Poster Session 4: Pediatric Urology
Sunday, June 30, 2024 • 16:10–17:40

Cite as: *Can Urol Assoc J* 2024;18(6Suppl1):S51-61. http://dx.doi.org/10.5489/cuaj.8829

MP 4.1

Prevalence of differences in sex development in patients with hypospadias and undescended testes

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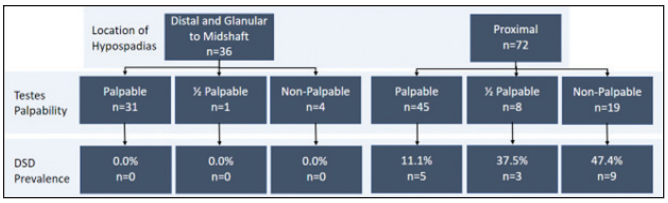
Introduction: Hypospadias and undescended testicles (UDT) are common congenital conditions, affecting approximately one in 125 and one in 33 boys, respectively. When patients present with both hypospadias and UDT, further workup is recommended to rule out differences in sex development (DSD). There has been limited contemporary data regarding the prevalence of DSD in patients with a history of both hypospadias and UDT. Our objective was to determine the prevalence of DSD among patients presenting with hypospadias and UDT.

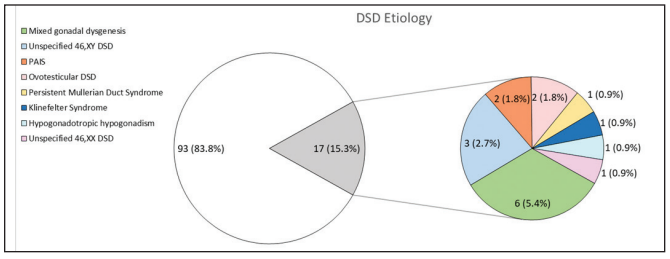
Methods: A retrospective chart review was conducted on patients that were evaluated at Children's Hospital Los Angeles from 2000–2022 with a diagnosis of hypospadias and UDT. The degree of hypospadias, presence of and palpability of UDT, and prevalence and type of DSD were recorded.

Results: A total of 177 patients were identified with both hypospadias and UDT, with 17/108 (15.7%) diagnosed with DSD. Proximal hypospadias made up only 58.5% of those without DSD vs. 100% of those with confirmed DSD (p=0.004). A significantly smaller proportion of DSD patients had palpable gonads compared to those without DSD (29.4% vs. 75.5%, p=0.0006). The most common etiology of DSD was mixed gonadal dysgenesis (35.3%; n=6).

Conclusions: Our analysis confirms higher incidence of DSD only among patients with proximal hypospadias. The existence of UDT in proximal hypospadias suggests need for DSD workup, with a higher likelihood of diagnosis when non-palpable UDT is present. Patients with glanular to midshaft hypospadias and UDT may not require further workup in the absence of other anomalies.



MP 4.1. Figure 1. Flowchart of hypospadias location and testes palpability with DSD prevalence.



MP 4.1. Figure 2. Pie chart illustrating breakdown of DSD etiology.

MP 4.1. Table 1. Distribution of characteristics of patient cohort by DSD diagnosis (N=108)

	Confirmed DSD n=17 (15.3%)	No DSD n=94 (84.7%)
Race/ethnicity (p=0.7969), n (%)		
White	3 (17.7)	14 (14.9)
Black	1 (5.9)	1 (1.1)
Hispanic/Latino	9 (52.9)	51 (54.3)
Asian or Pacific Islander	1 (5.9)	10 (10.6)
Middle-Eastern	0 (0.0)	1 (1.1)
Other	1 (5.9)	8 (8.5)
Unknown	2 (11.8)	9 (9.6)
Location of hypospadias (p=0.0044*), n (%)		
Proximal	17 (100.0)	55 (58.5)
Midshaft to distal	0 (0.0)	22 (23.4)
Glanular	0 (0.0)	16 (17.0)
Unknown	0 (0.0)	1 (1.1)
Unilateral vs. bilateral undescended testicle(s) (p=0.4053), n (%)		
Unilateral	11 (64.7)	46 (48.9)
Bilateral	6 (35.3)	47 (50.0)
Unknown	0 (0.0)	1 (1.1)
Palpability of testes (p=0.0006*), n (%)		
Palpable	5 (29.4)	71 (75.5)
1/2 palpable	3 (17.7)	6 (6.4)
Non-palpable	9 (52.9)	14 (14.9)
Unknown	0 (0.0)	3 (3.2)

*Statistically significant. p-values indicate results of Fisher's exact tests for difference in proportions between DSD and no DSD for each characteristic variable.

MP 4.2

Assessing the limitations of Doppler ultrasound in distinguishing postoperative renal complications in pediatric transplant patients

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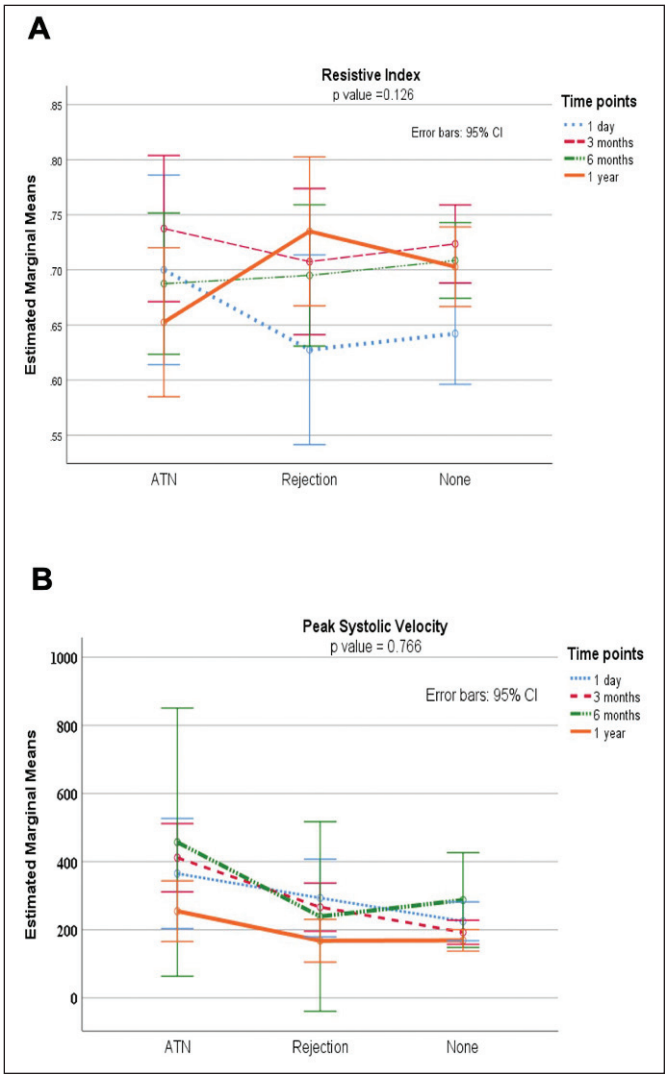
Introduction: Following renal transplant, Doppler ultrasound (DU) parameters resistive index (RI) and peak systolic velocity (PSV) are employed to assess vascular patency and renal perfusion in adults. We aimed to assess the efficacy of these parameters in differentiating between acute tubular necrosis (ATN) and rejection in pediatric renal transplant recipients.

