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Scientific Abstracts

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Contents

Incremental Value of Micro-Ultrasound Targeted Prostate Biopsy Cores - A Secondary Analysis of the Optimum Randomized Trial

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Introduction: Micro-ultrasound (microUS) is a novel, high-resolution imaging technique that allows for real-time visualization of prostate tissue. Level 1 evidence supports non-inferiority to magnetic resonance imaging (MRI) in the detection of clinically significant prostate cancer (csPCa, defined as Gleason Grade Group ≥ 2). The ideal number of microUS-targeted biopsy cores per region of interest, however, remains uncertain. The objective of this analysis is to determine the ideal number of targeted prostate biopsy cores needed to detect csPCa using high-resolution microUS.

Methods: This was a secondary analysis of data from the OPTIMUM trial, a multicenter, international, open-label, randomized, noninferiority trial comparing MRI and microUS for the detection of csPCa. For the microUS-targeted lesions, the sampled biopsy cores (one to five) and their corresponding detection of csPCa were recorded. Detection was assessed as the presence of csPCa in at least one of the targeted cores. The primary outcome was the rate of csPCa detection, stratified by sequential core number. Differences in detection rates between the groups were analyzed using the Wilcoxon rank-sum test (p-value <0.05).

Results: A total of 148 patients were assessed who had a microUS-guided targeted biopsy between December 2021 to September 2024. The detection of csPCa using microUS in at least one targeted core was recorded in 116, 112, 104, 12, and 6 patients with one, two, three, four, and five targeted cores sampled, respectively. The rate of csPCa detection increased with additional targeted cores: 85% with one core, 92% with two cores, 98% with three cores, and plateaued at 100% with four and five cores. There were significant differences in the rate of csPCa detection between one and three cores (p<0.001) and between two and three cores (p=0.025). All other relationships were not significant (p>0.05).

Conclusion: The detection of csPCa using microUS is significantly improved by taking multiple cores, up to three, with four and five targeted cores not meaningfully improving the detection of csPCa. Three targeted biopsy cores maximize prostate cancer detection while minimizing unnecessary sampling and potential patient complications.

Source of funding: Exact Imaging.

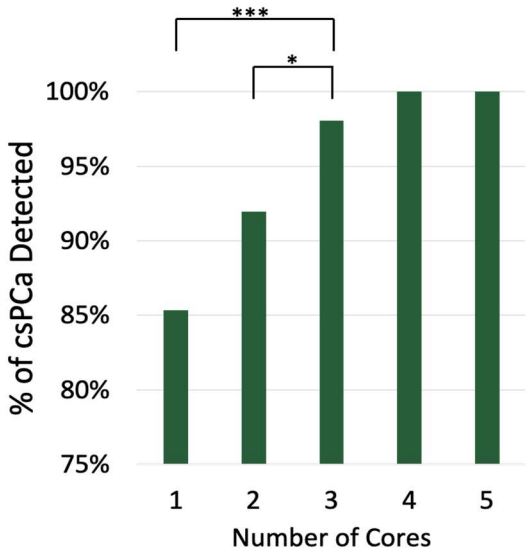

Figure 1. Incremental detection of clinically significant prostate cancer (csPCa) with increasing numbers of micro-ultrasound (microUS)-targeted biopsy cores. *** p <0.001; * p=0.0025.

Tolerability and Clinical Outcomes of Penile Plication Using Inhaled Methoxyflurane (Penthrox®): A Retrospective Cohort Study

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Introduction

Penile plication is commonly performed with general or spinal anesthesia. Previously, our group compared deep intravenous sedation (DIS) with nursing administered conscious sedation (NACS) plus local anesthesia (LA) and found that patients tolerated NACS, with no difference in perioperative pain scores or recurrence of curvature on follow up. The use of inhaled, self-administered analgesics such as methoxyflurane (Penthrox®) as an adjunct to local anesthesia represents a potential alternative to NACS in the ambulatory setting. This approach offers advantages including convenience, negligible risk of airway compromise, and shorter recovery times, reducing overall patient turnover time. Additional benefits include lack of requirement for intravenous access and reduced nursing support during the procedure. In this study, we evaluated the tolerability of penile plication performed with Penthrox® as an adjunct to local anesthesia.

Methods

We retrospectively evaluated tolerability in patients undergoing penile plication before and after a practice change from NACS with local anesthesia to inhaled methoxyflurane with local anesthesia. NACS consisted of intravenous midazolam and fentanyl. Local anesthesia was identical in both cohorts and comprised a 1:1 mixture of 1% lidocaine and 0.25% bupivacaine (marcaine). Dorsal penile nerve block, penile ring block, and pudendal nerve block were performed for all procedures. In the methoxyflurane cohort, a single vial of inhaled methoxyflurane was administered, and patients were instructed on self-administration prior to the procedure. Baseline characteristics, intraoperative complications, safety outcomes, and recurrent curvature at 3-month follow-up were collected and analyzed.

Results

A total of 75 patients underwent penile plication during the study period (September 2022 to September 2026), including 60 patients who received NACS and 15 who received inhaled methoxyflurane. The median preoperative curvature in the NACS group was *45*° (IQR 45–75), while the median curvature in the methoxyflurane group was 52.5° (IQR 30–53.5). All patients in both cohorts reported tolerating the procedure. One patient in the methoxyflurane group sought postoperative assessment from their family physician for pain management. There were no urgent care or emergency department visits in either cohort. At follow-up, all patients in both groups reported functionally satisfactory curvature correction.

Conclusions

These findings demonstrate the feasibility and clinical utility of self-administered inhaled methoxyflurane as an alternative to NACS or deep intravenous sedation (DIS) for penile plication in the ambulatory surgical setting. This approach may offer advantages in patient recovery while also contributing to reduced operating room turnover times and improved surgical access.

Real-World Outcomes of Optilume Drug-Coated Balloon Treatment for Urethral Stricture Disease: A Canadian Tertiary Care Experience

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Introduction And Objectives:
Urethral stricture disease affects approximately 0.9% of men in North America and significantly impacts quality of life. The Optilume Paclitaxel Drug-Coated Balloon (DCB) is a novel therapy that dilates the stricture while delivering paclitaxel to prevent fibrosis and recurrence. Real-world data on efficacy, complications, and predictors of failure, particularly in Canadian patients, remain limited.

Methods:
A retrospective review was performed of patients who underwent DCB treatment for urethral stricture disease at a tertiary care centre, with a minimum of 1-year follow-up. Baseline demographics, stricture characteristics, postoperative outcomes, and complications were collected. The primary endpoint was treatment efficacy, defined as the absence of repeat intervention. Logistic regression analyses were conducted to identify predictors of treatment failure.

Results:
A total of 111 male patients met inclusion criteria, with a mean follow-up of 16.9 months (range 12.2–41.9). The mean age was 53 years. Nine patients (8.1%) had no prior treatment, 91 (82.0%) had undergone prior endoscopic treatments, and 14 (12.6%) had undergone urethroplasty. Among patients treated endoscopically, 37.8% had ≥5 prior treatments. The majority (75.6%) had bulbar urethral strictures, with an average stricture length of 2.21 ± 1.2 cm. The most common stricture etiologies were idiopathic (45.9%), iatrogenic (30.1%), traumatic (12.6%), infectious (5.4%), hypospadias-related (4.5%), and lichen sclerosis (1.8%). Overall efficacy was 73.8%, with treatment failure observed in 29 patients (26.1%) at a mean time to re-treatment of 11.9 months. Of 14 patients with prior urethroplasty, 10 (74.1%) required no repeat treatment. The mean change in Qmax was +7.2 mL/s. Multivariate logistic regression identified non-bulbar urethral strictures as a significant predictor of treatment failure (OR 6.5, 95% CI 1.49–31.77; p=0.015). In subgroup analysis of patients with prior endoscopic treatment, having ≥5 prior endoscopic procedures was an independent predictor of treatment failure (OR 3.9, 95% CI 1.45–10.5; p=0.007).

Conclusions:
Repeat intervention was not required in 73.8% of patients treated with DCB over an average follow-up of 16.9 months. Non-bulbar strictures and ≥5 prior endoscopic treatments were significant predictors of failure. These findings may aid in preoperative prognostication and patient counselling.

Determinants for Discontinuing Intracavernosal Injection Therapy in Men with Erectile Dysfunction

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Introduction and objectives
Extracavernous injection (ICI) therapy is an effective treatment for erectile dysfunction (ED) in men who have not seen benefit from oral PDE type-5 inhibitors. Despite its efficacy, a considerable portion of patients who are prescribed ICI elect to discontinue therapy or fail to refill their prescription. Our study aimed to elucidate demographic, clinical, and treatment-related factors associated with ICI discontinuation to improve future adherence and patient outcomes.

Methods
A retrospective analysis was conducted on men who initiated ICI therapy at the Manitoba Men's Health Clinic between April 2024 to January 2025. Baseline variables (age, BMI), etiology and duration of ED, type and duration of ICI use, reported adverse events, and subsequent surgical intervention with inflatable penile prosthesis (IPP) were collected. Reasons for discontinuation of ICI were thematically categorized. Descriptive statistics were performed to characterize the above factors.

Results
Of 170 patients, 77 did not refill their ICI prescription (mean age 60.0 years; BMI 30.50 kg/m^2). ED etiologies included organic (45.5%), DM (35%), psychogenic (13%), CVD (11.7%), prostate cancer (8%), CKD (3.9%), peyronies (3.9%) DLD deficiency (2.6%) and other (6.5%) urologic issues, Some patients presented with multiple etiologies. Mean ED duration was 6.4 years. Mean duration of ICI use for quadmix was 8.6 months, trimix 5.4 months, super quadmix 6.8 months. No adverse events were reported. Thirteen patients (7.64%) elected to undergo IPP.
Of 170 patients enrolled, 18 (23.4%) patients discontinued ICI use due to injection aversion/pain, 15 (19.5%) were lost to follow-up, 14 (18.2%) were dissatisfied with the effectiveness of ICI, 7 (9.1%) chose alternative therapy, 6 (7.8%) had cost barriers, 2 (2.6%) had cancer treatment priority and 2 (2.6%) did not have a documented reason for discontinuation.

