Podium Session 1: Endourology, BPH
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POD 1.1
The SUMMIT trial: Optilume BPH drug-coated balloon for male LUTS

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Introduction: The Optilume BPH catheter system is a minimally invasive drug/device combination therapy designed to treat lower urinary tract symptoms (LUTS) associated with benign prostatic enlargement (BPE). In this study, we assessed the outcomes related to maximum urinary flow rate (Qmax), quality of life (QoL), postvoid residual (PVR), and responses to a validated questionnaire.

Methods: This prospective, single-arm, multicenter, open-label study was conducted across five Canadian centers to assess the effectiveness of the Optilume BPH system for treating LUTS caused by BPE. Functional and sexual outcomes were assessed in 30 catheter-free patients at baseline, on the treatment day, and at followup intervals of baseline, three, six, and 12 months.

Results: Thirty patients underwent treatment for symptomatic BPE with the Optilume BPH system from July 2022 to August 2024. The average age was 63.06±2.5 years and mean prostate volume was 45.95 cc (IQR 33.72–63.1). The median baseline maximum urinary flow rate (Qmax) was 7.95 mL/s (IQR 5.87–11.25), and the median PVR was 77.5 mL (IQR 28.5–159.25 mL). The median duration of catheter use after the procedure was two days, with a range of 1–6 days. Thus far, 23 patients (54%) have completed the three-month followup, 17 patients the six-month followup, and seven patients the 12-month followup. At three, six, and 12 months, a marked increase in Qmax was observed, rising from a baseline of 8.74 to 15.8, 16.42, and 15.18 mL/s, respectively, suggesting sustained improvements in urinary function. Similarly, the PVR volume decreased substantially from a baseline of 94.54 mL to 66.82 mL at three months, and remained consistently lower at 68.14 mL at 12 months. Patient-reported symptom severity, measured by IPSS, showed a considerable reduction from 23.43 at baseline to 12.26 at three months and further improvement to 10.58 at six months, and 11.42 at 12 months. Sexual function, as assessed by the MSHQ-EJD and IIEF, displayed more stable trends. The MSHQ-EJD scores improved slightly from 1.89 to 2 at three months, stabilizing at around 1.71 at 12 months. The IIEF scores remained relatively consistent from 43.73 at baseline to 47.52 at three and six months, and 39.71 at 12 months.

Conclusions: Over 12 months, patients showed a significant, sustained improvement in Qmax and a PVR. The IPSS also significantly decreased, demonstrating effective symptom relief. Sexual function remained stable with minor fluctuations, indicating that urinary improvements were achieved without compromising sexual health over the followup period.

Acknowledgements: Funding by Laborie Medical Technologies.

POD 1.2
Final validation of a new stent symptom questionnaire: The Canadian Endourological Group Stent Symptom Score (CEGSSS)

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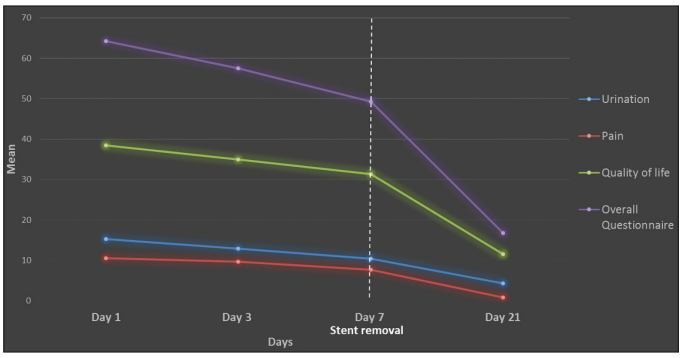
Introduction: The only validated questionnaire to assess the impact of ureteral stents is the ureteral stent symptom questionnaire (USSQ). The USSQ is infrequently used in clinical practice and research, as it is long and cumbersome. We sought to develop and validate a shorter ureteral stent symptom questionnaire.

