# Poster Session 8: Endourology, BPH (Part 2)
# Monday, July 1, 2024 • 7:00–8:30

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## MP 8.1

### Sarcopenia is highly prevalent but not associated with worse perioperative outcomes in elderly patients following percutaneous nephrolithotomy

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**Introduction:** Sarcopenia is the generalized loss of muscle mass and can be defined by axial skeletal muscle area on cross-sectional imaging. It has been correlated with patient outcomes across many fields, including urologic oncology, and is regarded as an objective measurement of frailty in geriatric patients. Sarcopenia has been linked to risk of nephrolithiasis; however, no studies to date have examined its utility in predicting perioperative risk in endourology. Accordingly, the objective of this study was to determine if sarcopenia can be used as a prognosticator of outcomes after percutaneous nephrolithotomy (PCNL) in a cohort of higher-risk elderly patients.

**Methods:** Patients ≥70 years with cardiovascular disease who underwent PCNL from 2014–2019 at our institution were identified retrospectively. Patients without computed tomography (CT) imaging within one year of surgery were excluded. Sarcopenia was measured using skeletal muscle index (SMI). SMI was calculated by measuring total skeletal muscle (-29 to 150 Hounsfield Units) area at the mid-L3 vertebral body axial cut on CT, divided by height squared. Image analysis was performed using Aquarius iNtuition software. SMI <55 and <39 cm2/m2 was used to define sarcopenia for men and women, respectively.

**Results:** The study cohort consisted of 80 patients, of which 56 (70%) met criteria for sarcopenia, with median SMI 45.1 and 39.6 cm2/m2 for males and females, respectively. There was no difference in mean age between the groups, however, the prevalence of sarcopenia was significantly higher among men compared to women (73.2% vs. 26.8%, p<.0001). There were no significant differences in transfusion rate (7.1% vs. 12.5%), ED readmissions (21.4% vs. 25%), or postoperative complications (28.6% vs. 37.5%) between sarcopenic and non-sarcopenic patients. Length of stay was similar between groups.

**Conclusions:** This is a novel evaluation of sarcopenia as a predictor for outcomes after PCNL in higher-risk elderly patients. While sarcopenia was highly prevalent in our study cohort, it was not associated with increased perioperative complications and was not a predictor for inferior outcomes. Further studies focusing on a more general cohort are warranted and may have value in evaluating how sarcopenia can be used to guide surgical decision-making.

**MP 8.1. Table 1. Patient demographics and perioperative outcomes**

| | Sarcopenic (n=56) | Control (n=24) | *p-value* |
|---|---|---|---|
| **Demographics** | | | |
| Age (years), median (IQR) | 75 (6.2) | 75 (3.0) | .26 |
| Gender, n (%) | | | <.0001 |
| Male | 41 (73.2) | 5 (20.8) | |
| Female | 15 (26.8) | 19 (79.2) | |
| BMI (kg/m$^2$), median (IQR) | 27.1 (3.8) | 32.8 (13) | .001 |
| **Peri-Operative Outcomes** | | | |
| Transfusion, n (%) | 4 (7.1) | 3 (12.5) | .44 |
| Length of stay (days), median (IQR) | 1 (1) | 1.5 (1) | .55 |
| ED readmission, n (%) | 12 (21.4) | 6 (25) | .73 |
| Any post-operative complication, n (%) | 16 (28.6) | 9 (37.5) | .43 |
| Clavien-Dindo Grade >II complication, n (%) | 5 (8.9) | 2 (8.3) | .93 |

## MP 8.2

### Day case Aquablation: First global published experience report in ambulatory surgical center

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**Introduction:** Aquablation, a novel minimally invasive technique using high-velocity waterjet for precise, image-guided prostatic tissue resection, has emerged as a promising approach for BPH management. We sought to investigate the feasibility, safety, and efficacy of same-day discharge (SDD) after Aquablation specifically in an ambulatory surgical center (ASC).

**Methods:** A prospective cohort of men diagnosed with significant BPH underwent Aquablation at a single ASC institution between July and September 2023. Comprehensive preoperative assessments were conducted, including uroflowmetry, IPSS, and PVR. Aquablation was performed as morning cases using the AquaBeam™ Robotic System, under general anesthesia, coupled with Olympus bipolar focal bladder neck cautery and standardized recovery irrigation pathway using a three-way, 22 F catheter with 50 cc balloon inflation. Following the procedure, men were assessed for immediate postoperative outcomes, including pain levels, hematuria, and voiding efficiency. Patients meeting discharge criteria were allowed to return home on the same day.

**Results:** A total of 40 consecutive men (100%) with an average prostate size of 130 ml underwent SDD Aquablation. No transfusions or return to the OR were noted. The procedure demonstrated a significant improvement in urinary flow rates and a substantial reduction in IPSS scores at the one-month postoperative period. Pain scores were minimal, and the incidence of postoperative complications, including hematuria and urinary retention, was low and comparable to previously published outcomes. Despite more meticulous focal cautery, no differences in erectile, ejaculatory or adverse outcomes were observed.

**Conclusions:** SDD after Aquablation for BPH at an ASC appears to be a safe and effective approach, yielding favorable outcomes in terms of symptom relief and patient satisfaction. Morning procedures, more attentive cautery, and streamlined patient pathways appear to be essential for SDD. Furthermore, despite electrosurgical hemostasis, ejaculatory, sexual, and postoperative pain were not compromised. Early discharge not only enhances patient experience but also optimizes healthcare resources, paving the way for a more efficient and patient-centered approach to BPH management.