Conclusions
Discontinuation of ICI therapy is influenced by a combination of physical, psychological, and social factors rather than disease severity or demographic characteristics alone. Targeted patient counselling and structured follow-up may improve long-term adherence to ICI therapy and optimize treatment outcomes.

A Phase 1 Safety, PK and Preliminary Efficacy Study of Localized Therapy using Enolen®(Enzalutamide) Implants for Early-Stage Prostate Cancer

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Introduction and objectives:

Androgen Receptor Pathway Inhibitors (ARPI) have well-established anti-cancer effects across multiple stages of prostate cancer (PCa). However, systemic anti-androgen therapy is associated with considerable side effects. We developed a novel polymer-based enzalutamide-containing implant, Enolen®, to provide continuous local drug administration to the prostate for men with localized PCa.

Methods:

NCT06257693 is a first-in-human Phase 1 trial to test the feasibility, safety, PK profile, and preliminary efficacy of intraprostatic Enolen® implants (~ 15 mm long, 1 mm in diameter). Up to 16 planned implants will be placed into MRI-visible lesions of 20 men with PCa scheduled for a robotic-assisted radical prostatectomy (RARP) within 6-12 weeks. Eligible men had at least one >0.5 cm MRI-visible biopsy-confirmed lesion and ISUP Grade Group (GG) of 2 or higher PC. Enzalutamide levels were collected serially in plasma and in prostate tissue at prostatectomy. IPSS, EPIC, and AEs by CTCAE v5.0 were monitored during the study. Enolen® implants were collected post-prostatectomy and analyzed for residual content to establish in vivo drug release.

Results:

As of October 31, 2025, 18 males have been consented, and 15 males with a median age of 64 (range 50-76) received 7-16 implants. The biopsy detected ISUP GG for the subjects implanted ranged from GG 2 to GG 5. The mean duration of the implants was 52 days (range 41-71). AEs associated with enzalutamide or implant procedure included Grade 1 fatigue, pain due to the implant procedure, hematuria or dysuria. No new post-prostatectomy adverse events were noted. Erectile dysfunction was not observed in the post-implant period. Mean (SD) testosterone levels (14 pts) at screening were 502 ± 96 ng/mL and 449 ± 86 ng/mL at prostatectomy. Implantation has not resulted in any delays or impediments to definitive PCa treatment. Supratherapeutic enzalutamide levels were achieved in prostate tissue surrounding the implants: mean (SE) 19896 ± 2931 ng/g with corresponding plasma levels of ~ 25 ng/mL (Range 11.4 to 33.6 ng/mL) between day 8 and day 29 post-implantation (~ 16,600 ng/mL reported for oral enzalutamide). Prostate and tumor shrinkage from pre- and post-MRIs in all treated patients will be presented.

Conclusions:

This trial establishes the safety and feasibility to deploy up to 16 Enolen® implants into the prostate prior to RARP for localized PCa with tumor volume shrinkage by MRI. PK and PD analyses showed high prostate but minimal systemic enzalutamide levels and no adverse effects on testosterone or sexual function. Two additional cohorts of 36 patients for dose optimization and extended in-situ duration are being explored.

Source of funding: NCI/NIH

The Evaluation of Educational Resources in Radical and Partial Nephrectomy for Patients with Kidney Masses

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Introduction
Approximately 8,000 Canadians are diagnosed with renal cell carcinoma (RCC) each year with most of these patients receiving a nephrectomy for definitive management of their malignancy. While healthcare providers aim to convey information in a way that is understood by patients during surgical consultations, previous literature has demonstrated that understanding is poor and as little as 25% of the key information regarding risks and benefits is retained. Understanding and information retention can be improved with pre-surgical educational resources, which have demonstrated a benefit in terms of patient understanding and satisfaction with procedural outcomes. While patient stakeholder groups like Kidney Cancer Canada (KCC) have already developed decision aids for select patients, these do not provide an overview of nephrectomy procedures for all patients.

Methods
An educational resource explaining the risks, benefits, and follow-up associated with nephrectomy procedures was created in consultation with patient stakeholders at KCC and a fellowship trained urologist at the Southern Alberta Institute of Urology (SAIU). Patients referred to SAIU for consideration of surgical management of a kidney mass were asked to participate which consisted of reviewing the educational resource and completing a short follow-up questionnaire. The questionnaire assesses the benefit of the resource for them and the importance of them being involved in decision making surrounding the surgical management of their mass. Treating urologists were also asked to complete a questionnaire assessing the utility and accuracy of the resource.

Results
A total of 24 patients completed the initial questionnaire of 30 who were approached to participate for a total recruitment rate of 80%. Patients who completed the questionnaire had a mean age of 59.1 ±13.0 and 58% were male. For education level 25% had grade 12 or less, 29% had completed trades or vocational school, 42% had a bachelor's degree, and 4% had advanced degrees. When asked if participants wanted more information beyond their initial urology consult 25% answered "definitely yes" and another 38% answered "probably yes". When asked if the resource improved patient understanding of the nephrectomy procedure 96% answered with either "strongly agree" or "somewhat agree". When asked if the resource was written at a level that was easy to understand and if the resource helped empower them to collaborate on treatment decisions all participants answered with "strongly agree" or "somewhat agree". Lastly, when asked if the resource made participants less anxious about the procedure 54% answered either "strongly agree" or "somewhat agree".

Conclusions
Patients undergoing nephrectomy expressed a clear interest in receiving additional information regarding their procedure. We found that the developed resource improved patient understanding of nephrectomy procedures, was easy for patients to understand, and helped improve patient anxiety regarding the nephrectomy procedure.

Clomiphene Citrate in Idiopathic Male Infertility: Changes in Total Motile Sperm Count and Reproductive Hormones

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Introduction and objective:
Infertility affects 15% of couples worldwide, yet evidence for empiric therapy in idiopathic male factor infertility is limited. Clomiphene citrate (CC), a selective estrogen receptor modulator that stimulates endogenous gonadotropins, is widely prescribed, but its impact on total motile sperm count (TMSC) and reproductive hormones remains uncertain. This study evaluated the association between CC therapy and changes in TMSC and reproductive hormones in infertile men.

Methods:
This single-center retrospective cohort included men ≥18 years with idiopathic infertility treated with CC. From January 2022 to November 2024, 108 men received CC; after excluding those without a post-treatment semen analysis and those with baseline TMSC >20 million/mL, 60 were included. The primary outcome was change in TMSC; secondary outcomes were changes in testosterone, FSH, LH, estradiol, and 17-OHP measured before and after CC. Hormonal changes were assessed with paired t-tests; primary versus secondary infertility with independent t-tests; predictors of change in TMSC with multivariable linear regression.

Results:
A total of 60 men (mean age 35.6 ± 4.6 years) were treated for an average of 12.9 ± 6.1 months. Following CC, mean TMSC increased by 13.1 million ($p=0.005$); 17-OHP by 1.8 nmol/L, testosterone by 9.9 nmol/L, FSH by 4.9 IU/L, LH by 4.8 IU/L, and estradiol by 53.9 pmol/L (all $p<0.001$). Change in TMSC was not associated with age, BMI, baseline hormone levels, or CC treatment duration (all $p>0.05$). Furthermore, men with primary (n=46) versus secondary infertility (n=14) did not differ in the degree of TMSC or hormonal changes (all $p>0.05$).

Conclusions:
CC was associated with a significant increase in TMSC, with concurrent rises in reproductive hormones. This response was independent of age, BMI, baseline hormone levels, and treatment duration, and no clinical predictors of benefit were identified. Larger prospective studies are needed to validate these findings and to guide optimal dosing and candidate selection.

TABLES

Table 1. Hormonal outcomes before and after clomiphene citrate treatment

	n	Pre (Mean ± SD)	Post (Mean ± SD)	Mean Δ (95% CI)	*p-value*
TMSC (millions)	60	5.69 ± 5.62	18.82 ± 37.19	+13.14 (4.06–22.22)	0.005*
17-OHP (nmol/L)	21	2.78 ± 1.43	4.55 ± 2.06	+1.78 (1.08–2.47)	<0.001*
T (nmol/L)	50	10.05 ± 5.00	19.90 ± 7.75	+9.86 (7.46–12.26)	<0.001*
FSH (IU/L)	49	6.59 ± 4.73	11.46 ± 10.64	+4.87 (2.40–7.33)	<0.001*
LH (IU/L)	47	4.92 ± 2.54	9.70 ± 7.81	+4.78 (2.72–6.83)	<0.001*
Estradiol (pmol/L)	24	89.21 ± 36.15	143.08 ± 64.03	+53.88 (26.91–80.85)	<0.001*

TMSC, total motile sperm count; 17-OHP, 17-hydroxyprogesterone; T, testosterone; FSH, follicle-stimulating hormone; LH, luteinizing hormone; CI, confidence interval; SD, standard deviation. Δ, change (post − pre). Asterisk denotes $p < 0.05$.

