

Poster Session 4: Functional Urology (Part 1)

Saturday, June 28, 2025 • 16:00–17:30

Cite as: *Can Urol Assoc J* 2025;19(6Suppl1):S44-51. <http://dx.doi.org/10.5489/cuaj.9261>

MP 4.1

Non-transecting bulbar urethroplasty techniques reduce the risk of patient-perceived erectile dysfunction and chordee while providing similar stricture-free success

Keith F. Rourke¹, Alexis Filyk¹

¹Division of Urology, Department of Surgery, University of Alberta, Edmonton, Canada

Introduction: The impact of urethral transection on urethroplasty outcomes remains limited and at times conflicting. The purpose of this study was to compare outcomes of transecting and non-transecting bulbar urethroplasty techniques using a matched case-control analysis.

Methods: This was a matched, case-control analysis comparing patients undergoing non-transecting bulbar urethroplasty to a transecting cohort. Patients were matched with respect to age, stricture length, and urethroplasty technique. Followup consisted of clinical assessment three weeks postoperatively with cystoscopy at 3–4 months and clinical assessment annually. Outcome measures were stricture recurrence (failure to easily pass a 16 Fr flexible cystoscope on followup), 90-day complications (Clavien \geq 2), patient satisfaction, patient-perceived de novo erectile dysfunction, and chordee. Comparison between transecting and non-transecting cohorts were made using the Mantel-Cox test or Chi-squared when indicated.

Results: A total of 406 patients that underwent non-transecting bulbar urethroplasty (group 1) were successfully matched to 406 with urethral transection (group 2) from a cohort of 1331 bulbar urethroplasty performed from August 2003 to April 2024. The entire cohort (n=812) had a median patient age of 47 years (IQR 26), stricture length of 2 cm (IQR 2.5), and the stricture etiology most commonly idiopathic in 63.7% (517), traumatic in (16.1%), or iatrogenic in 9.6% (78). Patients underwent reconstruction with either buccal mucosa onlay in 58.9% (487), anastomotic urethroplasty in 39.9% (324), or combined tissue transfer in 1.2% (10). Groups did not differ with respect to age (p=0.90), stricture length (p=0.96), technique (p=1.0), failed endoscopic treatment (p=0.84), comorbidities (p=0.44), obesity (p=0.10), diabetes (p=0.21), smoking (p=0.55), or preoperative catheter status (p=0.82). On log-rank testing with a median followup of 143 months (IQR 96.75), there was no difference in urethroplasty success between groups (p=0.99). Stricture-free status at one year was 96.1% and 96.0% for non-transecting and transecting groups, respectively. Corresponding five-year stricture-free estimates were 95.0% and 94.4%, while estimated 10-year stricture-free results were 93.0% and 93.0%, respectively. There was no difference between groups with respect to 90-day complications (9.1% vs. 8.1%, p=0.71) or satisfaction (94.1% vs. 94.6%, p=0.88); however, patients undergoing non-transecting techniques had a lower incidence of erectile dysfunction (3.9% vs. 7.4%, p=0.03) and patient-perceived chordee (0.5% vs. 2.6%, p=0.02).

Conclusions: Non-transecting bulbar urethroplasty techniques provide similar stricture-free success compared to case-matched transecting techniques but reduce the incidence of patient-reported erectile dysfunction and chordee.

MP 4.2

Neurotrophins and proneurotrophins: Diagnostic and therapeutic potential in overactive bladder syndrome in aging women

Claudia Covarrubias², Lysanne Campeau^{1,2}, Philippe Cammisotto²

¹Division of Urology, McGill University, Montreal, Canada; ²Lady Davis Institute for Medical Research, Montreal, Canada

Introduction: Overactive bladder (OAB) is a prevalent urologic condition that profoundly impacts the quality of life in elderly women.¹ The limited tolerability of traditional diagnostic methods highlights the need for non-invasive alternatives. Neurotrophins, such as nerve growth factor (NGF) and brain-derived neurotrophic factor (BDNF), have emerged as promising urinary biomarkers for diagnosing OAB and monitoring treatment response.^{2,3} This study evaluated the reproducibility and predictive utility of these biomarkers in aging female patients with OAB.

Methods: A total of 80 female participants, aged 50–86 years, were recruited for a prospective, single-center study, consisting of both OAB patients and age-matched controls. Among these, 56 participants completed the full protocol and were included in the final analysis. Clinical assessments were conducted using standardized questionnaires and voiding diaries to capture patient-reported outcomes. Urinary biomarkers, including NGF, proNGF, BDNF, proBDNF, and p75ECD, were measured using ELISA. Biomarker levels were analyzed in OAB patients both before and after treatment and compared to controls, with adjustments for potential confounders such as age, insulin resistance (HOMA-IR), and renal function (eGFR) (Figure 1).

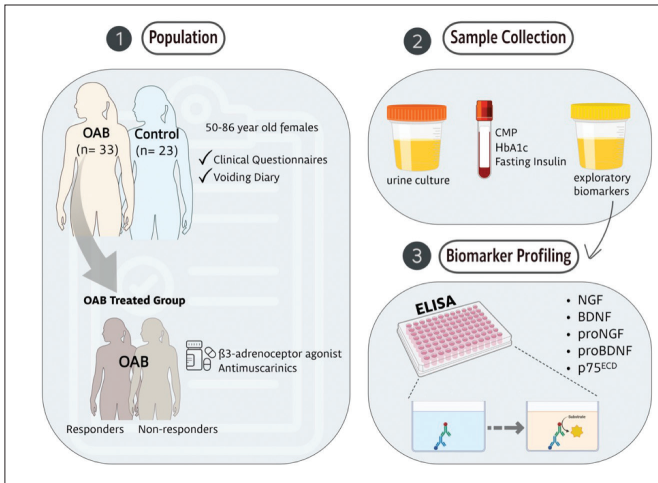
Results: OAB patients were older than controls (69.5±10.1 vs. 56.6±5.5 years, p<0.0001) and had higher HOMA-IR (4.0±3.7 vs. 2.0±1.0, p=0.028) and lower eGFR (75.3±18.1 vs. 96.4±16.5 mL/min/1.73m², p<0.0001). Urinary NGF and its ratios correlated with symptom severity (Figure 2). In post-treatment analysis, 40% of OAB patients (responders) showed significant improvements in NGF and proNGF levels, corresponding with symptom relief, while non-responders had no significant biomarker change. Ratios of mature to precursor neurotrophins more accurately reflected treatment response than absolute biomarker values.