Methods: We used a three-phased approach. Phase 1 (P1) included prioritizing domains/items to be included in a minimal needs data set with patient partners and experts. This was used to develop the first version of the CEGSSS. Phase 2 (P2) involved pilot testing of the feasibility and readability of the CEGSSS in patients with ureteral stents. Iterative changes were made based on feedback, and the process was repeated until data saturation. Phase 3 (P3) was a multicenter (n=10), North American, prospective study to evaluate the reliability and validity of the CEGSSS.

Results: P1: With patient (n=21) and expert (n=9) input, the first version of the CEGSSS included 13 items and three domains (urinary symptoms, pain, and quality of life). P2: Three cycles were required (n=15 patients) to reach data saturation. The final version of the CEGSSS included 11 items and three domains. Readability was at a grade 5 level. Mean time to complete was <7 minutes. P3: 287 patients were enrolled. Exploratory factor analysis determined that three domains was appropriate. Internal consistency (validity of each item in a domain) was supported with Cronbach alpha coefficients of 0.65 (95% CI 0.57, 0.71), 0.61 (0.57, 0.65), 0.81 (0.77, 0.84), and 0.81 (0.78, 0.84) for urination, pain, quality of life, and the overall questionnaire, respectively. The test-retest correlation coefficient at days 1 and 3 were 0.71 (95% CI 0.63, 0.77), 0.71 (0.62, 0.77), 0.79 (0.72, 0.84), and 0.78 (0.72, 0.83), respectively. Finally, discriminative validation (ability to measure any degree of change) and sensitivity to change (capacity to detect changes, with and without a stent) can been seen in Figure 1. The CEGSSS demonstrated significant discriminative validation ($p<0.001$) and sensitivity to change ($p<0.001$) for all domains and the overall questionnaire.

Conclusions: This three-phase methodologic study supported the development of a new and valid ureteral stent symptoms questionnaire that can be performed within seven minutes. The CEGSSS is an easy-to-use tool for both clinical and research settings.

Acknowledgements: Supported by the Canadian Endourology Group.



POD 1.2. Figure 1. Discriminative validation and sensitivity to change.

POD 1.3

Worsened postoperative outcomes are associated with delayed intervention for benign prostatic hyperplasia

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Introduction: Male patients with lower urinary tract symptoms secondary to benign prostatic hyperplasia (BPH) are often faced with the decision of undergoing a procedure or beginning/continuing with medical management. Limited data are available to assess whether delaying a procedure affects long-term functional outcomes. The objective of this study was to assess how delayed surgical intervention following BPH diagnosis affects postoperative outcomes within one year of surgery.

Methods: This retrospective cohort study used Merative™ Marketscan® Commercial Database from January 1, 2007, to December 31, 2022. Adult male patients (≥50 years) diagnosed with BPH who underwent a BPH procedure were included. Patients treated within two weeks of diagnosis or with neurologic conditions were excluded. The impact of prolonged time to intervention on post-procedure outcomes (medication use, urinary retention, OAB diagnosis, and reoperation) was analyzed using logistic regression, while healthcare utilization (postoperative ER and clinic visits) was assessed with Poisson regression.

Results: A total of 74 325 men met the inclusion criteria. The median time from BPH diagnosis to procedure was 10.9 months. A longer delay from BPH diagnosis to procedure was associated with significant negative postoperative outcomes across all procedures (Table 1). The odds of using postoperative BPH medication beyond 30 days were higher across all procedures, with the greatest increase observed in the simple prostatectomy group (OR 1.010, 95% CI 1.005–1.015, p<0.001), followed by TURP (OR 1.006, p<0.001) and laser treatments (OR 1.005, p<0.001). Postoperative clinic visits increased significantly for TUIP (IRR 1.004, p<0.001), TURP (IRR 1.003, p<0.001), and laser procedures (IRR:1.001, p<0.001). Postoperative overactive bladder (OAB) was associated with laser (OR 1.005, p<0.01), TURP (OR 1.005, p<0.001), and MIST (OR 1.003, p<0.05), while postoperative incontinence was higher in the laser (OR 1.003, p<0.001) and TURP (OR 1.002, p<0.01) groups. Urinary retention was significantly reduced in the laser (OR 0.998, p<0.05) and MIST (OR 0.996, p<0.001) cohorts. There was no statistically significant association with reoperation rates across all procedures.

