within 30 days of discharge.

Conclusions: Our findings support the potential advantages of robotic adrenal surgery compared to laparoscopic surgery to include shorter operative time, shorter hospital stay, and less blood loss. Robotic adrenal surgery is a safe and effective alternative to laparoscopic surgery that should be included in the armamentarium of the minimally invasive urologic surgeon.

Source of Funding: None.

V8-08 Intraoperative ultrasound guided non bisecting technique for robotic nephron sparing surgery in endophytic tumours of kidney

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Presented By: Dipak Rajyaguru, Consultant Urologist

Introduction and Objectives: Nephron sparing surgery is standard of care in T1 tumours of the kidney. Completely endophytic tumors are challenging to treat by any approach. Precise localization of tumor, saving maximum renal parenchyma and achieving trifecta outcomes is often difficult. Intraoperative ultrasound is mandatory to localize these tumours intraoperatively. After marking the extent and depth of tumor by ultrasound, the overlying parenchyma is incised in a linear fashion over the tumour. After visualizing the tumor margins, parenchyma is incised over the kidney, tumour is seen and, enucleation or enucleoresection is performed to remove the tumour. In this technique, there is a small risk of entering the tumor and having a positive margin. To prevent this, we report the technique of removing the overlying parenchyma entirely and resecting the tumor from the sides circumferentially.

Materials and Methods: A 60 year old man presented with a 2.7*2.7*1.7 cm right renal upper polar solid, enhancing mass which was completely endophytic. He had no symptoms and the mass was detected during health checkup. A robotic partial nephrectomy was planned using a 5 port transperitoneal approach using the Da Vinci Xi system. After marking the renal

V8-07 Transperitoneal Laparoscopic Resection of Paraaoortic Paraganglioma: A Case Presentation

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Presented By: Altug Tuncel, MD, Prof., FEBU

Introduction: Paraganglioma, also called as extra-adrenal pheochromocytoma, is a chromaffin cell located at various sites along the sympathetic/parasympathetic chain, ranging in incidence from 0.2-1/100,000. The gold standard treatment for paraganglioma is surgical resection, and overall survival after treatment is similar to the normal population. In the present case report, we present the feasibility of transperitoneal laparoscopic resection of paraaoartic paraganglioma.

Presentation of the case: A 39-year-old male patient was referred from Endocrinology and Metabolism Diseases Clinic for a left paraaortic paraganglioma. In his medical history, there was arterial hypertension, sweating and palpitations lasting for a 2-year. Diagnostic laboratory parameters were in normal ranges, except for 24-hour urine collection for normetanephrine (patient’s result: 980.41 mcg/L; normal range: 88-444) and plasma normetanephrine (patient’s result: 1749.78 pg/ml; normal range: 12-61). Abdominal computed tomography showed a lesion 36 mm in diameter with an irregular contrast enhancing portions solid mass at left periaortic area. Iodine-123 metaiodobenzilguanidin scintigraphy showed an uptake in the left paraaortic lesion. In light of above findings, the mass was excised via laparoscopy without complication. The operative time and estimated blood loss were 35 minutes and 30 cc, respectively. The patient was discharged uneventfully on the postoperative second day. Histopathological examination was consisted with paraganglioma. The patient is still alive with no health problems or recurrence for the last 15 months.

Conclusion: We consider that transperitoneal laparoscopic excision could be safely applied in patients with paraaortic paraganglioma.

V8-07 Transperitoneal Laparoscopic Resection of Paraaoortic Paraganglioma: A Case Presentation

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1University of Health Sciences School of Medicine, Ankara State Hospital, Department of Urology, 2University of Health Sciences School of Medicine, Ankara State Hospital, Department of Pathology

Presented By: Altug Tuncel, MD, Prof., FEBU

Introduction and Objectives: Nephron sparing surgery is standard of care in T1 tumours of the kidney. Completely endophytic tumors are challenging to treat by any approach. Precise localization of tumor, saving maximum renal parenchyma and achieving trifecta outcomes is often difficult. Intraoperative ultrasound is mandatory to localize these tumours intraoperatively. After marking the extent and depth of tumor by ultrasound, the overlying parenchyma is incised in a linear fashion over the tumour. After visualizing the tumor margins, parenchyma is incised over the kidney, tumour is seen and, enucleation or enucleoresection is performed to remove the tumour. In this technique, there is a small risk of entering the tumor and having a positive margin. To prevent this, we report the technique of removing the overlying parenchyma entirely and resecting the tumor from the sides circumferentially.

Materials and Methods: A 60 year old man presented with a 2.7*2.7*1.7 cm right renal upper polar solid, enhancing mass which was completely endophytic. He had no symptoms and the mass was detected during health checkup. A robotic partial nephrectomy was planned using a 5 port transperitoneal approach using the Da Vinci Xi system. After marking the renal
parenchymal margins and assessing tumour depth by intraoperative ultrasound, a circumferential incision was kept on the renal parenchyma just beyond the tumour margins. Renal artery and vein was clamped by bulldog clamps. The renal parenchymal incision was deepened and partial nephrectomy was completed by blunt and sharp dissection. Renal parenchyma overlying the tumour was removed along with the specimen. Renorraphy was done in two layers using 3-0 and 2-0 quill sutures by sliding week clip technique. Warm ischemia time was 32 minutes.

