Podium Session 2: Functional Urology, Pediatric Urology
Saturday, June 29, 2024 • 16:30–17:30

Cite as: *Can Urol Assoc J* 2024;18(6Suppl1):S7-10. http://dx.doi.org/10.5489/cuaj.8821

POD 2.1

Sacral neuromodulation in bladder and bowel dysfunction: Early insights from the first Canadian pediatric cohort

Roseanne Ferreira[1], Natasha Brownrigg[2], Mandy Rickard[2], Max Freeman[2], Abby Varghese[2], Michael Chua[2], Armando Lorenzo[2], Dean S. Elterman[1], Joana Dos Santos[2]
[1]Department of Urology, University Health Network, Toronto, Canada; [2]Department of Urology, The Hospital for Sick Children, Toronto, Canada

Introduction: As the prevalence of refractory bladder and bowel dysfunction (BBD) persists, innovative solutions are paramount in pediatric urologic care. This study aimed to present the inaugural Canadian experience using sacral neuromodulation (SNM) as a therapeutic option for children with refractory BBD.

Methods: Patients <18 years old with refractory BBD were prospectively followed from 2018 to the present. Preoperative evaluation included spinal MRI and video urodynamics. Refractory BBD was defined by symptom persistence after six months of conservative and >3 months of optimized combined medical therapy. Two-stage SNM implantation was executed with a minimum two-week stage-1 trial. Functional outcomes and complication rates were measured following institutional protocols.

Results: Six patients completed stage-2 implantation at a median age of 10.8 (range 8.2–18) years. Indications included one patient with primary bladder symptoms (urinary incontinence [UI]), four with mixed dysfunction-UI, fecal incontinence (FI), and one FI (Table 1). The median baseline Dysfunctional Voiding Scoring System (DVSS) score was 12.5 (10–22). Medication use was reduced; at six-month followup, only one patient required adjunct bladder medication. Median DVSS at one-year followup was 5.5 (0–7). Symptomatic resolution was noted in three patients at six months, sustained over one year. Early surgical complications were reported in one (infection) and late complications in three (lead fracture, battery depletion, non-traumatic malfunction), requiring SNM reimplantation at a median of 37.5 (range 36–49) months post-implantation.

Conclusions: SNM offers promising results for refractory pediatric BBD in Canada. The significant improvement in symptoms highlights the treatment's potential, which must be balanced against the high need for revision detected at three years. This study establishes the feasibility of introducing SNM for selected refractory pediatric patients with BBD.

POD 2.1. Table 1. Preoperative patient characteristics

Patient	Sex	Age at surgery (yrs)	Comorbidities	SNM Indication	Urodynamic findings	Spine MRI	Anorectal manometry	Medical Therapy	Conservative treatment
1	Female	9.4	ADHD	UI, OAB	DO, low compliance, decreased capacity	Normal	-	Anticholinergic, B3 Agonist, laxative	Biofeedback
2	Male	8.2	ADHD	UI, OAB, FI/encopresis, constipation	DO, low compliance, decreased capacity	Normal	Normal	Anticholinergic, B3 Agonist, laxative, enema	Biofeedback, Pelvic physiotherapy
3	Female	11.5	ADHD	UI, OAB, FI/encopresis, constipation	Normal	Normal	-	B3 Agonist, alpha-blocker, laxative	Pelvic physiotherapy
4	Male	10.2	None	UI, OAB, FI/encopresis, constipation	DO, low compliance, decreased capacity	Normal	Abnormal	Anticholinergic, B3 Agonist, alpha-blocker, laxative	Biofeedback, Pelvic physiotherapy
5	Female	15	None	UI, OAB, FI/encopresis, constipation	DO, decreased capacity	Normal	Normal	Anticholinergic, B3 Agonist, laxative, enema	Biofeedback, Pelvic physiotherapy
6	Male	18	Anxiety	FI/encopresis, constipation	-	Normal	Normal	Senokot, Senna, Magnesium, Pico-salax, PEG, Saline enema, Peristeen enema	Biofeedback, Pelvic physiotherapy