Conclusions: Delaying surgeries for BPH treatment is associated with worsening postoperative outcomes, including increased medication use, and patients developing overactive bladder and incontinence. These findings suggest that timely intervention may improve long-term outcomes. Further research is needed to determine the optimal timing for surgery and underlying mechanisms.

Acknowledgements: Supported by Boston Scientific Corporation.

POD 1.4

Comparative evaluation of temperature generation during laser lithotripsy: Thulium fiber laser, pulsed thulium:YAG, and holmium:YAG with pulse modulation in an ex-vivo porcine kidney model

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Introduction: Laser lithotripsy during ureteroscopy often generates heat, posing a risk of thermal injury if not adequately controlled. With advancements in lithotripsy technology, it is essential to evaluate temperature changes associated with new laser systems. This study provides the first comparison of temperature generation by pulsed thulium:YAG (Tm:YAG; Dornier Thulio), thulium fiber laser (TFL; Olympus SOLTIVE) and holmium:YAG with pulse modulation (MOSES; Boston Scientific MOSES 2.0) at dusting settings in an ex-vivo porcine kidney model.

Methods: Eighteen porcine kidney-ureter units were prepared by endoscopically guided percutaneous insertion of a multipoint temperature sensing probe. Ovoid Bego stones (0.46–1.14 g) were implanted in the renal pelvis via pyelotomy incision. A K-type thermocouple probe was affixed to the distal end of a single-channel flexible ureteroscope and passed into the renal pelvis through a 35 cm 12 Fr ureteral access sheath. Kidney units were randomly assigned to one of three laser groups: MOSES, TFL, or pulsed Tm:Yag. Each stone underwent continuous lasering for 10 minutes using 200 µm fibers at dusting settings of 0.3 J and 50–60 Hz, with continuous temperature recording. Normal saline irrigation at room temperature was applied at 100–150 mmHg pressure. Statistical analysis was performed using one-way ANOVA and Tukey post hoc testing in GraphPad Prism (v10.1, GraphPad Software, Boston, MA, U.S.).

Results: The highest mean temperature change observed during laser lithotripsy occurred with TFL, reaching 8.13±1.96 °C. Pulsed Tm:YAG generated a mean temperature change of 4.12±1.26 °C, while MOSES resulted in the lowest mean temperature change at 3.32±1.84 °C. There was no statistically significant difference between MOSES and pulsed Tm:YAG (p=0.7266); however, TFL showed a significantly greater temperature increase compared to both pulsed Tm:YAG (p=0.0031) and MOSES (p=0.0010) (Figure 1).

Conclusions: Pulsed Tm:YAG demonstrates a similar temperature profile to MOSES during ex-vivo retrograde intrarenal surgery. In contrast, TFL generates significantly higher temperatures than both pulsed Tm:YAG and MOSES during laser lithotripsy, potentially raising the risk of thermal injury.

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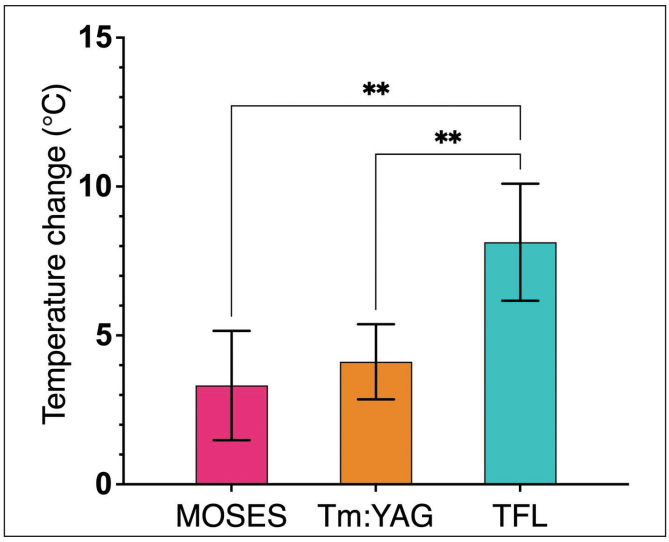
POD 1.3. Table 1. Prolonged time to surgical intervention is associated with worsening postoperative outcomes