Conclusions: Urinary neurotrophins hold potential as non-invasive diagnostic markers for OAB and for monitoring treatment response in aging female patients.

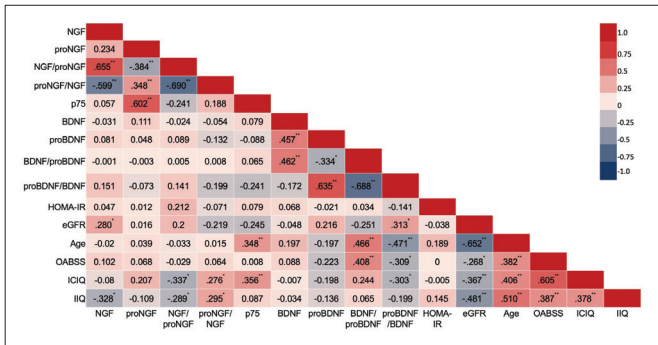
Acknowledgements: The authors gratefully acknowledge the support provided by the Canadian Urological Association Scholarship Foundation Career Development Award and the Quebec Network for Research on Aging.

References:

1. Cameron AP, Chung DE, Dielubanza EJ, et al. The AUA/SUFU guideline on the diagnosis and treatment of idiopathic overactive bladder. *J Urol* 2024;212:11–20. <https://doi.org/10.1097/JU.0000000000003985>
2. Sheng W, Zhang H, Ruth KH. Could urinary nerve growth factor be a biomarker for overactive bladder? A meta-analysis. *Neurourol Urodyn* 2017;36:1703–10. <https://doi.org/10.1002/nau.23210>
3. Tsiapakidou S, Apostolidis A, Pantazis K, et al. The use of urinary biomarkers in the diagnosis of overactive bladder in female patients: A systematic review and meta-analysis. *Int Urogynecol J* 2021;32:3143–55. <https://doi.org/10.1007/s00192-021-04945>



MP 4.2. Figure 1. Graphical representation of the study methodology. (1) Patients were categorized into OAB and control groups, with the OAB group further stratified into treatment responders and non-responders based on clinical outcomes. (2) Blood and urine samples were collected from all participants. (3) Urinary exploratory biomarkers were quantified using the ELISA technique for detailed assessment.



MP 4.2. Figure 2. Correlation between selected demographics and questionnaires vs. neurotrophins and their ratios in the total cohort. color scale bar represents the strength of correlation; correlation coefficient ($-1 \leq r \leq 1$), * $p < 0.05$, and ** $p < 0.01$ (2-tailed) for the significance of correlation, Pearson correlation test.

MP 4.3
Second time's a charm? Revision urethroplasty provides comparable outcomes to primary urethroplasty

Ahmad AlShammari¹, Alexis Filyk¹, Nathan Hoy¹, Keith F. Rourke¹

¹Division of Urology, Department of Surgery, University of Alberta, Edmonton, Canada

Introduction: While urethroplasty is likely the most effective treatment for urethral stricture, stricture recurrence can occur even in the most experienced hands. Revision urethroplasty is a viable option but comparability of outcomes to a urethroplasty-naive population remains uncertain. The objective of this study was to assess outcomes of revision urethroplasty in a surgery-naive population using a matched case-control analysis.

Methods: This was a matched, case-control analysis comparing patients undergoing revision urethroplasty to a urethroplasty-naive population. Patients were matched with respect to age, stricture etiology, length, and urethroplasty technique. Followup consisted of clinical assessment three weeks postoperatively and cystoscopy at 3–4 months, with clinical assessment annually. Outcome measures were stricture recurrence (failure to pass a 16 Fr flexible cystoscope on follow-up), 90-day complications (Clavien ≥ 2), patient satisfaction, de novo erectile dysfunction, and chordee. Chi-squared and Kaplan-Meier analysis were conducted where appropriate.

Results: Of 2068 patients undergoing urethroplasty from August 2003 to April 2024, 195 patients that underwent repeat surgery (group 1) were successfully matched to 195 reconstruction-naive case-controls (group 2). The entire cohort ($n=390$) had a mean patient age of 48.8 years (SD 15.0), stricture length of 5.4 cm (SD 3.5), and stricture etiology was idiopathic in 28.2% (110), lichen sclerosis in 22.1% (86), hypospadias in 20.5% (80), trauma in 16.4% (64), iatrogenic in 9.7% (38), radiation in 1.5% (6), and infectious in 1.5% (6). Patients underwent reconstruction with either buccal mucosa onlay/inlay in 56.4% (220), anastomotic urethroplasty in 11.8% (46), staged in 23.1% (90), penile fasciocutaneous flap in 6.2% (24), or combined tissue transfer in 1.5% (6). Groups did not differ with respect to age ($p=0.94$), stricture length ($p=0.94$), etiology ($p=1.0$), stricture location ($p=0.80$), urethroplasty technique ($p=1.0$), failed endoscopic treatment ($p=0.28$), comorbidities ($p=0.74$), obesity ($p=0.78$), diabetes ($p=1.0$), smoking ($p=0.24$), preoperative bacteriuria ($p=0.41$), or catheter status ($p=0.29$). On time-to-event assessment with log-rank testing with mean followup of 136.9 months (SD 71.5), there was no difference in urethroplasty success between groups (revision 84.6% vs. naive 85.6%, $p=0.58$). Stricture-free status at one year was 90.5% and 91.3% for revision urethroplasty and reconstruction-naive groups, respectively. Corresponding five-year stricture-free estimates were 83.1% and 84.9%, while estimated 10-year stricture-free results were 80.8% and 84.1%, respectively. Ninety-day complications (11.8% vs. 12.8%, $p=0.88$), satisfaction (90.8% vs. 87.2%, $p=0.33$), de novo ED (4.1% vs. 4.6%, $p=1.0$), or chordee (4.8% vs. 2.7%, $p=0.42$) did not differ between groups.

Conclusions: Revision urethroplasty provides comparable outcomes to urethroplasty-naive patients in a case-matched population with similar stricture-free survival, complications, sexual dysfunction, and patient satisfaction. Surgeons should not hesitate to offer revision surgery to patients failing initial urethroplasty.