**Results:** Patient was discharged on 3rd postop day with drain in situ. Drain was removed on 6th Postop day. There were no intraoperative or postoperative complications. Histology showed a clear cell renal cell carcinoma grade 2 with negative margins.

**Conclusions:** Using a non bisecting technique, guided by intraoperative ultrasound, a circumferential incision around the tumour followed by partial nephrectomy seems to be oncologically safer with less chances of positive margins when compared to incising the parenchyma over the tumour and enucleating it. The loss of a few more nephrons in this technique would be less harmful than a positive margin and risk of recurrence.

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**V8-10 Case Report: Adrenal Preservation in Bilateral Clear Cell Carcinoma Recurrence with robot-assisted**

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**Presented By:** Lorena Barboza de souza, Medical Student

**Introduction and Objective:** In the face of complex conditions such as clear cell carcinoma in the adrenal glands, robotic surgery emerges as an advantageous option compared to laparoscopic and open surgery techniques. In this scenario, the ability to preserve a sufficient amount of adrenal tissue to avoid postoperative hormonal deficiency is a significant concern. Studies suggest that maintaining only 10-15% of adrenal tissue may be sufficient to prevent such deficiency, highlighting the need for precision and efficacy of the robotic approach. This case report aims to illustrate the applicability and benefits of robot-assisted adrenalectomy in a clinical context of extreme complexity, involving bilateral recurrence of adenocarcinoma.

**Methods:** A 70-year-old male patient with a history of clear cell renal cell carcinoma, Fuhrman grade 2, presented with bilateral recurrence in the adrenal glands after 2 years and 3 months. He underwent total robotic adrenalectomy on the left side, following access to the left retroperitoneum and identification of the tumor. For better visualization of the tumor on the right side, a change in position was opted, with the performance of a partial adrenalectomy accompanied by careful hemostasis review, without any bleeding occurrences. The surgical intervention was concluded with retroperitoneal lymphadenectomy.

**Results:** Resection with the described surgical technique was performed on both sides, totaling 146 minutes. The console operation time was 47 minutes for the left side and 58 minutes for the right side. Estimated blood loss during the procedure was 80ml. Without perioperative and postoperative complications, the patient was discharged after 3 days. The final histology revealed the following results: left adrenal tumor - 5.0 cm clear cell carcinoma. Angiolympathic invasion not detected. Surgical margins free of neoplasia. Right adrenal tumor - 3.3cm clear cell carcinoma, no angiolympathic invasion detected.

**Conclusions:** The robot-assisted surgical approach proved beneficial in both partial and total resection in adrenalectomy, achieving the goal of preserving adrenal function, thus avoiding the need for hormonal replacement therapy and postoperative complications compared to laparoscopic and open approaches. No financing.
VIDEO SESSION 8

V8-11 CT based 3D reconstruction for complex and endophytic renal tumour
Abhay Khandekar1, nipul Tilva1, Dipak Rajyaguru2, Shyam Mohan3, Hemang Bakshi3, jitendra amlani4
1HCG Cancer Centre, Sola, 2Uro-care Hospital, 3HCG Cancer Centre, sola, 4Uro-Care Hospital, 5Sidhivinayak Hospital, Mininagar

Presented By: Abhay Khandekar, M. ch. (Urology)

Introduction and Objective: Partial nephrectomy has increasingly been used as a preferred modality of treatment in renal tumours where feasible, using robotic technology. In T1b tumours, between 4 to 7 cm in size, partial nephrectomy can be challenging. Preoperative software-based virtual 3D reconstruction of the renal anatomy and type tumour can help in the planning and execution of a robotic partial nephrectomy in such cases. The objective of this video is to demonstrate the utility of high-quality preoperative 3D reconstruction in complex T1b renal tumours.

Method: We present a video of a 29-year-old female patient who had an incidentally detected 2.5 cm complete endophytic upper pole lesion. Preoperatively 3D reconstruction of his CECT images was done. The 3D model was cognitively used during the robotic resection of the lesion. Renal hilar vessels were disected out completely. As much as possible hilar dissecion was completed by using 3d reconstruction and all supplying vessels and calyces were identified and taken care of. At last bulldog clamps were used for clamping the renal artery and vein. Resection was performed and parenchymal renorrhaphy was done in two layers. Warm ischemia time was 17 minutes. Console time was 63 minutes. Intraoperative usage of 3D reconstructed images was correlated during Robot-Assisted Partial Nephrectomy(RAPN) with various anatomical parameters like arterial, venous and calyceal anatomy. Apart from this depth and margin of resection and remnant kidney volume can be assessed.

Results: The patient was discharged on POD 2. There were no post-operative or intraoperative complications. Final histology showed a carcinoid tumour with negative surgical margins. We used this technique in 8 patients with T1b complex renal hilar tumours and 5 complete endophytic tumours, evaluated the role of 3D reconstruction in the management of such cases. We were able to perform Partial nephrectomy in 6 cases successfully according to the prep plan. But in 2 cases which were scheduled for radical nephrectomy, intraoperative use of this software made it possible to perform partial nephrectomy.