Table 2. Changes in Azoospermia Status from Pre- to Post-Treatment

	Post: Not Azoospermic	Post: Azoospermic	Total, n (%)
Pre: Not Azoospermic	49	4	53 (88.3%)
Pre: Azoospermic	4	3	7 (11.7%)
Total, n (%)	53 (88.3%)	7 (11.7%)	60

McNemar's Test: $p = 1.00$

Table 3. Predictors of change in total motile sperm count (n=23)

	B (95% CI)	β	*p-value*
Age	-0.27 (-5.98–5.45)	-0.03	0.921
BMI	0.91 (-2.65–4.47)	0.17	0.593
Pre-17-OHP	2.92 (-5.01–10.84)	0.25	0.443
Pre-T	0.83 (-3.13–4.79)	0.15	0.660
Pre-FSH	-0.62 (-5.21–3.98)	-0.08	0.778
Pre-LH	-3.12 (-10.51–4.28)	-0.31	0.381
Pre-Estradiol	-0.45 (-0.94–0.05)	-0.55	0.076
Treatment Duration	-0.86 (-3.76–2.04)	-0.19	0.535

Multiple linear regression of change in total motile sperm count. Outcome is ΔTMSC (post − pre). B, unstandardized coefficient; β, standardized coefficient; CI, confidence interval; TMSC, total motile sperm count; 17-OHP, 17-hydroxyprogesterone; T, testosterone; FSH, follicle-stimulating hormone; LH, luteinizing hormone. No predictor reached statistical significance ($p<0.05$).

Table 4. Independent-Samples t Test Comparing Changes in Semen and Hormonal Parameters between Primary and Secondary Infertility Groups

Outcome	1° Infertility (Mean Δ ± SD)	2° Infertility (Mean Δ ± SD)	Mean Difference (95% CI)	*t* (df)	*p-value*
TMSC	12.06 ± 38.57 (n=46)	16.69 ± 20.97 (n=14)	-4.64 (-26.26–16.99)	-0.43 (58)	0.669
17-OHP	1.90 ± 1.55 (n=17)	1.25 ± 1.45 (n=4)	+0.65 (-1.14–2.44)	+0.76 (19)	0.455
T	10.10 ± 8.85 (n=39)	9.00 ± 7.18 (n=11)	+1.10 (-4.75–6.95)	+0.38 (48)	0.707
FSH	5.24 ± 9.42 (n=38)	3.58 ± 4.72 (n=11)	+1.66 (-4.29–7.60)	+0.56 (47)	0.578
LH	5.01 ± 7.86 (n=37)	3.92 ± 1.56 (n=10)	+1.09 (-2.59–5.88)	+0.43 (45)	0.668
Estradiol	54.26 ± 67.52 (n=19)	52.40 ± 54.21 (n=5)	+1.86 (-66.21–69.93)	+0.06 (22)	0.955

Values are mean change (post − pre) ± SD for each group. Mean difference is primary minus secondary with 95% CI; two-sided independent-samples t tests were used (Welch's correction when variances were unequal). TMSC, total motile sperm count; 17-OHP, 17-hydroxyprogesterone; T, testosterone; FSH, follicle-stimulating hormone; LH, luteinizing hormone; CI, confidence interval. No comparison reached statistical significance ($p<0.05$).

Outcomes Among Rural and Urban Patients with High-risk NMIBC: Results from the Canadian Bladder Cancer Information System (CBCIS)

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Background: Patients with high-risk non-muscle invasive bladder cancer (NMIBC) require frequent surveillance and adjuvant intravesical therapy, which may be less accessible in rural area. Utilizing the Stats Canada Remoteness Index (RI), we sought to investigate the effect of rurality/remoteness on the presentation, management, and surveillance of high risk NMIBC and cancer specific outcomes such as survival and rate of progression.

Methods: The Canadian Bladder Cancer Information System (CBCIS) database was used to identify all patients diagnosed with high risk NMIBC (defined as HG Ta, any T1 disease, CIS) on initial transurethral resection of bladder tumor (TURBT). Using the manual classification method, rural areas were defined as a RI $\geq$ 0.15. Exclusion criteria included patients with non-urothelial histology, unknown T stage, or evidence of nodal or distant metastases at time of diagnosis.

Results: Among 2838 high-risk NMIBC patients, 71% were urban and 30% rural. Rural patients were more likely than urban patients to present with high grade (HG) T1 tumors (42% vs. 37%, p=0.059). Repeat TURBT was performed within 90 days for HG T1 disease in 29% of urban and

23% of rural patients (p=0.04). Rural patients were less likely than urban patients to receive induction BCG (52% vs. 69%, p<0.0001). 5-yr progression free survival to MIBC was significantly lower among rural patients (80% vs 85%; p=0.048).

Conclusions: Rural patients with high-risk NMIBC were significantly less likely to meet quality indicator benchmarks for guideline concordant surveillance and management, although overall rates are low indicating a potential area of quality improvement efforts.

Progress Update on a Randomized Clinical Utility Study of ClarityDX Prostate in Patients with Suspicion of Prostate Cancer

Adam Kinnaird

Background:
ClarityDX Prostate uses a patient's total and free PSA plus clinical features in one of four machine learning models, depending on the available data, to predict their risk of having clinically significant prostate cancer (defined as grade group ≥2). Accurate and early prostate cancer diagnosis is important to ensure suitable therapeutic options are offered to patients while preventing overdiagnosis and overtreatment. ClarityDX Prostate was developed to be an adjunctive screening tool for prostate cancer for men with elevated PSA[1]. The ClarityDX Prostate Score is a decision support model that enables clinicians and patients to make more informed decisions regarding the appropriateness of subsequent imaging or biopsy procedures. The clinical pathway aligns with the Canadian Urological Association (CUA) to use adjunctive strategies to better stratify the risk of clinically significant prostate cancer.

Objective:
The primary purpose of this study is to investigate the clinical utility of ClarityDX Prostate in reducing further healthcare utilization for men identified to be at risk of prostate cancer, in a real-world setting.

Methods:
This clinical utility study is a prospective, randomized, two-armed trial enrolling 1074 patients ≥ 18 of age, over three years, suspected of prostate cancer. Recruitment has begun at the Kipnes Urology Centre (KUC), Edmonton, led by PI/urologist Dr. Adam Kinnaird, and the Prostate Cancer Centre (PCC), Calgary, led by PI/urologist Dr. Eric Hyndman, and a PCC satellite centre at Lethbridge Urology. Three additional Canadian sites will also participate: the Men's Health Clinic in Winnipeg, Manitoba, led by PI/Urologist Jasmir Nayak; the Murray Koffler Urologic Wellness Centre in Toronto, Ontario, led by PI/Urologist Dr. Chris Wallis, and the Vancouver Prostate Centre, led by PI/Urologist Dr. Miles Mannas.
The arms of the study are Experimental/ClarityDX Prostate and Control/Standard of Care (SOC). All patients undergo a ClarityDX Prostate test using one of four ClarityDX Prostate models, depending on the available data: 1) ClarityDX Prostate (total PSA, free PSA, age, and previous negative biopsy), 2) ClarityDX Prostate + DRE findings, 3) ClarityDX Prostate + MRI (PI-RADS score and prostate volume), 4) ClarityDX Prostate + MRI + DRE.

The test report is shared with the healthcare team of participants randomized into the ClarityDX Prostate arm before the healthcare team decides whether to perform an MRI/advanced imaging and/or biopsy. Participants randomized into the Control arm and their healthcare providers will be blinded to the test report, and participants will be considered for MRI/advanced imaging and/or biopsy based on SOC. The ClarityDX Prostate test results will be unblinded at the 12-month follow-up visit and shared with the participant's health care team to assess whether there is a need to change the participant's care path.

Expected Findings:
It is hypothesized that the use of ClarityDX Prostate as a reflex test for PSA will reduce the number of biopsies for participants with no or indolent/clinically insignificant prostate cancer upon referral to a urologist.

Conclusion: A cost-effective and scalable adjunctive strategy that can accurately predict clinically significant prostate cancer from indolent disease may improve the screening pathway of patients suspected of prostate cancer.

1 Development of an effective predictive screening tool for prostate cancer using the ClarityDX machine learning platform. Hyndman, ME, et al. npj Digital Medicine, 2024, Vol. 7.

Robotic Ureterolithotomy for 14 cm Ureteral Stone Burden Around Retained Stent

Shaine Jivan and Kamaljot S. Kaler

INTRODUCTION:

Management of extensive ureteral stone burden due to encrusted retained ureteral stents is rare, with few cases documented. We present a case of a 53-year-old male with a 14 cm encrusted ureteral stone around a stent treated with a robotic ureterolithotomy and post operative results.

METHODS:

The patient had a long-standing history of indwelling encrusted ureteral stents and large bilateral renal stone burden. They underwent successful bilateral percutaneous nephrolithotomy (PCNL) for renal stones. The patient then underwent left robotic ureterolithotomy to remove the extensive ureteral stone burden (Fig. 1) and reconstruct the ureter.

RESULTS:

Under general anesthesia, the patient was positioned in right lateral decubitus position. Laparoscopic dissection exposed the dilated ureter from the ureteropelvic junction (UPJ) to the bladder. Two ureterotomies facilitated stone and stent removal. First, a proximal ureterotomy 3 cm incision allowed extraction of the 4 cm proximal stone and the 8 cm mid stone. The second, distal ureterotomy enabled removal of an additional 2 cm stone fragment. Intraoperative ureteroscopy and ultrasound ensured complete stone clearance. The ureter was reconstructed using running and interrupted 4-0 absorbable sutures. A double-J ureteral stent was placed for drainage, and a nephrostomy tube was left in situ.

Postoperatively, the patient recovered well. The nephrostomy tube was clamped after three days and removed following a successful nephrostogram demonstrating ureteral patency. Six weeks later, the ureteral stent was removed via flexible cystoscopy without complications.

Follow-up imaging, including nuclear medicine renal scan (MAG3) and CT IVP, showed no ureteral obstruction or stricture. The nuclear scan demonstrated equal split renal function (50% left kidney, 50% right kidney) with no obstruction. The patient reported no major postoperative issues.

CONCLUSION:

Robotic ureterolithotomy, post bilateral PCNL, proved to be an effective and safe treatment for a 14 cm ureteral stone around a retained stent. This approach enabled complete stone removal, preservation of renal function confirmed on post-operative imaging, and avoidance of more invasive procedures. This case supports the utilization of robotic surgery for extensive ureteral stones.

