

Moderated poster session 1: Laparoscopy & robotics/Voiding dysfunction/Pediatrics Thursday, October 12, 2017 10:30 am–12:00 pm

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P1

Tying the knot on robotic transition: Results of a prospective study on the learning curve and operative time of robotic pediatric urology procedures

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Introduction: The transition to robotic-assisted procedures in pediatric urology leads to an increase in operative times, which impacts healthcare costs and resources. Attempts to reduce the learning curve of robotic surgery in adults have focused on structured training to improve operative times at each step, but this work has not extended to pediatric urology. The objectives of this study are to investigate the learning curve and operative times of a single surgeon transitioning from laparoscopic pyeloplasty to robotic-assisted pyeloplasty (RAP) and from open ureteric re-implantation to robotic-assisted extravesical ureteral re-implantation (RUR) and to determine where efficiency gains are found early in the learning curve.

Methods: This prospective cohort study includes all RAP and RUR procedures performed using a three-port technique between July 2013 and April 2016. Both operations were sectioned into discrete operative steps: ports insertion and closure, dissection of the ureteropelvic junction (RAP) or ureter (RUR), dismemberment of the renal pelvis and spatulation (RAP) or creation of the submucosal tunnel (RUR), ureteropelvic anastomosis (RAP) or closure of the submucosal detrusor tunnel (RUR) recorded by a trained unbiased coder. The primary outcome was the trends of total and step-specific operative times. Success was defined as resolution or significant decrease in the grade of hydronephrosis for the RAP group and resolution of urinary tract infections off antibiotic prophylaxis or negative voiding cystourethrogram (VCUG) in the RUR group. Operative times were compared using student's t-test by the first and last quartiles. Descriptive analyses were performed on other outcomes of interest.

Results: See Table 1.

Conclusions: A reduction in intracorporeal suturing time leads to the greatest efficiency gain when transitioning to RAP and RUR. At our center, despite a relatively low volume of robotic cases (14/year), this efficiency was achieved within the first 20 procedures for both RAP and RUR. This study will aid the design of structured residency training programs to improve the operative learning curve for novice surgeons initiating RAP and RUR.

P2

Natural history and predictors of parastomal hernia after robot-assisted radical cystectomy

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Introduction: Parastomal hernia (PH) is a frequent complication of urinary diversion after radical cystectomy. We investigated the prevalence, predictors, and outcomes of PH. Clinical and radiological evidence of PH was also investigated.

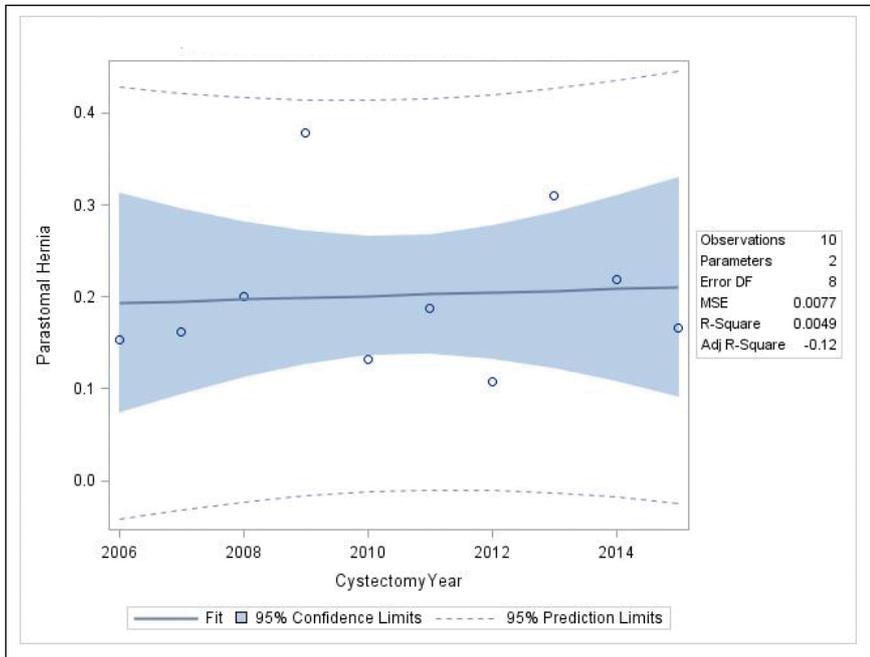
Methods: Retrospective review of 446 patients who underwent RARC at our institution from 2005 was conducted. Data was reviewed for demographics, clinical findings, imaging results, and other perioperative outcomes. Radiological PH was defined as protrusion of abdominal content through the stoma defect in the abdominal wall. PH was further described in terms of symptoms and their management. Kaplan-Meier method was used to depict time to developing PH and logistic regression to evaluate predictors of PH.

Results: 384 patients who underwent RARC and IC were included in the analysis. Mean age was 70 years with median followup of 18 months (interquartile range [IQR] 6.8–34.7). 74 (19%) patients had radiological evidence of PH, 24 (32%) were symptomatic, and eight (11%) underwent treatment. Median time to develop PH was 13 months (IQR 8.8–22.0). PH occurred at a rate of 10%, 33%, and 36% at one, three, and five years, respectively (Fig. 1). Median time to symptoms was 24 months after RARC (IQR 7.0–39.6) and eight months after radiological diagnosis (Fig. 2). Patients with PH had significantly higher body mass index (BMI) (30 vs. 28; $p=0.009$), longer overall operative time (347 vs. 388 min; $p=0.01$), longer urinary diversion time (128 vs. 108; $p=0.03$), and higher blood loss (400 vs. 250; $p=0.01$). The incidence of PH was studied based on incorporation of intracorporeal diversion in the program. On multivariable analysis, operative time was the only variable associated with higher incidence of PH (odds ratio 1.25; 95% confidence interval 1.02–1.04; $p<0.001$).

