

Poster Session 5: BPH (Part 1)

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MP 5.1

Collective Optilume BPH 2-year clinical outcomes: Combined experience from the pivotal PINNACLE and EVEREST prospective clinical studies

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Introduction: The Optilume BPH catheter system (Urotronic, Inc./Laborie Medical Technologies, Plymouth, MN, U.S.) is an FDA-approved, minimally invasive, drug-coated dilation system designed for addressing BPH-related LUTS. The transurethral radial balloon open (TURBO) prostate procedure has been studied in two clinical investigations (EVEREST and PINNACLE). EVEREST is a prospective, non-randomized, multicenter study (n=80), followed by PINNACLE, a prospective, multicenter, randomized study (n=100). Combined clinical data from these two studies through two-year followup is presented here.

Methods: A total of 179 men with symptomatic BPH were treated with OptilumeBPH in the two studies in Latin America, Canada, and the U.S. The combined study cohort includes men with a mean age of 65 years old and prostate volume of 41 cc. Followup was completed at three, six, 12 months, and annually thereafter. All studies were designed to follow subjects through five years; however, while long-term data continues to be collected, we present the two-year data, as it constitutes a complete dataset for both studies at the time of this abstract.

Results: IPSS improved in subjects treated with OptilumeBPH from 22.9 at baseline to 9.7 at two years. Peak urinary flow rate in subjects treated with Optilume improved from 9.8 mL/s at baseline to 18.1 mL/s at two years. Postvoid residual volume improved from 75 cc at baseline to 56 cc at two years. Sexual function was not impacted based on the IIEF overall satisfaction score from 6.3 at baseline to 6.8 at two years. There were no reported transfusions, retrograde ejaculation, stress incontinence, or stricture formation in the series. BPH retreatment with surgery was observed in three (1.7%) of the subjects.

Conclusions: Subjects with BPH treated with OptilumeBPH TURBO prostate procedure exhibited significant and sustained improvement in symptomatic and functional outcomes, with a remarkable safety profile. There was no impact on erectile function.

MP 5.2

From retention to relief: Characteristics and outcomes of men with urinary retention undergoing Aquablation (analysis of the International Collaborative Aquablation Research Urology Society database)

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Introduction: Urinary retention (UR) is a common and unfortunate end-stage complication of benign prostatic hyperplasia (BPH). Aquablation, a robotic waterjet technology, is a safe and effective treatment for BPH; however, outcomes of those in UR requiring catheterization have not been thoroughly investigated. As such, we sought to evaluate the safety and efficacy of Aquablation in men with UR.

Methods: This study analyzed the International Collaborative Aquablation Research Urology Society (ICARUS) database, which includes men who underwent Aquablation from 2018–2024 at four high-volume centers. Patients were split into two groups based on presence or absence of UR requiring an indwelling catheter or clean intermittent catheterization prior to surgery. Patient demographics, intraoperative, and postoperative outcomes were assessed among both groups.

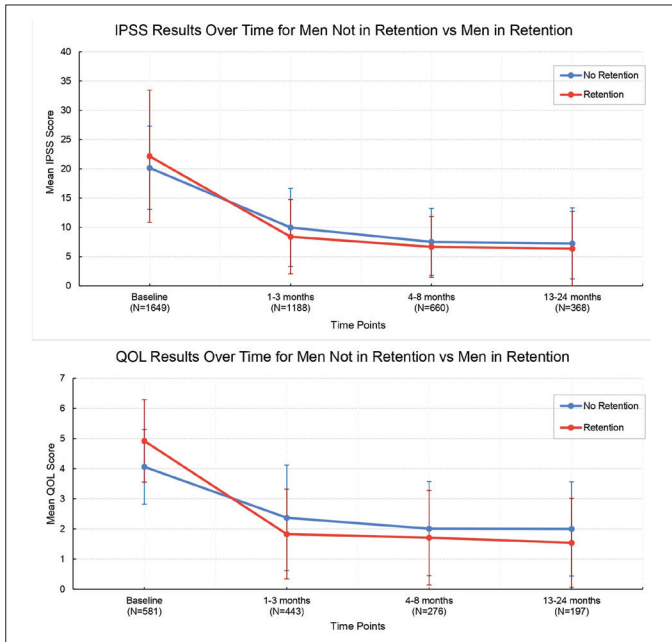
Results: A total of 286 men were in UR compared to 1603 men without UR. Age, comorbidities, and use of anticoagulation were similar between cohorts, but men with UR had larger prostates, higher baseline PSA, and worse urinary symptoms measured by the International Prostate Symptom Score (IPSS) compared to men not in UR. Aquablation and total operating room (OR) times were slightly longer for men in UR, and men in UR had a higher rate of transfusion, 30-day readmission rate, and were slightly less likely to pass their initial trial of void (TOV) (Table 1), but men with UR had similar improvements in functional outcomes at 24 months followup (IPSS, Quality of life [QoL]) (Figure 1). There were no differences in change in International Index of Erectile Function (IIEF) and both groups reported low (<11%) rates of retrograde ejaculation.

Conclusions: This study uses a large, international, real-world database to demonstrate that while men in UR have larger prostates, higher perioperative risks, and were slightly less likely to pass an initial TOV, Aquablation yields similar long-term outcomes compared to men not in UR.

Acknowledgements: ICARUS Study Group (International Collaborative Aquablation Research Urology Society) (Chicago, United States of America).

MP 5.2. Table 1. Multivariable analysis of men with and without UR undergoing Aquablation

	Men not in UR (n=1603)	Men in UR (n=286)	p
Baseline PSA, ng/mL, median (IQR)	3.46 (1.83–5.97)	5.19 (3.08–9.88)	<0.0001
Baseline prostate volume, mL, median (IQR)	74 (54–102)	105 (71–136)	<0.0001
Baseline IPSS, mean (SD)	20.17 (7.11)	22.15 (11.30)	0.0293
Aquablation time, min, median (IQR)	6.5 (5–8)	8 (6.4–9.1)	<0.0001
Total OR time, min, median (IQR)	55 (43–61)	60 (47–75)	0.0002
Takeback for cystoscopy/clot evacuation, n (%)	31 (1.94%)	9 (3.15%)	0.19
Blood transfusion, n (%)	4 (0.25%)	10 (3.5%)	<0.0001
30-day readmission rate, n (%)	10 (0.76%)	6 (2.6%)	0.02
Passed initial TOV, n (%)	1499 (97%)	243 (91%)	<0.0001



MP 5.2. Figure 1. (A) IPSS results over time for men not in retention vs. men in retention. (B) QoL results over time for men not in retention vs. men in retention.