ADHD: Attention-deficit/hyperactivity disorder; OAB: Overactive Bladder; UI: Urinary Incontinence; FI: Fecal Incontinence/encopresis; DO: Detrusor Overactivity; MRI: Magnetic Resonance imaging
- : Not performed

POD 2.2

Continent catheterizing channel with hemi-Kock ileal cystoplasty in patients with adverse risk factors

Sender Herschorn[1], Rano Matta[1], Sarah Neu[1]
[1]Division of Urology, University of Toronto, Toronto, Canada

Introduction: The management of patients with severely reduced capacity bladders and other risk factors who opt for continent catheterizing channels (CCC) is challenging. A cohort of patients with adverse factors was analysed to assess outcomes, durability, and revision rate of the hemi-Kock CCC.

Methods: Thirty-four patients (22 women, 12 men) with a mean age of 39.5 years (18–72) were selected from a cohort of 117 who underwent hemi-Kock CCC. Adverse factors included pelvic radiation (5), multiple unsuccessful appendiceal or Monti Mitrofanoff revisions (9), and bladder capacity ≤75mL (20). Diagnoses were spinal cord injury (12), spina bifida (9), other neurologic (4), exstrophy (2), post-radiation (5), pelvic trauma (1), and post-SUI surgery (1). Twenty-one of 34 patients (62%) were wheelchair-dependent. Preoperative management was Foley in 20 patients, suprapubic tube in six, and intermittent catheterization (IC) and pads in eight. In addition to the intussuscepted ileal nipple valve adjacent ileal cystoplasty was done in 32 and sigmoid cystoplasty in two. Simultaneous urethral procedures included bladder neck (BN) slings in 12, BN closure in 12, and no procedure in 10. Outcomes were analyzed from a prospectively collected database and included durability, surgical complications, and reinterventions. Success was defined as persistence of IC with social continence. The study was granted quality improvement exemption by the research ethics board.

Results: Mean followup was 9.5 years (median 6.5), (range 0.2–32.5). Overall bladder capacity increased significantly (mean 112 mL to 517 mL) ($p<0.0001$). At last followup, 30/34 patients (88%) were managing with IC ±pads. Four were failures, including two with indwelling catheters and two that required ileal conduits. Ten patients (29%) required open surgical interventions, including two for early postoperative complications of intra-abdominal urine leak (1) and wound dehiscence (1). Three patients (8.8%) required parastomal hernia repairs, one (3%) required stomal revision, three (8.8%) required valve revisions, and two had ileal conduits (one of whom had previous reintervention). Bladder stones seen in 15 patients (44%) were managed cystoscopically through the native urethra or CCC under local anesthesia. Twelve patients (35%) have not required any further intervention. Five patients died from unrelated causes, one post-radiation from pelvic sepsis despite secondary cystectomy four years after the procedure, and one from urothelial cancer after 15 years. One woman had a full-term pregnancy. Re-interventions may be needed years after the original procedure. No other significant morbidity has been seen.

Conclusions: Hemi-Kock CCC has good durability in patients with adverse risk factors who require continent abdominal access to their bladders. Having a large CCC and leaving urethral access, if possible, facilitates subsequent endoscopic procedures, if required. Long-term followup is needed.

POD 2.3

Placement of ureteral stent in ureteroneocystostomy performed for vesicoureteral reflux: Analysis of the data from National Surgical Quality Improvement Program-Pediatrics

Joan Marie Salangsang Flor[1], *Maryam Noparast*[1], *Kourosh Afshar*[1]
[1]Department of Urologic Sciences, University of British Columbia, Vancouver, Canada

Introduction: There is variability in terms of ureteral stent placement in patients undergoing ureteroneocystostomy for vesicoureteral reflux (VUR). Reasons for ureteral stenting are prevention of anastomotic leak and reduction of postoperative obstruction; however, there is limited high-level evidence supporting this common practice. This study aimed to identify the association between ureteral stent placement at the time of ureteral reimplantation for VUR and short-term postoperative outcomes using the National Surgical Quality Improvement Program-Pediatrics (NSQIP-P) data.