Methods: A retrospective, single-center review of pediatric renal transplants from January 2000 to July 2021 was conducted, including cases with single



MP 4.2. Figure 1. Repeated measures ANOVA did not show significant intergroup differences for (A) resistive index (p=0.126) and (B) peak systolic velocity (p=0.766) across all 4 intervals for acute tubular necrosis, rejection, and non-complicated (none) groups.

MP 4.2. Table 1. Cohort baseline characteristics

	ATN	Rejection	Non-complicated	p
N	43	83	293	
M:F	2.1	1.9	1.3	0.162*
Age + SD (months)	144.9±59.1	144.±57.6	125.2±63.2	**0.014#**
BMI + SD (kg/m²)	19.0±3.3	18.9± 4.0	18.6±4.9	0.787#
Kidney size + SD (cm)	10.5±1.4	10.5±1.4	10.8±1.2	0.084#
Living donor: Cadaveric	0.4	0.7	0.9	0.111*
Operating time + SD (min)	347.3±176.4	272±70	308.9±103.8	**0.001#**
Blood loss + SD (ml)	292.4±216.2	255.7±289.9	274.9±582.4	0.910#
Bladder abnormality: no bladder abnormality	0.2	0.3	0.3	0.625*

*Chi-squared test. #One-way ANOVA test.

MP 4.2. Table 2. Paired t-test parameters for the 3 study groups

Parameter	Mean difference	SD	p
RI: ATN group			
Day 1 vs. 3 months	-0.016	0.071	0.330
Day 1 vs. 6 months	-0.005	0.110	0.901
Day 1 vs. 1 year	0.012	0.089	0.681
PSV: ATN group			
Day 1 vs. 3 months	-8.875	102.433	0.703
Day 1 vs. 6 months	-62.875	137.114	0.236
Day 1 vs. 1 year	36.500	106.395	0.364
RI: Rejection group			
Day 1 vs. 3 months	-0.073	0.076	**<0.001**
Day 1 vs. 6 months	-0.079	0.092	**0.001**
Day 1 vs. 1 year	-0.070	0.075	**<0.001**
PSV: Rejection group			
Day 1 vs. 3 months	16.332	120.993	0.376
Day 1 vs. 6 months	11.500	152.074	0.752
Day 1 vs. 1 year	48.125	121.660	0.065
RI: Non-complicated group			
Day 1 vs. 3 months	-0.045	0.088	**<0.001**
Day 1 vs. 6 months	-0.050	0.101	**<0.001**
Day 1 vs. 1 year	-0.060	0.089	**<0.001**
PSV: Non-complicated group			
Day 1 vs. 3 months	-6.379	143.058	0.667
Day 1 vs. 6 months	17.709	175.762	0.416
Day 1 vs. 1 year	46.704	116.631	

renal artery anastomosis. Patients were categorized into ATN, rejection, and no complication groups. RI and PSV were recorded from DU at four intervals post-transplant (24 hours, three months, six months, and 12 months). RI and PSV values over time and between groups were analyzed using repeated measures ANOVA and one-year ANCOVA (with the previous three values as covariates), with paired t-tests for within-group comparisons.

Results: Of 419 patients, 43 were in the ATN group, 83 faced rejection, and 293 presented no complications. There were significant differences for age at operation (p=0.014) and operating time (p=0.001) between groups (Table 1). Time-series analysis showed no intergroup differences in RI (p=0.126) and PSV (p=0.766) across all four intervals (Figure 1). At one year, ANCOVA indicated no intergroup differences for RI (p=0.077) and PSV (p=0.749). Within-group comparisons showed stable RI in ATN patients, while those with rejection or without complications showed significant declines; PSV remained unchanged within groups (Table 2).

Conclusions: RI and PSV fail to reliably distinguish between ATN, rejection and non-complicated cases over time. Within groups, RI stability is noted in ATN, while it decreases in graft rejection and non-complicated cases. This may indicate predictive and clinical value in serial RI measurements to detect ATN. Overall, our findings emphasize the need for additional diagnostic methods beyond DU to effectively monitor post-transplantation renal complications in children.

MP 4.3

Investigating the outcomes of a top-down vs. bottom-up approach to safely minimize need for further investigations in children with recurrent urinary tract infections

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Introduction: Recurrent UTIs (rUTI), when associated with vesicoureteric reflux (VUR), can lead to loss of renal function. Initial imaging choices include a bottom-up approach (BUA) beginning with a voiding cystourethrogram (VCUG) or a top-down approach (TDA) beginning with a dimercaptosuccinic acid (DMSA) renal scan. In this retrospective cohort study, we compared both approaches in predicting either VUR or an abnormal DMSA and need for surgical VUR correction.

Methods: Patient charts from 2002–2010 with ≥1 febrile rUTI and a minimum two-year followup after a DMSA were reviewed. Exclusion criteria included children with posterior urethral valves, obstructive causes, and neurogenic bladder. Grading of imaging findings and need for surgical intervention was analyzed. Statistical analysis was conducted on SPSS version-28.

Results: Patient demographics are described in Table 1. Within the TDA group, of 146 patients with a normal DMSA (Table 2), only 2/9 patients with VUR had high grade VUR (NPV=93.5%), and neither required surgery. Of the 19 patients with DMSA abnormalities who had a VCUG, 14 had VUR and five had surgery. The odds of having VUR in patients who had an abnormal DMSA compared with those with a normal DMSA was 6.84 (95% CI 1.90, 24.67) and increased to 9.11 (95% CI 1.15, 73.24) for patients with bowel and bladder dysfunction (BBD). Within the BUA category (Table 2), 76 patients had no VUR and of those, 15 had an abnormal DMSA. The odds of an abnormal DMSA with VUR vs. no VUR was 3.6541 (p=0.0001), increasing to 6.1818 (p<0.0001) with high-grade VUR.

Conclusions: This study suggests that conservative use of VCUG in a focussed TDA is safe and predicts high-grade VUR and the need for surgical correction. The presence of BBD increases the likelihood of VUR in those with an abnormal DMSA. High-grade VUR is associated with a significant risk of DMSA abnormalities, which also predicts the need for VUR surgery.

MP 4.3. Table 1. General population demographics

Total Patients	399
Median Age at Initial Presentation	3.0 years
Females	331 (83.0%)
Males	68 (17.0%)
Bladder/Bowel dysfunction	108 (27.1%)

MP 4.3. Table 2. Flow chart describing TDA and BUA in rUTI

Recurrent UTIs													
399													
Top-Down								Bottom-Up					
192								207					
Scarring/Dysplasia on DMSA				No Scarring/Dysplasia on DMSA				VUR on VCUG			No VUR on VCUG		
45				146				131			76		
VUR		No VUR	No VCUG	VUR		No VUR	No VCUG	Scarring		No Scarring	Scarring		No Scarring
14		5	26	9		22	115	62		69	15		61
High-Grade	Low-Grade			High-Grade	Low-Grade			High-Grade	Low-Grade		High-Grade	Low-Grade	
7	7			2	7			20	42		1	14	
Required Surgery													
5	5	0	4	0	2	3	1	11	19	13	0	7	0

High-grade VUR defined as 4-5, high-grade DSMA abnormalities defined as loss of >20% differential function or scarring with >20% cortical involvement.