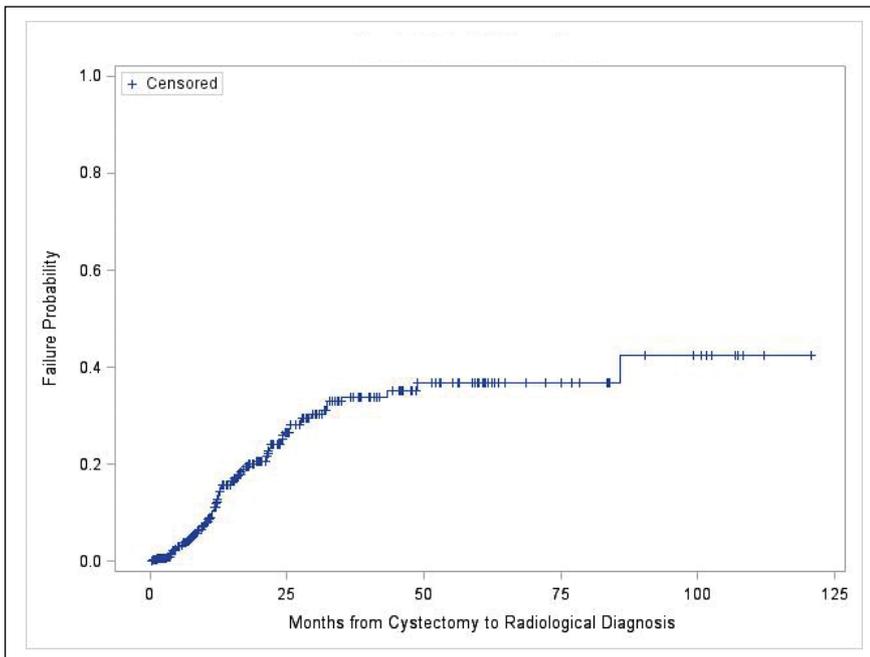
P1. Table 1. Results

	RAP		RUR	
Number of patients	24		18	
Gender (male:female)	17:7		2:16	
Mean age, months	95.4 (6–222)		61.7 (6–129)	
Mean followup, months	23.9 (6–36)		23.8 (6–39)	
Success rate, %	100		100	
Complications	Urinoma requiring nephrostomy and prolonged stenting-1, UTI-1		Delayed ureter injury requiring stenting-1	
	First quartile	Last quartile	First quartile	Last quartile
Mean time, minutes				
Total operative time	214.3	163.8*	218.2	159
Port placement and closure	48.2	38.1	41	36.2
Dissection	36.3	27.7	56.8	32.6
Dismember pelvis and ureter spatulation	19.1	14.7		
Submucosal tunnel creation			39.8	25.8*
Suturing	110.7	67.2*	80.6	42.2*
Resident console time	2.5	12.5*	0	22*

* $p<0.05$. RAP: robotic assisted pyeloplasty; RUR: robotic assisted extra-vesical ureteral reimplantation.



P2. Fig 1. Fit plot for parastomal hernia incidence by year.



P2. Fig. 2. Product-limit failure curve.

Conclusions: PH is a common complication following RARC (20%). Approximately one-third will develop symptoms and 10% will require surgical treatment. Risk for developing PH reaches a plateau after the third year. Longer operative time was associated with higher incidence of PH.

P3

Measuring quality for robot-assisted radical cystectomy worldwide: External validation of the Quality Cystectomy Score utilizing the International Robotic Cystectomy Consortium

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Introduction: Ensuring quality and comprehensive patient care is a duty of modern surgical practice. To optimize care for patients undergoing cystectomy, our group developed best practices for patients undergoing robot-assisted radical cystectomy (RARC) — Quality Cystectomy Score (QCS). In this study, we sought to validate the QCS and its effect on survival utilizing the International Robotic Cystectomy Consortium (IRCC) database.

Methods: Retrospective review of IRCC database (23 institutions from 12 countries) was performed. QCS is a composite measure of surgical performance based on four sets of quality metrics (I—preoperative criteria [administration of neoadjuvant chemotherapy]; II—operative criteria [overall operative time (<6.5 hours) and estimated blood loss <500 ml]; III—pathological criteria [negative soft tissue surgical margins and lymph node yield of >20]; and IV—perioperative criteria [no Clavien-Dindo Grade III-IV complications, readmission, or mortality within 30-d]). QCS was used to evaluate surgical performance and Kaplan-Meier method was used to compute relationship to oncological outcomes (recurrence-free survival [RFS], disease-specific survival [DSS], and overall survival [OS] rates). Cox proportional hazards model was fit to evaluate predictors of survival

Results: 1412 patients were included. Mean age was 67 years; 41% had extravesical and 22% were node-positive; 20% received NAC. Improvements in all the individual domains were observed except the perioperative domain, which was high and did not change. 86% received at least three stars and the proportion of patients receiving four stars increased from 8% in 2006 to 40% in 2016. Patients who had higher QCS star score showed better RFS, DSS, and OS (log rank p<0.001). On multivariable Cox proportional hazards analysis, patients who had lower QCS scores were more likely to have worse RFS (odds ratio [OR] 1.32; 95% confidence interval [CI] 1.01–1.92;

p=0.04), DSS (OR 1.59; 95% CI 1.05–2.40; p=0.03), and OS (OR 1.69; 95% CI 1.27–2.25; p=0.004).

Conclusions: QCS was a significant predictor of RFS, DSS, and OS and was able to measure the quality of surgical care worldwide. QCS can be measured to monitor programs and guide remediation.

P4

Intracorporeal vs. extracorporeal approaches to W configuration neobladders after robot-assisted radical cystectomy

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Introduction: We sought to compare robot-assisted intracorporeal (IC) to W orthotopic ileal neobladder to extracorporeal (EC) approach.

Methods: A retrospective review of our robot-assisted radical cystectomy (RARC) database was performed. No conversion to open surgery was done. We identified patients who underwent IC and EC neobladders (W configuration) and compared their short-term perioperative outcomes.

Results: 39 patients received neobladders (33 EC and six IC). Both groups showed comparable preoperative characteristics except for body mass index (BMI) (IC group showed higher BMI: 33 vs. 28; p=0.03). Although there was no significant difference in the diversion time, IC patients exhibited shorter overall operative time (374 vs. 446 minutes; p=0.04). They experienced less blood loss (183 vs. 426 ml; p=0.02). They had shorter hospital stay (5 vs. 9 days; p=0.001) but longer ICU stay (3 vs. 1 day; p=0.009). Fewer patients experienced overall complications (50% vs. 90%; p<0.001) but similar high-grade complications.

Conclusions: Patients with IC neobladders showed better short-term perioperative outcomes when compared to EC approach.

P5

Development and validation of Cystectomy Assessment and Surgical Evaluation (CASE) scoring for male radical cystectomy

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Introduction: It is vital to ensure standardization and objective feedback during training and skill acquisition for optimal surgical outcomes and patient safety. We aimed to develop a structured scoring tool, Cystectomy Assessment and Surgical Evaluation (CASE), which objectively measures and quantifies performance during radical cystectomy (RC) for men.

Methods: A multinational expert panel (11 surgeons who perform open and/or robot-assisted radical cystectomy [RARC]) collaborated towards development and content validation of the male RC scoring system. The critical steps of male RC were deconstructed into nine key domains, where each domain was assessed by five anchors evaluating surgical principles, technical proficiency, and safety. Content validation was done using the Delphi methodology. Each anchor statement was assessed in terms of three aspects: contextual relevance, concordance between language used and anchor score, and clarity of wording. An independent coordinator collated the comments from the expert panel and computed the Content Validity Index (CVI) for each aspect of each anchor. If CVI was ≥ 0.75 , consensus was reached and the statement was removed from the next round. If consensus was not achieved, the coordinator incorporated the comments from the panel and the updated scoring system was redistributed. This process was repeated until consensus was achieved for all statements. All experts were blinded to each other's assessment.