MP 5.3

Global Aquablation experience from the ICARUS database: Largest cohort assessing efficacy and safety in benign prostatic hyperplasia treatment

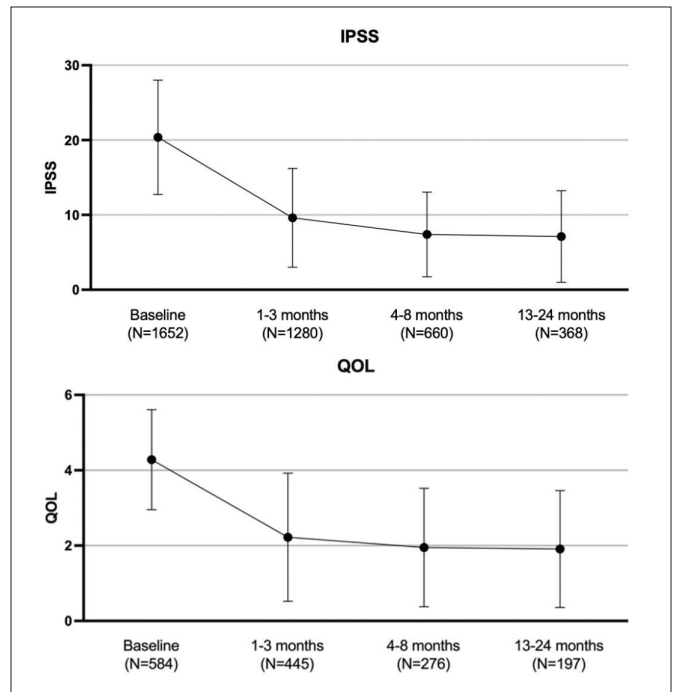
Adel Arezki¹, David Bouhadana¹, Aalya Hamouda³, Kevin C. Zorn², Alexander P. Glaser⁹, Brian T. Helfand⁹, Anouk Leathead⁴, Ilan Ohana⁵, Rosie Foucault⁶, Iman Sadri¹, Jeffrey A. Sioufi⁷, Tiago Rodrigues⁸, Joshua Cabral⁹, Margaret Gannon⁹, Gregory Raster⁹, David Nusbaum⁹, Shawn H. Marhamati¹⁰, John Klein¹⁰, Inderjit Singh¹⁰, James Kearns⁹, Mana AlMuhaideb¹, Abdulla AlAmeeri¹, Rakan AlHaidey¹

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Introduction: Since its FDA approval in 2017, Aquablation therapy has gained international acceptance as a novel, transurethral, image-guided, automated robotic-executed, heat-free waterjet prostate ablation for accurate, safe, and efficacious treatment for BPH. In this study, we introduce the largest real-world international database on Aquablation, aiming to provide a detailed characterization of global experiences, highlighting its clinical outcomes and safety profile.

Methods: Data from 2144 patients who underwent Aquablation from 2018–2024 were retrospectively analyzed in an IRB-approved study using the International Collaborative Aquablation Research Urology Society (ICARUS) database. Baseline demographics, operative characteristics, and functional outcomes — including International Prostate Symptom Score (IPSS), peak urinary flow rate (Q_{max}), postvoid residual (PVR), quality of life (QoL), and International Index of Erectile Function (IIEF) — were assessed preoperatively and at intervals up to 24 months postoperatively.

Results: At baseline, the mean (SD) age was 69 years (8.1), with a median (IQR) prostate volume of 79 mL (57–110) and mean (SD) IPSS of 20.4 (7.7). The median (IQR) operative time was 54 minutes (42–70), and the median (IQR) Aquablation time was seven minutes (5.3–8.5). Most patients (88.6%) experienced no complications (Clavien-Dindo grade 0), with low rates of



MP 5.3. Figure 1. Longitudinal trends of IPSS and QoL outcomes following Aquablation.

Clavien IIIb complications (2.5%) and blood transfusions (0.75%). Retrograde ejaculation was reported in 10% of patients. At 1–3 months postoperatively, median Q_{max} increased from 8.3 ml/s to 21.3 ml/s (p<0.001), median PVR decreased from 106 ml to 24 ml (p<0.001), and median (IQR) PSA decreased from 3.7 (1.9–6.5) to 2.1 (1.0–3.6) (p<0.001). Mean IPSS improved from 20.4 to 9.6 (p<0.001), and median QoL scores improved from 4.0 to 2.2 (p<0.001) (Figure 1). Improvements were sustained over time, with mean IPSS decreasing by 55.1% at 13–24 months and by 65.6% at 60 months compared to baseline (p<0.001). At long-term followup, the surgical retreatment rate for BPH was low at 1.54% and 21.8% of patients on medical management for lower urinary tract symptoms.

Conclusions: Using the largest real-world international database of Aquablation, the study demonstrates significant improvements in urinary flow rates, IPSS, and QoL scores, with sustained benefits. The procedure also shows low complication and retreatment rates, reinforcing the efficacy and safety of Aquablation in BPH management.

MP 5.4

Development and evaluation of RAPTOR-BPH: A retrieval-augmented large language model patient decision aid

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Introduction: The surgical management of benign prostatic hyperplasia (BPH) encompasses a growing range of technologies with varying invasiveness, risks, outcomes, and accessibility. This complexity can hinder effective shared decision-making. Large language models (LLMs) can personalize patient information but are limited by outdated training data and the potential for false information. We developed RAPTOR-BPH, a retrieval-enhanced LLM decision aid that integrates clinical guidelines to deliver accurate, tailored treatment insights.

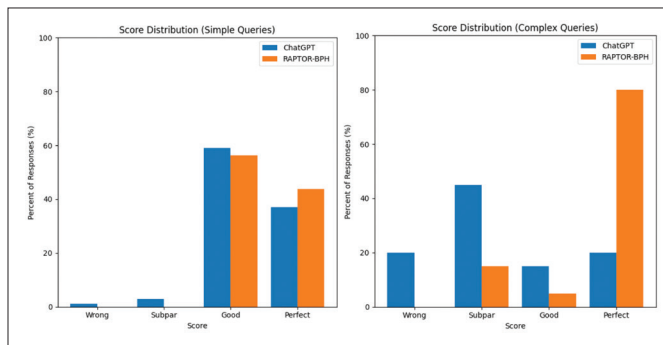
Methods: We built a vectorized BPH knowledge base from current urological society guidelines. A workflow was created to optimize information retrieval, combining hierarchical summarization, indexing, query decomposition, semantic

search, and contextual reranking. RAPTOR-BPH was evaluated against standard ChatGPT on 98 BPH-related queries: 88 simple (basic information) and 10 complex (multifaceted clinical scenarios). Two independent reviewers rated responses on a four-point scale (wrong, subpar, good, perfect). Wilcoxon signed-rank test compared models, and Cohen's Kappa measured inter-rater reliability.

Results: Results are demonstrated in Figure 1. For simple queries, RAPTOR-BPH provided "perfect" or "good" answers in 100% of cases, while ChatGPT achieved 96% ($p < 0.05$, small effect size $r < 0.1$). Inter-rater agreement was substantial for both (Kappa: 0.64 vs. 0.70). For complex queries, RAPTOR-BPH reached "perfect" or "good" in 85% of responses, compared to 35% for ChatGPT ($p < 0.05$, large effect size $r > 0.5$). Inter-rater agreement was substantial for ChatGPT (Kappa=0.72) but moderate for RAPTOR-BPH (Kappa=0.41).

Conclusions: We introduce RAPTOR-BPH, a retrieval enhanced LLM patient decision-aid for BPH related queries. Preliminary evaluations suggest that RAPTOR-BPH improves the accuracy and quality of patient information compared to standard ChatGPT. Further studies will assess its acceptability, feasibility, and effectiveness in clinical settings.

Acknowledgements: This abstract was accepted for presentation at AUA 2025.



MP 5.4. Figure 1. Comparison of model performance for both (A) simple and (B) complex queries.

MP 5.5

Aquablation for benign prostatic hyperplasia: WATER, WATER II, OPEN WATER, FRANCAIS WATER, and JAPAN PMS studies

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Introduction: Aquablation combines real-time imaging and robotic, water-jet ablation for the treatment of benign prostatic hyperplasia (BPH). It has gained recognition for its potential to deliver effective symptom relief with a favorable safety profile. This analysis consolidates data from multiple international studies—WATER, WATER II, OPEN WATER, FRANCAIS WATER, and JAPAN PMS—to evaluate the long-term outcomes of Aquablation across diverse patient populations. Herein we assess the long-term efficacy and safety of Aquablation in the management of BPH, focusing on symptom improvement, quality of life, and complications.