	Laser	Simple Prostatectomy	TUIP	TURP	MIST
Reoperation [OR (CI)]	0.999 (0.996 – 1.002)	0.981 (0.954 – 1.008)	1.004 (0.993 – 1.016)	0.998 (0.995 – 1.001)	1.001 (0.997 – 1.006)
Postop Botox [OR (CI)]	1.007 (0.997 – 1.016)	0.991 (0.891 – 1.101)	0.967 (0.889 – 1.051)	1.003 (0.995 – 1.011)	1.001 (0.986 – 1.017)
BPH Meds > 30days [OR (CI)]	1.005 (1.004 – 1.005) ***	1.010 (1.005 – 1.015) ***	1.008 (1.002 – 1.013) **	1.006 (1.005 – 1.007) ***	1.004 (1.002 – 1.006) ***
Postop ER Visits [IRR (CI)]	1.000 (0.999 – 1.001)	0.999 (0.994 – 1.005)	1.004 (0.999 – 1.001)	1.000 (0.999 – 1.001)	1.000 (0.998 – 1.002)
Postop Clinic Visits [IRR (CI)]	1.001 (1.000 – 1.002) ***	1.003 (1.001 – 1.005) ***	1.004 (1.001 – 1.006) ***	1.003 (1.002 – 1.004) ***	1.002 (1.001 - 1.002) ***
Postop OAB [OR (CI)]	1.005 (1.002 – 1.008) **	1.003 (0.983 – 1.023)	1.008 (0.995 – 1.020)	1.005 (1.003 – 1.008) ***	1.003 (1.000 - 1.007) *
Postop Incontinence [OR (CI)]	1.003 (1.001 – 1.005) ***	0.998 (0.989 – 1.008)	1.008 (0.999 – 1.017)	1.002 (1.000 – 1.004) **	0.997 (0.994 - 1.001)
Postop Retention [OR (CI)]	0.998 (0.997 - 0.999) *	1.002 (0.997 - 1.006)	1.003 (0.997 - 1.009)	0.999 (0.998 - 1.000)	0.996 (0.994 - 0.998) ***

Regression adjusted for age, CCI, and region.*p<0.05; **p<0.01; ***p<0.001"



POD 1.4. Figure 1. Mean maximum temperature changes during 10 minutes of continuous laser lithotripsy in an ex-vivo porcine renal pelvis. *p<0.05; **p<0.01; ***p<0.001.

POD 1.5

A feasibility study on the Anesthesia Sparing UREteroscopy (ASURE) protocol with laser lithotripsy for the management of kidney stones under local anesthetic

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Introduction: Recent attempts to improve surgical access have seen procedures evolve from inpatient hospital care to ambulatory surgical centers. We created the ASURE protocol to assess the feasibility of moving flexible ureteroscopy (fURS) from the operating room to our high-volume procedural clinic, which annually performs 16 000 flexible cystoscopies and 2–300 stent insertions under local anesthetic in Edmonton, Alberta, Canada.

Methods: Patients already consented for fURS were approached to have their procedure performed without anesthesia using our ASURE protocol. We were approved for 12 patients through our hospital's patient care management team, and selected patients >18 y/o with renal stones approximately 10 mm, HU<1200, who preferably had prior cystoscopy or stent insertion/removals. We excluded patients who reported procedural anxiety, had chronic pain, or stones requiring basketing/semi-rigid URS. Patients received topical lidocaine per urethra and flexible cystoscopy. A flexible ureteroscope (Innovex 7.5 Fr) was advanced over wire, using Single Action Pump with flow through (Boston Scientific) and Soltive TFL lithotripsy (150 um fiber, 0.2 J/10Hz, increasing by 0.2 J to max 0.6J) (Olympus Medical). All patients were contacted on postoperative day (POD) 1, and at six week with imaging.