**MP 8.2. Table 1**

| | N=40 |
|---|---|
| **PREOPERATIVE PARAMETERS** | |
| Mean age, years (range) | 70.7 (61-80) |
| Mean BMI, kg/m2 (range) | 26.3 (19-31) |
| Mean TRUS prostate volume, cc (range) | 130.2 (56-270) |
| Median lobe (%) | 26 (65%) |
| Foley retention (%) | 18 (45%) |
| Mean preoperative IPSS (range) | 26.9 (17-35) |
| Mean preoperative QOL (range) | 4.9 (3-6) |
| Mean preoperative Qmax, mL/sec (range) | 5.9 (2-10) |
| Mean preoperative PVR, mL (range) | 319.6 (84-902) |
| Mean preoperative SHIM (range) | 18.3 (11-25) |
| Mean preoperative MSHQ Function (range) | 9.1 (8-11) |
| Mean preoperative MSHQ Bother (range) | 2.0 (1-3) |
| Mean preoperative PSA, ng/dL (range) | 6.5 (1.9-11) |
| **PERI-OPERATIVE PARAMETERS** | |
| Mean ASA (range) | 1.9 (1-3) |
| Mean Aquablation passes (range) | 2.2 (2-3) |
| Mean operative time, min (range) | 64 (41-100) |
| Mean bipolar cautery time, min (range) | 31.2 (15-46) |
| Mean preoperative Hgb, g/L (range) | 145 (129-162) |
| Mean postoperative recovery room Hgb, g/L (range) | 136 (15-149) |
| Mean postoperative recovery time, hours (range) | 4.9 (4-7) |
| **POST-OPERATIVE PARAMETERS** | |
| Same calander day discharge | 40 (100%) |
| Mean foley removal day (range) | 2.8 (2-5) |
| Mean posterative pain VAS | |
| 1 week | 3.9 |
| 2 weeks | 2.1 |
| 4 weeks | 1.2 |
| Complications (30 days), (%) | |
| ER visit | 1 (2.5%) |
| Hematuria requiring manual clot irrigation | 2 (5%) |
| Return to OR for bleeding/hemostasis | 0 (0%) |
| Hospitalizations | 1 (2.5%) – shortness of breath |
| Infection (requiring antibiotics) | 2 (5%) |
| Stress urinary incontinence (using pads/protection) | 1 (2.5%) |
| Blood transfusion | 0 (0%) |
| Retrograde ejaculation | 6 (15%) |
| Mean 1 month IPSS (range) | 5.7 (4-12) |
| Mean 1 month QOL (range) | 0.8 (0-3) |
| Mean 1 month Qmax, mL/sec (range) | 23.7 (17-35) |
| Mean 1 month PVR, mL (range) | 17.3 (0-95) |
| Mean 1 month SHIM (range) | 18.1 (11-24) |

## MP 8.3

### Thulium fiber laser vs. holmium MOSES laser enucleation of the prostate for the treatment of benign prostatic hyperplasia: A randomized, prospective clinical trial

*Hazem Elmansy[1], Moustafa Fathy[1], Amr Hodhod[2], Abdalla Bazazo[1], Husain Alaradi[1], Saud Alhelal[1], Loay Abbas[1], Ahmed Kotb[1], Walid Shahrour[1], Ahmed S. Zakaria[1]*

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**Introduction:** We aimed to compare intraoperative and postoperative outcomes of patients who underwent holmium laser enucleation of the prostate with MOSESTM technology (M-HoLEP) vs. 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 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 six-month followup 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. Additionally, there were significant differences favoring M-HoLEP regarding hematuria scale, CBI time, hematuria 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-sizing reduction, were comparable between the two cohorts up to six months postoperative. None of the M-HoLEP patients were readmitted, compared to 9.1% of ThuFLEP participants.

**Conclusions:** Both MOSES technology and TFL provided satisfactory functional outcomes in EEP; however, MOSES 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.

**MP 8.3. Table 1. Preoperative, operative, and six-month followup data**

| Parameter | | M-HoLEP 43 patients | ThuFLEP 44 patients | p-value |
|---|---|---|---|---|
| **Preoperative Data** | | | | |
| **Age at surgery** median (range) *years* | | 72 (52-84) | 72 (56-88) | 1 |
| **Preoperative IPSS** median (range) | | 25 (16-31) | 21.5 (16-34) | 0.051 |
| **Preoperative QoL** median (range) | | 5 (3-6) | 5 (3-6) | 0.67 |
| **Preoperative Qmax** median (range) *mL/s* | | 6.7 (2.9-14.4) | 7.55 (1.3-13.8) | 0.58 |
| **Preoperative PVR** median (range) *mL* | | 168 (0-613) | 152.5 (0-536) | 0.67 |
| **Prostate volume** median (range) *cc* | | 114 (80-235) | 103.5 (80-189) | 0.59 |
| **Preoperative PSA** median (range) *ng/mL* | | 4.4 (0.84-25.6) | 4.7 (0.33-25) | 0.88 |
| **Operative Data** | | | | |
| **Enucleation time** median (range) *min* | | 50 (27-95) | 60 (30-110) | <0.001 |
| **Morcellation time** median (range) *min* | | 11 (5-30) | 10 (5-45) | 0.81 |
| **Hemostasis time** *min* | median (range) | 8 (4-16) | 9 (4-15) | 0.04 |
| | mean | 7.81 | 8.98 | |
| **Resected weight** median (range) *g* | | 87 (55-180) | 82.5 (50-176) | 0.52 |
| **Energy** median (range) *kJ* | | 96.6 (48.5-158.9) | 103.8 (56.8-199) | 0.08 |
| **Enucleation efficiency** median (range) *g/min* | | 2 (1.1-3.3) | 1.45 (0.94-2.67) | <0.001 |
| **Hemoglobin drop** median (range) *g/L* | | 10 (2-25) | 13 (1-33) | 0.006 |
| **Blood transfusion** n (%) | | 0 (0) | 2 (4.5) | 0.16 |
| **Operating room hematuria scale** (1-5) | median (range) | 1 (1-5) | 1 (1-3) | 0.031 |
| | mean | 1.23 | 1.36 | |
| **Recovery room hematuria scale** (1-5) | median (range) | 1 (1-5) | 2 (1-5) | <0.001 |
| | mean | 1.35 | 2.68 | |
| **CBI time** *hours* | median (range) | 2 (2-14) | 2 (2-30) | 0.002 |
| | mean | 2.6 | 6.1 | |
| **Postoperative hematuria time** *hours* | median (range) | 0 (0-12) | 0 (0-24) | <0.001 |
| | mean | 0.51 | 3.68 | |
| **Postoperative pain** | median (range) | 1 (0-9) | 0 (0-8) | 0.08 |
| | mean | 1.49 | 0.93 | |
| **Successful same-day TOV** n (%) | | 38/41 (92.7) | 24/30 (80) | 0.11 |
| **Catheterization time** *hours* | median (range) | 3 (3-30) | 3 (3-46) | 0.011 |
| | mean | 4.16 | 10.84 | |
| **Hospital stay** *hours* | median (range) | 4 (4-34) | 4 (4-48) | 0.003 |
| | mean | 5.26 | 12.64 | |
| **Admissions** n (%) | | 2 (4.7) | 14 (31.8) | <0.001 |
| **Readmissions** n (%) | | 0 (0) | 4 (9.1) | 0.043 |
| **Clavien score** | **I** n (%) | 3 (7) | 13 (29.5) | 0.009 |
| | **III** n (%) | 0 | 2 (4.5) | |
| | **IIIa** n (%) | 0 | 1 (2.3) | |
| **6-month Follow-up** | | | | |
| **Number of patients** | | 33 | 32 | |
| **IPSS** median (range) | | 4 (1-11) | 4 (0-12) | 0.35 |
| **QoL** median (range) | | 1 (0-3) | 1 (0-4) | 0.63 |
| **Qmax** median (range) *mL/s* | | 28.6 (15.6-47.1) | 23.9 (16.2-62.1) | 0.38 |
| **PVR** median (range) *mL* | | 36 (0-95) | 28 (0-169) | 0.34 |
| **Postoperative prostate volume by TRUS** median (range) *cc* | | 22 (14-36) | 25 (14-40) | 0.134 |