Results: The expert panel reached consensus after four rounds on all aspects, including language, relevance of skills assessed, and concor-

dance between the language used and the skill assessed. A ninth domain assessing disposition of tissue was removed from the system after the second round. CVI ≥ 0.75 was achieved in eight (11%) statements in the first round, 44 (61%) statements in the second, 17 (24%) statements in the third, and three (4%) statements in the fourth round. The final eight domains of the CASE include: pelvic lymph node dissection, development of the periureteral space, lateral pelvic space, anterior rectal space, control of the vascular pedicle, anterior vesical space, control of the dorsal venous complex, and apical dissection.

Conclusions: We developed and validated a scoring system for RC that can provide structured feedback for surgical quality assessment, training, and feedback. Validation of the scoring system is in process.

P6

Low incidence of clean intermittent catheterization with onabotulinumtoxinA in diverse age groups of overactive bladder patients with substantial improvements in treatment response

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Introduction: The potential need for clean intermittent catheterization (CIC) is known to increase in overactive bladder (OAB) patients after onabotulinumtoxinA treatment. We determined the risk of CIC and assessed the efficacy and quality of life (QoL) outcomes after treatment with onabotulinumtoxinA in different age groups by performing a post-hoc analysis of a large cohort of OAB patients.

Methods: Data from two onabotulinumtoxinA randomized, placebo-controlled, phase 3 trials and a post-marketing study were pooled for analysis (N=1177). Patients treated with onabotulinumtoxinA 100U in treatment 1 and placebo patients who received open-label onabotulinumtoxinA in treatment 2 were grouped by age: <40 (n=90), 40–49 (n=156), 50–59 (n=263), 60–69 (n=343), and ≥ 70 (n=325) years. Assessments at week 12 after treatment were: incidence and duration of CIC, mean and percent change from baseline in urinary incontinence (UI) episodes/day, proportions of patients with $\geq 50\%$ UI reduction, a positive response (urinary symptoms 'improved'/'greatly improved') on the treatment benefit scale (TBS), and change from baseline in Kings Health Questionnaire (KHQ) domains of social limitations and role limitations. Adverse events (AEs) were assessed.

Results: CIC rates after onabotulinumtoxinA treatment were lowest in the <40 group (1.1%) and increased slightly with age (3.2%, 5.3%, 5.3%, and 7.2% in the 40–49, 50–59, 60–69, and ≥ 70 groups, respectively). Mean CIC duration was three and 44 days in the <40 and 40–49 groups, respectively, and ranged from 78–88 days in the other groups. Mean UI episodes/day at baseline were 3.9, 4.8, 5.2, 5.7, and 6.0 in the <40, 40–49, 50–59, 60–69, and ≥ 70 groups, respectively. A robust treatment response was noted in all groups, including substantial reductions in UI episodes/day (-2.4, -2.6, -3.1, -3.6, and -2.9) and percent change in UI (-60.8%, -50.4%, -62.4%, -64.4%, and -46.8%). High proportions of patients in all groups achieved $\geq 50\%$ UI reduction (range 58.2–71.1%) and had a positive TBS response (range 66.2–73.8%). Improvements from baseline in KHQ domain scores were approximately 3–6 times the minimally important difference. Urinary tract infection was the most common AE in all groups.

Conclusions: In this large cohort of onabotulinumtoxinA-treated OAB patients, CIC risk increased slightly with age, but was low in all age groups and accompanied by substantial reductions in UI episodes/day, improvements in QoL, and treatment benefit. The <40 group had the lowest rate of CIC (1.1%), with a duration of three days. OnabotulinumtoxinA was well-tolerated in all age groups.

P7

Off-label use of incobotulinumtoxinA for treatment of patients with idiopathic OAB

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Introduction: OnabotulinumtoxinA is currently the only botulinum toxin formulation FDA-approved for treatment of overactive bladder (OAB) symptoms. Our aim was to assess the safety and efficacy profile for off-label incobotulinumtoxinA treatment in patients with refractory OAB symptoms.

Methods: This was a retrospective review of all patients who underwent intradetrusor injections of incobotulinumtoxinA between September 2013 and March 2017 for the treatment of idiopathic, refractory OAB. Pre- and post-procedure outcomes assessed included symptoms of incontinence, urinary frequency, nocturia, post-void residual (PVR), and complications. Statistics were calculated and assessed with a paired t-test, with significance of $p < 0.05$.

Results: 22 patients (16 females, six males) with the diagnosis of refractory, idiopathic OAB were included in the study, receiving a total of 24 injections. The average age in this cohort was 69.56 years. 100 units of incobotulinumtoxinA was used in 22 injections (91.7%) and 200 units in 2 (8.3%). Symptom resolution was noted in 21 (87.5%) of the treatments with $\geq 50\%$ decrease in symptoms. Frequency of voids (2.3 to 3.2 hours; $p=0.002$), nocturnal episodes (3.4 to 2.4; $p=0.041$), and pad usage (1.3 to 0.75; $p=0.011$) were significantly improved after therapy (Table 1). There was a slight increase in post-injection PVR (mL); however, this was not significant (22.8 to 48.9; $p=0.092$). Average followup was 10.2 weeks. Complications within 12 weeks of injection included urinary tract infection (16.7%) and urinary retention in one patient (4.2%) that required intermittent self-catheterization.

Conclusions: IncobotulinumtoxinA appears to be safe and effective for the treatment of idiopathic OAB. Further studies comparing it to onabotulinumtoxinA are needed.

P7. Table 1. IncobotulinumtoxinA results

	Pre-treatment	Post-treatment	P
Frequency of voids, hours	2.3 ± 1.9	3.2 ± 2.4	0.002
Nocturia	3.4 ± 2.8	2.4 ± 1.4	0.041
Daily pad use	1.27 ± 1.85	0.75 ± 1.07	0.011
PVR, mL	22.8 ± 33.4	48.9 ± 63.3	0.092
Complications			
Urinary tract infection		4 (16.7)	
Urinary retention		1 (4.2)	

PVR: post-void residual.

P8

Automating perineal hygiene effectively treats incontinence-associated dermatitis, maintains independence, and improves quality of life

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Introduction: The inability to self-toilet has a deep impact on patients' quality of life. Many patients experience emotional and skin damage from urinary and fecal incontinence. Prior work studied water-based toileting for patient management; however, results fell short due to issues with cleansing, time to dry, and continued need for skin care management. Patients treated with water-only cleansing systems do not meet current standards of a pH-neutral skin cleanser and a zinc oxide barrier for dermatitis management. While effective at acutely managing dermatitis, limited long-term adherence to current treatment results in frequent

relapse. We developed a comprehensive wellness system to both serve as an assistive device for patients with decreased mobility and help manage incontinence-associated dermatitis. We hypothesize that by automating the process of perineal hygiene, our system will allow those with limitations in toileting to continue to live independently, effectively treat dermatitis, maintain healing, and improve overall quality of life.