MP 4.4
The long-term risk of urethral stricture following hypospadias repair: A population-based, case-control cohort study

Sarah Neu^{1,4}, Michael Chua^{1,3}, Rano Matta^{1,4}, Christine Warren², Drew Wilton², Justin Kim¹, Refik Saskin², Amanda Hird^{1,4}, Robert Nam^{1,4}, Sender Herschorn^{1,4}, Lauren Lin¹

¹Department of Surgery, University of Toronto, ON, Canada; ²Institute for Clinical Evaluative Sciences, Toronto, Canada; ³Department of Surgery, The Hospital for Sick Children, Toronto, Canada; ⁴Department of Surgery, Sunnybrook Health Sciences Centre, Toronto, Canada

Introduction: Hypospadias is a common urogenital birth defect, with surgical repair aiming to reposition the urethral meatus to the penile tip. While hypospadias repair has demonstrated success, there is limited research on the risk of urethral strictures, which may occur years later. This study aims to investigate the risk of developing urethral stricture following hypospadias repair.

Methods: We conducted a retrospective, case-control cohort study of all males born in Ontario, Canada between Apr 1994 and March 2022 using population-based healthcare administrative databases. Cases were those who had hypospadias repair, matched to four controls by date of birth. The primary outcome was urethral stricture. Cox proportional hazards model was used to assess the association between hypospadias repair and urethral stricture incidence. Secondary exposure was hypospadias location (distal vs. proximal). Models were adjusted for baseline and secondary covariates where appropriate. HRs and 95% CIs were estimated.

Results: A total of 8955 cases were analyzed, with 35 820 controls. The mean and median age at time of surgery was 26.8 months and 19 months, respectively. Most (69.5%) had distal hypospadias. 9.0% had a multistage procedure, and 7.1% had a postoperative complication. Urethral stricture developed in 171 cases (1.9%) compared to 23 controls (0.06%). The HR of incident urethral stricture was 28.7 (95% CI 18.5–44.5) for hypospadias repair cases compared to matched controls. The HR of incident urethral stricture was 3.17 (95% CI 1.66–6.06) for proximal repair, compared to distal.

Conclusions: While the long-term risk of urethral stricture after hypospadias repair is low, patients who had hypospadias repair were significantly more likely to develop urethral strictures compared to age-matched controls. Those with proximal hypospadias were more likely to develop strictures compared to distal hypospadias. These findings can aid healthcare providers in counseling patients and families about the potential long-term complications of hypospadias surgery. *Acknowledgements:* Funded by the University of Toronto Functional and Reconstructive Urology Chair.

MP 4.5

A cost-conscious approach to managing bulbar urethral strictures: Urethroplasty vs urethral dilation

Anindyo Chakraborty², Abdullah Alzahrani¹, Mélanie Aubé-Peterkin³

¹Department of Urology, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia; ²Division of Urology, CHU de Québec and Université Laval, Québec, Canada; ³Division of Urology, McGill University Health Center, Montreal, Canada

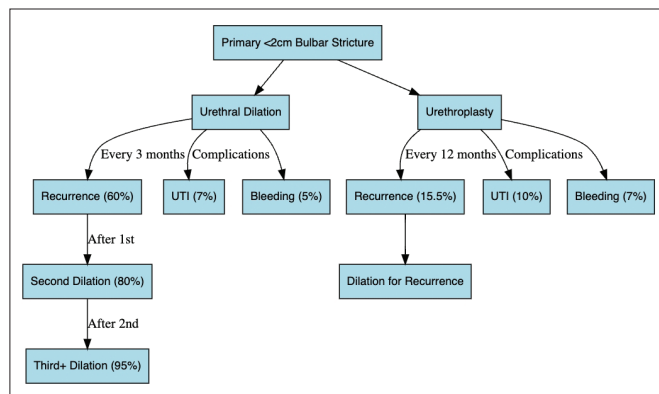
Introduction: Urethral strictures affect approximately 0.9% of men, imposing significant burdens on both patients and healthcare systems. Patients experience reduced quality of life, while healthcare systems face recurring costs due to frequent interventions. Common treatments include urethral dilation, a minimally invasive in-office procedure that provides temporary relief but has high recurrence rates, and urethroplasty, a surgical approach with higher upfront costs but greater durability. This study compares the institutional costs of these two approaches over a five-year treatment period for short (<2 cm) bulbar strictures.

Methods: A decision tree-based cost analysis (Figure 1) was constructed to compare primary anastomotic urethroplasty and repeat dilations based on literature data on stricture recurrences and complications (Table 1). In both scenarios, recurrences were treated with a subsequent dilation. Cost data were sourced from a high-volume tertiary care center. Analyses were performed using R v. 4.4.2, with costs reported in CAD.

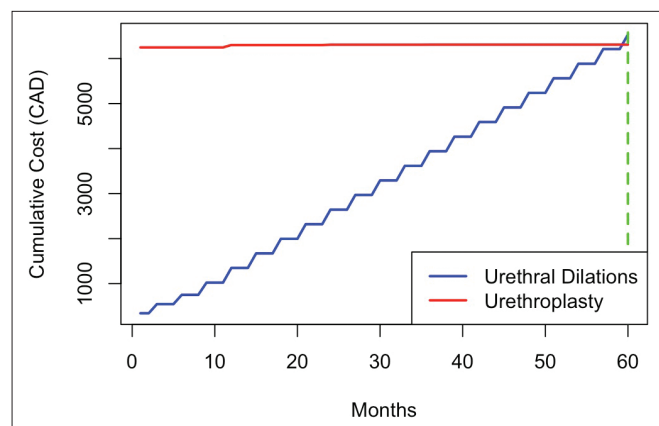
Results: Over a five-year followup, the cumulative institutional cost of urethroplasty (\$6310.16) was lower than that of repeated dilations (\$6533.98) (Figure 2), with a break-even point around 60 months. Sensitivity analyses varying the complication and recurrence rates of urethroplasty within literature-based ranges (Table 2) further reinforced urethroplasty's cost advantage over five years (Figures 3, 4, 5).

Conclusions: For patients with short primary bulbar strictures, urethroplasty is more cost-effective than urethral dilation over a five-year period from an institutional perspective. These findings do not account for patient-specific quality-of-life costs associated with more frequent stricture recurrences in dilation pathways. Further studies examining multi-institutional data are needed to externally validate these findings.

Acknowledgements: The authors wish to thank the Finance Department of the McGill University Health Center.



MP 4.5. Figure 1. Flowchart demonstrating the two treatment pathways for a short primary bulbar urethral stricture.