## MP 8.4

### Conservative management of patients with staghorn stones: A retrospective, single-center, 15-year experience

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**Introduction:** Staghorn stones are associated with significant morbidity, including worsening renal function, renal scarring, recurrent urinary tract infections (UTI), and sepsis. Surgical intervention and stone clearance are considered standard of care; however, conservative management with watchful waiting and medical therapy has emerged as a viable option in select patients with staghorn stones, particularly those deemed unfit for surgery or at a high risk of complications. This

study aimed to elucidate the safety and efficacy of conservative non-operative management of staghorn stones.
**Methods:** A retrospective chart review of a single surgeon's entire cohort of staghorn stone patients managed conservatively was executed. Reviewed data include patient and stone characteristics, medical management, and clinical outcomes. Primary outcomes include disease-specific mortality and progressive renal function loss, while secondary outcomes include all-cause mortality, changes in renal function, and other adverse outcomes.
**Results:** Twenty-four patients with staghorn stones managed conservatively were included in the study, with an average followup of 8.4 years. Twenty (83%) patients were treated non-operatively due to being deemed at high risk for operative complications. Among the 19 (79%) patients on medical therapy, 15 received prophylactic antibiotics, four were prescribed allopurinol, two were administered thiazide diuretics, and six patients received alkalization agents. Progressive renal deterioration occurred in three (13%) patients, with one (5%) patient requiring eventual dialysis due to longstanding hypertension and diabetes. We noted recurrent UTIs among 16 (67%) patients, with pyelonephritis occurring in five (21%) patients and urosepsis in one (4%) patient. Three patients (13%) died from non-stone-related causes, including cancer and muscular dystrophy; no patient died from a stone-related complication in our cohort.
**Conclusions:** Conservative management of selected patients with staghorn stones is a viable option. Detailed metabolic workup and active medical therapy are adjuncts to surveillance and may have contributed to reducing morbidity and mortality.
*Acknowledgements: Presented as abstract in World Congress of Endourology & Uro-Technology (WCET) 2023.*

## MP 8.5

### In vitro comparison of a novel recessed tip vs. standard tip fiber for stone dusting with thulium fiber laser

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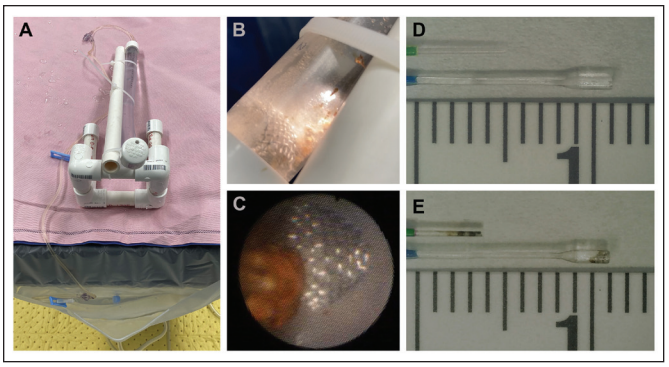
**Introduction:** Intraoperative laser fiber degradation and carbonization (charring) of stone impairs lithotripsy efficiency. Recessed tip (RT) laser fibers prevent fiber degradation by shielding the fiber from the target. While commonly used in holmium lithotripsy, there is limited data for its application in thulium fiber laser (TFL). We developed a benchtop model to compare the efficiency of stone dusting and fiber tip degradation in TFL with a standard bare tip (BT) vs. 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 (Figure 1). Continuous flow irrigation was maintained in the system. A single urologist used a flexible ureteroscope and 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 lithotripsy using a microscope to assess fiber tip burn-back.
**Results:** RT fibers experienced almost no burn-back at the end of each five-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 3/5 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 five 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=0.16).
**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.



**MP 8.5. Figure 1.** (A) Benchtop laser lithotripsy model with a mesh filter and outflow tubing. (B) External view of lithotripsy. (C) Endoscopic view of lithotripsy. (D) BT fiber (above) and RT fiber (below) before lithotripsy. (E) BT fiber (above) and RT fiber (below) after 5 minutes of lithotripsy.

## MP 8.6

### Aquablation for the treatment of benign prostatic hyperplasia: A prospective, monocentric, single-arm clinical trial of same-day discharge

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**Introduction:** We aimed to report the safety and efficacy of same-day Aquablation when using the AQUABEAM system and the Apogee 2300 ultrasound system.
**Methods:** Fifty men with moderate-to-severe benign prostatic hyperplasia (BPH) symptoms underwent Aquablation in a prospective, single-arm clinical trial between April and December 2023. Thirty-four men received followup at three months. The primary efficacy endpoint was the change of the International Prostate Symptoms Score (IPSS) from baseline to three months and the number of patients successfully sent home the same day of the procedure. The primary safety endpoint was the rate of unanticipated serious adverse effects (USADE) observed up to the three-month followup visit.
**Results:** Among the 50 patients, mean prostate volume was 80.6 mL. Mean Aquablation time was 7.50 minutes, mean bipolar cauterization time was 20.37 minutes, and mean operative time was 58 minutes. Almost half of the patients (48%) were discharged home the same day of the procedure within 6.43 hours. Among hospitalized patients (52%), three patients (11.5%) stayed for social reasons, 22 patients (84.6%) stayed for hematuria, and one patient stayed for sepsis (3.8%). The mean hospitalization time was 35.30 hours. The majority of adverse events (n=43) were classified as Clavien-Dindo grade II or lower (95%). Two patients had to be taken back to the operating room for bleeding complications. There was no USADE. IPSS score improved from 22.72 at baseline to 6.94 (15.78 point improvement, p<0.001) and IPSS quality of life from 5.18 to 1.26 (3.92 point improvement, p<0.001). Both urinary flow rate and postvoid residual volume improved, respectively, from 8.72 mL/s at baseline to 14.22 ml/s (p=0.002) and from 138.30 mL at baseline to 65.72 mL (p<0.001). There was no de novo erectile dysfunction and 88% of patients (30/34) maintained their antegrade ejaculation.
**Conclusions:** Results show that Aquablation therapy is effective and safe in treating men with BPH. In properly selected patients undergoing Aquablation therapy, same-day discharge is possible.
*Acknowledgements: This study was funded by Procept BioRobotics.*

## MP 8.7

### A population-based analysis of the COVID-19 generated surgical backlog for ureteroscopy, percutaneous nephrolithotomy, and extracorporeal shockwave lithotripsy

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**Introduction:** The COVID-19 pandemic had a global impact on elective surgery, with delays and slowdowns resulting in large surgical backlogs. Delay in elec-

tive surgery, such as kidney stone treatment, may lead to increased emergency department (ED) presentations and the need for urgent interventions. We aimed to identify periods of surgical backlog and recovery in elective ureteroscopy/laser lithotripsy (URS), percutaneous nephrolithotomy (PCNL), and extracorporeal shockwave lithotripsy (ESWL) during and following the COVID-19 pandemic, and correlation to ED stone presentations and urgent interventions.