Methods: We enrolled 26 residents in an assisted-living environment who, because of deficiencies in independent toileting, were considered for higher levels of nursing care. Entry criteria included an inability to effectively clean the perineum after urination or defecation, and ability to provide informed consent. Subjects were provided a wellness toileting device, pH balanced cleanser, and 2% zinc oxide spray cans designed for use with the device. Graded skin assessments, quality of life surveys, and caregiver surveys were performed at baseline, weekly for six weeks, and at 10 weeks. Charts were reviewed for hospitalization, change in the level of nursing care, and development of urinary tract infections.

Results: Of those enrolled, 45% had fecal incontinence, 73% had urinary incontinence, 75% had active dermatitis, and 96% expressed difficulty in applying prescribed perineal medication. Quality of life: The percentage of subjects who viewed their overall health and quality of life as good to excellent significantly improved after using the device. The impact of toileting on quality of life, and the effect of toileting on the relationship between subjects and caregivers improved significantly as well. Incontinence-associated dermatitis: 18 of 24 enrolled subjects had documented dermatitis at week 0, with an average severity score 4 and range from 2–7. After six weeks, there was an average loss of three points on Kennedy Scale, with 15/18 showing complete healing. By 10 weeks, there was complete, sustained healing among all subjects. One subject was hospitalized for a myocardial infarction at week 8. At the time of her hospitalization she had no dermatitis, but developed recurrent dermatitis during her hospitalization. There were no other adverse events.

Conclusions: Of those enrolled, 45% had fecal incontinence, 73% had urinary incontinence, 75% had active dermatitis, and 96% expressed difficulty in applying prescribed perineal medication. Quality of life: The percentage of subjects who viewed their overall health and quality of life as good to excellent significantly improved after using the device. The impact of toileting on quality of life, and the effect of toileting on the relationship between subjects and caregivers improved significantly as well.

P9

WITHDRAWN

P10

Individualized prediction of incontinence after robot-assisted radical prostatectomy: Development and validation of prostatectomy incontinence nomogram

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Introduction: Even though a number of risk factors for incontinence after robot-assisted radical prostatectomy (RARP) are known, there is a paucity of data that integrates them. Therefore, we sought to develop and validate a prostatectomy incontinence nomogram (PIN) that predicts probability of incontinence at six and 24 months after RARP.

Methods: Data from 1033 men with prostate cancer that underwent RARP from January 2008 to December 2015 at our institution were queried. After applying exclusion criteria, a total of 723 men were divided into nomogram: 1) development cohort (n=435, 60%); 2) testing cohort (n=144, 20%); and 3) external validation cohort (n=144, 20%). Cox proportional hazards regression models were used for univariate/multivariate analyses and to build a nomogram. Reduced model selection was performed using backward step-down selection process, and Harrell's concordance index (c-index) was used for quantifying the nomogram accuracy. Internal validation was performed by bootstrapping and the reduced nomogram model was calibrated. Using UCLA-PCI-short form-v2 urinary function questionnaire, perfect continence was defined as 0

pads, social continence was defined as 1 or 2 pads, and incontinence was defined as ≥ 3 pads used after RARP.

Results: Variables found to be predictive on univariate and multivariate analysis used in the model development cohort include age, body mass index, severity of lower urinary tract symptoms (LUTS), Charlson Comorbidity Index, margin status, preoperative erectile function, and prostate volume. The initial model has a c-index of 0.69 (95% confidence interval [CI] 0.66–0.72), and a six-month and 24-month area under the curve (AUC) of 0.69 and 0.71, respectively. The recalibrated model has a c-index of 0.64 (95% CI 0.58–0.71), and a six-month and 24-month AUC of 0.58 and 0.72, respectively. Using the developed calibrated nomogram, the overall predicted probability of incontinence is 30% (95% CI 0.26–0.33) by six months, and 5% (95% CI 0.04–0.07) by 24 months. **Conclusions:** We devised and validated a modest nomogram (c-index of 0.64) that is superior to any single clinical variable for predicting six- and 24-month risk of incontinence after RARP.

P11
Safety and quality issues associated with neonatal percutaneous nephrostomy tube (PNT) placement in neonates and infants

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Introduction: In the neonate and infant population, there is sparse literature addressing indications, thresholds, and safety of percutaneous nephrostomy tube (PNT) placement. PNT in our institution is performed by image-guided therapy (IGT) specialists, but post-procedure care is primarily under that of pediatric urology (U). Our objectives were to identify indications for PNT, the role of U in assessing patients before the procedure, and to assess outcomes/complications related to tube placement in patients <1 year of age.

Methods: Patients <1 year of age who underwent PNT by IGT from 2001–2014 were retrospectively reviewed after quality improvement committee approval. Data was collected pertaining to: indication, ordering service, comorbidities, demographics and renal status, and whether U consult was obtained.

Results: 57 patients were identified, of whom 49 were male and seven female. Age range was 2–345 days of age, with mean of 20 days. 71% of PNT were performed for therapeutic indications, primarily hydronephrosis with high creatinine (26%); however, 9% of tube placements had questionable indications. U was only consulted in 67% of instances if nephrology ordered the study and in 81% of cases where another service ordered the procedure. Only 1% suffered complications related to PNT placement — a urinoma. In reviewing IGT records, the indication for performing the procedure was recorded in only half the cases. Indications and success for PNT in even young neonates and infants is similar to adult series.

Conclusions: PNT is a safe procedure when performed by experts, even in the first year of life. Males by far are the most common patients who receive PNT, with hydronephrosis and impaired renal function as the primary indication. From a quality perspective, documentation by IGT should be enhanced. Since most tube care falls under the U service and as many as 10% of our patients had questionable indications for PNT, for quality and safety indications, collaborative decision-making that includes U are suggested prior to PNT insertion.

P12
Surgical outcomes of open ureteral re-implantation in patients with spinal dysraphism: A single-institution experience

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Introduction: Open ureteral re-implantation (OUR) is a common and highly successful urological procedure for vesicoureteral reflux (VUR); however, spina bifida (SB) patients present unique challenges when undergoing OUR compared to the general pediatric population. In this study, we aim to describe the outcomes of patients with SB undergoing OUR.

Methods: A retrospective review of all patients undergoing OUR at a single institution from 2008–2015 was performed. Collected variables included demographics, neurological lesion level and type, grade and laterality of VUR, and postoperative outcomes.