Methods: The 2020–2022 NSQIP-P database was queried using the ureteroneocystostomy operative and the VUR codes. The independent variables are age, sex, urologic comorbidity, prior VUR procedure, severity of reflux, preoperative urinary tract infection (UTI), and operative approach. The outcomes of interest are emergency room visits, operative time, readmissions, unplanned operations, length of hospital stay, and postoperative UTIs. Descriptive statistics were performed. Man-Whitney U test (univariate) and logistic regression (multivariate) were used for statistical analysis.

Results: We identified 4559 patients; 48.8% had a ureteral stent. The baseline characteristics of the cohort are listed in Table 1. Ureteral stenting at the time of ureteroneocystostomy for VUR is associated with longer operative time (median [Q1–Q3] of 179 [135–235] vs. 142 [110.5–181.5] minutes, p<0.001), and longer length of hospital stay (median [Q1–Q3] vs. 2 [1–3] and 1 [1–2] days, p<0.001). Multivariate analyses (Table 2) found that after adjusting for confounders (age, sex, urologic comorbidity, VUR severity, prior VUR procedure, and preoperative UTI and surgical approach), ureteral stent was associated with significantly higher emergency room visits (OR 1.48, 95% CI 1.17–1.87, o=0.001), related readmissions (OR 2.55, 95% CI 1.64–3.94, p<0.001), unplanned procedures (OR 1.77, 95% CI 1.08–2.91, p=0.024), and postoperative UTIs (OR 2.60, 95% CI 1.66–4.07, p<0.001).

Conclusions: The current study showed an association between stenting in ureteroneocystostomy for VUR and adverse postoperative outcomes. Consideration should be given to selective use of stent at the time of ureteral reimplantation for VUR.

POD 2.3. Table 1. Demographic, clinical, and procedural characteristics of patients undergoing reimplantation for vesicoureteral reflux disease (NSQIP-P database, 2020–2022) (N=4550)

Characteristic	Measure
Age (months), median (Q1–Q3[a])	47.36 (23.22; 78.27)
Sex, n (%)	
Male	1426 (31.3)
Female	3124 (68.7)
Urologic comorbidity	
Yes	1069 (23.5)
Neurogenic[b]	184
Non-neurogenic[c]	856
Both	29
No	3481 (76.5)
Prior VUR procedure	
Yes	430 (9.5)
Endoscopic sub-ureteric injection	184
Reimplant	218
Both	28
No	4120 (90.5)
Reflux disease severity	
VCUG[d] 1/RNC[e] 1	102 (2.2)
VCUG 2 or 3/RNC 2	1451 (31.9)
VCUG 4 or 5/RNC 3	2646 (58.2)
Unknown/insufficient information to classify	351 (7.7)
Laterality	
Unilateral	2130 (46.8)
Bilateral	2406 (52.9)
Unknown	14 (0.3)
Stent placement	
Yes	2221 (48.8)
No	2329 (51.2)
Type of procedure/technique	
Open	3431 (75.4)
Minimally invasive[f]	676 (14.9)
Both	443 (9.7)

[a]25th and 75th percentiles. [b]Neurogenic comorbidity includes: neurogenic bladder, neurogenic bowel, spina bifida/myelomeningocoele, tethered cord, spinal cord injury, and imperforate anus. [c]Non-neurogenic comorbidity includes: posterior urethral valve, Eagle-Barrett or prune-belly syndrome, bladder exstrophy, cloacal exstrophy, ectopic ureter, ureterocoele, and duplex kidney. [d]Voiding cystourethrogram. [e]Radionuclide cystogram. [f]Current Procedural Terminology (CPT) coding does not distinguish between laparoscopic reimplant and robot-assisted laparoscopic reimplant, thus they are classified together as 'minimally invasive.'