**Methods:** Population-based rates of elective URS, PCNL, and ESWL during the first (March to June 2020) and second (November 2020 to February 2021) waves of COVID-19 and the following 19 months in Ontario, Canada, were quantified. Poisson-generated estimating equation models were used to predict expected rates during COVID-19 based on the pre-COVID-19 period. Standardized rate ratios (SRRs) of observed to expected rates were generated for surgical procedures. ED stone presentations, patient demographics, admissions, and urgent URS interventions during the same time periods were identified.

**Results:** Overall, 25 927 elective URS, 1507 PCNL, and 1730 ESWL cases were identified. During the first COVID-19 wave, overall elective stone procedures decreased by as much as 67% (SRR 0.327; 0.313–0.341), and continued to be performed at below expected rate post-COVID-19 waves. In absolute terms, the backlog was the greatest for URS (1071 cases), while in relative terms, the under-performance of PCNL was the greatest during and after COVID-19 waves (SRR 0.571; 0.355–0.634). ESWL was the only procedure with sustained periods of recovery, as high as 49% above expected (SRR 1.494; 1.300–1.717). There was no difference in age group, sex, income quintile, rurality, repeat visits <30 days, admissions, ICU admissions, or length of stay between years or waves. The proportion of admitted patients undergoing urgent URS during and after waves increased by as high as 6%.

**Conclusions:** An overall decrease in elective stone procedures was observed during the COVID-19 pandemic. URS and PCNL were being performed at below or expected rates post-COVID-19 pandemic without significant periods of recovery, suggesting a backlog of these procedures. An increased proportion of urgent stone intervention from the ED may suggest that compared to pre-COVID, patients may have presented at more advanced and symptomatic stages of disease due to surgical backlogs.

*Acknowledgements: Research Innovation Council at St. Michael's Hospital and the Ontario Health Data Platform (David Gomez).*

## MP 8.8

### An analysis of benign prostatic hyperplasia surgical treatment reimbursement trends across Canada

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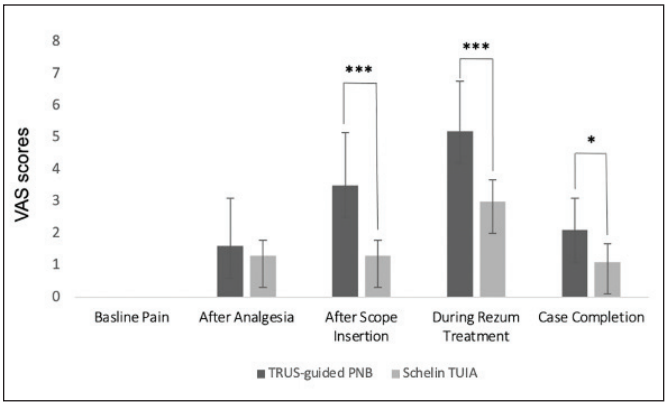
**Introduction:** A variety of procedures for the endoscopic surgical treatment of symptomatic benign prostatic hyperplasia (BPH) refractory to medical therapy has existed for decades. This study examined trends in surgeon compensation for these treatments within Canada.

**Methods:** The physician fee schedule for BPH surgery across 10 Canadian provinces for the years 2010 and 2023 were obtained. A descriptive study was executed examining, first, the provincial reimbursement for transurethral resection of prostate (TURP) and laser ablative/enucleation surgery; second, the difference in TURP reimbursement between 2010 and 2023; and third, the annual change in TURP reimbursement juxtaposed with the annual change in the provincial Consumer Price Index (CPI) and annual salary for the working population aged 35–44.




**MP 8.8. Figure 1.** VAS scores measuring pain at 5 time points for TRUS-guided PNB vs. Schelin catheter TUIA. Bars represent mean ± SD (n=10). *p<0.05. **p<0.001.

**Results:** Seven of 10 Canadian provinces reimburse laser BPH surgery equally to TURP. The average provincial TURP reimbursement is $545, ranging from $451 in Ontario to $688 in Saskatchewan. Since 2010, TURP reimbursement has varied by province from a 0% net change in Ontario to an increase of 21% in Nova Scotia. Reimbursement for TURP has increased at a slower pace than the local CPI, and for half of the provinces at a slower pace than the annual salary for people aged 35–44.

**Conclusions:** The compensation model for endoscopic BPH surgery does not have a unified structure in Canada that is consistent across provinces, nor does it keep up with inflation, possibly impacting future recruitment, increasing geographic disparities, and most importantly, limiting the adoption of new BPH therapies.

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## MP 8.9

### Understanding current ergonomic setup for urologists conducting anatomical endoscopic enucleation of the prostate surgeries: Survey analysis from the Endourological Society

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**Introduction:** Maintaining a healthy posture and prioritizing surgeon safety is crucial for ensuring a sustained practice and preventing work-related injuries. Anatomic endoscopic enucleation of the prostate (AEEP) surgeries are complex, require upper and lower body coordination, and require a specific setup and equipment. Our study examined surgeons' prostate enucleation ergonomics and explored its relationship with musculoskeletal injuries.

**Methods:** Google Forms® was used to distribute a two-month online survey to urologists via the Endourological Society mailing system. Participants and answers were anonymous. The data was analyzed in R-Studio. A series of Chi-squared tests were performed to determine the effect of descriptives, surgical practice characteristics, and ergonomic setup during AEEP on musculoskeletal complaints.

**Results:** Of 119 completed responses, 65.5%, 37.8%, 35.3%, and 37.7% had general, back, neck, or shoulder pain. Female AEEP surgeons reported more back pain than male surgeons. Surgeon age and experience protected against AEEP-related musculoskeletal pain. Back pain is more common in surgeons with AEEPs over two hours. There was no correlation between the position of the display monitor, the seating arrangements, or the type of resectoscope, and the reporting of musculoskeletal pain. AEEP was most often done sitting (86%) without eye or ear protection (75.6% and 94%, respectively). Most surgeons used resectoscopes size 24 (76.5%) without dissection wings (86.6%). The monitor is usually not at eye level (60.5%) and more than 1 m away (68.9%). The room is usually dimmed 52.9% with music playing 57.1% of the time.