MP 4.4

Selective release of CO_2-loaded nanoparticles for vesicoureteral reflux imaging

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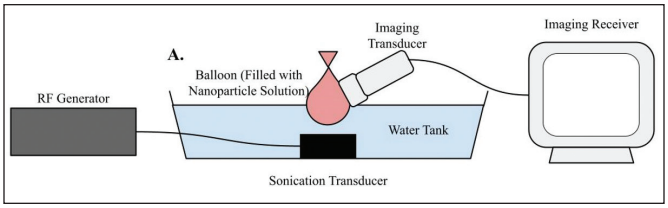
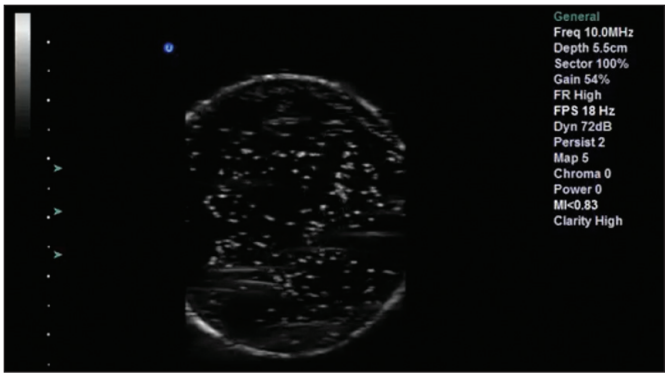
Introduction: The current gold-standard technique for detection of vesicoureteral reflux (VUR) is the voiding cystourethrogram (VCUG), which can be problematic, with the need for bladder catheterization and ionizing radiation. While contrast-enhanced voiding urosonography avoids the use of ionizing radiation, it still requires catheterization. We propose a new, catheter-free modality. The concept is to intravenously inject covalently bound CO2 nanoparticles that are filtered by the kidney and excreted into the urine. In the bladder, the nanoparticles are activated by ultrasound to produce CO2 bubbles. Any bubbles visualized in the ureters or kidneys will indicate VUR presence. We present our early preclinical data.

Methods: Polyethylenimine (PEI, 500-940 mg) was dissolved in solvent (DI water, ethylene glycol, or PBS; 10 mL), followed by dry ice (50 g) in a sealed Parr apparatus. Dry ice released CO2 and the reaction was stirred for 18 hours until it reached ambient temperature. A rubber balloon (simulating a bladder) was

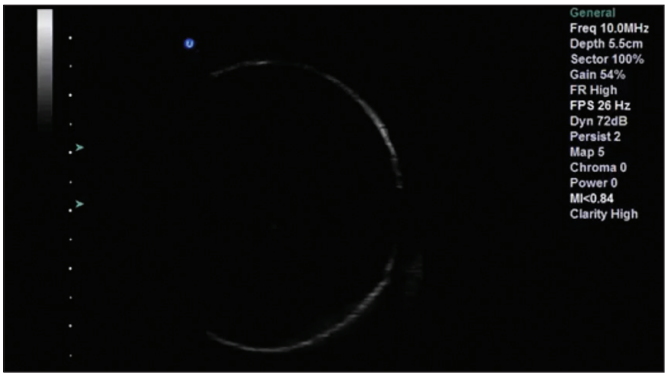
filled with either water only or the nanoparticle solution. We used a prototype 1.1 MHz spherically focused, air-backed transducer (focal depth: 55 mm) or a prototype unfocused 1.66 MHz air-backed transducer, a computer-controlled RF generator (JJ&A Instruments) to provide bubble sonication, and a Butterfly iQ imaging system to simultaneously visualize the bubbles produced. We used an electrical power of 10 W with a 10% duty cycle (one month on, nine months off) for a period of five seconds. A 37 mm layer of pork belly was then interposed between the ultrasound transducers and the experiment was repeated.
Results: Figure 1 shows nanoparticle and water solutions upon stimulation with ultrasound in the balloon-only model. Our work shows the potential to produce and visualize microbubbles when applied to CO2-loaded nanoparticles. Also, visualization was successful with a 37 mm thick layer of pork belly interposed between the ultrasound and balloon.
Conclusions: We demonstrated the ability to selectively release covalently bound CO2 nanoparticles and use CO2 bubbles as an ultrasound contrast agent. This is a major technical hurdle we have overcome in our quest to develop a catheter-free, radiation-free VCUG. Our next steps are to refine our nanoparticles, optimize ultrasound activation parameters, and test this modality in an animal model to detect VUR.



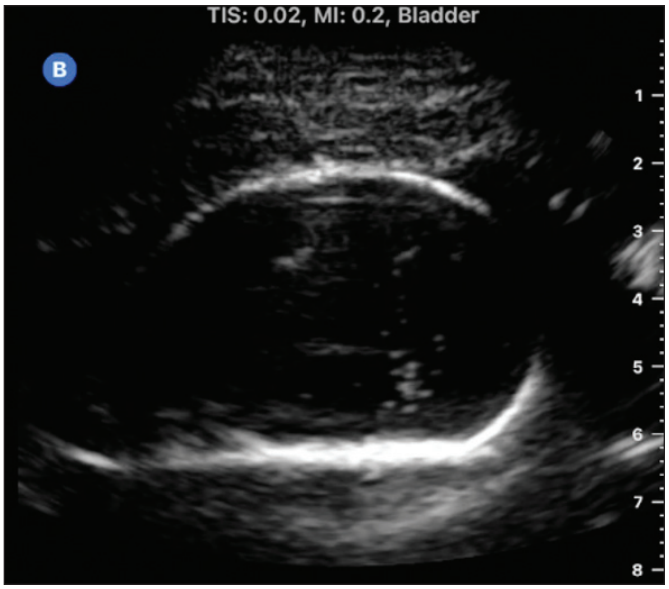
MP 4.4. Figure 1. Schematic drawing of experimental apparatus. A rubber balloon filled with nanoparticle solution is "activated" by sonification transducer-releasing CO_2 bubbles. An imaging transducer allows for visualization of this process.



MP 4.4. Figure 2. Representative ultrasonographic image of CO_2 formation in a nanoparticle-filled balloon after activation.



MP 4.4. Figure 3. Representative ultrasonographic image of water-filled balloon without evidence of CO_2 formation after sonification.



MP 4.4. Figure 4. Successful visualization of CO_2 bubbles after sonification in nanoparticle-filled balloon overlayed with thick pork belly.