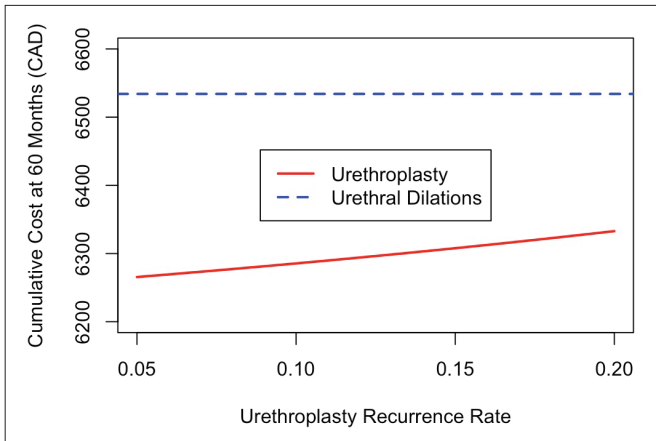
MP 4.5. Figure 2. Cumulative cost comparison of undergoing urethroplasty vs. urethral dilations projected over a 5-year interval.

MP 4.5. Table 1. Baseline assumptions

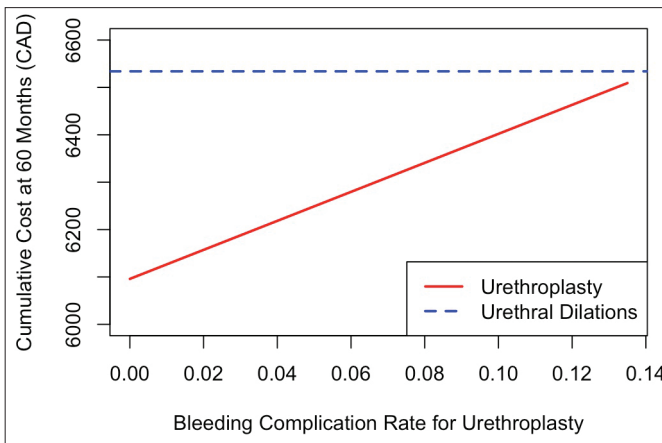
Parameters	Value
Cost of anastomotic urethroplasty	5919.67 CAD
Cost of urethral dilation	341.20 CAD
Dilation recurrence rate by number of recurrence	
1st	60%
2nd	80%
3rd	95%
Dilation recurrence interval	3 months
Urethroplasty recurrence rate	15.5%
Urethroplasty recurrence interval	12 months
UTI complication rate	
Dilation	7%
Urethroplasty	10%
Bleeding complication rate	
Dilation	5%
Urethroplasty	7%
Cost of UTI complication	1136.64 CAD
Cost of bleeding complication	3060.70 CAD

MP 4.5. Table 2. Sensitivity analyses ranges

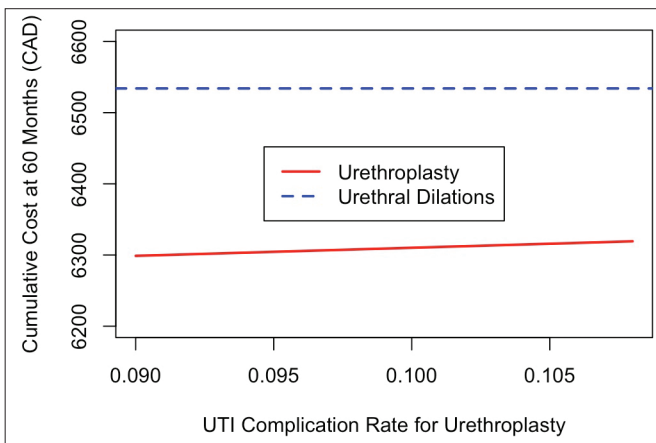
Parameter	Range
Urethroplasty stricture recurrence Rate	5–20%
UTI complication rate (urethroplasty)	9–10.8%
Bleeding complication rate (urethroplasty)	0–13.5%



MP 4.5. Figure 3. 5-year cumulative cost comparison between urethroplasty and urethral dilations based on urethroplasty stricture recurrence rate variations.



MP 4.5. Figure 4. 5-year cumulative cost comparison between urethroplasty and urethral dilations based on urethroplasty bleeding complication rate.



MP 4.5. Figure 5. 5-year cumulative cost comparison between urethroplasty and urethral dilations based on urethroplasty urinary tract infection complication rate.

MP 4.6

One size does not fit all: A cross-sectional study addressing practitioner discourse in the role of physiotherapy for women with pelvic floor disorders

Zanna Franks¹, Chelsea Harris², Wyatt MacNevin¹, Jocelyn Stairs^{2,3}, Ashley Cox¹

¹Department of Urology, Dalhousie University, Halifax, Canada; ²Department of Obstetrics and Gynecology, Dalhousie University, Halifax, Canada; ³Department of Community Health and Epidemiology, Dalhousie University, Halifax, Canada

Introduction: Physiotherapy is an evidence-based, conservative treatment for pelvic floor disorders (PFD). The role of pelvic floor muscle training (PFMT) is expanding in Canada, but it is unclear how practitioners view the role of PFPT and if there are discrepancies between subspecialists. The objective of this study was to assess differences in perspectives and knowledge among urogynecologists, urologists, and female health physiotherapists on the role of PFMT in managing PFDs.

Methods: A cross-sectional survey was distributed to urologists, urogynecologists, and physiotherapists practicing in Nova Scotia, Canada from May to June 2023. The questionnaire explored clinical practice and practitioner opinions on the use of PFMT for clinical indications including stress urinary incontinence, overactive bladder, pelvic organ prolapse, pelvic pain, pelvic floor hypertonicity, and sexual dysfunction. Knowledge regarding various PFPT techniques was also assessed. Descriptive statistics were used to characterize the demographics of respondents. Kruskal-Wallis H test was used to compare responses between specialties. Analyses were completed using Stata 17.0.

Results: A total of 84 surveys were distributed. Respondents included 14 urologists, 11 urogynecologists and 27 physiotherapists (61.9% response rate). Urologists were less likely than physiotherapists ($p=0.001$) and urogynecologists ($p=0.003$) to value the importance of PFMT for urinary incontinence. Urologists were less likely than physiotherapists ($p=0.03$) and urogynecologists ($p=0.02$) to view PFMT as important for treating prolapse. Urologists were also less likely than physiotherapists to say that PFMT has an important role for treating pelvic pain ($p=0.04$). There was varied knowledge between the groups on adjuncts to PFMT, such as vaginal cones, electrical stimulation, and transcutaneous stimulation.

Conclusions: There are discrepancies in knowledge of treatment options and efficacy between healthcare providers treating female PFDs. Urologists were less aware of the role of PFMT as a conservative treatment option and did not feel as strongly that PFMT was helpful for this population when compared to physiotherapists and urogynecologists. Enhancing provider education may improve understanding, patient counseling, and access to this evidence-based treatment modality.