Results: Of 408 patients undergoing ureteral re-implantation at our institution over an eight-year span, 10 had spinal dysraphism (2.45%). The

P12. Table 1. Baseline characteristics of patients undergoing OUR

Age at OUR in years, median (IQR)	12.4 (12.7)
Gender, n (%)	
Male	5 (50)
Female	5 (50)
Race, n (%)	
White	10 (100)
Non-White	0 (0)
Body mass index at OUR in kg/m ²	21 (8.2)
Neurologic lesion, n (%)	
Myelomeningocele	7 (70)
Lipomyelomeningocele	1 (10)
Caudal regression	2 (20)
Level of lesion, n (%)	
Thoracic	0 (0)
Lumbar	7 (70)
Sacral	3 (30)
Surgical indication, n (%)	
Asymptomatic VUR	1 (10)
Bladder decompensation with VUR	1 (10)
Stricture at ureteroneocystostomy	3 (30)
VUR with recurrent pyelonephritis	5 (50)
OUR technique, n (%)	
Cohen cross-trigonal	6 (60)
Politano-Leadbetter	3 (30)
Non-refluxing	1 (10)
VUR grade*, n (%)	
High-grade (Grades 4 and 5)	6 (86)
Low-grade (Grades 1, 2, and 3)	1 (14)
VUR laterality*, n (%)	
Unilateral	5 (71)
Bilateral	2 (29)
Length of stay in days, median (IQR)	5 (5.5)
Followup or censorship in months, median	33

*Data not included for 3 of 10 due to stricture as surgical indication. IQR: interquartile range; OUR: open ureteral reimplantation; VUR: vesicoureteral reflux.

P12. Table 2. Postoperative outcomes of patients undergoing OUR

Complication rate, n (%)	
30-day	4 (40)
90-day	5 (50)
Complications by Clavien-Dindo grade, n (%)	
Grade 2	3 (30)
Grade 3b	2(20)
Febrile urinary tract infection	4 (40)
Length of stay in days, median (IQR)	5 (5.5)
Followup in months, median (IQR)	33 (43.3)

IQR: interquartile range; OUR: open ureteral reimplantation; VUR: vesicoureteral reflux.

median age at surgery was 12.4 years, and the median body mass index was 21 kg/m². 70% of patients underwent primary OUR, most for high-grade bilateral VUR with recurrent pyelonephritis (5/7 patients, 71%). Three patients underwent redo-OURs for stricture. Of the primary OURs, four were performed in a Cohen cross-trigonal fashion and three using the Politano-Leadbetter technique. Remaining demographic data are shown in Table 1. Median length of stay was five days and median duration of followup was 33 months. The rate and severity of complications are shown in Table 2. All patients underwent renal ultrasonography at three months postoperatively. Hydronephrosis was resolved or improved in 70% of patients and unchanged in 20% of patients. Hydronephrosis at three months postoperatively was worsened in only one patient. Four patients had a subsequent febrile urinary tract infection (UTI) postoperatively.

Conclusions: Open ureteral re-implantation is a challenging procedure in SB. While 30- and 90-day complications and surgical failure as measured by persistent febrile UTI was relatively high, our cohort is older and more comorbid than those undergoing OUR for primary VUR. Despite non-modifiable risk factors for secondary reflux, persistent and contralateral reflux is rare. Larger studies are needed to determine what constitutes an acceptable complication rate for the treatment of VUR in the SB patient population.

P13

Rare alterations in *Cyp11b1* gene in 46,xx virilized females with ambiguous genitalia and 46,xy males with early onset virilization
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Introduction: Mutations in the *CYP11B1* gene on chromosome 8q can result in 11-beta hydroxylase deficiency (11OHD), a rare, non-life-threatening form of congenital adrenal hyperplasia (CAH) associated with genital ambiguity and is a disorder of sexual differentiation (DSD). Due to limited resources for screening outside the US, the true incidence of 11OHD is unknown worldwide. We evaluated ten international patients who presented with ambiguous genitalia for *CYP11B1* mutations.

Methods: Our IRB-approved study was conducted through international humanitarian efforts (IVUMed, Salt Lake City, US) and collaboration with an international genetics laboratory. In our cohort, eight patients were 46,XX with ambiguous genitalia and two patients were 46,XY with precocious puberty. Patient DNA underwent analysis with comparative genomic hybridization (CGH) using standard and custom microarray platforms. Our custom array evaluates X and Y chromosome-specific genes and 208 autosomal genes involved in sexual and gonadal differentiation. Single nucleotide polymorphism (SNP) oligoarray was added to enhance the detection of smaller mutations. Further analysis of the *CYP11B1* gene was performed using long-range PCR and Sanger sequencing.

Results: Of the 10 patients, seven patients had *CYP11B1* gene alterations. Five patients were noted to have missense or nonsense mutations causing

alterations in amino acid sequences: 1) homozygous Thr198Met (exon 4); 2) heterozygous Thr198Met (exon 4); 3) heterozygous Ser112Ile; 4) heterozygous Arg374Gln and Arg453Trp (exon 8); and 5) heterozygous Arg138Cys (exon 3) and Leu407Phe (exon 8). In two patients with 46,XX karyotype and Prader 4 genital ambiguity, we identified a novel large base-pair homozygous deletion between *CYP11B1* and its homologous gene *CYP11B2*, resulting in *CYP11B2-CYP11B1* chimera and loss of function in 11-beta hydroxylase enzyme. This was discovered with de novo copy number loss on CGH+SNP custom array and further confirmed with long range PCR of *CYP11B1* gene.

Conclusions: *CYP11B1* mutations may be more prevalent worldwide in patients with atypical presentations and ambiguous genitalia than previously known. We report on a novel *CYP11B2-CYP11B1* gene fusion in two patients with ambiguous genitalia and non-classical presentation of CAH. This mutation may have gone undiagnosed with standard microarray platforms. Custom microarray with SNP analysis may provide increased detection of rare causes of DSD.

P14

Surgical management and outcomes of pediatric ureterocele: A 12-year experience

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Introduction: Transurethral incision (TUI) is a minimally invasive procedure for the initial treatment of ureterocele. Timing at which to perform initial TUI is not well-characterized, and prior studies have demonstrated a high rate of patients requiring a subsequent operation. We describe our 12-year experience with ureterocele management in pediatric population.

Methods: We performed a single-institution retrospective analysis from 2002–2015 in patients with ureterocele. Demographic information, diagnostic studies, perioperative and post-operative data were evaluated. Initial and subsequent surgical management was recorded (TUI, excision and reimplantation, heminephrectomy, or nephrectomy).

