Podium Session 4: Pediatrics / Endourology
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POD-04.01

A randomized, controlled trial of bladder training video vs. standard urotherapy for bladder and bowel dysfunction

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Introduction and Objectives: Controversy surrounds which treatment modality is most effective in reducing symptoms in children with bladder/bowel dysfunction (BBD). Herein, we examine if an animated bladder training video (BTV) is as effective as standard urotherapy (SU) in improving BBD symptoms.

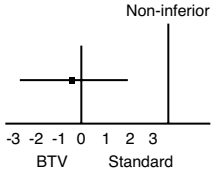
Methods: Non-inferiority, randomized, controlled trial including patients aged 5-10 years who scored ≥11 on the BBD symptomology Vancouver questionnaire. Children with vesicoureteral reflux, neurogenic bladder, learning disabilities, recent urotherapy, and primary nocturnal enuresis were excluded. BBD symptoms were evaluated at baseline and at three-month followup (F/U). A sample size of 126 ensured a non-inferiority margin of 3.5 difference in scores between groups. An intention-to-treat protocol was followed, and baseline vs. F/U scores were compared with paired parametric tests.

Results: Of 539 screened patients, 173 (32%) were eligible and 150 (28%) enrolled. Of these, 122 (81%) completed the trial, 21 (14%) are active, five (3%) were lost to F/U, and two (1%) withdrew. Baseline characteristics were similar between groups with scores of 20.0 ± 6 and 19.8 ± 8(p=0.82) for BTV and SU respectively (Table 1). At F/U, both BTV and SU scores reduced to 14.1 ± 7 and 13.8 ± 6 (p=0.81), respectively. The mean change in symptomology scores in BTV and SU was 5.8 ± 5.8 and 6.2 ± 6.1, respectively, and the difference was -0.4 (97.5% CI:-2.5–1.7). The upper limit CI did not exceed the 3.5 non-inferiority margin.

Conclusions: BTV is not inferior to SU in reducing BBD symptoms in children aged 5-10 years with BBD. BTV ensures patients are consistently provided the same information regardless of provider or setting. BTV appears to be an effective alternative to SU, as families can independently access and review BTV as often as necessary, thus maximizing the use of limited resources without adversely impacting outcomes.

Table 1. POD-04.01.

Characteristic	BTV n=75 (%)	SU n=75 (%)	*p* value
Gender			
Male	21 (28)	24 (32)	0.59
Female	54 (72)	51 (68)	
Age (years)	7.0 ± 1.7	6.9 ± 1.6	0.62
Presenting symptoms			
Daytime incontinence (daily)	17 (23)	16 (21)	0.84
Recurrent UTI (minimum 2)	36 (48)	35 (47)	0.87
Frequency (more than 8 voids daily)	16 (21)	18 (24)	0.70
Urgency (rush to pee every day)	29 (39)	21 (28)	0.17
Constipation (Bristol Stool Chart ≤3; bowel movements other than daily; hard stools)	58 (77)	58 (77)	1.00
Anticholinergic prescription	24 (32)	23 (31)	0.86
Mean change in symptomology score	5.8 ± 5.8	6.2 ± 6.1	0.71
Number of pts who had an increase in score	9 (12)	8 (11)	0.97
Mean followup time (months)	3.4 ± 1.0	3.7 ± 1.7	0.32



POD-04.02

The incidence and predictors of peripheral nerve injury during abdominal-pelvic surgery: Results from the National Surgical Quality Improvement Program (NSQIP) Database

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Introduction and Objectives: Peripheral nerve injury (PNI) is a rare, but preventable complication of surgery. We sought to determine the rate of PNI following common abdominal and pelvic procedures and to determine the impact of minimally invasive surgical techniques on these rates.

Methods: Using the American College of Surgeons National Surgical Quality Improvement database, we examined rates of PNI among patients undergoing appendectomy, hysterectomy, colectomy, or radical prostatectomy between January 1, 2005 and December 31, 2012. We examined trends in peripheral nerve injury over time and assessed the influence of minimally invasive surgical techniques, in addition to relevant clinical and demographic factors in multivariable logistic regression models.