MP 4.7

Evidence for extracorporeal magnetic stimulation to treat urinary incontinence in men

Ryan Wong², Blayne Welk¹

¹Division of Urology, Department of Surgery, Western University, London, Canada; ²Schulich School of Medicine and Dentistry, London, Canada

Introduction: Extracorporeal magnetic stimulation (EMS) is effective for urinary incontinence (UI) in women; however, its use in men has not been well studied. Our objective was to conduct a systematic review to understand the evidence supporting EMS in the treatment of men with urinary incontinence.

Methods: A systematic review was performed using MEDLINE, CINAHL, and PEDro databases. Studies examining the use of EMS, either in isolation, or compared to other treatments, in adult men with UI were included. Two independent reviewers screened the articles. Double data extraction was performed to ensure accuracy. A qualitative analysis of the data was performed.

Results: A total of 280 studies were screened and nine were included. Across all studies, 181 men were treated with EMS. Eight of nine studies investigated the use of EMS following prostatectomy. There were four randomized controlled trials (RCT) identified, all of low-moderate-quality, and with small sample sizes ($n=16-36$); in these RCTs, EMS resulted in early continence compared to traditional pelvic floor muscle therapy (PFMT) and was superior to sham treatment. Only one of the studies ($n=10$) included urodynamic measures, which showed significant increases in maximum cystometric capacity (56.8%) and Valsalva leak point pressure (44.2%) following a two-month course of EMS. In another study in men post-prostatectomy ($n=56$), EMS reduced 24-hour pad usage by 48%, with persistent reductions at 12.5 months following the initial treatment. Four studies showed that EMS can improve lower urinary tract symptoms and urinary leakage quicker than PFMT.

Conclusions: The literature supporting the use of EMS to treat men experiencing UI is limited; however, results are generally positive. Long-term results seem similar to PFMT; however, EMS may result in a quicker return to continence. Larger, prospective studies are necessary.

MP 4.8
The financial burden of adult urinary incontinence management on patients and healthcare systems: A systematic review of economic evaluations

Anna C.E. Sarafis¹, Jennifer Locke², Katherine Anderson³
¹Faculty of Medicine, University of British Columbia, Vancouver, Canada; ²Division of Urology, Kelowna General Hospital, Kelowna, Canada; ³Department of Urologic Sciences, University of British Columbia, Vancouver, Canada

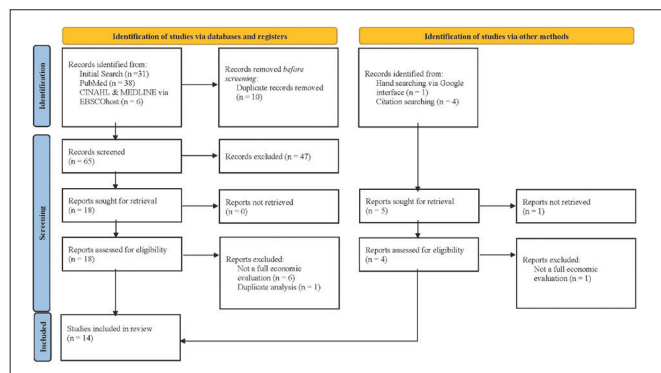
Introduction: Adult urinary incontinence (UI) has a significant impact on quality of life, and treatment can be costly to the patient and healthcare system. This systematic review aimed to summarize the costs of UI management in relation to their effectiveness by reviewing economic evaluations to increase awareness of the significant financial impact of management decisions.

Methods: PubMed, Medline, CINAHL databases, and grey literature were searched to identify economic evaluations, published from 2014–2024, of surgical and conservative UI interventions using PICO. This study was registered with PROSPERO (CRD4202462204). The quality of full-texts was assessed using Drummond's checklist. Costs were adjusted to the 2024 USD.

Results: Fourteen high-quality studies were eligible (Figure 1: 10 model-based, three randomized controlled trials, and one prospective observational study. There were 13 cost-utility analyses, three cost-effectiveness analyses, and one cost-benefit analysis. Six studies compared surgical treatments; six compared surgical and conservative treatments; one compared conservative treatments; and one compared a combined surgical/conservative approach to surgery alone. Among surgical treatments, transobturator (TOT-MUS) and retropubic midurethral slings (TVT-R-MUS) were among the most cost-effective. Among surgical vs. conservative treatments, dominant treatments included initial pelvic floor muscle therapy, electrical muscle stimulator; pessary, and TVT-R-MUS. Data synthesis revealed gross cost and effectiveness ranges, such as all slings, ranged from \$2336.20–48 720.04 with quality-adjusted-life-years ranging from 0.87–24.014.

Conclusions: Economic evaluations of UI management may be beneficial in effective resource allocation; however, inherent differences in health systems and study method heterogeneity, including time horizon, cost components, and discount rate, may prompt poor data pooling for meta-analysis and lead to inadequate recommendations.

Acknowledgements: The authors would like to thank the librarians at Kelowna General Hospital for their assistance.



MP 4.8. Figure 1. PRISMA flow diagram.

MP 4.9
Analysis of safety outcomes for benign scrotal surgery conducted with local anesthesia

Yool Ka¹, Jainik Shah¹, Maximilian Fidel¹, Connor Roque¹, Ahmed Almuhanna², Premal Patel²

¹Max Rady College of Medicine, University of Manitoba, Winnipeg, Canada; ²Section of Urology, University of Manitoba, Winnipeg, Canada

Introduction: General and spinal anesthesia are commonly used forms of sedation to perform benign scrotal surgery; however, these methods come with high healthcare costs, potential side effects, and often result in increased wait times to receive surgical care, given the non-urgent nature of the conditions. Using local anesthesia (LA) only has previously shown promising results in terms of patient tolerability and satisfaction for scrotal surgery; however, evidence remains limited, and further research is needed to further assess its safety comprehensively. Our objective was to assess patient tolerance, intraoperative complications, and 4–6-week adverse events related to the procedure.

Methods: We conducted a retrospective study of patients undergoing hydrocelectomy, spermatocelectomy, epididymectomy, and testicular biopsy at a Canadian ambulatory surgical center from October 2022 to June 2024. LA was administered via a spermatic cord block and along the median raphe for all procedures. For large hydroceles or spermatoceles, where an early block was unfeasible, the block was applied after the delivery of the testicle. Baseline characteristics, intraoperative events, and postoperative adverse events were recorded.