Results: 58 pediatric patients underwent treatment for ureterocele in our cohort. Unilateral ureterocele was seen in 56 patients and bilateral in two patients. There were 72.4% female (n=42) and 27.5% male. Prenatal hydronephrosis was diagnosed in 51.7% (n=30), the remainder was diagnosed postnatally at a mean age of 7.7 ± 15.1 months. 12 patients (21%) had a secoureterocele. Vesicoureteral reflux was present in 72% (n=42) of patients. As for initial management, TUI was performed in 88% of patients (n=51) while five patients underwent excision with reimplantation and two underwent nephroureterectomy. Median age at time of initial surgery was two months (interquartile range [IQR] 17.5 days–6 months). The median age of patients undergoing initial TUI was 1.8 months (IQR 17.0 days–6 months). Of the patients who underwent TUI, 72.5% (n=37) required a second surgery with ureterocele excision and ureteroneocystotomy being the most common. The median time to second surgery was 12.9 months (IQR 6.7–27.3 months).

Conclusions: Our experience with management of ureterocele demonstrates early initial TUI within first two months of life, and a high likelihood that these patients will need further surgical management. Second intervention occurs most often within the first two years after TUI.

P15**Two-stage repair for proximal hypospadias with chordee: Long-term review**

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Introduction: We aimed to review the experience with long term followup of boys undergoing two-stage hypospadias repair.**Methods:** A retrospective chart review was performed identifying 95 boys who underwent a two-stage modified Belt-Fuqua repair from 1985–2003. Overall, followup was an average of 7.3 years (range 0.1–19.75 years). The original meatal location was proximal (midscrotal to midshaft) in 76 and distal with urethral hypoplasia in 19. All patients were judged to have chordee necessitating transection of the urethral plate. Associated genital abnormalities were DSD (6%), bifid scrotum (22%), cryptorchidism (24%), and inguinal hernia (18%). Age at surgery, use of testosterone, and operative complications were noted.**Results:** The first stage was performed at an average age of 16 months (range 9–55) and the second stage was performed at an average age of 28 months (range 16–108). 60 patients (63%) underwent Nesbit procedure at the first stage. Intramuscular testosterone was given to 47 (49%) patients prior to first stage and to 36% of patients prior to both stages. The average neourethral length was 4 cm (range 3–8). During followup period, 27% of patients presented with urinary tract infection (UTI), which were recurrent (>2 UTIs) in 10% of patients. 15 patients (16%) underwent a one-time urethrotomy of stricture at junction of the native and neourethra at an average of 32 months after second stage. One patient required a second internal urethrotomy. Five (5%) patients required a one-time meatoplasty for meatal stenosis at an average of 18 months after second stage. Seven (7%) patients underwent urethrocutaneous fistula repair at an average of 42 months after second stage. 33 (35%) patients required urethral diverticular repair at an average of 25 months after second stage. None had strictures distal to the diverticulum. 40 (42%) patients required no additional surgery after the second stage. In no instance was extragenital skin required for either initial or salvage surgery and no patients returned with residual chordee.**Conclusions:** The two-stage repair remains a reliable and safe option for the repair of proximal hypospadias with chordee. Neourethral diverticuli are the most common occurrence requiring surgery after two-stage repair. They may be unavoidable, given the use of lax preputial skin to reconstruct long neourethras. Fistula and stricture were less common and required a single minor intervention in almost all cases. In no instance was buccal mucosa needed for the initial repair or for the salvage of a “hypospadias cripple.”**P16****Pediatric renal transplant and subsequent ureteral re-implantation**Michelle Yu, Rajeev Chaudhry, Thomas W. Fuller, Glenn M. Cannon, Francis X. Schneck, Michael Ost, Christina R. Nguyen, Heidi A. Stephany
Children's Hospital of Pittsburgh of UPMC, Pittsburgh, PA, USA**Introduction:** Ureteral complications after pediatric renal transplantation include vesicoureteral reflux (VUR) and stricture, which can lead to graft failure. Management may require ureteral reimplantation (UR) of the transplanted ureter by a pediatric urologist. We aim to evaluate the rates and outcomes of UR of transplant ureters at a high-volume pediatric transplant center.**Methods:** A retrospective review of all pediatric renal transplant patients at a single institution who underwent UR from January 2006 to January 2016 was performed. Data included demographics, comorbidities, etiology of end-stage renal disease (ESRD), imaging, and history of urological disease.**Results:** A total of 172 renal transplants were performed during the study period, in which all ureteral anastomoses were performed by pediatric transplant surgeons (with 78% reported as non-refluxing). 67 patients (39%) had a urological etiology for ESRD, with posterior urethral valves as the predominant disease (35%). Nine patients (5.2%) underwent UR of the transplant ureter by a pediatric urologist. Median age at re-implant was 18.8 years (interquartile range [IQR] 9.5–19.5) and median time from transplant to UR was 1.8 years (IQR 1–2.8). There was a higher numberof UR in those with urological etiologies for ESRD as compared to those with non-urological causes (7 vs. 2; $p=0.01$). Of the seven patients with urological disease, three underwent creation of a vesicostomy in infancy and eventual takedown before time of transplant. All nine patients had pyelonephritis of the renal graft with a voiding cystourethrogram confirming VUR into the graft. Of these, five had grade V VUR. Six of seven patients had photopenia in the graft on a dimercaptosuccinic acid (DMSA) scan. Urodynamics were not performed in any of the nine patients. Eight (78%) had no further episodes of pyelonephritis after UR. Stent migration was reported in one patient. There were no alterations to graft function and creatinine levels post-re-implantation.**Conclusions:** Patients requiring ureteral re-implantation after renal transplantation were more likely to have an underlying urological etiology for ESRD. Preoperative workup, including urodynamics, may elucidate bladder function in those with urological disease and determine those at risk for VUR and subsequent pyelonephritis. The overall risk of ureteral re-implantation after transplantation is small (5.2%); however, patients and families, particularly those with underlying urological etiologies for ESRD, should be counselled accordingly during their pre-transplantation evaluation.**P17****Direction of rotation in testicular torsion and identification of new predictors of testicular salvage**Todd S. Yecies, Jathin Bandari, Francis X. Schneck, Glenn M. Cannon
University of Pittsburgh, Pittsburgh, PA, USA**Introduction:** Traditionally, it has been thought that in testicular torsion, the testicle rotates in a medial direction. In manual detorsion, the testicle is rotated laterally to counteract the anticipated medial rotation. Thus, if a patient has a lateral rotation of the testicle, manual detorsion carries the risk of increasing the degree of torsion, potentially increasing the degree of testicular ischemia. In order to quantify this risk, we assessed the frequency in which lateral testicular rotation occurs. Additionally, prior literature suggests that young age, duration of symptoms, and abnormal testicular echotexture have been associated with orchiectomy for testicular torsion. We aim to expand on existing literature in identifying additional predictors of testicular non-viability.**Methods:** We performed a retrospective review of 104 cases of emergent scrotal exploration performed for testicular torsion by three pediatric urologists from 2003–2017. Patients with neonatal torsion, negative scrotal exploration, or exploration for presumed intermittent testicular torsion were excluded. Additional variables collected included age, laterality, time to exploration, presence of gastrointestinal symptoms, testicular ultrasound characteristics, degree of torsion, transfer from outside hospital, and testicular salvage. Univariable logistic regression was performed to assess if any factors predicted direction of testicular rotation. Univariable and multivariable logistic regression was used to identify predictors of testicular salvage.**Results:** Of 104 cases of acute testicular torsion, information regarding the direction of testicular rotation was available in 81 patients. Lateral testicular rotation occurred in 38 cases (46%). No factors were found to be predictive of direction of torsion, including age ($p=0.84$), laterality ($p=0.15$), gastrointestinal symptoms ($p=0.12$), and ultrasound characteristics, such as testicular size differential ($p=0.14$), presence of hydrocele ($p=0.54$), or abnormal echotexture ($p=0.78$). Orchiectomy for testicular non-viability was performed in 50/104 cases (48%). On univariable analysis, younger age ($p=0.002$), absence of gastrointestinal symptoms ($p=0.02$), time to exploration ($p\leq 0.001$), testicular size differential on ultrasound ($p=0.002$), absence of hydrocele ($p=0.01$), abnormal echotexture ($p\leq 0.001$), and degree of torsion ($p=0.04$) were associated with orchiectomy. On multivariable analysis, younger age ($p=0.03$), time to exploration ($p\leq 0.001$), testicular size differential ($p=0.04$), absence of hydrocele ($p=0.01$), abnormal echotexture ($p\leq 0.001$), and degree of torsion ($p=0.03$) were associated with orchiectomy.**Conclusions:** Testicular rotation occurs in a lateral direction in 46% of cases. No predictive factors for identifying direction of torsion were identified. Lateral manual detorsion should be performed only with awareness