POD 2.3. Table 2. Multivariate analysis: Association between postoperative outcomes and ureteral stenting

Outcome	Adjusted OR[a] (95% CI)	p
Emergency department visits	1.48 (1.17–1.87)	0.001
Related readmissions	2.55 (1.64–3.94)	<0.001
Unplanned procedures related to anti-reflux treatment	1.77 (1.08–2.91)	0.024
Urinary tract infections	2.60 (1.66–4.07)	<0.001

[a]Odd ratio was adjusted for patient-related confounders (age, sex, urologic comorbidity, VUR severity, prior VUR procedure, and preoperative urinary tract infection) and procedural factors (type of procedure: open, minimally invasive or both).

POD 2.4

Comparative analysis of artificial urinary sphincter and adjustable transobturator male system for post-prostatectomy incontinence

Mark McAllister[1], *Keith F. Rourke*[1], *Nathan Hoy*[1]
[1]Department of Surgery, University of Alberta, Edmonton, Canada

Introduction: The artificial urinary sphincter (AUS) has long been considered the gold standard treatment for post-prostatectomy incontinence (PPI). More recently, the adjustable transobturator male system (ATOMS) has been introduced as another treatment option, with considerable overlap between the treatment populations. Although both are effective treatments, there is minimal data comparing the two procedures. Our study aimed to compare the safety and efficacy of AUS and ATOMS for patients with moderate incontinence to further inform surgical management recommendations.

Methods: We conducted a retrospective, single-center cohort study of adult patients (>18) receiving AUS or ATOMS at the University of Alberta between September 1, 2015, and August 1, 2023. Patients were hierarchically case-control matched based on preoperative pads per day (PPD), etiology of incontinence, previous radiation and/or urologic surgery, and age. Data was analyzed using paired two-tailed t-test and Fisher's exact test.

Results: Eighty-eight patients receiving ATOMS were case-control matched to patients receiving AUS during the study period (n=176). The average followup

time for ATOMS patients was 18.7 months compared to 39.0 months in AUS. Mean age (68.8 vs. 68.1, p=0.51) and preoperative PPD (4.0 vs. 4.4, p=0.08) were similar between cohorts, with 60% (n=53) of patients reporting moderate incontinence (3–4 PPD). Rates of patient-reported improvement were similar between cohorts (95.3% vs. 89.8%, p=0.13). Absolute change in PPD was similar between groups (3.50 vs. 3.45, p=0.79); however, patients receiving ATOMS had a larger relative reduction in PPD (88.4% vs. 80.6, p=0.03) and were more likely to achieve postoperative continence (<1 PPD) compared to patients receiving AUS (OR 3.55, 95% CI 1.84–7.06, p<0.001). The average initial volume instilled for ATOMS devices was 7.89 mL, with 56% (n=48) of patients requiring ≥1 adjustment. There were no differences in the rates of postoperative complications between groups (ATOMS=15%, AUS=17%). AUS was associated with an increased risk of requiring surgical revision compared to ATOMS (OR 4.02, 95% CI 1.58–10.2, p=0.005).

Conclusions: Our findings show that ATOMS is associated with a greater percent reduction in pad usage and decreased risk of requiring surgical revision compared to AUS when controlling for key patient characteristics. This data supports ATOMS as an excellent treatment option for patients with moderate urinary incontinence post-prostatectomy.

POD 2.5

Two-stage repair for primary hypospadias: Functional and cosmetic outcomes of 145 cases with long-term followup over five years

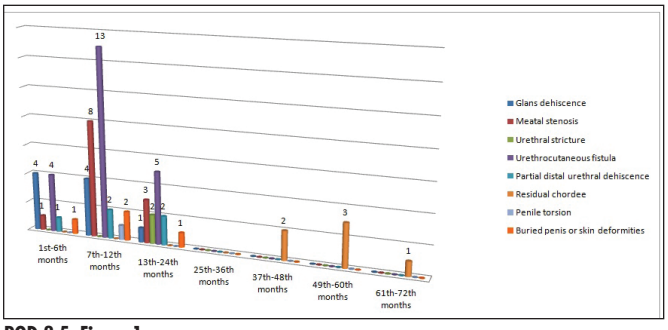
Tayfun Oktar[1], Ismail Selvi[1], M. Irfan Donmez[1], Baris Aydin[1], Abubekir Böyük[1], Orhan Ziylan[1]