**Conclusions:** Musculoskeletal complaints are significant among endourologists who perform AEEP. Operative time seems to be the main risk factor for back pain. Surprisingly, younger patients reported more musculoskeletal concerns and

experience seems to be a protective factor. More studies are needed in this field to ensure enucleation surgeon safety and well-being.

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## MP 8.10

### Patient activation: Is it related to kidney stone disease patient quality of life?

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**Introduction:** The Patient Activation Measure (PAM) is a questionnaire that assesses an individual's knowledge and skill regarding self-management of their disease.[1] This study aimed to validate the PAM within a kidney stone disease (KSD) population. Secondary objectives included determining the variability of patient activation within this population and establishing correlations between activation and other variables, such as demographics, quality of life, and health literacy.

**Methods:** This single-center, cross-sectional study includes individuals 18 or older who currently have, or have had, kidney stones. A cross-sectional survey was administered to gather demographic data and responses for PAM-13, the Wisconsin Stone Quality of Life questionnaire, and the Health Literacy Questionnaire (HLQ).[2-4] Only dimensions 3 (actively managing my health), 7 (navigating the healthcare system), 8 (ability to find good health information), and 9 (understand health information well enough to know what to do) of the HLQ were administered. Multiple linear regression analysis was used to analyze associations between activation and continuous variables, and the Kruskal-Wallis rank sum test was used for categorical variables.

**Results:** A total of 157 individuals with KSD were included; 100 respondents were men (63.7%) and 57 were women (36.3%). The median age was 59 years. Overall, 9.6%, 8.9%, 45.9%, and 35.7% scored a PAM level of 1, 2, 3, and 4, respectively. A significant association between PAM score and marital status was found, but not between income, education level, employment status, ethnicity, sex, or medication adherence. Among the questionnaires administered, only HLQ dimensions 3 and 9 were found to be significantly related to PAM level.

**Conclusions:** Preliminary results suggest that only marital status and HLQ dimensions 3 and 9 are significantly related to patient activation in KSD patients. Particular focus must be directed towards this aspect of KSD management, as patient activation is vital in patients with chronic disease.

*Acknowledgements: This work was supported in part by the 2023 Urology Care Foundation Summer Medical Student Fellowship Program and the Herbert Brendler, MD, Research Fund.*

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## MP 8.11

### Predicting poor voiding pattern after HoLEP using maximum flow rate as an objective outcome

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**Introduction:** Holmium laser enucleation of the prostate (HoLEP) is considered the size-independent gold standard for surgical management of benign prostate enlargement (BPE). The aim of this study was to identify preoperative patient characteristics that predict poor voiding pattern after HoLEP using postoperative maximum flow rate (Q-max) as an objective measurement.

**Methods:** A retrospective chart review of all patients undergoing HoLEP procedures at our institution between January 2006 and December 2022 was performed. Patient demographics, preoperative PSA, IPSS score, Qmax, and catheter time were collected. Postoperative catheter time, trial of void results, IPSS score, and Qmax were obtained. Predictive factors of poor emptying, defined as Qmax <15 ml/sec, were identified using logistic regression models.

**MP 8.11. Table 1. Patient baseline characteristics**

| n=1121 | |
|---|---|
| Mean age, years (SD) | 70.7 (8.3) |
| DM, % (n) | 5.9 (59) |
| ASA score, % (n) | |
| 1 | 64.3 (719) |
| 2 | 22.3 (249) |
| 3 | 13.0 (145) |
| 4 | 0.4 (5) |
| Prostate Medication, % (n) | |
| Alpha blockers only | 63.6 (594) |
| 5-ARI only | 3.4 (32) |
| Combination medication | 33.0 (308) |
| Indication for the surgery, % (n) | |
| Retention | 40.4 (448) |
| Hematuria | 1.1 (12) |
| Lower Urinary Tract Symptoms | 54.0 (599) |
| Prostate Cancer Causing Bladder Outflow Obstruction | 3.6 (40) |
| Renal Insufficiency | 1.0 (11) |
| Mean Preoperative Catheter Time, days (SD) | 5.5 (12.7) |
| Mean TRUS prostate size, g (SD) | 98.3 (49.0) |
| Mean pre-operative PSA, ng/dL (SD) | 6.7 (9.1) |
| Preoperative Q-max, % (n) | |
| <15cc/second | 97.2 (630) |
| >=15cc/second | 2.8 (18) |
| Mean pre-operative IPSS, (SD) | 19.2 (8.0) |

**MP 8.11. Table 2. Operative characteristics and postoperative outcomes**

| Operative characteristics | |
|---|---|
| Mean Enucleation Time, minutes (SD) | 90.7 (38.1) |
| Mean Morcellation Time, minutes (SD) | 18.6 (15.6) |
| Mean Weight of Enucleated Prostate, grams (SD) | 70.7 (50.1) |
| Mean Hospital Stay, days (SD) | 1.3 (1.6) |
| Early Postoperative Complications, % (n) | |
| Failed Trial of Void | 32.1 (17) |
| Hematuria | 64.2 (34) |
| Epididymoorchitis | 3.8 (2) |
| Q-max at one month, % (n) | |
| <15cc/second | 29.6 (232) |
| >=15cc/second | 70.4 (552) |

**Results:** A total of 1121 HoLEP procedures were analyzed. The mean age was 70.7±8.3, the mean prostate volume was 98.3±49, and the mean hospital stay was 1.3±1.6 days. Low Qmax was found in 232 (29.6%) at one-month followup. Diabetes mellitus, weight of enucleated prostate, being on combination medication for BPE, and low preoperative Qmax were identified as independent risk factors for low Qmax (OR 1.29, 0.998, 1.16, and 1.29, respectively, p< 0.005). Age had an OR of 0.0066 (p=0.057), which may suggest it is a dependent risk factor for low Qmax

**Conclusions:** Diabetes mellitus, larger volume of enucleated tissue, being on combination BPE therapy, and low preoperative Qmax are risk factors for low Qmax post-HoLEP. Understanding these factors can help improve patient counselling and followup.

## MP 8.12

### Review of the safety of sterile water compared to normal saline as irrigation solution in ureteroscopy

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**Introduction:** Normal saline (NS) is the standard irrigation solution for ureteroscopy (URS) due to its theoretically reduced risk of hyponatremia, hemolysis, and fluid overload compared to sterile water (SW). The objective of this study was to assess whether SW irrigation for URS was associated with increased rates of postoperative complications compared to NS.