Results: From October 2022 to June 2024, a total of 251 procedures were performed. Of these procedures, 43.0% (n=108) were hydrocelectomies, 34.3% (n=86) were spermatocelectomies, 10.0% (n=25) were epididymectomies, and 12.7% (n=32) were testicular biopsies. The mean patient age was 52.3±15.7 years with a BMI of 30.0±8.8. No procedures were aborted due to patient intolerability. There were no reported intraoperative complications. At 4–6 weeks postoperative followup, no patients sought care from their family doctor, with only 1.2% (n=3) patients requiring an emergency department visit for wound infection. No patients required hospital admission.

Conclusions: Our results indicate that performing outpatient scrotal surgeries under LA is both safe and feasible. Safely conducting these procedures in an outpatient setting can shorten patient wait times, improve tertiary care centre efficiency by reducing inpatient demand, and make better use of limited resources, such as operating rooms and inpatient facilities. Continued longer-term followup is needed to monitor recurrence rates.

MP 4.10
Using predictive analytics to understand Neurogenic Bladder Symptom Score (NBSS) variations in adults with acquired spinal cord injury

Mehran Nejad-Mansouri¹, Daniel Lizotte¹, Jeremy Myers², Sean Elliott³, John Thomas Stoffel⁴, Sara Lenherr², Rhiannon Lyons¹, Tianyue Zhong¹, Blayne Welk¹

¹Western University, London, Canada; ²University of Utah, Salt Lake City, United States; ³University of Minnesota, Minneapolis, United States; ⁴University of Michigan, Ann Arbor, United States

Introduction: Individuals with spinal cord injury (SCI) have varying bladder health trajectories. We explored whether a predictive machine learning model could determine which patients will have worse urinary symptoms.

Methods: Using the Neurogenic Bladder Research Group SCI registry, we used 238 variables in a decision tree analysis. A cross-validated exhaustive Chi-squared automatic interaction detection (eCHAID) technique was used as the tree-growing mechanism. The primary outcomes were baseline Neurogenic Bladder Symptom Score (NBSS) and change from baseline NBSS at one-year followup.

Results: Among the 1479 participants, mean baseline NBSS was 24.2±0.3 (standard error of mean). Our decision tree predicted that patients with a suprapubic tube or a urostomy as their primary bladder management method and a score of <51.7 on the SCI quality of life bowel questionnaire had the lowest (i.e., best) mean baseline NBSS at 13.4±0.8. In contrast, females who voided spontaneously had the highest mean baseline NBSS at 34.4±1.0. Our second decision tree evaluated the change in NBSS at one-year followup. The median change in NBSS was -1 point (IQR -6 to 2). Of the 711 participants that performed better than the median change (i.e., improved), 45% were equally accounted for by women who did not use bladder-relaxing medications at baseline, and men without a history of urinary tract infections who used a single bladder management method at followup. Women with a short duration (<1 year) of indwelling catheteriza-

tion post-injury who were using bladder-relaxing medications were predicted to improve their NBSS in 2/3 instances. Conversely, men using a single bladder management method at baseline who required additional methods at followup scored within the bottom 50 percentiles in 2/3 instances.

Conclusions: These decision trees help predict urinary symptom burden in people with SCI based on combinations of patient characteristics; however, the models had a limited predictive capacity in forecasting future symptom changes.

MP 4.11
Exploring OnabotulinumtoxinA injection paradigms: A scoping review of injection practices and clinical outcomes

Hodan Mohamud¹, Rachel Kopkin², Susanna Gunamany², Shada Sinclair², Victoria Harbour², Ekene Enemchukwu²

¹Temerty Faculty of Medicine, University of Toronto, Toronto, Canada; ²Department of Urology, Stanford University, Stanford, United States

Introduction: OnabotulinumtoxinA (BTX) is an effective treatment for refractory idiopathic overactive bladder (iOAB). BTX injection paradigms have been proposed based on clinical experience and BTX's mechanism of action on a cellular level. Balancing efficacy and side effects is crucial. This scoping review evaluates the literature on iOAB treatment and examines injection paradigms to gain a deeper understanding of the data and guide future research and practice with a focus on optimizing patient-tailored injection techniques.

Methods: A scoping review methodology was used and electronic databases, including PubMed, Embase, and Web of Science, were systematically searched by a trained librarian to identify relevant studies involving iOAB. A manual search of reference lists and relevant journals was conducted to supplement the electronic searches. Four reviewers independently assessed articles using Covidence software. A narrative synthesis approach was employed to summarize findings and identify key themes.

Results: Forty-two articles between 2003 and 2024 were reviewed. Parameters assessed included dose, scope type, needle gauge, site and depth of injection, number of injections, injection volume, and concentration. Key findings suggest injection site may affect outcomes, with modest improvements seen in trigone-inclusive vs. trigone-sparing approaches. Patient satisfaction was highest with detrusor injections compared to suburothelial or bladder base. While a variety of injection volumes and concentrations, ranging from 0.25–10 mL per injection, were reported, comparison is limited due to heterogeneity. Overall, symptom and quality of life improvements were consistently high, with low rates of adverse events.

Conclusions: This review highlights significant variations in injection techniques, despite an existing standardized protocol based on published clinical trials. Further research is needed to identify optimal injection paradigms that balance patient comfort, treatment efficacy, and minimize adverse events.

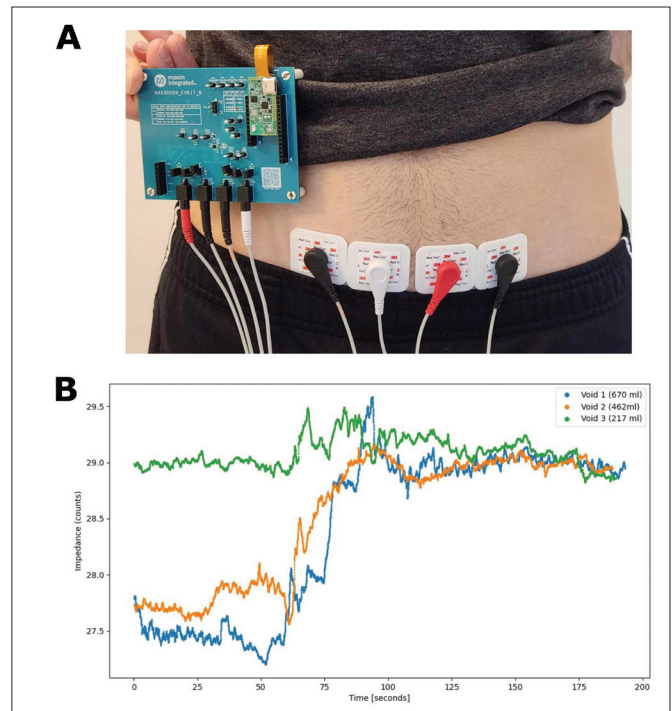
MP 4.12
Bioimpedance for non-invasive bladder volume measurement