Methods: Patient-level data were aggregated from five multinational studies involving patients with BPH treated with Aquablation. Key parameters evaluated included International Prostate Symptom Score (IPSS), quality of life (QoL) scores, peak urinary flow rate (Qmax), and postvoid residual volume (PVR) at baseline, one month, three months, six months, and 12 months post-procedure.

Results: In this multinational analysis involving 528 patients, the mean age was 67.8 ± 7.7 years, with a mean prostate volume of 71.7 ± 32.0 mL. At baseline, the IPSS was 21.5 ± 7.3 , reflecting moderate to severe symptoms. At three months post-Aquablation, the IPSS significantly decreased to 7.0 ± 5.6 , further improving to 5.8 ± 5.0 at six months, and stabilizing at 6.6 ± 5.5 by 12 months. Quality of life, as measured by the IPSS QoL score, showed a substantial decline from 4.7 ± 1.2 at baseline to 1.7 ± 1.6 at three months, and remained low at 1.4 ± 1.5 at both six and 12 months. Qmax increased significantly from a baseline of 8.1 ± 5.0 mL/s to 19.0 ± 11.1 mL/s at three months, and continued to improve to 20.5 ± 11.0 mL/s by 12 months. PVR demonstrated a notable reduction from 105.9 ± 106.9 mL at

baseline to 45.8 ± 62.0 mL at three months, and 53.1 ± 68.1 mL by 12 months. The voided volume also increased, from 197.5 ± 101.9 mL at baseline to 229.2 ± 123.4 mL at three months and reaching 271.9 ± 151.9 mL by 12 months.

Conclusions: Aquablation demonstrates sustained efficacy in reducing BPH symptoms and improving quality of life over a 12-month period. The findings from this multinational analysis support Aquablation as a safe and effective treatment option for patients with BPH.

Acknowledgements: Funded by Procept Biorobotics.

MP 5.6

Outcomes of Rezūm therapy in a large, multicenter, international cohort: 3-year analysis in patients with benign prostatic hyperplasia

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Introduction: Despite its growing popularity, long-term data on the efficacy and safety of Rezūm remains limited. This study aimed to provide valuable insights into the long-term outcomes of Rezūm therapy by analyzing a cohort of patients who underwent the procedure and were followed for three years. Our objective was to assess the durability and improvement of lower urinary tract symptom relief.

Methods: A prospective, international registry was established for Rezūm therapy at two high-volume centers. We reviewed data for patients followed between April 2019 and October 2021. All patients had baseline medical and BPH history documented, along with uroflowmetry (Qmax and PVR), and validated questionnaires (IPSS, IPSS QoL, BPHII, IIEF-15, MSHQ-EJD function and bother).

Results: In this study, we evaluated 712 patients with a three-year followup, analyzing LUTS and sexual function. The mean age at treatment was 67.2 years (SD 8.9). The mean baseline prostate volume was 74.1 cc (SD 34.4) and 66.8% of patients had a median lobe. The total mean number of vapor injections was 9.6 (SD 4.3), and the average scope-in time was 6.5 minutes (SD 23.9), with a median of four minutes. Patient followup data for postvoid residual (PVR) volumes showed a decline from a baseline mean of 134.9 mL ($n=598$) to 49.5 mL at 12 months ($n=262$), 47.8 mL at 24 months ($n=145$), and 38.5 mL at 36 months ($n=18$). Qmax demonstrated improvement, increasing from a baseline mean of 8.6 mL/s ($n=584$) to 14.5 mL/s at 12 months ($n=139$), 15 mL/s at 24 months ($n=103$), and 12.1 mL/s at 36 months ($n=17$). The IPSS showed a notable decrease, with baseline scores averaging 22 ($n=627$), then dropping to 9.6 at 12 months ($n=335$), 9.1 at 24 months ($n=207$), and remaining stable at 9.8 at 36 months ($n=64$). The IPSS-QoL score improved from a baseline mean of 4.5 ($n=627$) to 2.1 at 12 months ($n=334$), 1.8 at 24 months ($n=207$), and 1.9 at 36 months ($n=64$). BPHII improved from a baseline mean of 7.7 ($n=489$) to 2.9 at 12 months ($n=210$), 2.2 at 24 months ($n=105$), and 2.7 at 36 months ($n=51$). No statistically significant differences were observed in the IIEF or the MSHQ-EJD function and bother domains.

Conclusions: The Rezūm procedure resulted in significant improvements with sustained benefits over three years. These findings underscore the treatment's effectiveness in enhancing patient well-being while maintaining stable sexual function.

Acknowledgements: Funded by Boston Scientific.

MP 5.7

Aquablation for benign prostatic hyperplasia and prostate cancer: A safe and effective treatment option

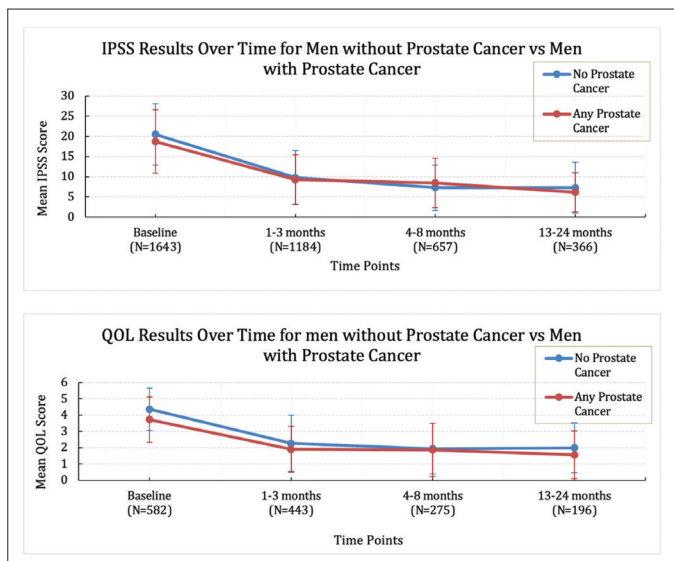
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Introduction: Aquablation has gained recognition as an effective treatment for lower urinary tract symptoms secondary to benign prostatic hyperplasia (BPH); however, its application in patients with prostate cancer (PCa) is underexplored. Currently, regulatory and clinical guidelines in various regions may limit the use of Aquablation in patients with known PCa, including those with low-risk PCa experiencing significant urinary symptoms from an enlarged prostate. This study aimed to evaluate the safety, efficacy, and outcomes of Aquablation in patients with known and incidentally detected PCa.

Methods: Data was obtained from the International Collaborative Aquablation Research Urology Society (ICARUS) database. A total of 1885 men who underwent Aquablation were identified and divided into two groups based on the presence or absence of any PCa. Variables and outcomes assessed included baseline demographics, operative characteristics, and functional outcomes, such as International Prostate Symptom Score (IPSS), peak urinary flow rate (Q_{max}), and postvoid residual at regular intervals over 24 months.