**Methods:** A retrospective chart review was performed on URS patients at a high-volume tertiary care center. Demographic, surgical, and postoperative data were recorded. Patients who received both NS and SW irrigation were excluded and the remaining were divided into one of two cohorts: URS with SW or URS with NS. The primary outcomes were the 90-day post-URS rates of emergency department (ED) presentation, hospital admission, and mortality. Secondary outcomes included the 30-day post-URS rates of abnormalities in sodium (Na), potassium (K), chloride (Cl), and hemoglobin (Hgb). A Chi-squared analysis was conducted to detect any significant differences in rates between groups.

**Results:** Between June 1, 2022, and June 30, 2023, 1001 patients with a median age of 62 years underwent URS with a median operative time of 37 minutes. The SW group had 677 patients and the NS group had 320 patients. There were no significant differences in the 90-day post-URS rates of ED presentation (SW=21%, NS=26%; p=0.075), hospital admission (SW=21%, NS=24%; p=0.36), or mortality (SW=1.3%, NS=1.9%; p=0.51) between groups. There were no significant differences between groups in the 30-day post-URS rates of serum abnormalities (Na [p=0.67], K [p=0.71], Cl [p=0.92], Hgb [p=0.30]) among patients who had normal preoperative values. These comparisons of complication rates are detailed in Table 1.

**MP 8.12. Table 1. Comparisons of complication rates between SW and NS irrigation groups**

| Outcome | SW irrigation (n=677) | NS irrigation (n=320) | Comparison between SW and NS irrigation groups | |
|---|---|---|---|---|
| | Rate (95% CI), % | Rate (95% CI), % | Difference in rates (95% CI), % | p |
| At least 1 ED presentation within 90 days of URS | 21 (17, 24) | 26 (21, 32) | -5.7 (-12, 0.57) | 0.075 |
| At least 1 hospital re-admission within 90 days of URS | 21 (18, 25) | 24 (19, 30) | -2.9 (-9.1, 3.3) | 0.36 |
| Mortality within 90 days of URS | 1.3 (0.61, 2.5) | 1.9 (0.69, 4.1) | -0.55 (-2.2, 1.1) | 0.51 |
| Postoperative Na abnormalities within 30 days of URS among patients with normal preoperative Na within 30 days | 8.0 (4.6, 13) | 6.8 (3.2, 12) | 1.2 (-4.6, 7.1) | 0.67 |
| Postoperative K abnormalities within 30 days of URS among patients with normal preoperative K within 30 days | 8.0 (4.6, 13) | 6.8 (3.3, 13) | 1.1 (-4.7, 6.9) | 0.71 |
| Postoperative Cl abnormalities within 30 days of URS among patients with normal preoperative Cl within 30 days | 7.6 (4.0, 13) | 7.9 (3.8, 14) | -0.32 (-6.7, 6.0) | 0.92 |
| Postoperative Hgb abnormalities within 30 days of URS among patients with normal preoperative Hgb within 30 days | 23 (16, 32) | 16 (9.4, 27) | 6.2 (-5.4, 18) | 0.30 |

**Conclusions:** SW irrigation for URS was not associated with increased complication rates compared to NS. SW emerges as a safe option for URS, offering enhanced visualization and cost-effectiveness compared to NS, and can therefore be considered the standard irrigation solution for URS.

## MP 8.13

### Predicted vs. actual cardiac events for transurethral prostate surgery: An analysis of the Revised Cardiac Risk Index

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**Introduction:** The Revised Cardiac Risk Index (RCRI) is the most validated tool to predict postoperative cardiac events in non-cardiac surgeries. This study compared RCRI-predicted outcomes with the actual incidence of cardiac events following endourologic interventions.

**Methods:** We conducted a retrospective review of patients who received transurethral resection of the prostate (TURP) or holmium laser enucleation of the prostate (HoLEP) from August to December of 2022. We assessed for postoperative cardiac events within 30 days, as defined by the seminal cardiac VISION study used in the RCRI prediction index. Fisher's exact test was used to determine statistical significance.

**Results:** A total of 136 patients with an average age of 73.2±7.9 (SD) years were identified, 69 of whom (51%) had TURP and 67 who underwent HoLEP. Twenty-five patients (18.4%) required myocardial injury after non-cardiac surgery (MINS) surveillance per standard practice. No patient had any intraoperative cardiac events. One patient experienced a non-fatal postoperative cardiac event

**MP 8.13. Table 1. Comparison of Revised Cardiac Risk Index (RCRI) predictions and actual incidence of 30-day cardiac events following endourologic interventions**

| RCRI score | Number of patients in each risk category | Predicted number of patients with cardiac complications within 30 days of surgery | Observed number of patients with cardiac complications within 30 days of surgery |
|---|---|---|---|
| 0 | 102 | 4.0 (2.9%) | 1 (0.7%) |
| 1 | 25 | 1.5 (1.1%) | 0 (0%) |
| 2 | 6 | 0.6 (0.4%) | 0 (0%) |
| 3 | 3 | 0.5 (0.3%) | 0 (0%) |
| 4–6 | 0 | 0 (0%) | 0 (0%) |
| Total | 136 | 6.5 (4.8%)* | 1 (0.7%)* |

*Statistical significance ($p<0.05$).

(asystole) within hours of surgery. RCRI predicted an overall 4.8% (n≈7) of the patients to have cardiac events (Table 1), significantly higher than the observed incidence of 0.7% (p=0.03).

**Conclusions:** In this study, RCRI significantly overestimated the 30-day cardiac risk following transurethral prostate surgery. Improved risk stratification will allow patients and surgeons to make informed decisions about transurethral surgery.

## MP 8.14

### WATER vs. WATER II 5-year update: Comparing Aquablation therapy for benign prostatic hyperplasia in 30–80 cm³ and 80–150 cm³ prostates

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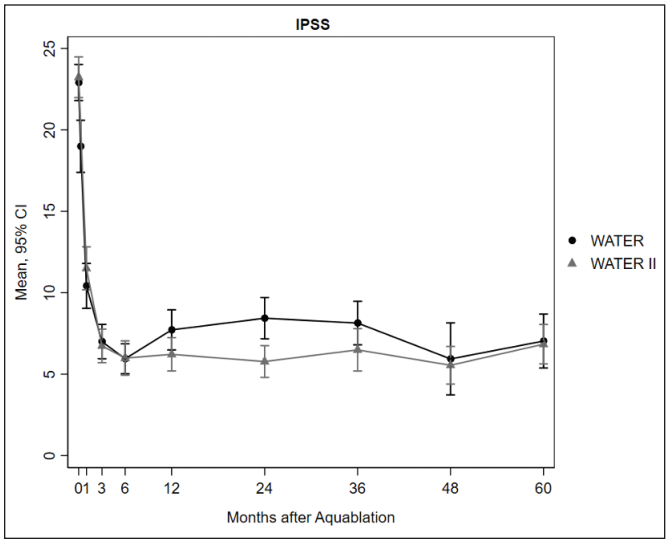
**Introduction:** We aimed to compare the outcomes of Aquablation for small-to-moderate (30–80 cc) prostates with the outcomes for large (80–150 cc) prostates at five-year followup.