Amir Hamzeh², Ria Belinda Khan³, Panagiotis Leonidas Papalazarou¹, Jonguk Lee¹, Brian Carrillo⁶, Monica Farcas⁵, Karim Habib¹

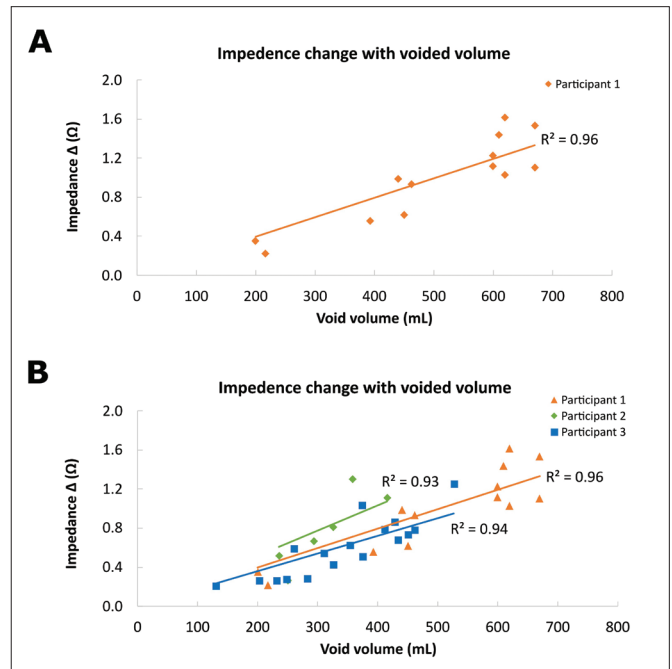
¹Division of Urology, Department of Surgery, St. Michael's Hospital, Toronto, Canada; ²Temerty Faculty of Medicine, University of Toronto, Toronto, Canada; ³Institute of Medical Science, Temerty Faculty of Medicine, University of Toronto, Toronto, Canada; ⁴School of Interdisciplinary Science, McMaster University, Hamilton, Canada; ⁵Division of Urology, Department of Surgery, University of Toronto, Toronto, Canada; ⁶WellSpring Research, Toronto, Canada

Introduction: Patients with neurogenic bladder lose bladder function and must perform clean intermittent catheterization on a fixed schedule. This schedule-based catheterization is challenging because urine production is not constant. This can result in patients attempting catheterization when the bladder is under-filled or overfilled, posing additional challenges for those with limited mobility. A continuous bladder volume monitoring device for ambulatory/home use would enable patients to catheterize only when necessary, thereby improving their quality of life. Bioelectrical impedance is a promising method for non-invasive bladder volume estimation, reducing under- or over-catheterization. This project aims to develop a bioimpedance device for accurate and reproducible bladder volume estimation at home.

Methods: The device comprised a MAX30009EV KIT bioimpedance device, with electrodes placed 4 cm above the pubic symphysis (Figure 1A). A current of



MP 4.12. Figure 1. (A) Device setup. (B) Impedance data from 3 voids.



MP 4.12. Figure 2. (A) Linear regression analysis of impedance changes with voided volume. (B) Linear regression graphs combined.

0.63 mA at 133 kHz was applied through two medial electrodes (2 cm from the midline), and two adjacent sensing electrodes measured bioimpedance laterally. Experiments were conducted on three healthy participants. Impedance changes were measured in the lower abdomen during voids (n=36) (Figure 1B). Linear regression analysis was then applied to the impedance data to generate a line of best fit, enabling bladder volume estimation (Figures 2A, B).

Results: We observed a strong correlation between bioimpedance changes during voiding and the voided volume ($R^2=0.96, 0.94, 0.93$). Using the line of best fit, we estimated urine volumes with an error of $28.53 \pm 18.53\%$ ($n=11$).

Conclusions: This study demonstrates that bioelectrical impedance is a viable method for non-invasively estimating bladder volumes. Implementing this technology could allow for real-time monitoring, enabling patients with neurogenic bladders to catheterize as needed rather than on a fixed schedule. This would significantly improve their quality of life and promote greater independence.

MP 4.13

Intermediate period outcome of Optilume in vesicourethral anastomotic stenosis

Dhruv Lalkiya¹, Wahid Mehmoush¹, Khaled Alotaibi¹, Walid Shabana¹, Walid Shahrour¹

¹Department of Urology, Northern Ontario School of Medicine University, Thunder Bay, Canada

Introduction: The off-label use of Optilume for vesicourethral anastomotic stenosis (VUAS) has been rarely studied. This study sought to evaluate the intermediate-period outcomes of Optilume in patients who were diagnosed with VUAS.

Methods: We conducted a retrospective chart review on patients who were diagnosed with VUAS and were treated with Optilume by a single surgeon from April 2023 to present (still ongoing). We descriptively presented the basic characteristics, frequency of previous treatments (dilations and/or VUAS incision and their respective recurrence intervals, Optilume recurrence-free status (defined as a successful cystoscopy), and recurrence-free interval.

Results: Among seven males averaging 72.9 years treated for VUAS, comorbidities included diabetes (28.5%), hypertension (85.7%), and coronary artery disease (57.1%). Historically, these patients had a mean of three prior urethral dilations and one VUAS incision, with recurrences noted at 22.3 and 55 days on average, respectively (Table 1). Post-Optilume intervention, an extended average recurrence-free interval of 467 days was achieved in four patients (57.1%), a notable increase compared to previous therapies. Three recurrences at 38, 51, and 40 days were observed; the earlier one was attributed to device-related technical issues. This preliminary data reflects a substantial improvement in managing VUAS with Optilume, suggesting its effectiveness in prolonging the duration between interventions.

Conclusions: Optilume shows promise as an effective intermediate-duration treatment for VUAS, offering longer recurrence-free periods than conventional methods. While initial results support its role as a transitional therapy before urethroplasty, further research with more participants and longer followup is needed to confirm these findings.

Acknowledgements: The abstract was presented as an unmoderated poster at NSUAU 2024 (data is updated further).