Results: Among the study participants, 122 had PCa (50% on active surveillance, 33% with incidental PCa, 12% pre-radiation treatment, 6% other) compared to 1761 men without PCa. Both groups had similar prostate volumes but the PCa group was significantly older (71.1 vs. 68.9 years, p=0.002) with a higher pre-operative PSA (6.65 vs. 3.5 ng/mL, p<0.001) and Prostate Health Index (45 vs. 28, p<0.001). There was no difference in the specimen weight from the limited post-Aquablation resection between groups (12 g). Postoperatively, there were no significant differences in transfusions, perioperative complications, or 30-day readmission rates. At three months, PSA and Prostate Health Index levels were higher in the PCa group (4.43 vs. 2.94 ng/mL, p=0.004 and 27 vs. 37, p<0.001, respectively) (Figure 1). Men with PCa had a slightly lower three-month change



MP 5.7. Figure 1. IPSS and QoL improvement over time in men with and without PCa after Aquablation.

in IIEF score (-2.00 vs. 0.09, p=0.002) but 24-month postoperative improvements in voiding parameters (IPSS, QoL, PVR, Q_{max}) were comparable between groups (Figure 1).

Conclusions: Aquablation is a safe and effective treatment for BPH in patients with PCa. Men with PCa do not experience a higher rate of complications compared to men without PCa, and urinary outcomes are similar. Medicare should lift the current restriction on Aquablation for men with PCa.

Acknowledgements: Accepted as a poster at AUA 2025.

MP 5.8

The relationship between time until surgery for BPH and postoperative outcomes: A retrospective study

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Introduction: Chronic bladder outlet obstruction from BPH causes maladaptive changes in the bladder. It is unknown if patients who delay BPH surgery have worsened postoperative outcomes. We assessed whether longer time between diagnosis of BPH and surgical treatment affected this.

Methods: Data from patients who received TURP or HoLEP from 2018–2024 were collected. Patients receiving surgery within two weeks or with acute urinary retention (AUR) at time of surgery were removed after collection. Negative postoperative outcomes were incontinence, medication for LUTS, IPSS change ≤ 5 , or AUR, all six months postoperatively. Leaving the hospital with a postoperative catheter was considered AUR. Those with incomplete data were removed from the relevant analyses. Welch's t-test was used to investigate outcomes and longer time to surgery. Simple linear regression was done to assess the connection between time to surgery and prostate size.

Results: Post-exclusions, 53 patients had TURP, and 110 had HoLEP. Mean time from clinic visit to surgery was 35.0 months (45.7). Delayed time to surgery was not associated with negative outcomes. A shorter time to intervention with TURP was significantly associated with postoperative AUR. A shorter duration from presentation to surgery was significantly associated with larger prostate volume for HoLEP (R²=0.03) but not TURP. The complete results are shown in Table 1.

Conclusions: No association was found between longer time between first urology visit for LUTS and negative postoperative outcomes. TURP patients with sooner surgery may have increased BPH severity, affecting postoperative AUR. The statistically significant relationship between time to surgery and prostate volume with HoLEP is likely because symptoms are not only determined by prostate size. Delayed decision to operate may not affect outcomes; conversely, the first visit to the urology clinic may not be a reliable indicator of disease onset. Urologists should base operative decisions on the course of disease rather than on followup duration in clinic.

MP 5.9

Benign prostatic hyperplasia growth rate based on MRI from a tertiary referral center

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Introduction: With the emergence of novel surgical technologies in managing BPH according to prostate size, it becomes crucial to understand prostate growth in men. Magnetic resonance imaging (MRI) remains one of the most accurate clinical methods for measuring prostate size. Few studies have successfully used MRI to predict prostate size in the past, and most studies rely on autopsy studies done more than 30 years ago. We aim to assess the ongoing prostate growth in men with BPH using MRI data.

Methods: We retrospectively identified all men who had ≥ 3 prostate MRIs done at our institution from 2014–2023. A linear mixed-effects model was employed to investigate factors associated with changes in prostate volume, incorporating both fixed effects for covariates and random effects to account for individual variability.

Results: A total of 145 patients were included, contributing 511 prostate volume measurements over time. On average, prostate volume increased by 1.59 mL per unit increase in time after adjusting for other covariates. The median number of observations per patient was 3.5 MRIs, indicating multiple followup

MP 5.8. Table 1. Effects of time to surgery on outcome variables, and assessment of effect of prostate size on time to surgery

	TURP			HoLEP		
Age (SD)	71.2 (7.4)			72.9 (7.19)		
n	53			110		
	Mean time to surgery of non-failure group (months)	Mean time to surgery of failure group (months)	p	Mean time to surgery of non-failure group (months)	Mean time to surgery of failure group (months)	p
Postoperative incontinence at 6 months	40.2	102.5	0.2	24.9	39.0	0.2
Continued use of medication for LUTS at 6 months	42.9	93.7	0.3	27.1	33.5	0.5
IPSS difference ≤5 at 6 months	38.7	50.0	0.5	31.5	20.7	0.6
≥1 postoperative episode of acute urinary retention	57.6	27.1	0.03*	29.8	29.2	0.9
	Mean value (cc)	Adjusted R ²	p	Mean value (cc)	Adjusted R ²	p
Prostate volume	54	0.03	0.05	129	-0.01	0.5

*Statistically significant.

measurements for most individuals. Higher baseline PSA levels and the use of 5-alpha-reductase inhibitors and alpha-blockers were associated with larger prostate volumes during followup. In addition, patients with larger prostate size at baseline experienced more considerable growth on followup. History of prostate cancer; being on active surveillance for prostate cancer; and PI-RADS score did not impact prostate growth.

Conclusions: We have identified several factors that affect prostate growth over time. Average growth was found to be 1.59 ml/year. PSA level and use of BPH medication were linked to more considerable prostate growth, and a history of prostate cancer or survival for prostate cancer did not affect overall prostate growth, indicating BPH as the main culprit in prostate growth.

MP 5.10
Improving upstream care: Most patients are unaware of lifestyle managements and medical side effects for lower urinary tract symptoms prior to urology assessment in Canada

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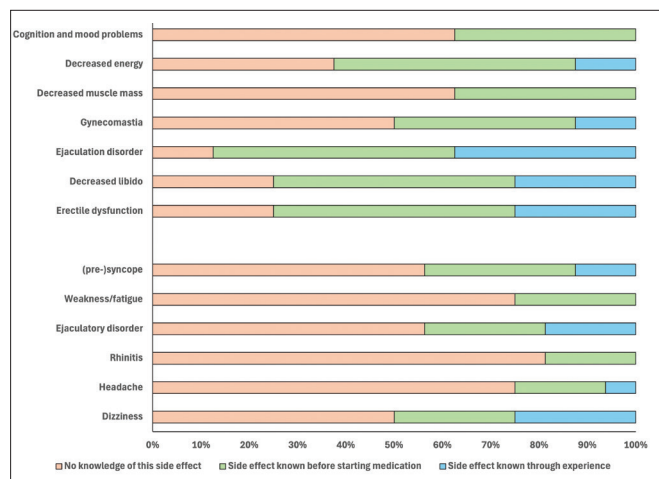
Introduction: Treatment of benign prostatic hyperplasia (BPH) and lower urinary tract symptoms (LUTS) includes lifestyle changes, medication, and interventions. With limited healthcare access in Canada, patients may have delays in presenting to urology. Patients' understanding and previous treatment at the time of their first visit to urology is not well understood. We studied patients' knowledge of conservative management, medications, and side effects prior to their initial urology assessment.

Methods: Patients at their initial urology visit for BPH/LUTS were given an anonymous survey to capture patient demographics, BPH medication history, delays in accessing care, and knowledge of conservative options and BPH medications, including their side effects.