Source of Funding: None.

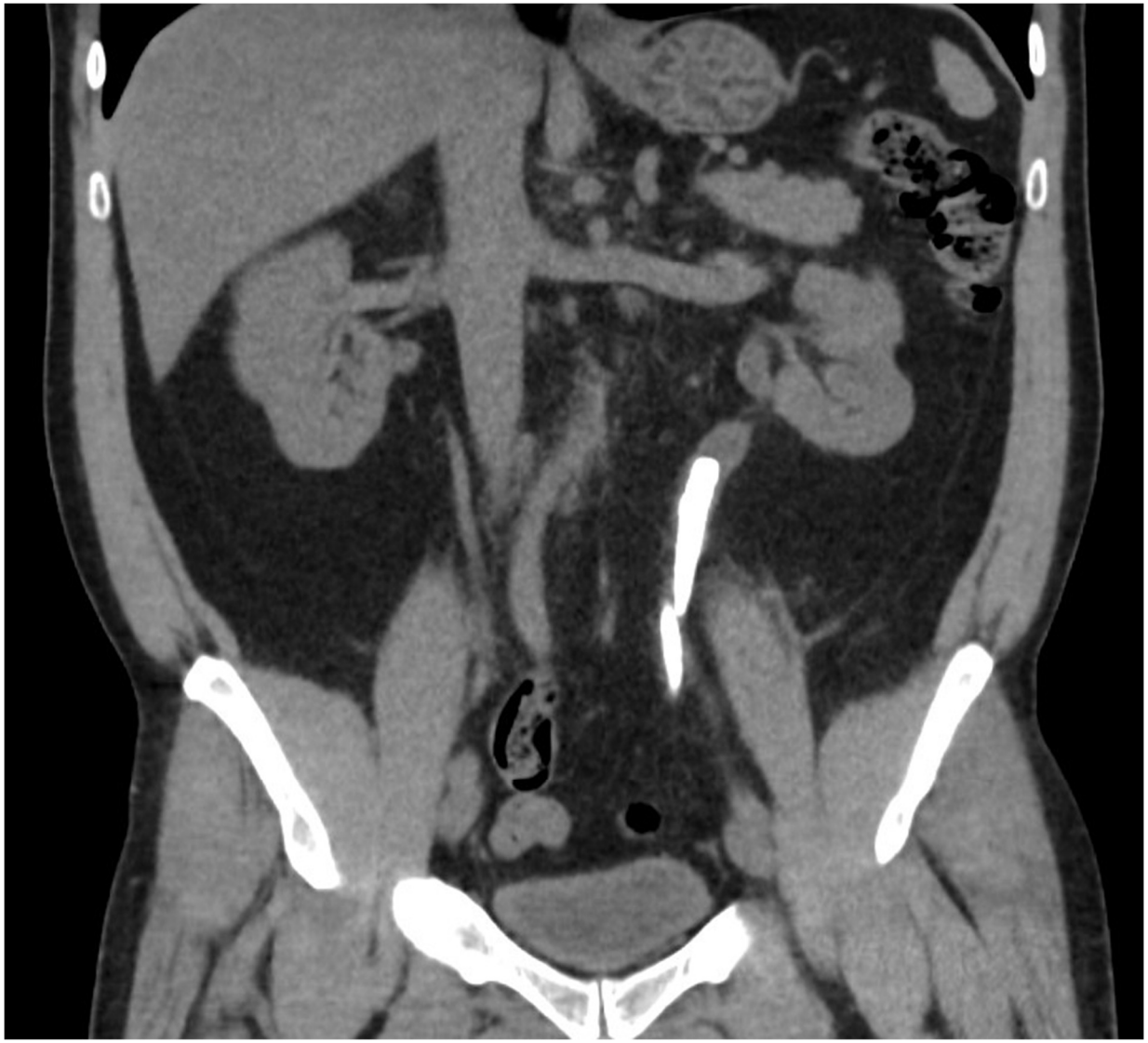

Figure 1. Pre-operative CT of left ureteric stone

Assessing Peri-operative Outcomes in Robotic Kidney Transplantation with Expansion to Deceased Donor Transplants: A Quality Assurance Study

Anna Sarafis, Max Levine

Introduction: Robotic kidney transplantation (RKT) has been recognized as non-inferior to open kidney transplantation. This minimally invasive approach to kidney transplantation has been recently introduced to the University of Alberta Hospital (UAH) in 2024. Currently, it is unclear if there are inherent perioperative differences such as operative times, ischemic times, complications and early graft function between robotic kidney transplants using living (scheduled) versus deceased donors (unscheduled). Capturing these parameters would assist in assessing program performance, safety, and may provide insight into case scheduling and resource allocation. Through a quality assurance lens, we aimed to assess and compare the early perioperative outcomes of living (LD) relative to deceased donor (DD) RKT using data from 21 cases at a single institution.

Methods: This study was a quality assurance initiative that retrospectively reviewed prospectively maintained data of robotic kidney transplants conducted from June 2024 to January 2026 by a single surgeon at the UAH. Transplant recipients were categorized by donor type (living vs deceased). Patient characteristics and early perioperative outcomes including operative times, ischemia metrics, complications, and early graft function were compared using univariate analyses. Independent t-tests and fisher exact tests were applied, respectively. Statistical significance was defined by a two-tailed p-value <0.05.

Results: Of the 21 cases analyzed, 16 were recipients of LD while 5 were recipients of DD (4 donation after brain death, 1 donation after circulatory death). Age and sex did not significantly differ between groups; however, BMI was significantly higher in DD RKT (27.8 vs 36.8, $p = 0.0092$). There were no significant differences in total OR, total case, nor total console times. Regarding ischemic metrics, rewarming time was not significantly different (LD RKT: 39.4 mins vs DD RKT: 38.4 mins, $p = 0.80$) while cold ischemia time was significantly higher in DD RAKT (LD RKT: 266.86 mins vs DD RKT: 467.80 mins, $p = 0.036$). DD RKT had a higher length of hospital stay (LD RKT: 7.56 days vs DD RKT: 13 days, $p = 0.000046$). There were no significant differences in Clavien-Dindo grades and there were no recorded re-operations, surgical site infections, lymphocele formation nor incisional hernia formation in the acute post-operative period in any group. DD RKT had a higher 30-day creatinine (LD RKT: 118.25 vs DD RKT: 154.75, $p = 0.033$).

Conclusions: This quality assurance study suggests comparable operative times and rewarming times between living and deceased donor RKT. Furthermore, complications were minimal among both cohorts. Overall, our analysis demonstrates the safety and feasibility of living and deceased donor RKT at the UAH. In consideration of our small population size and lack of longitudinal data, further studies would be prudent for continued quality improvement and program evaluation.

Predictors of Lymph Node Dissection and Nodal Positivity in Renal Cell Carcinoma: A Population-Based Analysis from the Manitoba Histology Renal Database

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Introduction:
The role of lymph node dissection (LND) in renal cell carcinoma (RCC) remains unsettled. Randomized evidence has not shown a universal survival benefit for routine LND yet improving staging accuracy and guiding adjuvant therapy remain key motivations for selective nodal sampling. Our objective was to (1) characterize trends in LND utilization and (2) identify histopathologic predictors of nodal metastasis in a provincial RCC nephrectomy cohort.

Methods:
We conducted a retrospective, population-based analysis of adult RCC nephrectomies performed between 2008 and 2018 within Manitoba's centralized histopathology system. Inclusion required radical or partial nephrectomy for RCC. Exclusions included pediatric histologies, biopsy-only specimens, transplant/rejection pathology, non-renal primaries, non RCC histology and cases outside the study window.

Results:
Among 690 RCC nephrectomies, LND was performed in 83 (12.0%) and 13/83 (15.7%) were node positive. LND utilization increased over time with year-to-year variability (peak 16.2% in 2018). Within the LND subset, lymphovascular invasion (LVI) was significantly associated with nodal metastasis (OR 4.28; 95% CI 1.25–14.65; p = 0.034), as was sarcomatoid differentiation (OR 7.33; 95% CI 1.55–34.59; p = 0.019). High histological grade was more frequent in node-positive tumors (mean 3.5 vs 2.81; p = 0.005). Tumor size was numerically larger in node-positive disease (11.07 vs 8.79 cm) but not statistically significant (p = 0.165).

Conclusions:
In this population-based cohort, LND was employed selectively and increased modestly over time. LVI and sarcomatoid differentiation were the strongest histopathologic correlates of nodal metastasis. These findings support a biology-driven approach to LND rather than routine dissection in all cN0 RCC.

Effects of Opioid Sparing Protocol Implementation for Robotic and Laparoscopic Urologic Surgery

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Introduction:
Advances in minimally invasive urologic surgery enable similarly effective procedures with less painful incisions, potentially reducing opioid prescriptions and their harmful effects. We measured the impact of implementing an opioid sparing pain control protocol in patients undergoing laparoscopic or robotic surgery.

Methods:
Case-control analysis of 82 patients on the opioid sparing protocol (OSP) and 82 procedure- and GFR-matched controls. All eligible patients (no ischemic cardiac disease, existing and anticipated GFR > 30 mL/min/1.73m², no pre-existing opioid use) from March-October 2024 were included. Primary outcome was in-hospital pain score (/10). Secondary outcomes: oral morphine equivalent dose (MED), renal function, 90-day cardiac events, and length of stay (LOS).