[1]Division of Pediatric Urology, Department of Urology, Istanbul University İstanbul Faculty of Medicine, Istanbul, Turkey

Introduction: The long-term outcomes for two-stage repair in the treatment of primary hypospadias is scarce. Thus, we aimed to analyze our long-term clinical data in patients with two-stage primary hypospadias repair.

Methods: Files of 145 boys who underwent two-stage surgery for primary hypospadias repair between September 2001 and October 2017 with >5 years of followup were retrospectively reviewed. Demographics, preoperative clinical characteristics, postoperative complications, and the hypospadias objective scoring evaluation (HOSE) score at the last clinical visit were noted.

Results: Median age at the time of first-stage and second-stage surgeries were 36 (range 12–288) and 42 (range 18–300) months, respectively. Of those, 56.6% had penoscrotal hypospadias and 29.6% had scrotal or perineal hypospadias, while 13.8% had mid-penile hypospadias with uncorrectable chordee/poor urethral plate. Topical dihydrotestosterone was used in 52.4% (those with glans diameter <14 mm). Preputial graft was used in all cases. Median followup after the second stage was 120 (range 66–224) months. The overall postoperative complication rate was 31.1%, where 29% underwent reintervention. The most common complication was urethrocutaneous fistula (15.2%), followed by meatal stenosis (8.3%), glans dehiscence (6.2%), residual chordee (4.1%), partial distal urethral dehiscence (3.4%), buried penis or skin deformities (2.8%), urethral stricture (1.4%), and graft contracture after the first-stage surgery (1.4%). The median time from second-stage surgery to the first repeat intervention for complications was 11 (range 6–64) months. According to the HOSE score, 93.8% of the patients appear to have functional and cosmetical acceptable outcomes.



POD 2.5. Figure 1.

Conclusions: Our results indicated that two-stage surgery is a functionally and cosmetically satisfactory option for primary hypospadias repair, with almost 30% complication rate, most of which can be regarded as acceptable.

Acknowledgements: The presenting author will join the congress as a part of EAU-CAU Exchange Program.

POD 2.6

Is it better to address the outlet prior to onabotulinum toxin-A (BoNT-A) injections in men? A long-term followup

Mario Ochoa[1,2], Mariano Garcia[3], Emily Dalton[2], Kevin V. Carlson[1,2], Darren Desantis[1], Richard Baverstock[1,2]

[1]Division of Urology, Department of Surgery, University of Calgary, Calgary, Canada; [2]Vesia [Alberta Bladder Center], Calgary, Canada; [3]Plataforma INVEST Medicina , UANL-KER Unit Mayo Clinic (KER Unit Mexico), Monterrey, Mexico

Introduction: Evidence concerning long-term outcomes in males with idiopathic overactive bladder (iOAB) is limited and rarely explores on the effects of previous prostate surgery. This study aims to evaluate the long-term treatment persistency and adverse events of repeated intravesical onabotulinum toxin-A (BoNT-A) injections in male iOAB patients after prostatic surgery (i.e., transurethral resection of the prostate [TURP], greenlight laser prostatectomy [GLP], or radical prostatectomy [RP]).

Methods: In this single-center, retrospective study, data from 272 individuals treated with intravesical BoNT-A injections between 2019 and 2023 was collected and evaluated. Outcome data of 84 male patients with iOAB refractory to pharmacological treatment, with collectively 274 BoNT-A injections, were assessed and presented. Both individuals with urgency incontinence and urgency without incontinence were included. Mild to moderate incontinence was considered when a maximum of four pads per day were used. BoNT-A long-term successful treatment was determined as the total number of individuals who were still on active treatment at our last followup and/or reported to have stopped BoNT-A due to clear patient satisfaction and further treatment was not required. Patients with a postvoid residual volume >150 and symptomatic were advised to perform CIC.