Results: From 57 invitees, 42 completed and four partially completed surveys were collected. The mean age was 68.2 (SD 10.2). Patients reported an average of 2.3 (SD 5.6) years from symptom onset to general practitioner visit and 6.7 (SD 7.2) years to have urology assessment. Of 44 respondents, 36 (81.8%) did not recall conservative management counseling; 44.2% of patients had trialed alpha-blockers (ABs), 20.9% 5alpha-reductase inhibitors (5ARIs), 2.3% anticholinergics, 2.3% mirabegron, 4.7% phosphodiesterase-5 inhibitors (PDE5i), and 11.6% herbal medications, while 41.9% had never tried any BPH medications. Over 50% of the patients knew the 5ARI sexual side effects, but <50% knew the AB side effects (Figure 1).

Conclusions: Canadians with BPH report an average 6.7 years between symptom onset and urology assessment. During this time, over 80% of this cohort did not recall conservative therapy counseling, 41.9% had not trialed medica-

tion, and side effects of these medications were not well understood. Given long specialist wait times in Canada, improving primary care counseling and treatments may enhance patient care while waiting and/or reduce number of consultations required.



MP 5.10. Figure 1. Patient knowledge of side effect profiles of medications for BPH treatment.

MP 5.11
Salvage Aquablation treatment in recurrent lower urinary tract symptoms: An analysis of the International Collaborative Aquablation Research Urology Society (ICARUS) database

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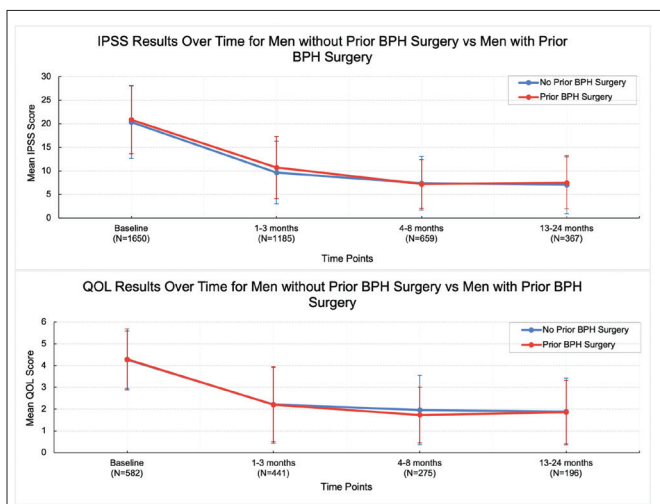
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Introduction: Aquablation is a cutting-edge, transurethral, image-guided, robotic, heat-free, waterjet-based technique for ablating benign prostatic hyperplasia (BPH) and alleviating lower urinary tract symptoms (LUTS) with speed and improved safety compared to conventional methods; however, its effectiveness as a salvage BPH therapy for refractory/recurrent LUTS following prior BPH surgery has yet to be investigated. As such, we sought to evaluate the safety, effectiveness, and clinical outcomes of Aquablation as a salvage therapy.

Methods: Data was obtained from the International Collaborative Aquablation Research Urology Society (ICARUS) database. A total of 1885 men who underwent Aquablation were divided into two groups based on the presence or absence of a previous BPH surgery. Variables and outcomes assessed included baseline demographics, operative characteristics, and functional outcomes, such as International Prostate Symptom Score (IPSS), International Index of Erectile Function (IIEF), peak urinary flow rate (Qmax), and quality of life score (QoL) at regular intervals over 24 months.

Results: Among the study population, 109 men had undergone a prior BPH surgery (20% photo-vaporization of the prostate [PVP], 20% transurethral resection of the prostate [TURP], 21% water vapor thermal therapy [WVTT], 27% prostatic urethral lift [PUL], and 12% other). The remaining 1778 men served as a control cohort. Preoperatively, both the salvage and control groups had similar age, prostate volume (82 vs. 78 cc, p=0.19), and LUTS-related medication use. Men with prior BPH surgery were less likely to have a median lobe (46% vs. 67%, p<0.0001) and had a lower preoperative Qmax (6.75 vs. 8.50 ml/s, p=0.02). Operating room time was significantly lower in the salvage group (56 vs. 50 minutes, p=0.003). There were no significant differences in perioperative complications, 30-day readmission rates, surgical retreatment rates, retrograde ejaculation rates, or postop IIEF scores. There were similar improvements in voiding outcomes, including Qmax, PVR, IPSS, and QoL scores (Figure 1).

Conclusions: Aquablation shows comparable safety and effectiveness as a salvage therapy for recurrent LUTS following previous BPH surgery. Aquablation should be offered for men who have failed prior procedures but want to preserve continence and sexual function.



MP 5.11. Figure 1. (A) IPSS results over time for men without prior BPH surgery vs. men with prior BPH surgery. (B) QoL results over time for men without prior BPH surgery vs. men with prior BPH surgery.

MP 5.12

Rezūm water vapor injection thermal therapy: Functional outcomes in massively enlarged prostates

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Introduction: Rezūm water vapor thermal therapy is frequently used for prostates under 80 cc, while massively enlarged prostates >150 cc are typically treated with open and endoscopic enucleation. This study aims to evaluate clinical outcomes in prostates >150 cc treated with Rezūm.

Methods: We analyzed data from an International Rezūm registry database, which prospectively collated information from two high-volume centers between April 2019 and August 2024. Eligible patients were those with prostates above 150 cc. Variables such as patient demographics, operative characteristics, and functional outcomes were assessed at baseline, as well as at three, six, and 12 months post-procedure.

Results: The study evaluated 27 patients with a mean age of 72 years (68.3–77) years and a median prostate volume of 160 cc (151.5–179). Among them, 22 patients (81.5%) exhibited a median lobe, and 15 patients (55.6%) had a history of urinary retention. The median number of vapor injections performed was 17.6 (15–21), and the average scope-in duration was 6.3 minutes. Significant improvements were observed in urinary function. Maximum urinary flow rate (Qmax) increased from 6.7 mL/s at baseline (n=14) to 10.3 mL/s at three months (n=2), reaching 20 mL/s at six months (n=1), and 13.9 mL/s at 12 months (n=2). Postvoid residual volume (PVR) decreased from 149 mL at baseline (n=14) to 50 mL at three months (n=2), 10 mL at six months (n=2), and 36.8 mL at 12 months (n=5). Patient-reported outcomes also improved considerably. IPSS decreased from 21.1 at baseline (n=13) to 10.3 at three months (n=9), 5.6 in six months (n=7), and 6.8 in 12 months (n=4). IPSS QoL decreased from 4.2 at baseline (n=13) to 2.4 at three months (n=9), 1.1 in six months (n=7), and 1 in 12 months (n=4). BPHII also showed improvement from 6.6 at baseline (n=12) to 3.2 at three months (n=6), 1.4 in six months (n=7), and 1.3 in 12 months (n=3).

Conclusions: Water vapor thermal therapy demonstrates encouraging results in enhancing urinary function and quality of life for older patients with BPH volumes exceeding 150 cc. This procedure is associated with a favorable safety profile and minimal bleeding. The substantial improvements in urinary flow and symptom relief highlight vapor injection therapy as an effective treatment option for patients with massively enlarged prostates seeking a minimally invasive treatment alternative.

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MP 5.13

Remuneration and trends in utilization in open simple, robotic simple prostatectomy, and laser enucleation procedures at Canadian academic institutions

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Introduction: Previous studies have identified disparities with transurethral resection of the prostate (TURP) endoscopic fees between provinces and the lack of dedicated laser enucleation of the prostate (LEP) codes. There is a lack of data on fee structure among guideline-recommended BPH procedures for large prostate volumes. We assessed the remuneration and temporal utilization

trends for LEP, open simple prostatectomy (OSP), and robotic-assisted simple prostatectomy (RASP) at academic centers in Canada.