Results:
Pain scores were acceptable and similar between OSP and controls on POD0 (4 (0-10) vs. 4 (0-10) /10, $p>0.05$) and POD1 (3 (0-10) vs. 2 (0-9) /10, $p>0.05$). MED was lower in OSP (0.0 (0.0-80) mg) versus controls (17 (0.0-125) mg, $p<0.05$). There were no 90-day cardiac events in either group. GFR was similar for OSP versus controls at 6 weeks (66 (30-115) vs. 66 (25-102) mL/min/1.73m², $p>0.05$) and 1 year (66 (18-118) vs. 66.0 (26-99) mL/min/1.73m², $p>0.05$). Median LOS was 30 h for both groups. Two OSP patients presented to ED for abdominal pain versus zero controls. After discharge, 4 OSP patients (4.9%) required additional opioid prescriptions versus 14 controls (17%, $p<0.05$). At 1 year, 2 OSP patients (2.4%) were filling opioid prescriptions versus 3 controls (3.7%, $p>0.05$).

Conclusions:
Pain scores remain similar with standard or opioid sparing regimens despite significantly reduced morphine use in the OSP group.
Fewer OSP patients required post-discharge opioid prescriptions (4.9% vs. 17%), with comparable long-term opioid use at 1 year. No differences emerged in short- or long-term renal function or ED presentations with increased anti-inflammatory use and fewer opioids.

Cost-Differential of Robotic-Assisted vs Open Kidney Transplantation in a Single Canadian Tertiary Healthcare Center

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Objectives:
Robotic-assisted kidney transplantation (RAKT) is becoming increasingly adopted in select transplant centres globally, but is only established at a single Canadian centre. While upfront costs of robotic-assisted procedures is greater than open approaches, reduced complications can offset the price differential. RAKT reduces wound complications, which may decrease overall health care costs of transplant. This study is a quality assurance initiative to compare crude costs of RAKT versus open kidney transplantation (OKT) in a Canadian center.

Methods:
Adult living donor (LD) kidney transplants performed at the University of Alberta Hospital (Edmonton, AB, Canada) between March 2024 and September 2025 were reviewed, stratified by surgical approach (OKT vs RAKT), and the crude costs compared using a t-test. Intraoperative disposable and instrument costs were directly quantified from Intuitive Surgical, Inc. and the electronic health record. Time-dependent costs of the transplant admission were calculated based on published average costs per unit of time (in room time, anesthetic time, recovery room time, length of stay [LOS]). Re-admissions within 6-weeks were reviewed. Data are presented as Mean [SD]; costs are reported in Canadian dollars.

Results:
Fourty-three LD renal transplantations were performed in the review period with 31 OKT and 12 RAKT. The intraoperative cost of OKT was significantly lower than RAKT ($7507.55 [$971.18)] vs $12056.26 [$472.84], $p < 0.001$). In room time was shorter for OKT compared to RAKT (232.6 [32.5] min vs 287.3 [11.3] min, $p < 0.001$). Time in the recovery room was similar for OKT and RAKT (102.3 [38.4] min vs 87.8 [25.5] min, $p=0.23$). LOS was not different between OKT and RAKT (8.35 [3.63] days vs 7.50 [1.0] days, $p = 0.43$). The total transplant admission costs were not different between OKT and RAKT ($22040.89 [$6652.88] vs $25083.35 [$1767.75], $p = 0.13$). After OKT, there was a 10% rate of surgical wound related re-admissions, with no re-admissions required in the RAKT group.

Conclusion:
In this preliminary crude cost review in a Canadian centre, RAKT demonstrated comparable overall costs to OKT despite higher intraoperative expenses. Cost balancing may be driven by a trend towards shorter stays in recovery and LOS. Reduced rates of major wound complications categorically reduce costs of total care. RAKT may represent a cost-comparable alternative to OKT, with potential cost savings through avoidance of major wound complications. Future analysis required to model cost-efficacy to justify wider spread adoption of RAKT in a single payer system.

Sources of Funding**:** N/A

Needlestick Injury Among Surgical Residency Programs

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Introduction
Surgical residents are at high risk of occupational exposure to needle stick injuries worldwide. We sought to identify prevalence of Needlestick Injuries (NSIs), characterize the circumstances in which they most commonly occur, how often injuries were reported and outline barriers to reporting such injuries.

Methods
This study was performed during the 2025-2026 academic year at the University of Manitoba. 112 resident physicians in surgical specialties were identified and invited via email to participate in an anonymous online survey of 28 qualitative and quantitative questions.

Results
Of 51 (46% response rate) respondents, over half (55%) indicated they suffered at least 1 NSI without reporting it. In total, our survey identified 135 injuries. The two most common scenarios resulting in NSI's were self-inflicted during suturing (42%), and as a result of assisting a co-surgeon while suturing (32%). Accordingly, 79% reported they suffered the majority of NSIs in a main operating room and 61% indicated most of their NSI's occurred during regular working hours. Many respondents reported multiple reasons for not reporting a NSI, including not wanting to leave in the middle of an operation (76%), feeling there was no need to report it (52%), and feeling too rushed to report (48%). 63% underestimated the risk of contracting HIV from a NSI involving a patient with HIV, and 76% overestimated the risk of contracting Hepatitis C from a NSI involving a patient with Hepatitis C. 96% indicated they would be comfortable encouraging a lower year resident to report a witnessed NSI, while only 58% would be comfortable encouraging a higher year resident to report a witnessed NSI.

Conclusion
NSIs are a common underreported risk to surgical residents at the University of Manitoba. Future research should investigate strategies to reduce injuries and improve reporting among this high-risk population.

Evaluating Urologic Complications in Prostate Cancer Patients Who Have Undergone Radiotherapy and Bph Surgery

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Objective:
Radiotherapy (RT), by EBRT, brachytherapy, or a combination, is a common treatment option for prostate cancer and an alternative to radical prostatectomy. Although patients avoid the potential surgical complications of a prostatectomy, they are at risk of radiation related complications which may take years to present. Poor wound healing in irradiated tissue presents a challenge for the management of concurrent processes such as BPH, and for surgical management of issues such as stricture or incontinence. We hypothesized that allowing adequate time for urethral re-epithelialization and maturation post BPH surgery would reduce urologic complications in patients undergoing both prostate surgery and prostate radiation. The main objective of this retrospective review was to evaluate complications in prostate cancer patients in Alberta who have undergone both radiotherapy and TURP/GLLP, assessing the influence of the order and timing of these interventions.

Methods:
Patients who underwent TURP/GLLP and curative intent RT for prostate cancer in Alberta were identified from the Alberta Prostate Cancer Research Initiative (APCaRI) database. Demographic information, disease and treatment characteristics, BPH surgery details, and associated complications were collected from the database and Connect Care chart review.

Results:
A total of 75 patients were included for analysis. The mean age was 76.8 in the surgery first group and 77.5 in the RT first group. The majority of patients had a TURP, 5 of whom required repeat TURP, and 2 patients had GLLP. A total of 9 patients received curative intent brachytherapy. There were 51 patients who underwent surgery prior to RT, and 24 patients who underwent RT first. In the surgery first group, 22% had a urologic complication requiring intervention (such as stricture, bladder neck contracture, rectovesical fistula). In the RT first group, 54% had a urologic complication requiring intervention. Within the surgery first group, patients with a <3 month, 3-6 month, or >6 month interval from surgery to RT had a 50%, 32%, and 16% complication rate, respectively. This subgroup comparison did not reach statistical significance. The most common complication was stricture requiring intervention (10 patients in surgery first group, 9 patients in RT first group). One patient in the surgery first group, who had surgery 3.5 months prior to RT, and one patient in the RT first group developed a fistula.

Conclusion:
Among Albertan patients who have undergone both TURP/GLLP and RT for prostate cancer, the rate of urologic complications requiring intervention was higher in the group who underwent RT prior to BPH surgery. Patients who underwent surgery at least 6 months prior to initiation of RT had a non statistically significantly lower complication rate than those who had less than 3 months from surgery to RT. This trend suggests

that in patients who require BPH surgery as well as radiation therapy for prostate cancer, treating their BPH first and then delaying RT for 6 months post operatively reduces the rate of urologic complications. Limitations of this study include its small sample size, retrospective nature, and the qualitative nature of complication identification/description. This study may support patient education/counselling on the risks and benefits of BPH surgery in the context of radiotherapy for prostate cancer, possible adjustments to surgical booking timelines for patients with known prostate cancer, as well as collaborative decision making with radiation oncologists about treatment timing for optimizing patient management and reducing complication rates.

Patterns and Barriers to Sperm Banking Among Testicular Cancer Survivors in Canada

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Introduction and objectives
Testicular cancer affects young men during peak reproductive years, and sperm cryopreservation is recommended prior to gonadotoxic treatment. However, real-world utilization, costs, and patient experiences in Canada remain poorly characterized. This study evaluated sperm banking utilization, fertility outcomes, and patient-reported barriers among testicular cancer survivors in Manitoba.

Methods
We conducted a retrospective chart review and prospective telephone survey of men diagnosed with testicular cancer who underwent sperm cryopreservation between 2007–2019 at the province's sole fertility preservation centre. Demographic data, treatment details, and semen parameters were collected from medical records. Structured surveys assessed counselling, decision-making, perceived costs, logistical barriers, and fertility outcomes.

Results
24 of 42 eligible men (57%) completed the survey. Mean age at banking was 25.6 years. Most patients (71%) received chemotherapy in addition to orchiectomy. Abnormal semen parameters were common (79%), with median sperm concentration and total sperm count below WHO reference limits. Although 88% recalled receiving fertility counselling, 50% felt rushed in decision-making. Mean cost of banking was approximately $2000 over three years, and 58% found this burdensome. Only three men (13%) used their cryopreserved sperm, all achieving live births through ART. Natural conception occurred in 46% of participants despite prior gonadotoxic therapy.

Conclusions
Sperm banking utilization in this Canadian cohort was low, and most survivors achieved natural conception. Financial burden and decisional pressure were major patient-reported barriers. Findings highlight the need for earlier, structured counselling and consideration of public funding to improve equitable access to fertility preservation.