MP 4.5
Edmonton families lack awareness of testicular torsion

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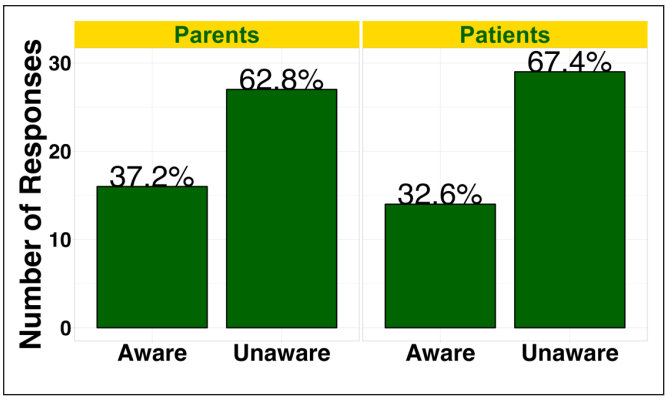
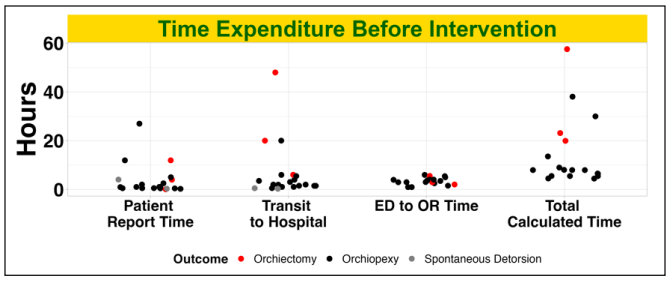
Introduction: In Edmonton, orchiectomy rates after testicular torsion (TT) are 12–14%, with 15% of patients having testicular atrophy at followup.[1] Outcomes following a TT are largely influenced by the time interval from symptom onset to surgical intervention. Orchiectomy rates increase significantly if symptoms persist beyond 6–8 hours[1,2] Delays in patient presentation contribute to this interval but are poorly characterized. Therefore, a local assessment of TT awareness and its association with morbidity is warranted to better understand any sources of delay. We hypothesized that one-third of Edmonton's pediatric patients and their parents had previously heard of TT. Additionally, in affected families, we predict a lack of TT awareness is associated with increased orchiectomy rates, delays in presentation to the emergency department (ED), and prolonged time to surgical intervention.
Methods: Families (pediatric patient and accompanying parent) completed independent surveys pertaining to sources of health information, comfort with testicular health, and awareness of TT. Two groups, healthy controls and families that presented with acute scrotal pain, were retrospectively surveyed. Families from the scrotal pain group were asked about the timeline surrounding symptom onset, parent notification by patient, and hospital presentation. Followup data and outcomes were assessed in the subsequent months. Statistical analysis was performed in RStudio. Data collection is still ongoing.
Results: Among all families surveyed (n=43), 14 (32.6%) patients and 16 (37.2%) parents had heard of TT. Of patients who suffered a TT (n=20), it took an average 3.8 hours (median=1) to notify their parents of symptoms and 6.5 hours (median=2) to present to the hospital after symptom onset. On average, it took 3.4 hours (median=3) for patients to get to the operating room from the ED. Of patients with TT, four (20%) had previously heard of the condition. A lack of awareness was associated with longer times to intervention, although this was not statistically significant.
Conclusions: We demonstrate that TT is not well known among families in Edmonton. Moreover, the time interval prior to presentation constitutes a substantial proportion of the total interval from onset to surgery. Thus, the pre-admission interval is a potential target for improving treatment delays. Further evidence is required to show that a lack of awareness is statistically associated with worsened outcomes in hospitals across Canada.



MP 4.5. Figure 1. Counts of individuals aware of TT.



MP 4.5. Figure 2. Time expenditure before intervention.

Acknowledgements: This project is being completed in conjunction with a nationwide study of testicular torsion awareness headed by the IWK Centre in Halifax, NS. Financial support for this project was provided by a Dr. Rex Boake Studentship in Urology Award and the IWK Centre.

References:

1. Sawchuk T, Metcalfe P. Teste talk: A trial social media campaign to improve awareness of testicular torsion. *Can Urol Assoc J* 2023;17:E110–5. https://doi.org/10.5489/cuaj.8135
2. Bowlin PR, Gatti JM, Murphy JP. Pediatric testicular torsion. *Surg Clin N Amer* 2017;97:161-72. https://doi.org/10.1016/j.suc.2016.08.012

MP 4.6

Long-term outcomes after refluxing ureterocystostomy in primary non-refluxing megaureter

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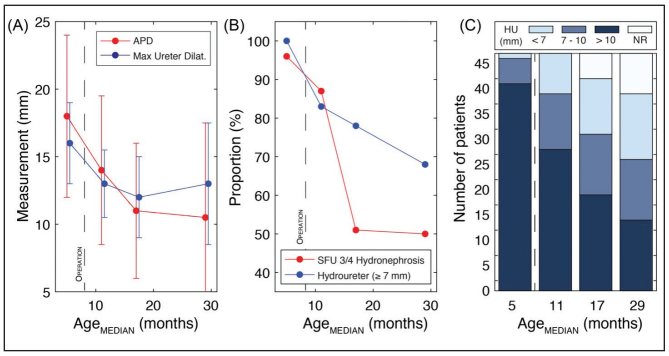
Introduction: Surgical intervention for primary non-refluxing megaureter (PNM) is indicated in patients with worsening upper tract dilatation or recurrent urinary tract infections (UTI). In young children with significant discrepancy between a small bladder and large ureter caliber, a side-to-side refluxing ureterocystostomy can be considered. The objective of this study was to describe the natural history and long-term outcomes after ureterocystostomy in patients with PNM.

Methods: Patients referred to our institution for antenatal hydronephrosis were considered. We included patients who underwent ureterocystostomy with PNM, defined as hydroureteronephrosis with dilatation >7 mm and absent vesicoureteral reflux. We excluded patients with other etiologies for upper tract dilatation. We assessed for surgical outcomes, complications, culture-proven UTI, and resolution of hydroureteronephrosis.

Results: Among 183 patients diagnosed with primary megaureter, 47 (25.6%) underwent primary ureterocystostomy for obstruction. The median age of presentation, surgery, and followup was two, eight, and 43 months, respectively. A total of seven patients developed 30-day complications (Clavien-Dindo grade 1: two developed retention; grade 2: five developed UTI in the short postop; grade 3–5: none). Over long-term followup after operation, 11 (23%) patients experienced breakthrough UTIs, and seven (15%) required ureteral reimplant or takedown for recurrent UTI. All patients had preoperative hydronephrosis (median APD 18, high-grade in 96%) and all patients had hydroureter with a median ureter dilatation of 17 mm. As shown in Figure 1, there was a decrease in both the proportion of patients with high-grade hydronephrosis (median APD 11, high-grade in 50%) and hydroureter with median dilatation of 13 mm.

Conclusions: Side-to-side refluxing ureterocystostomy is a safe and feasible option for PMN. The short-term complication rate is low, and while 15% of patients required surgical intervention for reflux, the majority of patients had resolution of upper tract dilatation by last followup.



MP 4.6. Figure 1.

MP 4.7

Development of a novel, low-dose computed tomography protocol for pediatric urolithiasis assessment: A systematic review and implementation study

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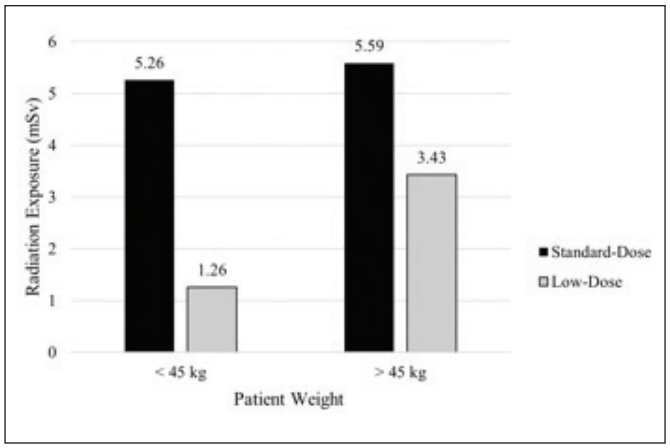
Introduction: Computed tomography (CT) is used for pediatric urolithiasis assessment in complex cases where ultrasonography is inconclusive. Despite success in the adult population, development and use of low-dose CT protocols in pediatric urology is limited. To address this need, a systematic review was conducted to characterize low-dose CT stone protocol use in pediatrics and to aid in the development and implementation of a novel, low-dose protocol.