Results: Twelve patients were recruited (18 approached). The average age was 64 years (49–81); 40% were female. The average was three stones per renal unit and average stone size was 9 mm (3–13). All were renal stones except for one, which was treated mid-ureter. Thirty percent of patients were symptomatic and none pre-stented. Nine patients reported minimal pain (<3.4/10 VAS) during all stages of the procedure and reported 0/10 pain on POD 1, with full return to normal activity. Three patients tolerated their procedures poorly (>6.4/10 VAS) at one or more stages of their fURS and required perioperative analgesia. All completed their lithotripsy and were discharged home with an average pain VAS 5.6/10 on POD 1 resolving by six weeks. Followup imaging showed a stone-free rate of 84%, and one episode of transient urinary retention was noted at POD 3.

Conclusions: Our pilot evaluation shows that the ASURE protocol is a feasible approach to lithotripsy, with the potential to drastically impact the required infrastructure for contemporary ureteroscopy. Our subsequent prospective clinical trial will seek to define ideal patient characteristics, patient-reported outcomes, and the effects on case costs and resource use.

POD 1.6

Rezum therapy for large prostates (≥80 mL): A multicenter study

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Introduction: Managing large-volume prostates (≥80 mL) in benign prostatic hyperplasia (BPH) is challenging due to the higher complication rates associated with traditional surgical treatments. These patients typically require invasive procedures. Rezum, a minimally invasive treatment that uses water vapor, offers a safer alternative by targeting and ablating obstructive prostate tissue to relieve LUTS.

Methods: This study used a prospective, international registry database that gathered data from two high-volume centers between April 2019 and August 2024. Baseline medical histories, uroflowmetry (Qmax, PVR), and validated questionnaires (IPSS, IPSS QoL, BPHII, IIEF-15, MSHQ-EjD) were collected. The primary outcomes evaluated included symptom scores, functional improvements, and safety at baseline, six, 12, and 24 months.

Results: A total of 259 patients with a mean age of 68.3 years (62.9–73.9) and prostate volumes ≥80 mL were treated with Rezūm. The median prostate volume was 105 mL (91–122.5 mL), and 207 patients (81.2%) had a median lobe. A history of urinary retention was present in 86 patients (33.6%). On average, 13.2 injections (±3.8) were administered per procedure, which lasted an average of 6.9 minutes (±10.1). The IPSS improved from 21.8 (n=212) at baseline to 9.1 at six months (n=131), 6.6 at 12 months (n=107), and 5.7 at 24 months (n=68). The maximum urinary flow rate (Qmax) increased from 8.2 mL/s (n=198) at baseline to 14.6 mL/s at six months (n=45), 14.1 mL/s at 12 months (n=46), and 14.9 mL/s at 24 months (n=33). Postvoid residual (PVR) volume decreased from 132.5 mL (n=196) at baseline to 72 mL at six months (n=42), 60 mL at 12 months (n=93), and 90 mL at 24 months (n=38). The IPSS quality of life (IPSS QoL) score decreased from 4.5 (n=212) at baseline to 1.4 at six months (n=131), 1.65 at 12 months (n=107), and 1.1 at 24 months (n=68). The BPHII score dropped from 7.5 at baseline (n=171) to 3.3 at six months (n=86), 2.9 at 12 months (n=65), and 2.3 at 24 months (n=35). No significant changes in sexual function were observed, as measured by the IIEF and MSHQ.

Conclusions: Rezūm therapy is a safe, effective, and minimally invasive treatment for large prostates (≥80 mL), demonstrating similar outcomes to those for smaller prostates. Significant improvements were seen in urinary symptoms and quality of life, with minimal impact on sexual function.

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