Methods: The availability, number of procedures performed, and provincial remuneration fee codes were assessed for LEP, RASP, and OSP at six academic centers across Canada from 2019–2023 (Table 1). Additionally, perioperative data was compared between LEP and RASP/OSP at UBC from 2021–2023. The mean length of hospital stay, duration of surgery, blood loss, and duration of postoperative catheterization were compared between both groups with a Welch two-sample T-test (Table 2).

Results: From 2019–2023, LEP utilization has increased substantially from 260 to 460 per year at Canadian centers, while RASP and OSP are minimally used (Table 1). Moreover, remuneration for these procedures differs significantly from \$403.30 to \$702.44 for OSP, \$474.92 to \$804.19 for RASP, and \$450.60 to \$1153.04 for LEP in different provinces (Table 1). Hourly reimbursement was, on average, higher for LEP. At UBC, there was a significant difference between the duration of postoperative catheterization, but not between the length of hospital stay, duration of surgery, and blood loss between the LEP and RASP/OSP groups (Table 2).

MP 5.13. Table 1. Trends in the numbers of LEP, RASP, and OSP from 2019–2023 and site-specific billing codes

Year of Surgery	LEP (total numbers)	RASP (total numbers)	OSP (total numbers)
2019	260	1	29
2020	198	0	30
2021	299	0	32
2022	409	3	27
2023	460	2	13

Fee codes	LEP	RASP	OSP
British Columbia	\$948.67	\$474.92	\$474.92
Alberta	\$779.99	\$693.32	\$693.32
Manitoba	N/A	N/A	\$702.44
Ontario	\$450.60	\$804.19	\$643.35
Québec	\$458.10 (+\$211.10 if anesthesia time 2.5h or more)	\$603.30	\$403.30
Nova Scotia	\$1153.04	\$623.37	\$623.37

N/A: no dedicated fee code, other codes sometimes billed in lieu.

MP 5.13. Table 2. Mean length of hospital stay, duration of surgery, blood loss, duration of postoperative catheterization, and relative physician reimbursement per hour between the LEP and RASP/OSP groups at UBC from 2021–2023

Patient-specific Factors	LEP (n= 541)	RASP/OSP (n= 8)	p
Mean length of hospital stay (days)	1.20	2.25	0.13
Mean duration of surgery (minutes)	95.67	222.5	0.29
Mean blood loss (mL)	175.38	535.71	0.31
Mean duration of postoperative catheterization (days)	1.98	10.75	<0.01
Mean relative physician reimbursement/hour	\$948.67/1.6h = 592.92\$/hr	\$474.92/3.7h = 128.36\$/hr	N/A

Conclusions: The use of treatments for large prostates is currently changing in Canada, with an increasing number of LEPs performed at major academic centers across Canada. Remuneration is substantially different for the same procedures across provinces. RASP is associated with longer catheterization compared to LEP, with many possible confounders.

MP 5.14 HoLEP in nonagenarians and octogenarians with large prostates is safe and effective: A retrospective, single-center analysis

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Introduction: Past studies have found minimal differences in outcomes for patients over 75 compared to those under 75 for holmium laser enucleation of the prostate (HoLEP). As the average lifespan increases, we aimed to assess the feasibility and safety of HoLEP for octogenarians and nonagenarians, specifically focusing on large prostates.

Methods: This retrospective analysis included patients who underwent HoLEP for BPH at a single center from August 2014 to August 2024 with large prostates (>60 cc). Octogenarians and nonagenarians were compared across preoperative, perioperative, and postoperative outcomes. Outcomes were compared using Welch's t-test.

Results: A total of 62 patients met the inclusion criteria: 50 octogenarians and 12 nonagenarians. Average prostate volume was 162 ml and 126 ml, respectively. The two groups had similar preoperative medical conditions, prostate volumes, and rates of urinary retention. No significant differences were observed in total operation time, resected adenoma weight, complication rate, duration of catheterization, length of hospital stay, or success rate for the first trial of voiding (Table 1). Perioperative complications classified as Clavien-Dindo (CD) IIIb occurred in one nonagenarian (8%, takeback for repeat morcellation). No patients experienced postoperative complications of CD III or greater, while serious but recoverable postoperative complications, such as fever secondary to infection, deep vein thrombosis, or transient atrial fibrillation, were observed in 12% of octogenarians and 17% of nonagenarians; 83% and 88% of patients passed their first trial of void.

MP 5.14. Table 1. Comparison of preoperative, perioperative, and postoperative outcomes between octogenarians and nonagenarians undergoing HoLEP

	Age range		
	80s (n=50)	90s (n=12)	p
Pre-op			
Prostate medications (%)	58%	92%	0.004*
Prostate volume (mL)	160.8	125.7	0.1
Urinary retention (%)	40%	70%	0.1
Intraoperative			
Total operation time (min)	115.9	111.8	0.7
Resected adenoma weight (g)	125.9	110.3	0.5
Pathology (% cancer)	18%	0%	0.002*
Clavien Dindo >II (%)	0%	8%	0.3
Post-op			
Length of catheterization (days)	2.7	3.2	0.8
Length of hospital stay (days)	1.4	1.5	0.6
1st trial of voiding (% failed)	12%	17%	0.7
Clavien Dindo >II (%)	0%	0%	-

Conclusions: Operative outcomes were similar in octogenarians and nonagenarians who underwent HoLEP for large prostates in this single-center study. Perioperative and postoperative complication rates were minimal and recoverable, and for older patients, especially in chronic urinary retention, these risks may be acceptable. Patient selection and informed consent remains critical.

MP 5.15
Assessing predictive factors for failed trial of void following Rezum water vapor therapy for benign prostatic hyperplasia

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Introduction: Benign prostatic hyperplasia (BPH) is a highly prevalent disease affecting many men in their mid to late stages of life. Rezum water vapor therapy, a minimally invasive treatment for BPH that uses convective water vapor energy to decrease the area of the obstruction, has been documented for its safety and efficacy. Following the Rezum water vapor therapy, patients are discharged with a Foley catheter insertion and undergo a trial of void (TOV) at the time of catheter removal. A failed TOV results in a recatheterization, leading to prolonged discomfort and increased risk for urinary tract infection. Our objective was to fill the gap in literature by investigating patient variables that may be associated with the rate of failed TOV following the procedure in an outpatient setting.

Methods: We conducted a retrospective study of patients undergoing Rezum water vapor therapy at a Canadian ambulatory surgical center from April 2022 to November 2024. We retrospectively collected data from patients who were over the age of 18, receiving Rezum water vapor therapy, and were not using a Foley catheter prior to the procedure. Baseline characteristics, number of injections, and postoperative progress markers were recorded. Univariate logistic regression analysis for each collected variable was performed to determine predictive factors.

Results: From April 2022 to June 2024, a total of 262 procedures were performed. The mean patient age was 68.9±8.0 years with a BMI of 29.4±5.0. Of these patients, 5% (n=9) failed the TOV, 8.4% (n=15) initially passed urine but subsequently failed the TOV, and 86.6% (n=55) had a successful TOV. All TOVs were performed at a one-week postoperative followup. Following univariate logistic regression analysis, preoperative postvoid residual volume (PVR) was shown to affect the outcome of the TOV (p=0.0125), with age, BMI, gland size, median lobe size, total injections, and median lobe injections not being significantly associated with the TOV failure.