Evaluating Outcomes from Prostate Artery Embolization for Benign Prostatic Hyperplasia Within Edmonton, Alberta, Canada

Sicheng Lee[1], Rahim Samji[2], Matthew Mancuso[1], Karen Arklie[2], Howard Evans[1], Nicholas Dean[1]

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[2]Department of Radiology & Diagnostic Imaging, University of Alberta, Edmonton Canada

Introduction:
Prostate artery embolization (PAE) is a percutaneous, minimally invasive, guideline recommended treatment option for benign prostatic hyperplasia (BPH). PAE has lower rates of sexual dysfunction and higher rates of surgical reintervention than conventional endoscopic urologic procedures. The role of PAE in our publicly funded healthcare system remains somewhat unclear. This study aimed to evaluate the incidence and predictors of PAE failure for catheterized and non-catheterized patients.

Methods:
All patients referred for PAE to the Vascular & Interventional Radiologists of Northern Alberta from March 2019-June 2025 were included (Figure 1). Patient demographics, procedural details, and post-procedural outcomes were assessed retrospectively. Descriptive statistics were used to analyze outcomes. Categorical variables were compared with chi-square testing. Logistic regression was used to assess predictors of PAE failure. Statistical significance was defined as a p-value <0.05.

Results:
Of 103 referrals, 81 patients (78.6%) underwent PAE. The median patient age at time of PAE was 78 years (range 71–84 years). The most common indication for PAE was catheter-dependent urinary retention (38/81, 46.9%). Most catheter-dependent patients failed PAE (21/38, 55.3%) requiring long-term catheterization (11/38, 29% immediately failed trial of void; 4/38, 10.5% developed delayed urinary retention) or a conventional urologic procedure (6/38, 15.8%). Non-catheterized patients had a higher rate of success (32/43, 74.4%) with 11 (25.6%) failures. Mean time to failure for non-catheterized patients was 372 days. Baseline catheter dependence was significantly associated with PAE outcome ($X^2 = 7.44$, $p = 0.006$). Prostate volume, age, diabetes, and middle lobe presence were not statistically significant predictors of PAE failure or time to failure.

Conclusions:
A higher rate of failure was seen in catheter-dependent patients compared to the available PAE literature (55.3% vs. 9–42%). Non-catheterized patients had a lower failure rate; however, a small proportion of them underwent further BPH surgery. Patient selection and referral patterns may account for the higher rate of failure within our catheterized cohort as compared to the existing PAE literature.

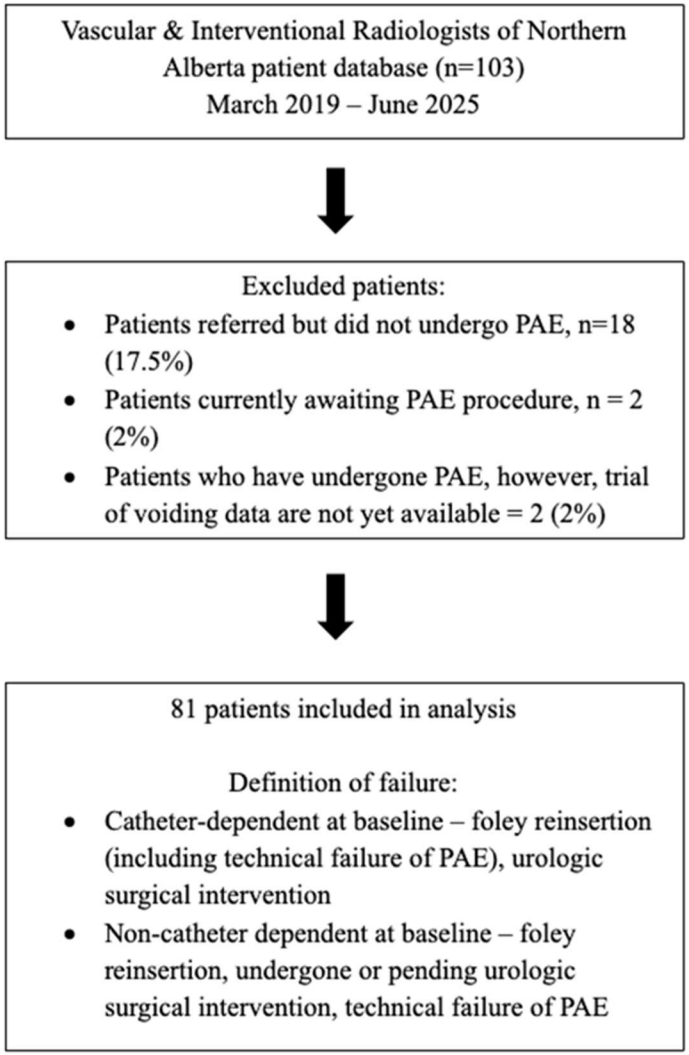

Figure 1. Flow diagram of patients undergoing prostate artery embolization in Edmonton from March 2019 – June 2025.

Premature Termination of Extracorporeal Shockwave Lithotripsy Secondary to Intraoperative Hypertension: A Single Center Retrospective Review

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Division of Urology, Department of Surgery, University of Alberta[1]

Introduction:
Extracorporeal shockwave lithotripsy (SWL) is widely used for nephrolithiasis, but premature termination due to intraoperative hypertension is poorly studied. We sought to characterize a cohort of patients whose SWL procedures were terminated early due to hypertension and their associated outcomes.

Methods:
We retrospectively reviewed adults undergoing SWL whose procedures were terminated prematurely due to intraoperative hypertension. Patient demographics, stone and operative characteristics, and perioperative blood pressures (BP) were collected. Outcomes included emergency department (ED) visits, complications, hospital admissions, retreatment rates, and stone-free status on follow-up imaging. Comparisons used Mann-Whitney U, Fisher's exact and Welch's t-tests. Associations between BP variables and outcomes were assessed using Spearman correlation and univariable logistic regression.

Results:
Twenty-six SWL procedures were studied. Median age was 53 years (IQR 44-64), 77% were male, and median BMI was 31 kg/m². Ten patients (38%) had pre-existing hypertension. Mean pre-operative systolic BP was 153+/-18 mmHg, increasing to a peak intraoperative systolic BP of 171+/-24 mmHg. Patients with pre-existing hypertension had higher peak systolic BP (184+/-27 vs 162+/-17 mmHg, p=0.03) and greater systolic BP rise (median +28 vs +14 mmHg, p=0.02) (Table 1). Higher peak systolic BP correlated with fewer shocks delivered (ρ=-0.41, p=0.04) and increased odds of ipsilateral retreatment (OR 1.38 per 10 mmHg, p=0.048) (Table 2). Overall, 38% required retreatment and 38% were stone-free on first follow-up imaging.

Conclusions:
Premature SWL termination due to intraoperative hypertension is uncommon but clinically relevant. Greater intraoperative BP elevations were seen in patients with pre-existing hypertension and were associated with reduced treatment delivery and increased need for retreatment. Improved perioperative BP screening may help avoid early termination and optimize SWL resource utilization.

Table 1. Baseline demographics, intraoperative and post-operative characteristics of ESWL patients with premature termination secondary to intraoperative hypertension (*n*=26)

Variable	Overall (*n*=26)	No HTN (*n*=16)	HTN (*n*=10)	Effect size	*p*-value
Age, median (IQR), years	53 (44-64)	58 (44-64)	56 (39-66)	+1	0.92*
Male sex, n (%)	20 (77)	13 (81)	7 (70)	OR 0.55	1.00‡
BMI, median (IQR), kg/m^2	31 (28-34)	30 (27-33)	33 (29-36)	+3	0.15*
Anxiety hx, n (%)	9 (35)	5 (31)	4 (40)	OR 1.4	1.00‡
Pre-op sBP (mean±SD), mmHg	153±18	150±18	158±16	+8	0.26†
Peak sBP (mean±SD), mmHg	171±24	162±17	184±27	+22	**0.03**†
ΔsBP median (IQR), mmHg	18 (10-31)	14 (8-21)	28 (18-41)	+14	**0.02**†
Shocks delivered (median)	1674	1780	1500	-280	0.29*
ED visit ≤24h	3 (12)	1 (6)	2 (20)	OR 3.8	0.27‡
Retreatment ≤1yr	10 (38)	5 (31)	5 (50)	OR 2.2	0.41‡
Stone-free at 1 year	10 (38)	7 (44)	3 (30)	OR 0.55	0.68‡

***** Effect size Hodges-Lehmann median difference, *p*-value Mann–Whitney U test.
† Effect size mean difference, *p*-value Welch's t-test.
‡ Effect size exact odds ratio, *p*-value Fisher's exact test.
Bolded values indicate statistical significance ($p<0.05$).
HTN = pre-existing diagnosis of hypertension before SWL.

Table 2. Correlation and univariable association analyses of ESWL patients with premature termination secondary to intraoperative hypertension (*n*=26)

Predictor	Outcome	Statistical method	Effect estimates	*p*-value
Pre-op sBP	Peak intra-op sBP	Spearman correlation	ρ = 0.62	**<0.001**
ΔsBP	Shocks delivered	Spearman correlation	ρ = -0.41	**0.04**
Peak intra-op sBP (per 10 mmHg)	Ipsilateral retreatment ≤1 year	Univariable logistic regression	OR 1.38 (95% CI 1.01-1.96)	**0.048**
Fragmentation rating	Stone-free status	Univariable logistic regression	OR 2.6 (95% CI 0.9-7.8)	0.08

Bolded values indicate statistical significance ($p<0.05$).

The Long-Term Renal Functional Outcomes for Ct1 Tumors: The Effect of Tumor Patient Characteristics, Radical vs Partial Nephrectomy, and Tumoral Characteristics

Steven Lu, Tom McGregor, Deepak Pruthi

Introduction:
Nephron-sparing surgery is known to preserve short-term renal function in patients undergoing partial nephrectomy (PN) compared to radical nephrectomy (RN). However, there is limited longitudinal data on renal function trajectories extending beyond five years. Understanding long-term renal outcomes is essential given the rising life expectancy and the chronic burden of kidney disease. We aimed to evaluate long-term renal function after PN and RN, with particular attention to tumors that would be amenable to either partial or radical nephrectomy based on the CUA guidelines controlling for RENAL nephrometry score.