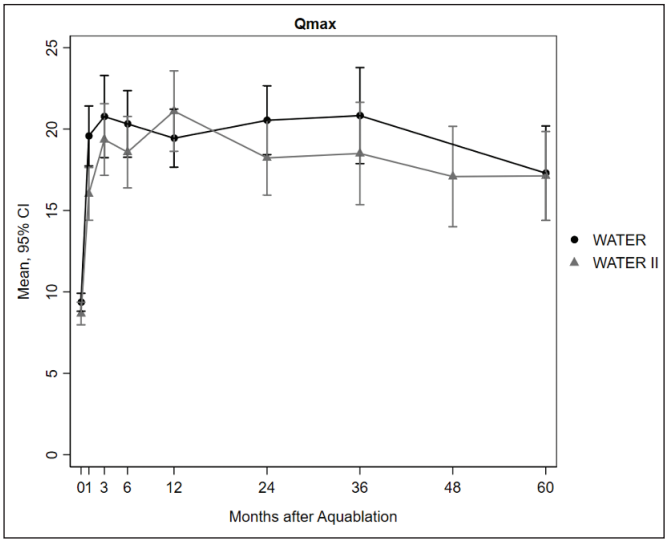
**Methods:** Waterjet Ablation Therapy for Endoscopic Resection of prostate tissue (WATER [W-I]; NCT02505919) is a prospective, double-blind, multicenter, international clinical trial comparing Aquablation and transurethral resection of the prostate (TURP) for the treatment of LUTS/BPH in prostates 30–80 mL. WATER II (W-II; NCT03123250) is a prospective, multicenter, single-arm, international clinical trial of Aquablation in prostates 80–150 mL. We compare baseline parameters and 60-month outcomes in 116 W-I and 101 W-II study patients. Student's t-test or Wilcoxon tests were used for continuous variables and Fisher's test for binary variables.

**Results:** International Prostate Symptom Score (IPSS) scores improved from 22.9 and 23.2 at baseline in W-I and W-II, respectively, to 7.0 and 6.8 at 60 months, with 60-month reductions of 15.9 and 16.4 points, respectively (p=0.852). At baseline, urinary flow rate (Qmax) was 9.4 and 8.7 cc/sec in W-I and W-II, improving to 17.3 and 17.1 cc/sec, respectively (p=0.933) at 60 months. Improvements in both IPSS and Qmax were immediate and sustained throughout followup. At five years, 99% and 94% of treated patients were BPH medication-free in W-I and W-II, respectively (p=0.0517). At five years, 95% and 97% of treated patients were free from surgical retreatment in W-I and W-II, respectively (p=0.508). The mean (SD) operative time was 33 (17) and 37 (13) minutes in W-I and W-II, respectively. Actual treatment time was four and eight minutes in W-I and W-II, respectively. By three months, Clavien–Dindo grade ≥II events occurred in 19.8% of W-I patients and 34.7% of W-II patients (p=0.468).

**Conclusions:** Five-year followup demonstrates that Aquablation therapy had sustained outcomes, few irreversible complications, and low retreatment rates for the treatment of LUTS/BPH independently of prostate volume of 30–150 ml.




**MP 8.14. Figure 1.** IPSS.




**MP 8.14. Figure 2.** Qmax.

## MP 8.15

### An international prospective registry for ureteral stents: Association between patient factors, removal method, stent duration, and pain scores

*Connor M. Forbes[1], Ben H. Chew[1], Victor K.F. Wong[1], Runhan Ren[1], Alexander P. Glaser[2], Kazumi Taguchi[3], Amy Krambeck[4], Marcelino Rivera[5], Ojas Shah[6], Edouard Tariel[7], Dirk Lange[1], Channa Amarasekera[4], Shuzo Hamamoto[3], Wilson R. Molina[8], John J. Knoedler[9], Mitchell R. Humphreys[10], Karen L. Stern[10]*

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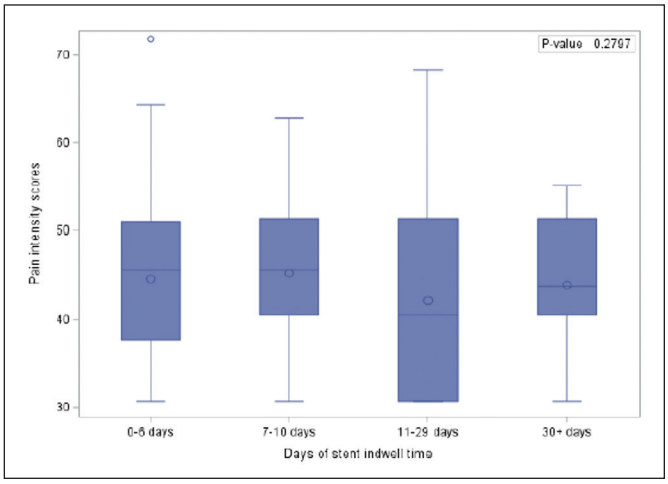
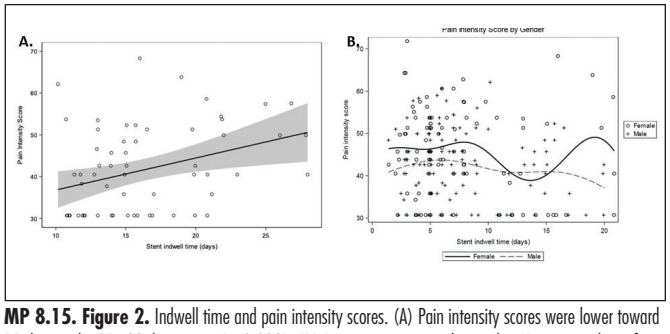
**Introduction:** A shorter stent indwell time has been thought to be associated with improved patient comfort. We assessed patient factors and stent indwell time in association with patient pain scores.

**Methods:** We queried a prospective, international database from 2020–2023 across 10 centers in four countries (Canada, U.S., France, Japan). The primary outcome was PROMIS Pain Intensity (3a) scores on the day of stent removal. Pain scores were compared, grouping patients by duration of stent indwell. Associations between sex, height, and tether vs. cystoscopic stent removal were assessed.