of the potential for increasing the degree of testicular rotation. Several new independent predictors of testicular salvage were identified.

P18

Predicting urinary tract infections in infants with prenatal hydronephrosis: Application of artificial intelligence and machine learning algorithms

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Introduction: The accurate prediction of urinary tract infections (UTIs) can guide the management of infants with prenatal hydronephrosis (HN). Although statistical methods have classically been used, machine learning (ML) is emerging as a tool for the analysis of big data in a semi-automated and adaptive manner. Herein, we trained and compared multiple ML algorithms for the prediction of UTIs in infants with prenatal HN.

Methods: A prospective dataset of 570 infants referred for prenatal HN was examined. We employed multiple supervised ML algorithms trained with demographic, clinical, and imaging features in a hypothesis-free manner to build models that could identify infants who would develop a UTI outcome.

Results: Our ML models were able to predict risk of UTI with accuracy scores that ranged between 0.807 and 0.903 and area under the curve scores between 0.441 and 0.717. The K nearest neighbor algorithm (K=11) had the highest mean accuracy score (0.903), while the logistic regression model had the highest mean area under the curve score (0.717) for our patient cohort.

Conclusions: Some ML techniques can accurately predict UTIs and may provide useful clinical information in infants with prenatal HN. These findings suggest the potential applicability of ML to support clinical decision-making in the field of pediatric urology.

Moderated poster session 2: Basic science/Education Thursday, October 12, 2017 10:30 am–12:00 pm

P19

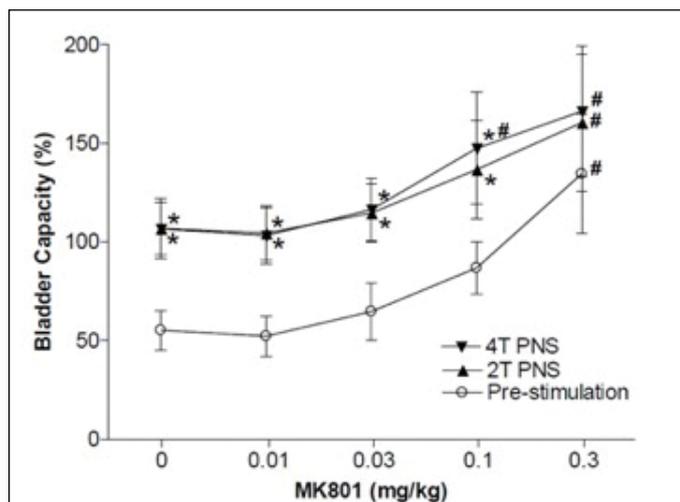
Glutamatergic mechanisms involved in bladder overactivity and pudendal neuromodulation in cats and pudendal neuromodulation in jamie

Jamie Uy¹, Michelle Yu¹, Xuewen Jiang², Cameron Jones¹, Bing Shen¹, Jicheng Wang¹, James R. Roppolo¹, William C. de Groat¹, Changfeng Tai¹
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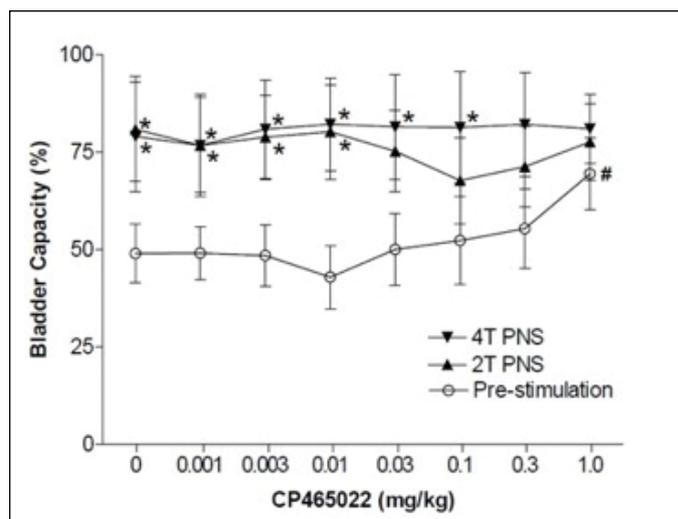
Introduction: Overactive bladder (OAB) affects approximately 33 million adults in the US. Current pharmacotherapies are limited by low efficacy and significant side effects. Pudendal neuromodulation is an alternative treatment for OAB, although the underlying mechanisms are not fully understood. This study aims to examine the contribution of NMDA and AMPA receptors to pudendal neuromodulation of bladder overactivity.

Methods: Bladder overactivity was induced by intravesical infusion of 0.5% acetic acid (AA) in 10 cats, with pudendal nerve stimulation (PNS) used to inhibit the bladder. Then MK 801 (a NMDA receptor antagonist) or CP465022 (an AMPA receptor antagonist) was administered intravenously to determine the involvement of ionotropic glutamate receptors in bladder overactivity and pudendal neuromodulation.