Methods:
We conducted a retrospective cohort study of patients who underwent open or laparoscopic PN or RN for cT1 renal tumors at a single academic center between 2011 and 2015. Patient demographics and comorbidities were recorded. Longitudinal renal function was assessed using serial eGFR values standardized via the CKD-EPI equation. The primary outcome was absolute and percent change in eGFR at 5-, and 10-years post-surgery. Multivariable linear mixed-effects models were used to assess the association between surgery type (Open/MIS) and eGFR trajectory over time, adjusting for baseline eGFR, age, comorbidities, and RENAL nephrometry score.

Results:
A total of 375 patients met inclusion criteria, of which 267 who underwent PN. Median follow-up was 10.6 years (IQR:8.5,12.4). At baseline, mean eGFR was similar between groups (PN: 88 mL/min/1.73m² vs RN: 78 mL/min/1.73m², p =0.11). At 5, and 10 years postoperatively, PN was associated with significantly smaller declines in eGFR compared to RN (mean eGFR 75 vs 56 mL/min/1.73m² (p<0.00001). At 10 years, the mean eGFR decline from baseline was 74 mL/min/1.73m² for PN vs 54 mL/min/1.73m² for RN (p <0.00001). After excluding those with pre-existing renal disease the cumulative incidence of CKD stage ≥3 was 47% (34/73) in the PN group vs 72% (34/50)% in the RN group at 5 years. Progression to end-stage renal disease requiring dialysis occurred in 17 patients with the median time to dialysis at 5.9 years (IQR: 2.2,8.9).
In multivariable analysis, at 5 years, age (OR 4.04 p<0.001), diabetes (OR 3.08 p=0.002), and hilar tumors (OR 2.69, p=0.007) were independently predictors of an eGFR <45 mL/min/1.73m² or dialysis; neither radical nor partial nephrectomy nor were other elements of nephrometry score statistically significant. Renal function remained largely stable from 5 to 10 years. At ten years only age remained statistically significant (OR 2.23, p=0.026).

Conclusions:
While patients who underwent a PN were more likely to have preserved renal function, In the multivariate analysis age, diabetes, and whether the patient had a hilar located tumor were associated with greater eGFR declines at 5 years post surgery for cT1 tumors. In the MV analysis radical or partial nephrectomy was not statistically significant. Renal function from 5 to 10 years remains stable. The long-term drivers of renal functional outcome are largely patient and tumor based, not reliant on the surgical technique.

Timely Access to Emergent Urologic Surgery in Edmonton: A Multicentre Analysis of Booking-to-Procedure Performance

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Introduction and Objectives:
Timely access to emergent surgery is necessary to reduce morbidity and limit avoidable inpatient bed use. Previous studies have demonstrated that lower-acuity cases are frequently delayed in Canadian centres, leading to longer inpatient wait times and system burden. Our study aims to comparatively evaluate timeliness of emergency urology cases against provincial targets; and quantify the frequency, duration, and impact of surgical delays at two tertiary care centres in Edmonton, AB.

Methods:
We conducted a preliminary review of adult patients (>18 years) undergoing emergency urologic surgery at the Royal Alexandra Hospital (RAH) and University of Alberta Hospital (UAH) between January-June 2025. Out-of-window (OOW) was defined as case request to in-room time >24 hours. Cumulative excess bed-days was calculated as the delay-attributable bed occupancy beyond 24 hours in patients with OOW procedures. Data was analyzed using chi-square/Fisher's exact tests for categorical variables, and Mann–Whitney U test for continuous variables.

Results:
After exclusions, 247 cases were analyzed (RAH n=162; UAH n=85). Overall, 99/247 (40.1%) cases were OOW, with 56/162 (34.6%) at RAH and 43/85 (50.6%) at UAH ($p<0.05$). Aggregate time from case-request to in-room time were longer at UAH (median 24.5h, IQR 14.6–55.5) than RAH (median 18.8h, IQR 7.1–27.0; $p<0.0001$). When stratified for OOW cases, significantly longer delays were seen at UAH (median 55.5h) compared with RAH (median 29.6h). Out-of-window cases in discharge-ready patients (discharge ≤POD1) generated 47.3 excess bed-days, with the majority occurring at the UAH compared to the RAH (33.6 bed-days vs 13.7 bed-days; $p<0.001$).

Conclusions:
Our study shows that 40% of emergent urology cases exceeded a 24-hour booking-to-procedure target. Delays were significantly more frequent and longer at the UAH, leading to prolonged system utilization. This data supports targeted operational interventions to reduce case rolling and optimize access for emergent urologic procedures.

Quantifying Continuous Bladder Irrigation Quality Using an Automated Monitoring System

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Introduction & Objectives:
Continuous bladder irrigation (CBI) is a common intervention for gross hematuria. It is labor-intensive, requiring continuous monitoring, frequent bag changes, and precise titration to prevent clot formation. Because CBI is manually controlled and lacks standardised protocols, assessment of CBI quality remains limited. In this study, we used an automated device capable of real-time CBI monitoring (Creative Medical Solutions) to quantify CBI irrigation quality and identify areas for improvement.

Materials & Methods:
This prospective observational pilot study was conducted on the urology ward at St. Michael's Hospital, Toronto, Canada. Nine patients receiving CBI after transurethral resection of the prostate were enrolled. An automated monitoring system (Creative Medical Solutions, Toronto, ON) was integrated into the standard setup without altering workflow. The device used load cells to track irrigation and effluent bag weights and an optical sensor on the effluent tubing to measure effluent blood concentration (EBC) every five seconds. Data on irrigation and effluent volumes, interruption frequency and duration, and the time above a predefined EBC threshold were collected for ~12h per patient.

Results:
A total of 120h of CBI data were analyzed, with a mean observation duration of 13.3 ± 2.3h per patient. Nurses adjusted settings an average of 7 ± 3 times, replaced 9 ± 4 saline bags (29 ± 14 L total), and emptied 9 ± 3 effluent bags per patient during the observed CBI duration. Unintentional interruptions lasted for 2 ± 2h per patient (≈15% of monitored time), mainly from depleted irrigation bags (3 ± 1 instances) or failure to unclamp new bags (1 ± 1). EBC exceeded the desired threshold for an average of 2.2 ± 2.3h per patient.

Conclusions:
CBI was unintentionally interrupted for nearly one-sixth of the monitored duration, highlighting measurable limitations in irrigation quality. Automated CBI monitoring provides objective, real-time assessment and exposes inefficiencies not previously measurable by manual observation. Continued data collection linked to clinical outcomes will clarify the impact of interruptions and guide standardized protocol development.

Comparison of Flexible and Navigable Suction Ureteral Access Sheath Ureteroscopy and Mini Percutaneous Nephrolithotomy for Treatment of Large Renal Stones: A Systematic Review and Meta-Analysis

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Background: Flexible and navigable suction ureteral access sheath (FANS-UAS) are a novel advancement allowing for ureteroscopic (URS) treatment of large renal calculi (≥2cm), traditionally treated with percutaneous nephrolithotomy (PCNL), the current gold standard. We performed a systematic review to compare the safety and efficacy of mini-PCNL (mPCNL) to URS using FANS (FANS-URS) for the management of large renal calculi.

Methods: A systematic review and meta-analysis were conducted in accordance with PRISMA guidelines (PROSPERO registration CRD420251136074). Electronic databases including PubMed and MEDLINE were searched, including studies between January 2018–September 2025. Studies comparing mPCNL versus FANS-URS for large renal stones (≥2cm) were included. Primary outcomes included stone-free rate (SFR) and complications, including bleeding and infectious complications. Secondary outcomes were operative time, hospital stay, and need for repeat procedures.

Results: Eight studies comprising 1824 patients were included, with 894 in the FANS-URS arm and 930 in the mPCNL arm. Pooled analysis showed no significant difference in SFR between the FANS-URS and mPCNL groups, RR of 1.00 (95% CI, 0.97–1.03, p=0.926). Overall complication rates were lower in the FANS-URS group compared to the mPCNL group, RR of 0.511 (95% CI, 0.296–0.882, p = 0.023). Specifically, transfusion rates were significantly lower in the FANS-URS cohort, RR of 0.201 (95% CI, 0.094–0.427, p = 0.004). Pre-stenting prior to FANS-URS was performed in 50% of patients across all studies.

Conclusions: FANS-URS was associated with similar stone clearance rates with significantly lower rates of complications. The data suggests that larger renal stones may be treated successfully with a less invasive approach while preserving the stone-free rates of the current gold standard.

Variable	FANS-URS (Mean ± SD)	mPCNL (Mean ± SD)	N (FANS-URS)	N (mPCNL)
Age (years)	53.49 ± 14.40	52.65 ± 10.80	896	930
BMI (kg/m²)	24.54 ± 3.80	24.43 ± 3.50	826	860
Stone size (mm)	24.83 ± 4.04	25.58 ± 4.71	850	885
Stone density (HU)	1104.51 ± 290.14	1108.50 ± 299.20	850	885

Female sex (%)	39%	41%	896	930
Lower pole stones (%)	47%	50%	219	250
Pre-stented (%)	50%	0%	896	70

Table 1: Pooled Baseline Characteristics – Flexible and navigable suction ureteral access sheath assisted ureteroscopy (FANS-URS) vs mini percutaneous nephrolithotomy (mPCNL).