Conclusion: We were able to conclude that 3-D reconstruction software helps us by providing a clearer cognitive map for intraoperative navigation, and a better understanding of anatomy which leads to reduced warm ischemia times and postoperative complications like urine leak and haemorrhage. The main advantage is a reduced rate of change of surgical planie conversion from partial to radical nephrectomy in borderline T1b complex tumours.

V8-12 Haemorrhage during laparoscopic partial nephrectomy despite adequate hilar clamping:Lesson Learnt
Jitendra Amlani2, Hemang Bakshi1, Vipul Tilva1, Shyam Mohan1, Dipak Rajyaguru6

"HCG Cancer Centre, 2Urocare Hospital"

Presented By: Jitendra Amlani, MCh (Urology)

Introduction and Objectives: Minimally invasive partial nephrectomy is the standard of care in T1 renal tumours. One of the key steps in laparoscopic partial nephrectomy is complete hilar dissection to take control of all hilar vessels for a bloodless field during resection. We report a case of significant renal parenchymal bleeding during a laparoscopic right partial nephrectomy despite adequate hilar control. We describe the steps taken for correction and completion of procedure. We have proposed the possible reasons for the event. Our objective is to highlight an uncommon scenario where significant bleeding can occur during laparoscopic partial nephrectomy despite adequate control of hilar vessels and the steps to manage when it does occur.

Methods: A 36 year old man presented with an incidentally detected right renal mass which was 3 by 2.8 by 2.5 cms in size. The mass was heterogenously enhancing, partially exophytic and the contralateral kidney showed normal function. There was a single renal artery and a single renal vein. Laparoscopic partial nephrectomy was begun using a 4 port transperitoneal approach in lateral position. After medial mobilisation of the right colon, the duodenum was kocherised to expose the IVC and renal hilum. The renal vessels were meticulously dissected and the tumour was defined after defatting of the kidney. Renal artery and vein were clamped using laparoscopic bulldog clamps. resection of the tumour was begun by scissors keeping a small circumferential renal parenchymal margin. As the resection started, resection, significant bleeding occurred. The vein was declamped and an additional bulldog was applied across the artery. The hilum was checked for a missed artery. Due to continuous bleeding, open conversion of surgery was done. A satinsky clamp was applied en masse across the hilum and partial nephrectomy was completed expeditiously. Renorrhaphy was done in two layers.

Results: Postop course was uneventful and patient was discharged on 3rd postop day. Despite adequate hilar clamping, significant bleeding during laparoscopic partial nephrectomy can be because of the following reasons: Poor quality of bulldog clamps. Significant atherosclerosis of vessels due to medical conditions like homocystenemia

Conclusion: Heavy bleeding can occur after adequate hilar clamping in laparoscopic partial nephrectomy. Open conversion may be needed to complete the case expeditiously and the surgical team should be prepared for this event.

V8-13 Robotic Assisted laparascopic resection of giant left pheochromocytoma
Hao Zhang1
1The First Hospital Of China Medical University

Presented By: Hao Zhang, PHD

A 22 years old male patients who were diagnosed as a giant left pheochromocytoma. The patient underwent a Robotic assisted laparascopic resection. The mass was located closed with the splenic artery
VIDEO SESSION 9: RECONSTRUCTION: LOWER TRACT

V9-01 Robotic Left Ureteral Reimplant with Left Peritoneal Hitch and Right Appendiceal Interposition for Bilateral Complex Radiation-Induced Ureteral Strictures

Carol Feng1, Daniel Roadman1, Morgan Salkowski1, Jacob Emerson1, Alexander Chow1

1Rush University Medical Center

Presented By: Carol Feng, MD

Introduction: Radiation-induced ureteral strictures create complex reconstructive dilemmas depending on the length of viable ureter. We present a 39-year-old female with bilateral mid-ureteral strictures who elected to proceed with robotic reconstruction.

Methods: The robot was docked in a pelvic configuration. Bilateral ureters were identified with fibrotic rings. Extensive ureterolysis assisted by intra-ureteral indocyanine green was performed just proximal to the iliac vessels where the ureters had radiation-induced damage. A peritoneal hitch was performed on the left allowing primary ureteral reimplantation. The right ureter would not reach, but a long appendix was available for interposition. A 45 mm load stapler was fired across the base of the cecum, preserving the appendiceal artery. The staple line on the appendix was excised, and after spatulating the right ureter, an anastomosis was performed. With the appendiceal interposition, we were able to perform a tension-free anastomosis to the bladder with running 4-0 Monocryl. Bilateral ureteral stents were placed during anastomoses.

Results: Operative time was 4 hours and 55 minutes. Postoperative course was complicated by urosepsis requiring right nephrostomy tube on post-operative day 3 (POD3) as well as ileus secondary to intraabdominal abscess managed with percutaneous drain placement. She was discharged on POD14. Nephrostomy tube, stents, and drain were removed as outpatient.

Conclusions: This video demonstrates robotic techniques to definitively reconstruct long, complex bilateral radiation induced strictures. While initial post-operative course was prolonged, with adequate bladder capacity a left psos hitch and right appendiceal interposition offers a reconstructive option, even in severely fibrotic and radiated fields.