MP 4.14

Analysis of recurrent urinary tract infections as a predictor of obstruction in women with a history of urethral sling surgery

Arushi Wadhwa¹, Ailsa Gan², Duane Hickling²

¹Faculty of Medicine, University of Ottawa, Ottawa, Canada; ²Department of Urology, The Ottawa Hospital, Ottawa, Canada

Introduction: Mid-urethral sling surgery (MUS) remains one of the cornerstone treatments for stress urinary incontinence, with success rates ranging from 62–98%.¹ Postoperative complications, including voiding dysfunction, occur in approximately 3%. Our previous work showed that 60% of women with chronic lower urinary tract symptoms and a history of MUS met objective criteria for obstruction.² This study primarily examined whether preoperative recurrent UTI predicts obstruction in women with chronic lower urinary symptoms and a history of MUS. It also evaluated the impact of suburethral sling excision on UTI recurrence.

Methods: A single-center, retrospective review examined patients with chronic lower urinary tract symptoms (>6 months) and a history of MUS. Obstruction was assessed by urodynamics according to Blaivas criteria or fluoroscopically. Demographic data, lower urinary symptoms, and UTI characteristics were collected.

Results: The charts of 95 patients were reviewed, 57 of whom presented with obstruction after MUS. Patients with obstruction averaged 2.84 UTIs over two years, while those without averaged 0.86. Logistic regression suggested a possible association, but the difference was not statistically significant ($p=0.530$). Among the 95 patients, 57 underwent sling lysis. In this group, UTIs averaged 1.33 in the two years before sling lysis and 1.12 in the two years after ($p=0.412$).

Conclusions: This study assessed the association between UTIs and obstruction in patients with chronic lower urinary symptoms following MUS. Patients with obstruction averaged more UTIs than those without. UTI numbers also decreased slightly after sling excision. These findings suggest a potential relationship between obstruction and recurrent UTIs, although further research with larger, prospective studies is needed to better evaluate the role of sling excision in reducing UTI recurrence and improving outcomes.

Acknowledgements: This abstract builds upon our previous data and findings that were published in the Journal of Urology.

References:

1. Yao J, Tse V. Twenty-five years of the mid-urethral sling: Lessons learned. *Int Neurourol J* 2022;26:102-10. <https://doi.org/10.5213/inj.2142086.043>
2. Ross J, Avvakoumova L, Yassein A, et al. Prevalence and predictors of bladder outlet obstruction in women with chronic urinary symptoms and a history of urethral sling surgery. *J Urol* 2023;209:384-90. <https://doi.org/10.1097/JU.0000000000003068>

MP 4.13. Table 1. Patients' basic characteristics and outcomes of VUAS treatments (dilation, VUAS incision, Optilume)

ID	Age (yr)	DM	HTN	CAD	Dilation (n)	Average no. of days between recurrence requiring dilation (days)	VUAS incision (n)	Average no. of days between recurrence requiring VUAS incision (days)	Catheter dependency interval (days)	Optilume recurrence interval (days)	Optilume recurrence-free interval (days)
1	64	No	Yes	Yes	4	8	2	60	590	38	38*
2	72	No	Yes	No	3	8	0	NA	113	No recurrence yet	531
3	83	Yes	Yes	Yes	3	15	0	NA	149	No recurrence yet	481
4	71	Yes	Yes	Yes	5	42	2	50	138	No recurrence yet	428
5	75	No	Yes	No	0	34	0	NA	NA	No recurrence yet	428
6	73	No	No	Yes	5	20	1	30	438	51	51
7	72	No	Yes	No	3	29	2	80	187	40	40
Average	72.9				3.2	22.3	1	55	269	44.5	323.5

*Reported technical issues with Optilume device.

MP 4.15**The diagnostic accuracy of pulsed fluoroscopy retrograde urethrogram vs. the traditional retrograde urethrogram in diagnosing urethral stricture: A randomized, prospective, comparative study***Dhruv Lalkiya¹, Vahid Mehrnoush¹, Walid Shabana¹, Walid Shahrour¹, Owen Prowse¹*¹Department of Urology, Northern Ontario School of Medicine, Thunder Bay, Canada

Introduction: Retrograde urethrogram (RUG) is the standard imaging method used to evaluate the urethral stricture, requiring the expertise of a skilled urologist for precise execution and interpretation. The ALARA principle (“as low as reasonably achievable”) emphasizes minimizing radiation exposure through strategies like time management, distance optimization, and shielding. This study explored the diagnostic accuracy and reliability of pulsed RUG (1FPS) compared to traditional RUG (4FPS) in identifying urethral strictures.

Methods: The study is a prospective, randomized control trial conducted at TBRHSC institute from September 2022 and ongoing, which includes a total of 45 participants. RAND function in Excel allotted 21 patients to traditional RUG arm and 24 participants to the pulsed fluoroscopy RUG arm. The demographic data, radiation dose and duration, stricture location during RUG, and intraoperative procedure were noted.

Results: A total of 77 RUG procedures were performed from September 2022 to present. The median age of patients was 68 years (range 39–88). Of these, seven patients were found to have no strictures, confirmed through cystoscopy.

Another 25 patients were excluded due to the presence of complex stricture disease or the need for procedural manipulation. The average X-ray exposure time for the pulsed fluoroscopy RUG group (n=25) was 0.76 seconds, while it was 0.98 seconds for traditional fluoroscopy RUG group (n=21). The average radiation dose for the traditional RUG was 0.00411 μ Gy, compared to 0.00373 μ Gy for the pulsed RUG group. Data analysis, conducted using IBM SPSS (v30.0) and Excel, yielded an F-statistic of 1.24, which was compared to the critical F-value (24,21) of 2.05 at a 95% confidence interval ($\alpha=0.005$). This result indicated no significant difference in radiation doses between the two groups ($p=0.30$). Pulsed fluoroscopy RUG results were compared with intraoperative findings, with results showing a specificity of 100% and an accuracy of 100%. Urethral strictures were categorized as bulbar urethral strictures (66.66%) and penile urethral strictures (33.33%).

Conclusions: Pulsed RUG demonstrates exceptional diagnostic accuracy (100%) while significantly reducing X-ray exposure time, adhering to the ALARA principle. Although the observed reduction in radiation dose did not reach statistical significance — potentially due to the judicious use of the X-ray paddle by physicians and the variability in patients' BMI — these findings nonetheless highlight the potential of pulsed RUG to enhance patient safety. Further studies and data are warranted to establish the feasibility of pulsed RUG as a safer diagnostic modality evaluating urethral stricture.

Acknowledgements: Supported by a NOAMA grant. The authors extend their gratitude to the radiology technician team at Thunder Bay Regional Health Sciences Centre (TBRHSC)