Results: The mean age at first BoNT-A injection was 67.4 years (SD 11.27). The mean duration of followup was 25.5 months (SD 25.74). Eight cases of urinary tract infections (9.5%) following intravesical BoNT-A injections were documented. A total of 13 patients (15.4%) required CIC during followup. No other adverse events were recorded. At last point of followup, 32 individuals (38%) continued on active treatment. Two subgroups were identified: 41 patients without prostate surgery and 43 patients with prostate surgery (TURP, n= 34; GLP, n=3; and RP, n= 6). The number of urinary tract infections and patient-reported outcomes of BoNT-A treatment (none, insufficient, or satisfactory) were similar. The number of patients who discontinued treatment was statistically lower in the surgery group (OR 0.24, 95% CI 0.09– 0.63, p=0.03). Likewise, a statistical difference was observed in de novo CIC in the same group (OR 0.23, 95% CI 0.05–0.91).

Conclusions: The data of this single-center, retrospective study suggest that addressing the bladder outlet prior to intravesical BoNT-A injections leads to lower discontinuation and de novo CIC rates compared with surgery-naive patients. Our findings should guide further prospective investigations.

POD 2.6. Table 1. Baseline characteristics for all participants

	Prostate surgery (n=43)	No prostate surgery (n=41)	p
Age at first injection in years, mean (SD)	69.1 (8.9)	65.7 (13.1)	0.166
Duration of followup in months after first BoNT-A injection mean (SD)	32.2 (31.4)	18.5 (15.3)	0.013
Wet OAB	21 (48.8%)	20 (48.8%)	0.584
Degree of incontinence			
Mild to moderate	19 (44.2%)	19 (46.3%)	0.508
Severe	2 (4.7%)	1 (2.4%)	0.518
Stress urinary incontinence	4 (9.3%)	3 (7.3%)	0.527
Micturition frequency, median (IQR)			
Diurnal	8 (10–7)	8 (12–8)	0.347
Nocturnal	2.5 (4–2)	3 (7–2)	0.313
Prior urological history			
Urethral intervention	11 (25.6%)	2 (4.9%)	0.009
NM bladder cancer	1 (2.3%)	2 (4.9%)	0.482
Pelvic radiotherapy	2 (4.7%)	3 (7.3%)	0.477
Number of used medications prior to BoNT-A, median (IQR)	2 (2–2)	2 (2–2)	0.174
PVR at baseline in ml, median (IQR)	32.5 (100–12.7)	26 (75–10)	0.732
Prior use of catheter			
CIC	6 (14%)	3 (7.3%)	0.266
Indwelling	3 (7%)	2 (4.9%)	0.523
Urodynamics performed before BoNT-A	35 (81.4%)	33 (80.5%)	0.568

POD 2.6. Table 2. Results after BoNT-A treatment, comparing surgery-naive patients and patients after prostate surgery

	Prostate surgery (n=43)	No surgery (n=41)	p
Number of injections, median (IQR)	2 (5–1)	2 (3.5–1)	0.079
Dosage of BoNT-A injections in units, median (IQR)	100 (100–100)	100 (100–100)	0.104
Effect BoNT-A in patients that stopped treatment			
Satisfactory	3 (15%)	10 (31.3%)	0.162
None or insufficient	17 (85%)	22 (68.8%)	
Number of patients that discontinued treatment	20 (46.5%)	32 (78%)	0.003
Odds ratio	0.24 (0.09–0.63)		0.003
PVR after BoNT-A treatment in mL, median (IQR)	77 (109–32)	124 (155.5–70.5)	0.01
New CIC after BoNT-A	3 (7%)	10 (24.4%)	0.027
Odds ratio	0.23 (0.05–0.91)		0.054
Number of urinary tract infection in the next 6 months after BoNT-A			
0	40 (93%)	36(87.8%)	0.33
>1	3 (7%)	5(12.2%)	