V9-02 Robotic assisted augmentation ileo-cystoplasty in genito-urinary tuberculosis-Point of technique

Victor Coelho5, Abhishek Singh5, Arvind Ganpule5, Ravindra Sabnis5, Mahesh Desai5

1Muljibhai Patel Urological Hospital, Nadiad, 2Vice Chairman Muljibhai Patel Urological Hospital Nadiad, 3Muljibhai Patel Urological Hospital Nadiad, 4Managing Trustee Muljibhai Patel Urological Hospital, Nadiad, 5Urology Resident Muljibhai Patel Urological Hospital Nadiad

Presented By: Victor Coelho, MBBS MS DNB

Introduction and objectives: A small proportion of patients with genitourinary tuberculosis (GUTB) have severely damaged kidneys and small capacity bladders and frequently require reconstructive surgeries which are done using a minimally invasive approach. Herein, we present a series of 3 cases and a video demonstration of a robotic-assisted augmentation ileocystoplasty.

Case 1: A 48 year man presented with complaints of lowgrade fever with increased frequency of micturition. His urine MGIT and Gene Xpert test were positive. A renogram showed a non-functioning right kidney and a left normal functioning kidney. On completion of ATT, we counselled him for the need for a right laparoscopic nephrectomy along with an orthotropic intra-corporeal robot-assisted ileal augmentation

Case 2: A 47 year old lady presented with complaints of burning micturition, and increased frequency 1 year ago. She was diagnosed with GUTB and had completed 6 months of ATT 1 year ago. A CECT showed bilateral normal kidneys with a small capacity bladder. She underwent a robotic assisted ileocystoplasty

Case 3: A 43 Year male, presented with increased frequency since last 3 months. He was diagnosed with GUTB. He was subsequently started on ATT which he continued for 6 months. 3 months following completion of the ATT, he underwent a robotic assisted ileo-cystoplasty.

Results: Steep Trendelenberg position was given and Pneumoperitoneum created. 7 port insertion at the level of umbilicus placed. Sigmoid colon and bladder mobilised adequately, and bladder was bivalved. Loop of ileum about 30cm in length, approximately 15 cm away from IC junction, separated with the help of bowel stapler. Isolated bowel loop detubularised completely at antimesenteric border. Bowel folded on itself to form “U shape” shaped manner. Inner border of “U” sutured to each other with help of V-loc 3-0. Both ends of this bowel sutured to margin of bladder to form closed cavity. 24 Fr Silicon Foley catheter placed. Bladder filled upto 150 ml and checked for leak. Adequate hemostasis achieved. Check scope revealed no bleeding. The operative duration in our group of patients ranged from 240 to 300 minutes. The per urethral catheter was removed on the 12th operative day in the first case and on the 14th operative day for the other two cases, and all the patient were discharged on postoperative day 15. The first and second patient are voiding spontaneously after 6 months of follow up, keeping a negligible post-void residue. The 3rd patient was not able to void to completion one month post-operatively and needed self-catheterization. He then developed pubic bone osteomyelitis which was managed with culture sensitive antibiotics. All the 3 patients had bowel recovery after 3-5 days post operatively and none on them developed any wound site complications.

Conclusion: The robot assisted ileal bladder augmentation is feasible, offering the advantages of mini-invasive techniques.

V9-03 Extraperitoneal Single-Port Robotic-Assisted Excision of Eroded Bladder Mesh

Arun Rai1, Alexandra L. Tabakin1, Robert Chang1, Jared Faith1, Matthew Mikula1, Vinay Patel1, Wai Lee1

1Northwell Health

Presented By: Arun Rai, MD

Ravi Munver1, Ernest Tong1, Yu Zhang1
1Hackensack University Medical Center

Presented By: Ravi Munver, MD, FACS

Introduction and Objective: Midurethral mesh slings are an excellent long-term treatment option for stress urinary incontinence. However, mesh erosion into the bladder wall is a potential known complication. Our objective is to describe a method for excision of mesh eroded into the bladder using an extraperitoneal approach with the single-port (SP) robot.

Methods: A 63-year-old female patient with a history of retro-pubic midurethral sling presented with recurrent UTIs and dysuria. She was found to have a mesh erosion within the bladder during a cystolitholapaxy of a bladder stone. Preoperative cystoscopy confirmed the presence of a new bladder stone overlying meshed within the left lateral bladder wall. The patient underwent a SP extraperitoneal robotic-assisted excision of the eroded mesh and bladder stone removal.

Results: A 4 cm curvilinear incision was made lateral to the umbilicus. After dissecting through subcutaneous tissue and fascia, the space of Retzius was bluntly dissected. The small Intuitive SP Access Port was inserted, and the Da Vinci SP robot was docked. The space of Retzius was further developed, and the mesh was visualized and dissected off the bladder. Intraoperative cystoscopy was performed to identify the bladder stone and the appropriate location for a cystotomy. Once the cystotomy was made, the mesh was excised from the bladder, and the calculus was removed through the cystotomy. The bladder was closed in two layers and back-filled with 250 mL of methylene blue diluted in normal saline with no fluid extravasation. Total operative time was 150 minutes. The patient had an uneventful postoperative course and did not require narcotics. On postoperative day 13, a cystogram showed no extravasation, and the Foley catheter was removed. The patient has had no recurrent UTIs or bothersome lower urinary tract symptoms since surgery.