Results: Between 2005 and 2012, 297 532 patients underwent appendectomy, hysterectomy, colectomy or radical prostatectomy. The overall rate of PNI was 0.03%. 44 patients treated using minimally invasive surgical techniques had PNI (0.03%) as compared to 63 that underwent open surgery (0.05%; p=0.0002). During the study period, there was a statistically significant decrease in the proportion of surgeries resulting in PNI (p<0.0001). Increased operative time (odds ratio (OR) 1.09 per 10 min, 95% CI 1.06-1.11), smoking status (OR 1.60, 95% CI 1.04-2.46), and body mass index (BMI) (OR 1.57 for BMI >30 compared to 18.5-25, 95% CI 1.00-2.47) were associated with an increased risk of PNI. Use of minimally invasive surgical approach was not associated with the risk of PNI (OR 0.71, 95% CI 0.47-1.09).

Conclusions: Prolonged operative time, smoking, and obesity are associated with an increased risk of postoperative PNI. Minimally invasive approaches to common abdominal-pelvic surgeries do not appear to increase the risk of PNI. Increasing awareness of this highly preventable complication may serve to further reduce incidence rates and improve patient care.

POD-04.03

Dusting vs. basketing during ureteroscopic lithotripsy: A multicentre prospective trial from the EDGE Research Consortium

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Introduction and Objectives: There is little evidence as to whether dusting stones is more efficacious than basket extraction of fragments during ureteroscopic lithotripsy. We prospectively followed patients to determine which method resulted in the higher stone-free rate.

Methods: Patients undergoing ureteroscopy for renal stones between 5-20 mm were eligible. The Endourology Disease Group for Excellence (EDGE) includes high-volume stone centres with well-established dusting (four sites) or basketing (four sites) approaches to renal calculi. Laser lithotripsy was used and patients were imaged within three months following ureteroscopy. The definition of stone-free was no fragments of any size on kidneys-ureters-bladder (KUB) and ultrasound imaging. All patients were stented postoperatively and given alpha blocker for 30 days.

Results: 59 patients were enrolled and followed for three months (n=36 basketing, n=23 dusting). The stones were slightly larger in the dusting group and significantly more laser energy was used in the dusting group. Operating room time was longer in the basketing group. There were fragments present in 4/36 (11.1%) in the basketing group compared to 9/23 (39.1%) of the dusting group. The stone-free rate was 89.1% in the basketing group and 60.9% in the dusting group. Only one patient from each group became symptomatic. There was no difference in emergency room admission or hospitalization between groups (18.4% dusting vs. 12% basketing) or in re-intervention rates (one dusting, two basketing).

Conclusions: Our analysis shows that in patients undergoing ureteroscopy for renal stones between 5-20 mm that active extraction of all fragments with a basket produces a higher stone-free rate (89.9%) than dusting the stone (60.9%). However, there was no difference in readmission or reintervention rates and only one patient in each group became symptomatic from their residual fragments. Long-term followup of these patients will also determine the fate of these fragments and whether they become symptomatic and require treatment.

POD-04.04

Is shockwave lithotripsy a risk factor for developing diabetes mellitus? A population-based cohort study

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Introduction and Objective: Our objective was to perform a population-based, retrospective cohort study to determine if patients treated with shockwave lithotripsy (SWL) are at a greater risk for the development of diabetes mellitus (DM) than those treated with ureteroscopy (URS).

Methods: All SWL and URS treatments performed in Ontario between January 1994 and December 2012 were identified using linked administrative healthcare databases. The primary outcome was the development of DM >90 days following treatment. SWL, the study exposure, was used as a time-dependent exposure to account for those who underwent SWL following URS. Unadjusted analysis with the Kaplan-Meier method was used to examine the time to development of DM across both groups. Multivariable analysis with Cox proportional hazards regression was used to assess the risk for DM between SWL and URS groups while controlling for age, gender, region of residence, income quintile, and comorbidity index. A sensitivity analysis was performed adjusting the time frame window for development of DM to a minimum of >180 and 365 days following treatment, respectively.