Conclusions: Our results indicate preoperative PVR as the only significant predictive factor for a failed TOV following catheterization after Rezum water vapor therapy in an outpatient setting. Identifying the population with a higher risk of recatheterization may allow for enhanced patient care. Continued longer-term followup is needed to determine postoperative surgical outcomes.

MP 5.16
Does postoperative antibiotic prophylaxis reduce urinary tract infection rates after holmium laser enucleation of the prostate? A randomized prospective clinical trial

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Introduction: We aimed to evaluate whether a three-day course of antibiotics following holmium laser enucleation of the prostate (HoLEP) reduces the incidence of postoperative urinary tract infections (UTIs) in a randomized controlled trial (RCT).

Methods: We included 89 patients who underwent HoLEP using MOSES™ 2.0 technology between November 2023 and September 2024 in this ongoing RCT. Patients' preoperative parameters, including prostate characteristics, were assessed, and all had a negative preoperative urine culture. All participants were discharged with a scheduled urine culture to be performed on postoperative day

3 (POD 3), regardless of whether they exhibited UTI symptoms. Intraoperative parameters and perioperative outcomes, including hospital admission and the incidence of postoperative UTIs, were collected and analyzed. Outcome measures, including IPSS, QoL, Qmax, and PVR, were collected and analyzed at one, three, and six months, with PSA measured at three months.

Results: The antibiotic and no-antibiotic groups consisted of 45 and 44 patients, respectively. There were no statistically significant differences in preoperative characteristics or intraoperative parameters between the two groups. On POD 3, 12 patients (26.7%) in the antibiotic group exhibited UTI symptoms, compared to 14 patients (31.8%) in the no-antibiotic group (p=0.34); however, only

MP 5.16. Table 1. Patient demographics, preoperative, operative, and postoperative data (up to 6 months)

Parameters	Antibiotics 45 patients	No antibiotics 44 patients	p	
Patient demographics and preoperative data				
Age years median (range)	76 (57–90)	73 (51–84)	0.17	
BMI kg/m ² median (range)	27.8 (20.1–35.2)	27.1 (23.9–32.1)	0.41	
Comorbidities n (%)	None	17 (37.8)	18 (40.9)	0.21
	HTN	8 (17.8)	9 (20.5)	
	DM	0 (0)	3 (6.8)	
	DM + HTN	9 (20)	6 (13.6)	
	HTN + CAD	11 (24.4)	8 (18.2)	
Preoperative IPSS median (range)	22 (15–32)	21 (15–34)	0.48	
Preoperative QoL median (range)	5 (3–6)	5 (3–6)	0.18	
Preoperative Qmax mL/s median (range)	9.8 (2–14.9)	8.1 (2–14.7)	0.4	
Preoperative PVR mL median (range)	126 (0–734)	138 (0–558)	0.94	
Preoperative PSA ng/mL median (range)	3.8 (0.5–16.8)	3.3 (0.32–25)	0.052	
TRUS prostate volume cc median (range)	108.7 (71.1–253)	101.7 (60–224.5)	0.12	
ASA score median (range)	3 (2–4)	3 (2–4)	0.71	
Operative and early postoperative findings				
Enucleation time min median (range)	41 (15–88)	38 (17–70)	0.08	
Morcellation time min median (range)	10 (4–43)	8 (2–30)	0.051	
Hemostasis time min median (range)	7 (3–16)	6 (3–15)	0.06	
Resected weight g median (range)	92 (50–223)	87 (30–199)	0.2	
Energy kJ median (range)	77 (34–122)	68 (38–161)	0.072	
Hospital stay hours median (range)	5 (4–48)	5 (4–48)	0.55	
Admissions n (%)	4 (8.9)	4 (9.1)	0.82	
Duration of catheterization hours	3 (2–46)	3 (3–46)	0.99	
UTI symptoms on POD 3 n (%)	12 (26.7)	14 (31.8)	0.34	
Positive postoperative culture on POD 3 n (%)	3/44*(6.8)	6/44 (13.6)	0.19	

*One patient missed their postoperative culture on POD 3.

MP 5.16. Table 1 (cont'd). Patient demographics, preoperative, operative, and postoperative data (up to 6 months)

Parameters	Antibiotics 45 patients	No antibiotics 44 patients	p
One-month followup			
Number of patients	43	41	–
IPSS median (range)	9 (0–23)	11 (2–21)	0.2
QoL median (range)	3 (0–6)	3 (0–6)	0.53
Qmax mL/s median (range)	21.5 (5.6–40.8)	19 (12.2–42.2)	0.8
PVR mL median (range)	45 (0–228)	63.5 (0–203)	0.17
UTI symptoms n (%)	3 (7)	4 (9.8)	0.51
Positive urine culture n (%)	1/3 (33.3)	0/4 (0)	0.21
Three-month followup			
Number of patients	36	34	–
IPSS median (range)	8 (0–23)	7 (3–24)	0.95
QoL median (range)	1 (0–6)	1 (0–6)	0.68
Qmax mL/s median (range)	23.5 (8.2–43)	20.5 (10.8–39)	0.36
PVR mL median (range)	45 (0–140)	53 (0–188)	0.87
PSA ng/mL median (range)	0.69 (0.023–12)	0.7 (0.1–4)	0.85
Six-month followup			
Number of patients	22	18	–
IPSS median (range)	4 (0–12)	6 (2–23)	0.08
QoL median (range)	1 (0–3)	1 (0–6)	0.4
Qmax mL/s median (range)	28 (8.8–45.7)	23.5 (11.5–50.2)	0.38
PVR mL median (range)	33.5 (0–121)	44 (0–604)	0.9
*One patient missed their postoperative culture on POD 3.			

three patients (6.8%) in the antibiotic group had a positive urine culture on POD 3, compared to six patients (13.6%) in the no-antibiotic group ($p=0.19$). One patient in the no-antibiotic group presented to the emergency room (ER) with acute epididymo-orchitis. At one-month followup, only one patient in the antibiotic group had a positive urine culture. Postoperative outcomes, including IPSS, QoL, Qmax, PVR, and PSA, were comparable between the two cohorts up to six months postoperatively (Table 1).

Conclusions: The administration of postoperative antibiotic prophylaxis following HoLEP does not significantly reduce the incidence of UTIs. This clinical trial will provide valuable insights into the practice of prescribing postoperative antibiotics after HoLEP, potentially reducing unnecessary antibiotic use.

MP 5.17**Recurrent urinary retention prior to surgery for benign prostatic hyperplasia is associated with unfavorable outcomes**

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Introduction: Previous studies have demonstrated that preoperative urinary retention increases the risk of postoperative complications in patients undergoing a benign prostatic hyperplasia (BPH) procedure. This study aimed to evaluate whether multiple preoperative retention episodes requiring catheterization are associated with worsened postoperative outcomes.

Methods: This retrospective cohort study used Merative™ MarketScan® Commercial Database from January 1, 2007, to December 31, 2022. Adult male patients (≥ 50 years) with a first-time diagnosis of BPH who underwent a BPH procedure were included. Patients treated within two weeks of diagnosis or with neurologic conditions were excluded. Postoperative outcomes within one year, including urinary retention, overactive bladder (OAB), incontinence, and healthcare utilization, were analyzed based on preoperative retention episodes (none, one, or two or more episodes of preoperative catheterization).