Conclusion: An extraperitoneal approach for excision of mesh eroded into the bladder is feasible with the SP robot by insufflating the space of Retzius. This approach can be safely performed without the need for steep Trendelenburg positioning. Excellent wound cosmesis and postoperative recovery can be achieved with this method.

V9-05 Techniques for Ureteral Reimplantation for Distal Disease

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1Temple University Hospital, 2Hackensack Meridian Health, 3NYU Langone Medical Center

Presented By: Kelley Zhao, MD

Introduction: Transecting and non-transecting ureteral reimplantation, such as refluxing, non-refluxing, and side-to-side techniques, are interventions available for the treatment of distal ureteral disease. We demonstrate our technique and outcomes of various distal ureteral reimplantation approaches including refluxing, non-refluxing, and side-to-side reimplantation for surgical management of distal ureteral disease.

Methods and Materials: We retrospectively reviewed our multi-institutional Collaborative of Reconstructive Robotic Ureteral Surgery (CORRUS) database to identify those who had undergone a non-refluxing, refluxing, or side-to-side ureteral reimplantation between 2012 to 2023. The specific technique utilized was determined based on clinical history and intraoperative findings. Our primary outcome was surgical success, defined as the absence of postoperative flank pain, absence of obstruction on radiographic imaging, and lack of subsequent interventions for ureteral disease recurrence.

Results: 237 patients were included in our study, 155 (65.4%) of whom underwent refluxing, 61 (25.7%) side-to-side, and 21 (8.9%) non-refluxing reimplantation (Table 1). There was a higher proportion of patients in the side-to-side reimplantation group who had history of pelvic radiation (32.8%) and history of prior ureteral intervention (37.7%). Overall, median operative time was 181.5 minutes (IQR 137.5-249.3) and median estimated blood loss was 50 milliliters (IQR 25-100). Major
Methods: The repair was performed with the single port robot into retention requiring indwelling catheterization. Cystoscopy at that time showed a patent, healing bladder neck and healing cystotomy closure. Conclusion: The transvesical approach using the single port robot is a minimally-invasive option for repair of bladder neck contracture. While this patient had a short stricture, longer or denser strictures may require more complex reconstruction such as Y-V-plasty or even prostatectomy. However, the single port robot would also facilitate these intraoperative adjustments.

Results: The procedure time was 106 minutes with 55 minutes of console time and little blood loss. The pathology showed urothelium with inflammation and fibrosis. The patient was discharged postoperatively with an indwelling catheter, which was removed on post operative day 6. The patient was able to void to completion. At one month follow up, he was continent. Cystoscopy at that time showed a patent, healing bladder neck and healing cystotomy closure.

Conclusions: Robotic ureteral reimplantation techniques may be utilized for management of distal ureteral disease. The desire to perform reimplanting, non-reimplanting, versus side-to-side reimplants is tailored to each patient depending on their past medical history, and their presentation both pre-operatively and intra-operatively.

V9-06 Single port robotic transvesical repair of bladder neck contracture

Courtney Yong1, Ethan Ferguson1

1Indiana University

Presented By: Courtney Yong, MD

Introduction: The single port robot has been shown to have utility in the transvesical space for simple and radical prostatectomy. This video shows a single port, transvesical approach to a bladder neck contracture repair. The patient is a 66 year old male with a history of BPH and two prior TURPs. He developed a bladder neck contracture and underwent an incision of the bladder neck. However, his symptoms returned, and he went into retention requiring indwelling catheterization. Cystoscopy showed a short, 16Fr bladder neck contracture. He elected for a robotic bladder neck contracture repair.

Methods: The repair was performed with the single port robot using the transvesical approach. We exchanged his indwelling catheter and made a 3 cm suprapubic incision, about 1.5 cm superior to the pubic bone. We accessed the space of Retzius through the midline, filled the bladder, and made a small cystotomy. The access port was placed directly into the bladder. We dissected circumferentially around the contracture and carried the dissection distally toward the urethra. We excised the contracture once we had reached the verumontanum. The urothelium was advanced down to the urethra using two running 3-0 stratafix sutures. A catheter was placed, the bladder was closed in two layers, and the fascia was closed.

Results: The overall operative time was 240 minutes. Estimated blood loss was minimal. No complications were noted and the patient was discharged on POD 3. The Foley and stent were removed at 1 and 4 weeks post-surgery and no postoperative complications or readmissions within 90 days post-surgery.

Conclusions: SP robotic extraperitoneal ureteral reimplantation is a safe and feasible option for lower tract reconstruction. The LAA approach can be feasible access for extraperitoneal surgery to anatomical organs while avoiding intraabdominal adhesions in patients with a hostile abdomen. The following surgical steps are described: (1) Initial access and extraperitoneal space development, (2) Port placement and docking, (3) Dissection of the distal ureter and the bladder, (4) Ureteral transection and ureteroneocystostomy.