Methods: A novel, low-dose CT protocol was developed based on a systematic review of the literature and expert consultation. Data collection was performed on a pediatric patient cohort who underwent CT stone imaging at a single institution over the past 10 years. Comparative analysis was performed between the retrospective cohort and the prospective cohort who underwent CT stone imaging using the novel, low-dose protocol. Patients were matched based on age and weight to determine percent dose reduction between protocols.

Results: Systematic review identified six relevant studies with radiation exposure ranging from 2.9–5.5 mSv for standard CT stone protocols and 1.0–2.72 mSv for low-dose pediatric CT protocols. At our institution, standard dose protocols delivered radiation exposures of 5.26 mSv for patients <45 kg and 5.59 mSv for patients >45 kg. Patients who underwent novel low-dose CT imaging had average radiation exposures of 1.26 mSv (<45 kg) and 3.43 mSv (>45 kg) (Figure 1). This corresponds to a radiation dose reduction of 76.1% for patients <45 kg and 38.6% for patients >45 kg.

Conclusions: Low-dose CT imaging for urolithiasis assessment in the pediatric population is underreported and underused, subjecting patients to increased radiation exposure. Through the development of a novel, low-dose protocol, significant dose reduction was achieved. This dose-reduction protocol has the potential for use across institutions to reduce radiation exposure in pediatric patients.



MP 4.7. Figure 1. Radiation exposure based on CT protocol showing significant reduction in radiation exposure with novel, low-dose protocol.

MP 4.8

Pediatric intravesical onabotulinumtoxinA injections for neurogenic vs. non-neurogenic bladder dysfunction: Clinical outcomes

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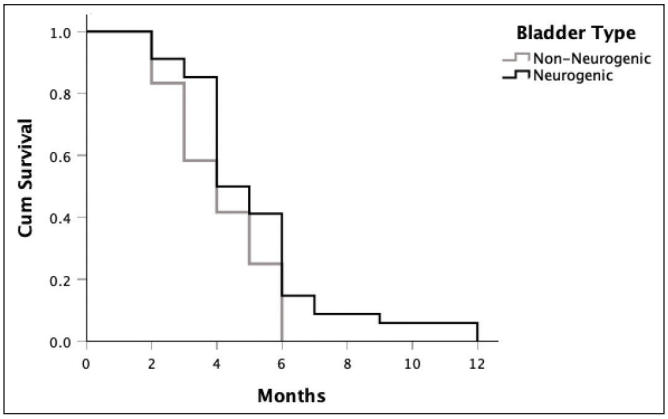
Introduction: Intravesical onbotulinumtoxinA (BTX-A) injection has emerged as a minimally invasive treatment for refractory bladder dysfunction in pediatrics. Its comparative effectiveness across a spectrum of diagnostic groups remains to be established. We aimed to assess the clinical outcomes of BTX-A for neurogenic bladder (NB) and non-neurogenic bladder (NNB) pediatric patients.

Methods: We identified 94 pediatric patients (<18 years) undergoing intravesical BTX-A injections for bladder dysfunction between 2015 and 2023 at a quaternary care center. Clinical outcomes included primary diagnosis, injection location, recent continence status, acquired treatment resistance, additional surgeries, and time to symptom recurrence.

Results: A total of 68 patients had NB and 26 had non-neurogenic bladder NNB (Table 1). There was a significant difference in injection location, with NNB receiving more sphincter injections ($p<0.001$). Improved continence at recent followup was similar between NB and NNB at 75% and 81%, respectively ($p=0.786$). Persistent leakage at recent followup was also similar at 6% and 19% ($p=0.109$). Although 6% of NB patients developed resistance to the effect of BTX-A compared to 0% of NNB patients, this difference was not significant ($p=0.573$). Time to recurrence of symptoms was similar ($p=0.136$) at 5.18±2.31 months for NB and 4.08±1.5 months in NNB. Cumulative survival analysis for recurrence also did not show a significant difference ($p=0.093$) (Figure 1). NNB patients were more likely to remain dry on BTX-A without adjuvant pharmacotherapy compared to NB patients (Figure 2).

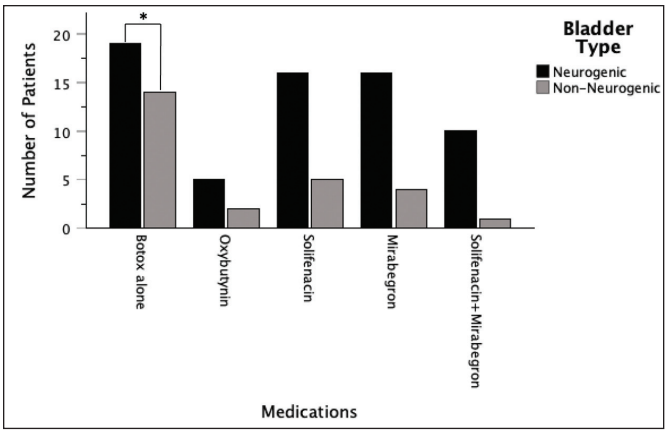
Conclusions: This study shows that intravesical BTX-A injections provide substantial improvement in continence for both NB and NNB, with equal rates of recurrence and resistance between the two groups. Notably, non-neurogenic patients had a higher likelihood of maintaining continence on BTX-A alone, suggesting a differential response to treatment that warrants consideration in clinical practice.



MP 4.8. Figure 1. No significant difference between neurogenic and non-neurogenic bladder patients is evident from log-rank test ($p=0.093$) when considering the course of time after treatment that symptoms recur.

MP 4.8. Table 1. Patient characteristics and clinical outcomes

Diagnosis	Count (%)	Intradetrusor injections	Sphincter injections	Combination injections	Improved continence (%)	Persistent leakage (%)	Acquired resistance (%)	Additional surgery (%)
Neurogenic bladder								
Total	68	62	2	4				
MMC or LMC	42 (62)	38	1	3				
SCI or trauma	3 (4)	2	0	1				
Spinal Tumor	1 (1)	1	0	0	51 (75)	4 (6)	4 (6)	7 (10)
VACTERL	3 (4)	3	0	0				
Other congenital deformities	7 (10)	8	0	0				
Central cause	4 (6)	4	0	0				
Unknown	8 (12)	6	1	0				
Non-neurogenic bladder								
Total	26	12	12	2	21 (81)	5 (19)	0 (0)	3 (12)
OAB	2 (8)	2	0	0				
Dysfunctional voiding	7 (27)	1	5	1				
PUV	14 (54)	7	6	1				
Unknown	3 (11)	2	1	0				



MP 4.8. Figure 2. A variety of pharmacotherapy regimens accompanies Botox therapy. Non-neurogenic bladder patients were significantly more likely to be dry on Botox alone than neurogenic bladder patients (p=0.029).

MP 4.9 - WITHDRAWN

MP 4.10

Sacral neuromodulation in pediatric refractory bladder and bowel dysfunction: Outcomes following reimplantation in Canada's first pediatric cohort

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Introduction: We aimed to investigate the durability of SNM-related resolution of symptoms in children, reasons, and timing for reimplantation in the inaugural Canadian pediatric cohort that underwent sacral nerve modulation (SNM) for refractory bladder and bowel dysfunction (BBD).

Methods: Patients <18 years who underwent SNM implantation were followed prospectively from 2018 to the present. All patients successfully underwent two-stage SNM implantation. The rates of adjunct therapy, complications, and device reimplantation reasons and timings were collected. Functional outcomes were evaluated via the Dysfunctional Voiding Scoring System (DVSS) and the Pediatric Incontinence Quality of Life measurement (PinQ).