Results: Among 74 325 men meeting the inclusion criteria, a “dose-dependent” relation between preoperative catheterization and postoperative outcomes was observed. Most patients (80.7%) had no preoperative catheterization, while 10.5% had one episode and 8.8% had two or more. Postoperative urinary retention was significantly higher with one preoperative catheterization episode across most procedures, including laser (OR 1.452, $p<0.001$) and TURP (OR 1.723, $p<0.05$), and even higher with two or more catheterizations (TURP: OR 2.326, $p<0.01$; MIST: OR 2.046, $p<0.001$). Reoperation rates were higher for patients with at least one episode of preoperative catheterization undergoing laser (OR 1.477, $p<0.001$). Additionally, postoperative BPH medication use increased significantly with catheterization, notably in laser (OR 1.165, $p<0.01$) and MIST (OR 1.727, $p<0.001$) groups. Postoperative ER and postoperative clinic visits also increased significantly in the MIST (IRR 2.048, $p<0.001$) and TURP (IRR 2.123, $p<0.001$) groups. OAB was less likely postoperatively with catheterization in laser (OR 0.488, $p<0.001$) and TURP (OR 0.451, $p<0.001$). Incontinence was higher after two or more catheterizations in MIST (OR 2.546, $p<0.05$) and TURP (OR 1.858, $p<0.05$) (Table 1).

Conclusions: Preoperative urinary retention significantly impacts postoperative outcomes in BPH patients. Even a single catheterization episode increases the risk of complications. Early recognition and management of urinary retention, including timely surgery, may prevent further deterioration and improve long-term outcomes.

Acknowledgments: Funded by Boston Scientific

MP 5.17. Table 1. Preoperative catheterization is associated with negative postoperative outcomes

	Laser	Simple Prostatectomy	TUIP	TURP	MIST
Reoperation [OR (CI)]					
Preop Cath x1	1.477 (1.194 – 1.827) ***	0.000 (0.000 – 0.000)	2.193 (0.985 – 4.882)	1.118 (0.922 – 1.356)	1.401 (0.929 – 2.367)
Preop Cath ≥2	1.322 (1.027 – 1.701) *	1.518 (0.548 – 4.205)	1.984 (0.756 – 5.206)	0.781 (0.616 – 0.991)	1.678 (0.897 – 3.138)
Postop Retention [OR (CI)]					
Preop Cath x1	1.452 (1.331 – 1.584) ***	0.816 (0.571 – 1.166)	1.723 (1.110 – 2.675) *	1.426 (1.327 – 1.533) ***	1.289 (1.039 – 1.600) *
Preop Cath ≥2	1.762 (1.603 – 1.937) ***	1.080 (0.787 – 1.482)	2.326 (1.410 – 3.837) **	1.588 (1.474 – 1.711) ***	2.046 (1.561 – 2.682) ***
BPH Meds >30 days [OR (CI)]					
Preop Cath x1	1.126 (1.032 – 1.229) **	0.788 (0.515 – 1.206)	1.570 (1.025 – 2.406) *	1.139 (1.060 – 1.224) ***	1.271 (1.033 – 1.563) *
Preop Cath ≥2	1.165 (1.057 – 1.285) **	0.838 (0.571 – 1.231)	1.367 (0.829 – 2.253)	1.171 (1.087 – 1.263) ***	1.727 (1.324 – 2.251) ***
Postop ER Visits [IRR (CI)]					
Preop Cath x1	0.981 (0.897 – 1.074)	1.287 (0.900 – 1.840)	0.830 (0.513 – 1.343)	1.028 (0.954 – 1.107)	1.392 (1.123 – 1.727) **
Preop Cath ≥2	1.100 (0.999 – 1.213)	1.267 (0.902 – 1.779)	2.048 (1.423 – 2.948) ***	1.100 (1.019 – 1.188) *	2.123 (1.689 – 2.668) ***
Postop Clinic visits [IRR (CI)]					
Preop Cath x1	1.100 (1.062 – 1.139) ***	1.075 (0.937 – 1.235)	1.333 (1.110 – 1.601) ***	1.059 (1.027 – 1.091) ***	1.031 (0.988 – 1.077)
Preop Cath ≥2	1.102 (1.059 – 1.146) ***	1.104 (0.972 – 1.254)	1.629 (1.332 – 1.991) ***	1.047 (1.014 – 1.082) **	1.035 (0.989 – 1.083)
Postop OAB [OR (CI)]					
Preop Cath x1	0.553 (0.408 – 0.751) ***	0.960 (0.255 – 3.603)	0.939 (0.280 – 3.146)	0.581 (0.441 – 0.766) ***	1.284 (0.793 – 2.078)
Preop Cath ≥2	0.488 (0.339 – 0.702) ***	0.000 (0.000 – 0.000)	0.466 (0.062 – 3.459)	0.451 (0.325 – 0.624) ***	0.559 (0.227 – 1.371)
Prostatitis [OR (CI)]					
Preop Cath x1	1.053 (0.848 – 1.308)	0.477 (0.105 – 2.165)	1.002 (0.387 – 2.597)	0.900 (0.742 – 1.092)	1.847 (1.086 – 2.141) *
Preop Cath ≥2	0.907 (0.742 – 1.100)	1.433 (0.550 – 4.733)	0.302 (0.041 – 2.223)	0.946 (0.774 – 1.155)	0.795 (0.291 – 2.174)
Postop Incontinence [OR (CI)]					
Preop Cath x1	0.874 (0.732 – 1.044)	0.606 (0.317 – 1.157)	1.060 (0.467 – 2.407)	0.882 (0.753 – 1.033)	0.985 (0.604 – 1.606)
Preop Cath ≥2	0.903 (0.742 – 1.100)	0.374 (0.181 – 0.771)	2.546 (1.236 – 5.245)	0.810 (0.682 – 0.982) *	1.858 (1.142 – 3.022) *

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

MP 5.18

A new model of prostate organoids to examine neurotrophin pathways in the development of benign prostatic hyperplasia

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Introduction: Benign prostatic hyperplasia (BPH) is characterized by fibrosis of the extracellular matrix and hypercontractility of the stromal tissue. In bladder dysfunction, similar symptoms are related to the ratio of pro nerve growth factor (proNGF) to its mature isoform (NGF). Organoids consist of tridimensional cellular structures that mimic the interactions between cells of different types, bypassing the limitations associated with co-culturing cells in two dimensions. They are commonly used in prostate cancer studies. We describe a model of prostate organoids to assess the role of neurotrophins in BPH.

Methods: Epithelial and stromal cells (50/50 in cell number) from Sprague-Dawley rat prostates were seeded in non-adherent wells. The structure of organoids was examined by confocal microscopy. BPH was induced with hyperglycemic medium (25 mM) combined or not with high testosterone (500 nM).

Neurotrophin levels were assessed by ELISA kits. Immunoblottings and RTqPCR were used on cell extracts to assess inflammatory, contractility, and fibrosis markers.

Results: Light microscopy revealed the organization of cells into spheroids. Confocal microscopy showed epithelial and stromal cells mingled at the surface of a hollow structure, as revealed by cytokeratin 17 (epithelial) and smooth muscle myosin heavy chain (stromal) markers. Spheroids released NGF and proNGF into the culture medium. NGF secretion was not affected by high glucose, whether or not it was combined with testosterone, or by THX-B. ProNGF levels were increased by testosterone and high glucose and reverted to control values by THX-B. Inflammatory markers IL1, IL-6, and TNF-alpha expression was unchanged in all conditions, as revealed by RT-qPCR. All results were similar to classical plate culture.

Conclusions: Organoid culture of prostate cells was reproducible and appeared to be a valid model to study prostate cell interaction in BPH in the context of neurotrophin secretion.

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