Results: The overall operative time was 240 minutes. Estimated blood loss was minimal. No complications were noted and the patient was discharged on POD 3. The Foley and stent were removed at 1 and 4 weeks post-surgery and no postoperative complications or readmissions within 90 days post-surgery. The LAA approach can be feasible access for extraperitoneal surgery to anatomical organs while avoiding intraabdominal adhesions in patients with a hostile abdomen. The LAA approach demonstrates some potential benefits including minimizing the risk of ileus, improved cosmesis, and decreased postoperative pain.

V9-07 Single-Port (SP) Robotic Extraperitoneal Ureteral Reimplantation Using Low Anterior Access (LAA)

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Presented By: Jaya Sai Chavali, MD, MBBS

Introduction: We aim to describe the technique and feasibility of our extraperitoneal (EP) single-port ureteral reimplantation using low anterior access (LAA) utilizing the da Vinci single-port (SP) robotic surgical system. LAA is defined as a 3cm low anterior transverse incision 2-3 finger breadths above the superior pubic ramus on the side of the surgery.

Methods: We demonstrate our extraperitoneal technique in a 61-year-old male with a left distal ureteric stricture and a prior history of multiple abdominal surgeries. We have elected to perform an extraperitoneal ureteral reimplantation given the concern for a hostile abdomen. The following surgical steps are described: (1) Initial access and extraperitoneal space development, (2) Port placement and docking, (3) Dissection of the distal ureter and the bladder, (4) Ureteral transection and ureteroneocystostomy.

Results: The overall operative time was 240 minutes. Estimated blood loss was minimal. No complications were noted and the patient was discharged on POD 3. The Foley and stent were removed at 1 and 4 weeks post-surgery and no postoperative complications or readmissions within 90 days post-surgery. The LAA approach can be feasible access for extraperitoneal surgery to anatomical organs while avoiding intraabdominal adhesions in patients with a hostile abdomen. The LAA approach demonstrates some potential benefits including minimizing the risk of ileus, improved cosmesis, and decreased postoperative pain.

V9-08 Single-Port Robot-Assisted Transvesical Diverticulectomy of Bladder Diverticulum

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Presented By: Mubashir Billah, MD
VIDEO SESSION 9

Introduction and Objective: We present Single-Port Robot Assisted Transvesical Diverticulectomy of Bladder Diverticulum. The single-port (SP) system offers a minimally invasive alternative with potentially reduced complications and quicker recovery times. This video demonstrates the efficacy and safety of the SP robotic-assisted transvesical diverticulectomy for large bladder diverticulum.

Methods: The patient is a 63-year-old male with large left bladder diverticulum on left lateral wall. The patient has benign prostatic hyperplasia with a history of transurethral resection of the prostate. Cystoscopy demonstrated a large bladder diverticulum, and the urodynamic study demonstrated weak detrusor function. The patient has a history of recurrent urinary tract infections and episodes of urinary retention requiring Foley catheter placement. The patient elected to undergo a diverticulectomy to reduce symptoms of urinary retention and reduce urinary stasis in the diverticulum.

Results: The total robotic operative time was recorded at 75.1 minutes. The patient was discharged on the first postoperative day (POD1) with a Foley catheter, which was removed successfully on POD7. Postoperative assessments showed a significant improvement in the post void residual volume, decreasing from 400cc preoperatively to 120cc. No intraoperative complications were reported.

Conclusions: The use of a single-port robotic-assisted approach for transvesical diverticulectomy is a reliable and effective treatment for bladder diverticulum, offering potential advantages in terms of reduced invasiveness, faster recovery, and minimal postoperative complications. This technique allows for precise diverticulectomy excision with excellent clinical outcomes, showcasing the SP system’s capability as a valuable tool in urological robotic surgery.

V9-09 Urethral Dilation Using a Urethral Drug-Coated Balloon

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Presented By: David C Dalton, MD

Introduction and Objective: Management of urethral strictures can be challenging, especially in patients who are not good candidates for formal reconstruction. Fortunately, the development of new devices, such as urethral drug coated balloons, add options for urologists and patients. In this video, we depict the treatment of a recurrent membranous urethral stricture using a urethral drug coated balloon (Optilume®) in a patient with prostate cancer previously treated with radiation.

Methods: A patient with prostate cancer previously treated with radiation developed a recurrent membranous urethral stricture. This is treated by performing urethral balloon dilation using a urethral drug coated balloon (Optilume®). The steps of the procedure are shown and discussed, as well as some special considerations for the Optilume® system.

Results: The membranous urethral stricture is successfully dilated in this video.

Conclusion: Urethral balloon dilation using a urethral drug coated balloon is a viable option for patients who are not good candidates for formal reconstructive procedures.

V9-10 Laparoscopic Augmentation Cystoplasty in a child with Solitary kidney and Poor Compliant Unsafe Bladder

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Presented By: Chandra Mohan Vaddi, MCh Urology

Introduction: Augmentation cystoplasty is used in the treatment of poor compliant, low capacity and refractory overactive bladder. We present our experience of laparoscopic augmentation cystoplasty in 11 years female child with dysfunctional voiding and non-compliant bladder with right solitary function kidney and right VUR grade 3.