**Results:** The database contained 359 patients, of whom 271 had a single stent placed after ureteroscopy for urolithiasis. Patients were grouped by short, medium, long, and very long stent dwell times by author consensus. Between these groups, no significant difference was detected in pain scores (p=0.28) (Figure 1). Within the long-duration stent group (11–29 days), patients reported less pain the closer they were to 11 days (p=0.008) (Figure 2A). Height when stratified by stent length was not significantly associated with pain scores. There was no difference in pain scores for removal with tether vs. cystoscopy. Men reported lower pain scores than women (p=0.015) (Figure 2B).




**MP 8.15. Figure 1.** Patient pain scores compared to stent indwell time (0–6 days, n=117; 7–10 days, n=53; 11–29, n=11). Pain scores were not statistically significant between groups.




**MP 8.15. Figure 2.** Indwell time and pain intensity scores. (A) Pain intensity scores were lower toward 11 days in the 11–29 days group (p=0.008). (B) Pain intensity scores by gender. Men reported significantly lower pain intensity compared to women (p=0.015).

**Conclusions:** Pain scores did not differ for patients with short, medium, long, or very long stent indwell times. Within the "long" stent duration group (11–29 days), a shorter indwell time was associated with improved pain scores. Within the short indwell time group (0–6 days) no difference was found in pain scores between 0–6 days. Men reported less pain than women. Importantly, pain scores were not different for cystoscopic vs. tether removal of stents.

*Acknowledgements: Registry was supported by Boston Scientific.*

## MP 8.16

### The impact of kidney stone composition on a patient's health-related quality of life

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**Introduction:** Kidney stone events lead to a significant impairment of a patient's physical health. Stone composition analysis often helps guide a patient's therapeutic and preventative treatment; however, it is not yet known if kidney stone composition has an impact on a patient's health-related quality of life (HRQoL). We aimed to assess the effect of stone type on patients' HRQoL.

**Methods:** We studied 2860 stone patients from 16 tertiary care centers who completed the questionnaire from June 2014 to March 2020. A higher score indicates a better HRQoL. Clinical variables and stone composition were identified by clinicians through the electronic medical record at enrollment. Kidney stone composition was grouped into four different metabolites: pure calcium oxalate (CaOx), pure calcium phosphate (CaP), pure uric acid (UA), and mixed CaOx/CaP stones. The WISQOL score was assessed using the Wilcoxon rank test, followed by a multivariable linear regression model considering all variables of interest.

**Results:** Of the 2860 kidney stone formers who completed the WISQOL questionnaire, 815 underwent stone composition analysis. The overall cohort was primarily composed of Caucasian (90%) individuals, with a predominance of patients being obese or overweight (77%) with bilateral (52%) and recurrent (76%) kidney stone disease. Of the 815 patients, 554 patients (68%) had pure CaOx stones, 129 patients (16%) had pure CaP stones, 72 patients (8.8%) had pure UA stones, and 60 (7.4%) patients had mixed CaOx/CaP stones. The WISQOL scores did not significantly differ across all subgroups and were found to have no impact on the HRQoL in the multivariable analysis (p>0.05).

**Conclusions:** Our study shows that stone composition has no impact on a patient's HRQoL; however, stone composition analysis may still provide valuable insights to guide preventative therapy.

## MP 8.17

### Kidney stone disease management and followup: Practice patterns among urologists in Canada

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**Introduction:** Kidney stone (KS) formation and recurrence constitute an important health issue in Canada. Despite the presence of KS guidelines, there is a lack of high-quality evidence for the management and followup of KS disease. We sought to evaluate the practice patterns and preferences of urologists across Canada in the management and followup of KS disease, as well as existing barriers to clinical practice.

**Methods:** A cross-sectional survey of Canadian urologists was developed and advertised through the mailing lists of the Canadian Urological Association (CUA), Quebec Urological Association (QUA), and Canadian Endourology Group (CEG). The survey was also directly sent to multiple urology departments across the country. We used descriptive statistics to present our most salient findings.

**Results:** Of the 81 urologists who completed the survey, 39 (48%) were from academic centers, 34 (42%) were from community hospitals, and the remaining eight (10%) practiced in mixed or private settings. The majority were from Quebec (37%), British Columbia (19%), Ontario (17%), Alberta (12%), and the rest (15%) were from other provinces. Most respondents performed over 75 ureteroscopies and less than 25 percutaneous nephrolithotomies (PCNL) annually (73% and 57%, respectively). Of those who performed PCNL, 57% performed percutaneous access themselves, predominantly using fluoroscopy alone (50%) or combined ultrasound and fluoroscopy (28%). The holmium laser, thulium fiber laser, and Moses laser were available in 82%, 69%, and 28% of hospitals, respectively, and were among the most preferred for KS surgery for 30%, 74%, and 20% of urologists, respectively. Regarding assessment of KS disease, 31% delegated metabolic workup to nephrologists or specialized KS clinics, mainly citing lack of time (41%) and expertise (23%). Additionally, 70% of urologists lacked access to multidisciplinary KS clinics at their institution, 74% of whom believed such clinics would benefit their institutions. Finally, when comparing urologists who have completed an endourology fellowship (n=44, 54%) to those who have not (n=37, 46%), the former were significantly more likely to perform PCNL access themselves (89% vs. 19%, p<0.001), conduct metabolic workup themselves (84% vs. 55%, p<0.01), and comfortably prescribe prophylactic and medical treatment for KS disease (91% vs. 48%, p<0.01).

**Conclusions:** Our study highlights practice patterns regarding KS disease management and followup across Canada. It contributes to further refinement of current KS guidelines and to the implementation of solutions to practice barriers Canadian urologists face.

## MP 8.18

### Does type of anesthesia during the surgical management of suspected renal colic during pregnancy have an impact on preterm birth?

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**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, anesthesia timing by trimester, or intervention.

**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 2009–2021 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, and 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 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 trimesters were 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 (Table 1).

**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.

**MP 8.18. Table 1. Multivariable predictors of preterm birth**

| Characteristic | OR (95% CI) | p |
|---|---|---|
| Anesthesia type | | |
| General | – | |
| Local | 0.95 (0.11, 8.18) | 0.96 |
| Monitored anesthesia care | 0.56 (0.09, 3.48) | 0.54 |
| Spinal | 0.62 (0.10, 3.72) | 0.60 |
| Intervention | | |
| Percutaneous nephrostomy | – | |
| Ureteral Stent | 0.35 (0.12, 1.02) | 0.054 |
| Ureteroscopy | 0.28 (0.08, 0.96) | 0.043 |
| Anesthesia timing | | |
| Trimester 1 | – | |
| Trimester 2 | 0.73 (0.08, 6.96) | 0.79 |
| Trimester 3 | 0.43 (0.05, 4.06) | 0.46 |

Generalized estimating equations model (Interventions: 234; Patients: 98).