Results: Four of six patients who underwent SNM required reimplantation over a period of 37.5 months (1–49) due to device malfunction (1), infection (1), lead fracture (1), and battery depletion (1)(Table 1). DVSS (11.5 [10–16]) and PinQ (38 [32–53]) scores at reimplantation indicated a moderate impact on QoL. Post-SNM reimplantation, the use of oral medications decreased (Table 2). DVSS scores decreased by 43% (-7.7–81.8) and 30% (0–63.6) at three and six months, respectively. Two patients had sustained symptom resolution at a one-year followup. QoL varied among patients, staying moderate at 3 (34 [11–61]) and six months (35 [9–72]).

Conclusions: Our SNM reimplantation cohort demonstrated promising improvements in functional outcomes and reduced reliance on oral medications. For children, device reimplantation appeared to be required over a period of approximately three years. The most common reason was related to device malfunction. Future research is needed to establish long-term effectiveness and symptom resolution following device reimplantation.

MP 4.10. Table 1. Patient characterists, neuromodulation indication and complications

Patient	Sex	Age at surgery (years)	SNM Indication	Time to reimplantation (month)	Cause for reimplantation	Management
1	Female	9.42	UI, OAB	39	Device Malfunction with no reported trauma	Reimplantation of MRI compatible lead and IPG system
2	Male	8.17	UI, OAB, FI/encopresis, constipation	49	Battery depletion/symptom recurrence	Battery change
3	Female	11.50	UI, OAB, FI/encopresis, constipation	36	Lead fracture after falling on device	Reimplantation of new MRI compatible lead and IPG system
4	Male	10.25	UI, OAB, FI/encopresis, constipation	1	Infection	Implant removal; Device replacement at later date

MP 4.10. Table 2. Neuromodulation outcomes and adjunct therapy rate

Patient	Sex	Age at reimplantation (years)	Baseline	3 months	6 months	12 months
1	Female	12.8	Anticholinergic, B3 Agonist, laxative, Antibiotics DVSS:11 PIN-Q:32	Laxative DVSS: 2 PIN-Q: 22	None DVSS: 4 PIN-Q: 9	None DVSS:0 PIN-Q: -
2	Male	12.3	Anticholinergic, B3 Agonist, Senna, Peristeen enema DVSS:10 PIN-Q:33	anticholinergic, PEG, ex-lax DVSS:7 PIN-Q:11	PEG, ex-lax DVSS:10 PIN-Q:24	
3	Female	14.5	B3 Agonist, alpha-blocker, laxative DVSS:13 PIN-Q:53	PEG, Prucalopride DVSS:14 PIN-Q:46	Laxative DVSS:13 PIN-Q:72	Laxative DVSS:7 PIN-Q:44
4	Male	10.3	Anticholinergic, B3 Agonist, alpha-blocker, laxative DVSS:12 PIN-Q:43	Cephalexin, B3 agonist, alpha blocker, PEG DVSS:6 PIN-Q:61	Cephalexin, alpha blocker, PEG DVSS:6 PIN-Q:46	Cephalexin, alpha blocker, laxative DVSS:4 PIN-Q:28

MP 4.11

Factors predicting opioid requirements of children undergoing outpatient circumcision

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Introduction: Healthcare providers are increasingly focused on minimizing opioid exposure to reduce the risks associated with opioids and further dependence. There is limited data about analgesic requirements and factors predicting opioid use in children undergoing outpatient urologic surgery. We aimed to identify factors that can predict the first 24-hour postoperative opioid requirements of prepubertal children undergoing outpatient circumcision.

Methods: We used prospectively collected data from our previous study comparing ultrasound-guided block on prepubertal males 1–12 years old undergoing elective circumcision. Operative characteristics were collected. Pain severity was recorded using validated pain scores Face, Legs, Activity, Cry, Consolability (FLACC score) and Parents' Postoperative Pain Measurement (PPPM) in the first 24 hours. Acetaminophen and ibuprofen were systematically given. Five doses of morphine were prescribed at home if needed. The time to the first dose of narcotics in postanesthesia care, data on analgesic consumption during the first postoperative and 24 hours, and parents' satisfaction on pain management were collected.

Results: A total of 155 patients were included for analysis. Forty-seven patients (30,3 %) did not require any opioids in the hospital or at home. Most patients (63.2%) did not receive morphine after discharge during the first 24 hours post-circumcision. Among the 25 patients who were administered opioids during hospital stay, 13 patients (52%) sustained a necessity for continued opioid use at home during the first 24 hours. A Youden threshold value was found to be significant at 45 minutes post-surgery for patients who used opioids. Of the 25 patients with hospital requirements, 10 patients (40 %) received their first opioids <45 minutes post-surgery and among them, two (20 %) sustained the need for continued at home during the initial 24-hour period (p<0.0147). In contrast, from the 15 patients (60.0 %) who received their first dose of opioids more than 45 minutes after surgery, 11 of them (73.3%) subsequently required opioids at home. The cumulative FLACC score 4 was found to be statistically significant (p=0.0154) for the consumption of narcotics in the first 24 hours.

Conclusions: The consumption of non-opioid analgesia on a scheduled basis with regional block for the first 24 hours in the postoperative period of pediatric circumcision seems to be sufficient for most patients in pain management. Receiving a narcotic dose in the immediate postoperative period seems to influence the subsequent narcotic consumption at home.

References:

1. Board I. Narcotic Drugs: Estimated World Requirements for 2019-Statistics for 2017. United Nations Publication 2014.
2. Boisvert-Moreau F, Turcotte B, Albert N, et al. Randomized controlled trial (RCT) comparing ultrasound-guided pudendal nerve block with ultrasound-guided penile nerve block for analgesia during pediatric circumcision. *Reg Anesth Pain Med* 2023;48:127-33. https://doi.org/10.1136/rapm-2022-103785

MP 4.12

Prevalence of bladder and bowel dysfunction in pediatric patients with epilepsy

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Introduction: Many neurologic conditions affecting the brain are associated with lower urinary tract symptoms. Nevertheless, there is a paucity of data regarding bowel and bladder dysfunction (BBD) in children with epilepsy, which is a common pediatric neurologic disorder affecting close to 1% of the general population. In this cross-sectional study, we aimed at evaluating the prevalence of BBD in children with epilepsy.

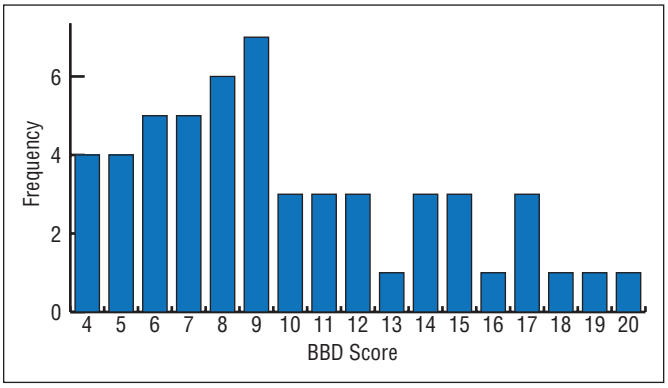
Methods: Children 5–18 years old diagnosed with epilepsy according to the International League Against Epilepsy criteria were included. Children with known neurogenic bladder, neurologic regression, history of neurologic or urologic surgery, and anatomic lower urinary abnormalities were excluded. We used Vancouver BBD questionnaire to assess bladder and bowel functions. We obtained institutional ethics approval. We used secure online data collection (RedCap).