Results: We identified 99 144 patients who underwent SWL or URS, with a median followup of 6.6 years (SWL 8.5 years, URS 5.6 years). The groups had similar baseline characteristics. Unadjusted survival analysis demon-

Table 1. POD-04.04. Baseline characteristics for patients treated with SWL and URS from January 1, 1994 to December 31, 2012

Characteristic	SWL n=46 318	URS n=47 773	URS then SWL n=5053
Demographics			
Age (years)			
Median (IQR)	49 (39-59)	49 (38-61)	47 (37-58)
Sex, n (%)			
Female	16 740 (36.1%)	18 391 (38.5%)	1937 (38.3%)
Male	29 578 (63.9%)	29 382 (61.5%)	3116 (61.7%)
Income quintile, n (%)			
Missing	122 (0.3%)	119 (0.2%)	18 (0.4%)
1- Lowest	8585 (18.5%)	9195 (19.2%)	871 (17.2%)
2	8884 (19.2%)	9755 (20.4%)	1059 (21.0%)
3	9173 (19.8%)	9621 (20.1%)	1051 (20.8%)
4	9632 (20.8%)	9907 (20.7%)	1032 (20.4%)
5- Highest	9922 (21.4%)	9176 (19.2%)	1022 (20.2%)
Geographic data			
Rural residence, n (%)	4896 (10.6%)	6403 (13.4%)	582 (11.5%)
Comorbidity			
0-1	322 (0.7%)	380 (0.8%)	47 (0.9%)
2-3	3187 (6.9%)	2904 (6.1%)	352 (7.0%)
4-6	14 414 (31.1%)	13 746 (28.8%)	1440 (28.5%)
7+	28 395 (61.3%)	30 743 (64.4%)	3214 (63.6%)

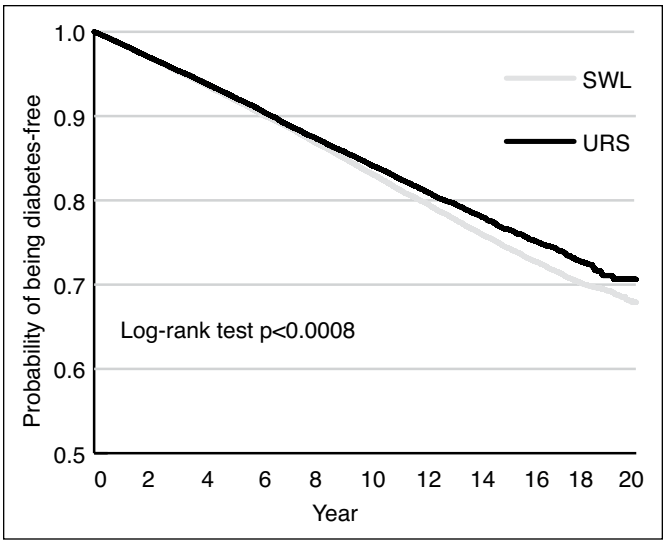

Fig. 2. POD-04.04.

strated an increased risk for the development of DM in the SWL group compared to the URS group (p<0.0008). Similarly, multivariable analysis demonstrated an increased risk of DM in the SWL cohort (HR 1.08, 95% CI 1.04-1.12; p<0.0001). Sensitivity analysis revealed comparable results with an increased risk of DM in the SWL cohort both with the time for exclusion increased to 180 days (HR 1.08, 95% CI 1.04-1.12; p<0.0001) and 365 days (HR 1.09, 95% CI 1.05-1.13; p<0.0001).

Conclusions: Our population-based cohort study demonstrated a small, but significant increased risk of DM in patients undergoing SWL compared to URS.

POD-04.05

2016 Prize Essay Competition Winner: Clinical Science

A prospective evaluation of obesometric parameters associated with renal stone recurrence

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Introduction and Objectives: To evaluate whether obesometric serum hormones and body fat distribution are associated with renal stone (RS) recurrence.

Methods: Prospective cohort study of participants undergoing RS intervention at a single institution from November 2009-June 2010 and followed for median 62 months. Obesometric parameters were measured at baseline, including body mass index (BMI), fasting serum leptin and adiponectin, and proportion of visceral adipose tissue (%VAT) averaged from three fixed axial computed tomography (CT) slices. The primary study outcome was stone recurrence.

Results: A total of 110 participants were enrolled. Elevated %VAT was associated RS recurrence; participants with %VAT in the highest quartile had five-year stone-free rate 47.1% compared to 72.2% among other participants (p=0.004). Adjusting for gender, elevated %VAT was independently predictive of RS recurrence among initial stone formers (N=74; HR 4.53, 95% CI 1.08-19.02), but not among recurrent stone formers (N=19; HR 0.51, 95% CI 0.054-4.72). Other obesometric factors, including leptin, adiponectin, and BMI, were not significantly predictive of recurrence.

Conclusions: We report a novel association between an elevated proportion of visceral adipose tissue and stone recurrence. These findings may inform patient counselling and followup regimens. The metabolic basis for these findings requires further investigation.