Materials and Methods: 11 years female child presented with storage LUTS and urge incontinence with recurrent UTIs, on evaluation MCU suggestive of Right VUR grade 3 and left poor functioning kidney. Urodynamic study was suggestive of Dysfunctional voiding, high-pressure bladder with impaired compliance. She was treated with double anticholinergics, CIC and antibiotic prophylaxis. Still, the child had recurrent UTIs and persistent LUTS, urge incontinence, so augmentation cystoplasty was done. Laparoscopic Ileo cystoplasty was done using 30 cm ileum, 15 cm proximal to ileocecal value and reconfigured into U shape, Re configured bowel was anastomosed to the bivalved native bladder

Results: There were no intraoperative and postoperative complications. Operative time 150 mins, blood loss 60 ml, postoperative ileus for 3 days, liquid started on 3rd pod, patient tolerated soft diet on 4th POD. The drain was removed on 3rd POD, foley catheter was removed after 2 weeks. Post-operative cystogram good capacity bladder with the resolution of reflux and anticholinergic were stopped

Conclusion: Augmentation cystoplasty is a safe procedure to increase the functional capacity of a small contracted, poorly compliant bladder, allow patient to preserve renal function and to achieve continence, enable reflux resolution and stoppage of anticholinergics.

V9-11 Single Position Robot Assisted Laparoscopic Left Ileal Ureter Interposition

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1MPUH Nadiad

Presented By: Ashlesh Bhavsar, MD

Introduction and Objective: To showcase a video demonstration of a single position ileal ureter interposition using a fourth generation Da Vinci X system

Methods: A 36 year old female with a total left ureteric avulsion was planned for ureteric replacement using ileum. We performed an Ante-grade Nephrostogram and cystoscopy which showed complete cut-off of ureter at L2 level. Left ileal ureter interposition was planned. The keys steps were the patient positioning, port placement and camera hopping to ease the bowel harvest and subsequent anastomosis. Patient was positioned in Left 45° flank up and 20° head down. Four robotic ports were positioned parallel to the left iliac blade. Robot was docked...
perpendicular to the left iliac blade. Post dissection, bowel was harvested in the same position, after the camera hopping an additional assistant port from the left subcostal area was used to fire staplers. 15 cm of ileum was isolated and anastomosed to upper ureter and bladder (after bladder was hitched to psoas muscle) Nephrostomy was removed at day 12 and DJ stent removed at the end of 4 weeks.

Results: Procedure was uneventful, total console time was 280 minutes, blood loss was 100 cc. There was no requirement for position change and Re-docking. No blood transfusion was required. Left abdominal drain was removed on 3rd day post-op position change and Re-docking. No blood transfusion was required. The double “J” stent was removed 4 weeks after surgery. Follow-up, the patient’s symptoms were relieved, and the serum creatinine and eGFR were 0.70 mg/dl and 115 L/min respectively. Ultrasound revealed residual mild hydronephrosis. No complications occurred.

Conclusions: Robotic assisted ileal replacement of ureter is safe and feasible using a single dock on a Da Vinci X system. Patient and port position are the key variables. Use of assistant from the left subcostal port to fire the staplers enables the use of bowel in semi-lateral position.

V9-12 Single-Port Robot-Assisted Distal Left Ureterectomy with Ureteral Reimplantation for Treatment of Ureteral Stricture

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Presented By: Mubashir Billah, MD

Introduction: This video will discuss our experiences utilizing single-port (SP) robot-assisted distal left ureterectomy with ureteral reimplantation with bioregenerative tissue wrap for management of left ureteral stricture.

Methods: The patient is a 41-year-old female with left ureteral stricture status post ureteroscopy with history of impacted nephrolithiasis, 3 ureteroscopies and prior stent placement. The patient has persistent hydrourephrosis and flank pain despite the stent placement. CT revealed persistent moderate left hydroureteronephrosis. Renal scan demonstrated equal function bilaterally with delayed excretion on the left side. Pre-operative labs reveal a creatinine of 1.40 and an eGFR of 41. This video demonstrates the steps to successfully completing an SP robotic-assisted distal left ureterectomy with ureteral reimplantation.

Results: In this case, the robotic time was 81 minutes, estimated blood loss (EBL) was 50 milliliters and the length of hospital stay was 1 day. No intraoperative complications were seen, and the patient tolerated the procedure well. An 18 French Foley was placed and was removed on post-op day 6 without incident. The stent was removed at 6-week follow up without incident. The patient is now stent-free with no further renal colic. Post-operative labs reveal a creatinine of 0.88 and an eGFR of over 60. Overall, we have performed a total of 16 SP ureteral reimplantation surgeries in the past with median operative time of 137 minutes (SD 32.7), median estimated blood loss of 25 milliliters, and 0% complication rate within 30 days (Table 1).

Conclusion: SP robot-assisted distal left ureterectomy with ureteral reimplantation presents an effective and safe treatment option for patients with severe ureteral strictures and prior stent failures. A Single Port Ahmed Modification (SPAM) also known as Lower Anterior Access (LAA) allows for either a retroperitoneal or transperitoneal approach with the same incision and more convenient and less traumatic access to mid and distal ureteral strictures. Additionally, in our experience, the da Vinci SPTM surgical system appears to be an effective alternative to its multiport counterpart, with shorter median operating times and EBL and better complication rates. More experience with the SP technique is required to better understand the potential risks and benefits.