Results: We recruited 51 patients into the study from 2021–2023; 43% were female. Mean (SD) age was 11 (3.7) years. Seventeen (33%) participants scored 11 or higher on the Vancouver questionnaire, indicating significant BBD symptoms. In this group, the median score was 14 (IQR 12.50–16). The highest scores were in the irritative lower urinary tract domain. Urinary incontinence was not common. The median score for the rest of the cohort was 7 (IQR 5.75–9).

Conclusions: The prevalence of BBD in the general pediatric population is estimated at 2–3%.[1] This study shows a much higher prevalence (33%) in children with epilepsy. We acknowledge that we may have overestimated the prevalence due to inherent shortcomings of cross-sectional studies, such as selection bias. Nevertheless, based on our findings, we recommend including urologic assessment in the routine care of children with epilepsy.

Reference:

1. Hellström AL, Hanson E, Hansson S, et al. Micturition habits and incontinence in 7-year-old Swedish school entrants. *Eur J Pediatr* 1990;149:434-7. https://doi.org/10.1007/BF02009667



MP 4.12. Figure 1. Distribution of BBD scores in children with epilepsy.

MP 4.13

Understanding the utility of renal length as an indicator of hydronephrosis severity

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Introduction: We aimed to describe the renal length index (RLI) and evaluate its utility in identifying severe UPJO-like hydronephrosis (HN) suggestive of obstruction.

Methods: A prenatal HN database (2008–2023) was reviewed to select patients with unilateral UPJO-like HN. Those with VUR, megaureter, atrophy, and other anomalies were excluded. RLI was calculated by using the formula (100%*[affected renal length - contralateral renal length]/affected renal length), based on baseline ultrasound. Data points, baseline renal length (RL), MAG3 t½ drainage time, curve patterns, and surgical interventions (pyeloplasty) were collected. Obstruction was defined as a t½ time >30 min and/or a non-descending

MP 4.13. Table 1. Patient characteristics by renal length comparisons

	Affected kidney >contralateral (n=372)	Affected kidney <contralateral (n=93)	p
Age baseline	3.7±3.8	4.3±3.9	0.17
Gender			0.5
Male	286 (76.9%)	68 (73.1%)	
Female	86 (23.1%)	25 (26.9%)	
Laterality			0.28
Left	288 (77.4%)	67 (72.0%)	
Right	84 (22.6%)	26 (28.0%)	
Baseline SFU			<0.001
1	60 (16.1%)	25 (26.9%)	
2	102 (27.4%)	52 (55.9%)	
3	130 (34.9%)	14 (15.1%)	
4	80 (21.5%)	2 (2.2%)	
Baseline APD	12.1±8.1	7.7±4.8	<0.001
Affected kidney length	6.1 (5.6–6.8)	5.5 (5.1–6.1)	<0.001
Contralateral kidney length	5.4 (5–5.9)	5.9 (5.4–6.5)	<0.001
Absolute renal length index	9.4 (4.9–16.7)	5.56 (2.0–11.1)	<0.001
Renal scan			<0.001
Non-obstructed	223 (59.9%)	80 (86.0%)	
Obstructed	149 (40.1%)	13 (14.0%)	
Surgery			<0.001
No	253 (68.0%)	83 (89.2%)	
Yes	119 (32.0%)	10 (10.8%)	

Data are presented as n (%), median (IQR), mean ±standard deviation. t-test for age at baseline, APD; Wilcoxon rank sum for RLI, renal length affected, renal length contralateral; Fisher exact test for all other variables.

drainage curve on MAG3 lasix scan. Fischer's t-test and Wilcoxon-sum were used for statistical analysis.
Results: From 465 patients, 226 (48.6%) were SFU 3–4, 162 (34.8%) showed obstruction on MAG 3, and 129 (27.7%) underwent pyeloplasty. The median RLI was 8.6% (IQR 4.3–16.1%). Patients with obstruction had a notably higher median RLI (16.07% [8.2–24.6%]) compared to non-obstructed counterparts (6.8% [3.4–11.8%], p<0.001). The RLI was threefold higher in the surgical group (18.3% [11.1–25.0%] vs. 6.9% [3.4–12.0%], p<0.001). In 93 (20%) of 465 cases, the affected kidney was smaller than the contralateral one. This group had a lower median RLI (5.56% [1.96–11.11%] vs. 9.405% [4.92–16.67%], p<0.001) and a decreased obstruction rate (14.0% vs. 40.1%, p<0.001) compared to the group with larger affected kidneys. Having an affected RL >contralateral RL increased the likelihood of surgery nearly fourfold (OR 3.9, 95% CI 2.0–7.7).
Conclusions: Higher RLI values are significantly associated with obstruction on MAG 3 lasix renal scan and, consequently, surgical intervention, particularly in patients whose affected kidneys are larger than the contralateral ones.

MP 4.14
Determining success post-pyeloplasty: The percent improvement of renal pelvis antero-posterior diameter vs. the hydronephrosis outcomes prediction score

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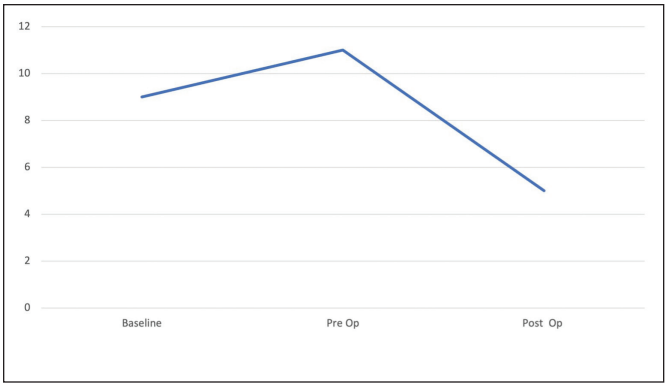
Introduction: Determining success after pyeloplasty is still a matter of debate among clinicians. We compared the hydronephrosis outcomes prediction score (HOPS) to the percent improvement of renal pelvis antero-posterior diameter (PI-APD) in patients who underwent surgery for ureteropelvic junction obstruction to objectively quantify hydronephrosis improvement (HI) and, consequently, pyeloplasty success.
Methods: Patients who underwent pyeloplasty between 2014 and 2022 were reviewed. Those with vesicoureteral reflux, megaureter, and bilateral cases were excluded. We collected at three different time points (baseline, at surgery, and six months postop): PI-APD, hydronephrosis severity (SFU,APD), renal length index, and HOPS. Post-pyeloplasty success was defined as HI on a six-month ultrasound showing either SFU gradeI/II or APD <10 mm. Descriptive statistics, including mean (SD), medians (IQR), and Chi-squared, were done.
Results: Of 150 pyeloplasty patients, 106 (71%) were male and 100 (67%) had left-sided obstruction. Median age at initial ultrasound (baseline) was 2.9 (IQR 6) months and at surgery was eight (IQR 11) months. Mean APD was 21±13 at baseline, 24±10 at surgery, and 9±1 at six-month followup. Mean HOPS at baseline was 9±2, 11±1 at surgery, and 5±2 at six-month followup. HI was determined by a 57%, 20% PI-APD, and by a four-point drop in the 12-item HOPS.
Conclusions: HOPS can accurately determine HI post-pyeloplasty, as a median HOPS of 5 post-surgery corresponds to a median PI-APD post-surgery of 60%. As previously shown, PI-APD >40% has been considered a clear marker of success post-pyeloplasty. Similarly, having a HOPS of 5 post-surgery can be considered a surrogate for pyeloplasty success, as a HOPS ≤4 was associated with spontaneous hydronephrosis resolution. HOPS is an objective and simplified way to quantify HI post-pyeloplasty, obviating nuclear scans.