Outcome	**Studies**	**FANS-URS Events / N (% Pooled)**	**mPCNL Events / N (% Pooled)**	**Effect Estimate**		**I^2**	**τ^2**
				RR (95% CI)	**P value**		
Immediate stone-free rate	6	611 / 780 (78.3%)	680 / 815 (83.4%)	0.93 (0.84–1.03)	0.129	50%	0.004
Stone-free rate (1–3 months)	8	808 / 894 (90.4%)	844 / 930 (90.8%)	1.00 (0.97–1.03)	0.901	0%	0.000
Stone-free rate (1–3 months, ≤2 mm)	4	559 / 622 (89.9%)	559 / 621 (90.0%)	1.00 (0.95–1.06)	0.926	0%	0.001
Zero-fragment rate (ZFR)	3	154 / 168 (91.7%)	184 / 197 (93.4%)	0.99 (0.86–1.14)	0.864	10%	0.001
Repeat procedure rate	3	55 / 458 (12.0%)	50 / 486 (10.3%)	1.34 (0.75–2.39)	0.165	0%	0.000
Any complication	8	136 / 894 (15.2%)	301 / 930 (32.4%)	**0.51 (0.30–0.88)**	**0.023**	90%	0.324
Minor complication	5	101 / 648 (15.6%)	213 / 684 (31.1%)	0.52 (0.23–1.18)	0.090	90%	0.389
Major complication	5	18 / 718 (2.5%)	45 / 754 (6.0%)	0.47 (0.17–1.27)	0.103	10%	0.107

Infectious complication	8	60 / 894 (6.7%)	165 / 930 (17.7%)	0.53 (0.28–1.00)	0.051	80%	0.473
Bleeding complication	4	0 / 703 (0.0%)	18 / 706 (2.5%)	**0.11 (0.04–0.32)**	**0.007**	0%	0.000
Transfusion rate	5	1 / 647 (0.2%)	16 / 680 (2.4%)	**0.20 (0.09–0.43)**	**0.004**	0%	0.000

Table 2: Dichotomous Variables – Flexible and navigable suction ureteral access sheath assisted ureteroscopy (FANS-URS) vs mini percutaneous nephrolithotomy (mPCNL). Statistically significant ($p < 0.05$) bolded. CI = Confidence Interval; I^2 = Heterogeneity statistic; τ^2 = Between-study variance.

Outcome	**Studies**	**FANS-URS (Pooled Mean)**	**mPCNL (Pooled Mean)**	**Absolute Difference**	**Mean Difference**	**Effect Estimate**		**I^2**	**τ^2**
						95% CI	**P value**		
Operative time (min)	8	78.14	67.71	+10.43	+5.97	-5.42 to 17.37	0.255	1%	92.43
Length of stay (days)	6	2.22	5.18	-2.96	**-2.38**	**-4.12 to -0.63**	**0.017**	1%	1.135
Hemoglobin drop (g/dL)	8	3.94	7.57	-3.63	**-3.34**	**-6.01 to -0.68**	**0.021**	1%	13.343

Table 3: Continuous Variables – Flexible and navigable suction ureteral access sheath assisted ureteroscopy (FANS-URS) vs mini percutaneous nephrolithotomy (mPCNL). Statistically significant ($p < 0.05$) bolded. CI = Confidence Interval; I^2 = Heterogeneity statistic; τ^2 = Between-study variance.

Urolithiasis in Pregnancy: Can Medical Expulsive Therapy be Safely Utilized?

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Introduction:

Urolithiasis is a common reason for non-obstetrical hospitalization of the pregnant population. While medical expulsive therapy (MET) has been used for the general population safely, there is limited evidence to guide MET for symptomatic urolithiasis in the pregnant population. This scoping review aims to assess the current literature available on safety and efficacy of MET in pregnancy.

Methods:
A literature search was conducted to find all relevant papers in MedLine, PubMed, and Google Scholar. Inclusion criteria were pregnant patients, use of medical expulsive therapy during pregnancy, stone passage and complication rates reported. Exclusion criteria included non pregnant patients, animal studies, systematic reviews, and meta-analyses.

Results:
The initial search resulted in 125 studies. After removing duplicates and applying inclusion and exclusion criteria two studies were included. They both found no statistically significant difference in birth outcomes or maternal adverse events when comparing the tamsulosin and control groups. The first study found sudden infant death syndrome (SIDS) occurred in 2/27 patients receiving tamsulosin. This was not statistically significant, and the second study had no occurrence of SIDS. Neither study found statistically significant differences in rates of spontaneous stone passage or need for surgical intervention.

Conclusion:
Only two retrospective studies exist, both suggesting no significant adverse maternal or neonatal outcomes with tamsulosin use, though one raised concern with unexplained SIDS events. Neither demonstrated clear efficacy. Nifedipine, with established safety in pregnancy for other indications, warrants evaluation as an alternative. High-quality, prospective studies with longer neonatal follow-up are urgently needed.

Figure 1. PRISMA flowchart of study selection

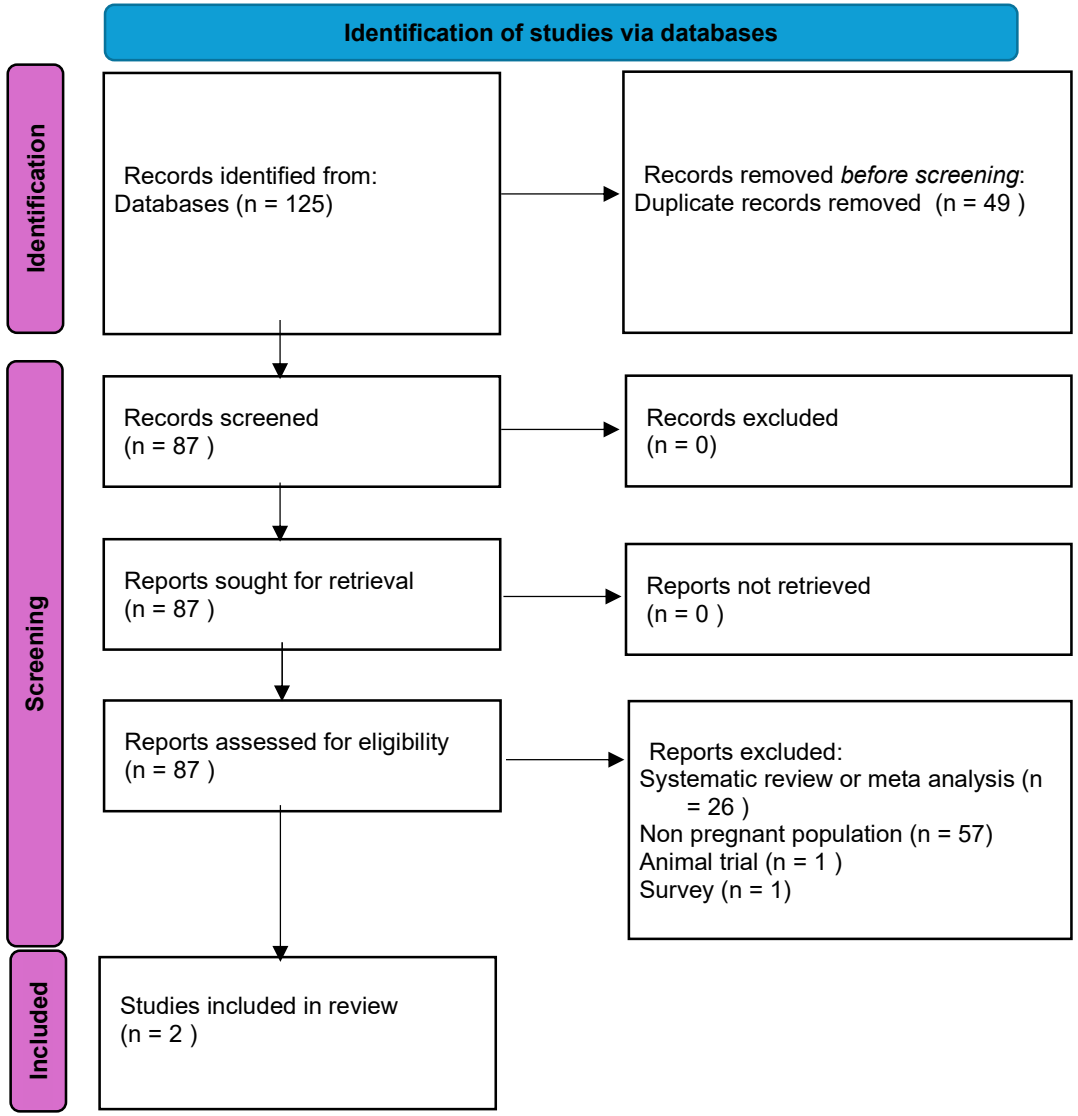

Table 1. Characteristics of studies related to medical expulsive therapy in pregnancy

Title	Perinatal outcomes with tamsulosin therapy for symptomatic urolithiasis	Safety and efficacy of tamsulosin as medical expulsive therapy in pregnancy
Sample size (n=)	81 Tamsulosin = 27 Control = 54	207 Tamsulosin = 67 Control = 138
Tamsulosin dose (mg)	NR	0.4
Duration of therapy (d)	1-110 (Mean = 3)	1-38 (Mean = 8)
Timing of exposure (Trimester)	1st = 11% 2nd = 40% 3rd = 47%	1st = 0% 2nd = 51% 3rd = 49%
Stone passage rate (%)	Tamsulosin: 53 Control: 29 p = NR	Tamsulosin: 62.5 Control: 45.5 p = 0.09
Mean time to passage (d)	Tamsulosin: 24 Control: 5 p = NR	Tamsulosin: 35 Control: 17 p = 0.06
Surgical intervention rate (%)	Tamsulosin: 29% Control: 29% p = NR	Tamsulosin: 23 Control: 27
SIDS (n(%))	Tamsulosin: 2 (7.4%) Control: 0 p = NR	Tamsulosin: 0 Control: 0
Other perinatal outcomes (gestational age, birth weight/height, APGAR score, head circumference	No significant difference	No significant difference

NR = Not recorded