V9-13 Robotic Bladder Neck Reconstruction (VY Plasty) for Bladder Neck Contracture After Radical Prostatectomy and Adjuvant Radiation Performed in the Community Setting

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Presented By: Neel Patel, MD, FACS

Introduction and Objective: Bladder Neck Contracture (BNC) is a well-reported complication that can occur after surgery on the prostate for benign or malignant conditions. Urethral dilation or endoscopic management can provide temporizing relief, however recurrence is common. Recurrent strictures can be managed with open surgery by a reconstructive surgeon. With advancements in minimally invasive surgery, management of BNC can easily be accomplished with a robotic VY plasty technique without requiring transfer to a tertiary care center.

Methods: We demonstrate a robotic bladder neck reconstruction using the VY plasty technique performed in the community setting in a 79 year old male with a history of robotic radical prostatectomy followed by adjuvant radiation. Post surgical and post radiation changes can pose a challenge, but identifying pelvic anatomy can minimize complications, operative time, and risk of injury. Flexible cystoscopy at the time of surgery allows the contracture to be easily identified using firefly fluorescence.
**Results:** Our patient tolerated the procedure well and had a non-complicated post-operative course. His pain was well controlled and there was no evidence of a urine leak on postoperative fluid creatinine. He was discharged home on post operative day two having bowel function and tolerating a solid diet. Our operative time was under two hours and estimated blood loss was 50mL.

**Conclusions:** BNC has routinely been difficult to manage with endoscopic techniques often leading to recurrence. Definitive management may require a reconstructive surgeon or transfer to a tertiary care center. Our techniques show that many urologists can safely and successfully manage these complications locally.

**V9-14 Vesicouterine fistula following bilateral uterine artery embolization for refractory post-abortal bleeding: A rare scenario**

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Presented By: Sudheer Devana, MCh Urology

**Introduction:** Vesicouterine fistula (VUF) is the rarest of all urogenital fistulas and it commonly occurs due to iatrogenic injury during cesarean section. Here we present an unusual case of spontaneous VUF which developed following bilateral uterine artery embolization (UAE) done for management of refractory post abortal bleeding.

**Material and Methods:** A 43-year-old female presented to us with severe vaginal bleeding, 6 days following dilatation and curettage done for second trimester abortion. She had persistent vaginal bleeding in spite of vaginal and uterine packing, balloon tamponade of uterus and tranexamic acid injections. Contrast enhanced computed tomography scan showed arterial hypervascular soft tissue with multiple venous channels suggestive of uterine artery malformation for which immediate bilateral UAE was performed using gel foam. After 2 weeks she developed sudden onset of urinary leak per vagina. Cystoscopy showed a large midline fistulous opening in the posterior wall of bladder close to dome communicating with lower uterine segment.

**Results:** The patient underwent robot assisted hysterectomy with fistula repair. The bladder was opened in the region of VUF and was dissected off the lower uterine segment and cervix. Hysterectomy was performed and specimen retrieved through the vagina which was later closed with 2-0 vicryl sutures. Bladder was closed transversely using 2-0 vicryl continuous sutures. Post operative course was uneventful and she was discharged on post operative day 4. Per urethral catheter was removed after 2 weeks and she was presently symptom free.

**Conclusion:** The index case represents an uncommon etiology of VUF which occurred following bilateral UAE done for treatment of refractory post abortal bleeding. Robot assisted repair in such cases offers best outcome with minimal morbidity.

**V9-15 Robotic left ureteral reimplant with psoas hitch**

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Presented By: Courtney Yong, MD

**Introduction:** This video demonstrates a multi-port robotic left ureteral reimplant with psoas hitch. The patient is a 46 year old female who sustained an unrecognized ureteral injury during hysterectomy for endometriosis. She was managed initially with percutaneous nephrostomy tube (PCN) because antegrade stent placement was unsuccessful. Internalization of the PCN was also unsuccessful. She elected for robotic ureteral reimplant.

**Methods:** The patient was positioned in lithotomy with access to the foley catheter, and ports were placed similar to a radical prostatectomy. The left ureter was dissected until an area of thick scar was encountered distally. The unhealthy, scarred portion of the ureter was partially dissected to provide an area of unhealthy ureter to place a clip on the stump. The ureter was dismembered and spatulated until widely patent. When pulling the ureter to the bladder for reimplant, the ureter appeared on some tension; therefore, the bladder was freed from its attachments and a psoas hitch was performed. We used a figure of eight to secure the detrusor muscle to the psoas tendon, and then passed the suture one extra time through the psoas tendon to allow a clip to be placed away from the bladder and prevent erosion. A cystotomy was made, and the ureterovesical anastomosis was completed using two running sutures from each apex. A ureteral stent was placed retrograde, the PCN was removed, and a foley catheter was left at the conclusion of the case.

**Results:** Procedure time was 215 minutes. The patient was discharged the next day with catheter and ureteral stent in place. The catheter was removed on the 9th day after surgery, and the patient has planned follow up at 4 weeks postop for stent removal.

**Conclusion:** A ureteral reimplant with psoas hitch is highly amenable to the robotic approach.