MP 4.14. Figure 1. Median HOPS score at baseline, surgery, and 6 months postoperative.

MP 4.15
The impact of pediatric circumcision on the penile microbiota

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Introduction: Male circumcision (MC) is performed for religious reasons, as treatment of pathologic phimosis, and for congenital anomalies associated with recurrent UTIs. This prospective cohort study aimed to identify the changes to the foreskin microbiota before and after MC.
Methods: We conducted a longitudinal study of pediatric patients undergoing MC and collected penile swabs during surgery and six weeks after MC (n=74). Patients were divided into three cohorts based on MC indication: pathologic phimosis, religious elective MC, and MC for medical reasons. The microbiota before and after MC was characterized using 16S rRNA gene sequencing analysis for the different groups.
Results: The penile microbiota was found to be significantly different between the cohorts prior to MC (p=0.014). After MC, the composition of the penile microbiota changes drastically (p=0.009) and the microbial diversity decreases. Data analysis suggests a preponderance of Prevotella sp. in uncircumcised boys, associated with higher T cell and dendritic cell density in the inner foreskin, which are markers for inflammation. The outer foreskin in boys with pathologic phimosis showed a higher density of Langerhans cells and natural killer cells.
Conclusions: These results suggest a change in the microbiota of the penile skin following MC and a correlation between inflammatory markers and the foreskin phimosis status. This information will increase the understanding of the relationship between the penile microbiota and the host in children and aid further studies to investigate the mechanism underlying the benefits of MC in patients undergoing circumcision electively or for pathologic phimosis.

MP 4.16
The risk of infertility in Wilms' tumor survivors: A Canadian, national, population-based study

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Introduction: Wilms' tumor (WT) carries a high survival rate. Treatment-related gonadotoxicity is perceived as low. We challenged this assumption by reporting on exposure to gonadotoxic treatments in a population-based, national cohort of patients with WT.
Methods: The following variables were collected for patients with WT from the CYP-C (cancer in young people in Canada) database from 2001–2018: sex, age at diagnosis, chemotherapy agents and doses, cancer relapse, and death. Risk of infertility was defined as exposure to at least one of the following three treatments: a cyclophosphamide equivalent dose (CED) greater than 4000 mg/m^2 for males and 6000 mg/m^2 for females, a carboplatin dose greater than 2000 mg/m^2, and whole abdominal irradiation in females (10.8 Gy).
Results: A total of 816 patients were included (53% female; mean age at diagnosis 3.7±2.6 years). Of these, 48% were exposed to radiation, 27% to an alkylating agent, and 8% to carboplatin therapy. The most common gonadotoxic exposure was to alkylating agents (151/217, 70%, received toxic CED) followed by carboplatin chemotherapy (19/65, 29%) and abdominal irradiation in females (59/215, 27%). Of the 229 gonadotoxic events, 60 occurred in children with relapse (26%), while 53 patients died in the study period. Overall, 88% of WT patients survived after receiving potentially gonadotoxic treatments.
Conclusions: In a national, population-based cohort of patients with WT, 24% were exposed to at least one gonadotoxic treatment, placing them at risk for infertility. Survivorship for patients treated with these agents was high. The risk of infertility in children treated for WT may not be as low as previously thought given these exposures. Treatment with alkylating agents posed the highest risk of gonadotoxicity in our cohort. These findings should be discussed during counselling and raise the potential need for fertility preservation interventions.

MP 4.17

Predictors for spontaneous resolution in children with primary non-refluxing megaureter: Analysis of a large, single-center experience

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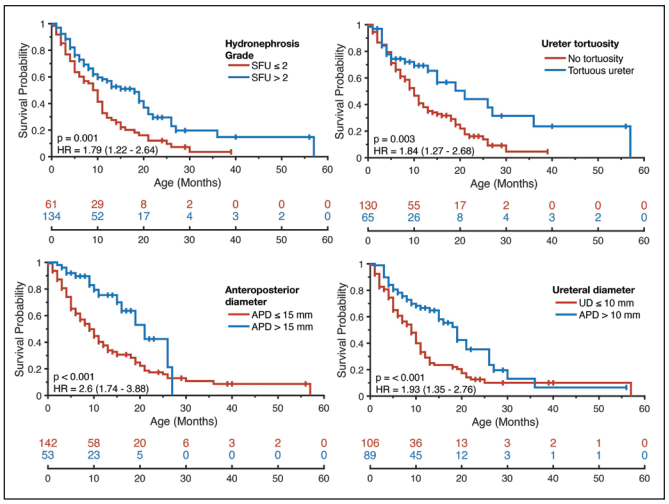
Introduction: Primary non-refluxing megaureter (PNM) comprises 10–20% of prenatal hydronephrosis cases. There is limited information on the rates and predictors for resolution of upper tract dilatation. Herein, we aimed to evaluate the time to detected resolution of hydroureteronephrosis during monitoring and assess early predictors for spontaneous resolution.

Methods: After receiving ethics board approval, we reviewed our institutional database for PNM. We defined PNM as hydroureteronephrosis with ureteral dilatation >7 mm and excluded patients with other etiologies for upper tract dilatation. Resolution was defined as: <10 mm anteroposterior diameter of the renal pelvis, <8 mm ureteral dilatation, or SFU grade ≤2. Patients were censored if they underwent surgical intervention or were lost to followup before documenting spontaneous resolution. Kaplan-Meier curves were drawn to illustrate the cumulative rate of resolution and determine univariate associations. Cox proportional hazards regression was performed to determine predictors for early resolution.

Results: A total of 195 patients with PNM were identified within the study period, including 154 (84%) boys, with 71 (46%) of them circumcised. The median followup time was 29 months (IQR 13, 51), with 121 (62%) achieving sonographic resolution during scheduled monitoring without intervention. The median age when resolution was documented was 11 months (IQR 5, 20). On survival analysis (Figure 1), initial low-grade hydronephrosis (HR 1.79, 95% CI 1.22, 2.64, p=0.001), initial anteroposterior diameter ≤15 mm (HR 2.60, 95% CI 1.74, 3.88, p<0.001), lack of ureteral tortuosity (HR 1.84, 95% CI 1.27, 2.68, p=0.003), and initial ureteral diameter ≤ 0 mm (HR 1.93, 95% CI 1.35, 2.76, p<0.001) were associated with increased likelihood of spontaneous resolution. On Cox multivariate regression, larger anteroposterior diameter (HR 0.53, 95% CI 0.29, 0.95, p=0.03) and larger ureteral diameter (HR 0.66, 95% CI 0.44, 0.99, p=0.04) were associated with delayed spontaneous resolution; however, high-grade hydronephrosis (HR 0.76, 95% CI 0.51, 1.14, p=0.18) and ureteral tortuosity (HR 0.78, 95% CI 0.48, 1.28, p=0.32) were not independently associated with delayed spontaneous resolution.

Conclusions: Early sonographic features in PNM are associated with the likelihood of spontaneous resolution, and greater anteroposterior and ureteral diameter are predictive of delayed spontaneous resolution of hydroureteronephrosis. Patients with at-risk sonographic features warrant closer followup.



MP 4.17. Figure 1.