Results: In the first group of five cats, AA irritation significantly ($p < 0.05$) reduced bladder capacity to $55.3 \pm 10.0\%$ of saline control. Pudendal nerve stimulation (PNS) at two- or four-times threshold (T) intensity for inducing anal twitching significantly ($p < 0.05$) increased bladder capacity to $106.8 \pm 15.0\%$ and $106.7 \pm 13.3\%$ of saline control, respectively. MK 801 at 0.3 mg/kg prevented the increase in capacity by 2T or 4T PNS. In the second group of five cats, AA irritation significantly ($p < 0.05$) reduced



P19. Fig. 1. Summarized results showing bladder capacity at different cumulative doses of MK801. Bladder capacity was normalized to the capacity measured during saline infusion before any drug treatment or pudendal nerve stimulation (PNS). *Significantly ($p < 0.05$) different from pre-stimulation data at each dosage (two-way ANOVA); #significantly ($p < 0.05$) different from the untreated condition in the same data group (one-way ANOVA). N=5 cats. PNS (5 Hz, 0.2 ms, T=0.16–0.6 V).



P19. Fig. 2. Summarized results showing bladder capacity at different cumulative doses of CP465022. Bladder capacity was normalized to the capacity measured during saline infusion before any drug treatment or pudendal nerve stimulation (PNS). *Significantly ($p < 0.05$) different from pre-stimulation data at each dosage (two-way ANOVA); #significantly ($p < 0.05$) different from the untreated condition in the same data group (one-way ANOVA). N=5 cats. PNS (5 Hz, 0.2 ms, T=0.16–0.6 V).

bladder capacity to $49.0 \pm 7.5\%$ of saline control. PNS at 2T and 4T significantly ($p < 0.05$) increased bladder capacity to $80.8 \pm 13.5\%$ and $79.0 \pm 14.0\%$ of saline control, respectively (Fig. 1). CP465022 at 0.03–1 mg/kg prevented the increase in capacity by 4T PNS and at 0.3–1 mg/kg prevented the increase in capacity by 2T PNS and at 0.3–1 mg/kg and CP465022 at 1 mg/kg significantly ($p < 0.05$) increased the pre-stimulation bladder capacity (about 80% and 20%, respectively) and reduced the amplitude of bladder contractions (about 30 cmH₂O and 20 cmH₂O, respectively) (Fig. 2).

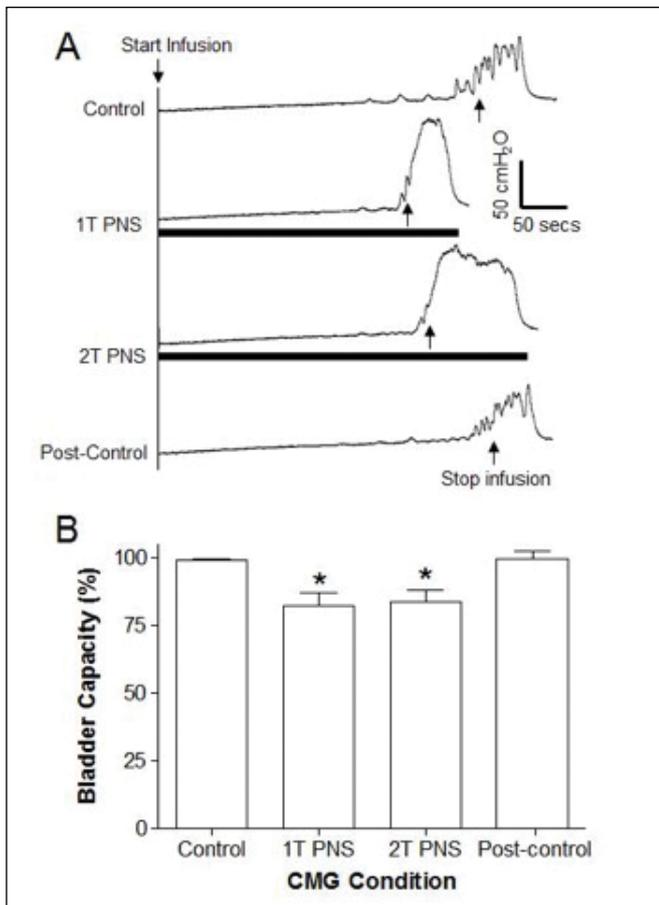
Conclusions: These results indicate that NMDA and AMPA glutamate receptors play an important role in PNS inhibition of bladder overactivity and that tonic activation of these receptors also contributes to the bladder overactivity induced by AA irritation. Further studies are needed to help assess the clinical implications for neuromodulation therapy for OAB.

P20

An excitatory reflex from superficial peroneal nerve to bladder in cats

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Introduction: Underactive bladder (UAB) is a symptom complex suggestive of detrusor underactivity and characterized by prolonged urination time with or without a sensation of incomplete bladder emptying, usually with



P20. Fig. 1. Effect of superficial peroneal nerve stimulation (PNS) on bladder capacity. **(A)** Repeated CMG tracings with/without PNS. The black bar under the bladder pressure tracing indicates the duration of PNS (1 Hz, 0.2 ms, T=8 V). T = threshold intensity to induce observable muscle twitch on the posterior thigh. Infusion rate = 2 ml/minute; **(B)** summarized results (N=8 cats). Bladder capacity was normalized to the control capacity. *Significantly ($p < 0.05$) different from the control capacity (one-way ANOVA). PNS (1–3 Hz, 0.2 ms, T=1.4–20 V).

hesitancy, reduced sensation on filling, and a slow stream. The prevalence of UAB is about 25–40% in >60 years old population and as many as 48% of the older men and 45% of older women show detrusor underactivity during urological evaluation. The impact of severe UAB on quality of life is significant, requiring intermittent self-catheterization or an indwelling suprapubic catheter to drain the bladder when urinary retention occurs. Currently, it is a therapeutic challenge for clinicians to successfully treat UAB, leaving the majority of UAB patients untreated.

Methods: Under alpha-chloralose anesthesia, a urethral catheter was used to infuse the bladder with saline and record bladder pressure changes. Electrical stimulation was applied to the superficial peroneal nerve to trigger a peroneal to bladder reflex by a cuff electrode or skin surface electrodes. Tibial nerve stimulation (TNS) or 30-minute duration was used to induce post-TNS inhibition, mimicking bladder underactivity.

Results: With the bladder distended at a volume about 90% of bladder capacity, the superficial peroneal nerve stimulation (PNS) at 1–3 Hz and threshold (T) intensity for inducing muscle twitching on the posterior thigh induced large amplitude (40–150 cmH₂O) bladder contractions. PNS (1–3 Hz, 1–2T) applied during cystometrograms (CMGs) when the bladder was slowly (1–3 ml/min) infused with saline, significantly ($p < 0.01$) reduced bladder capacity to about 80% of the control capacity and significantly ($p < 0.05$) enhanced reflex bladder contractions. During

the post-TNS inhibition period, PNS (1–3 Hz, 1–4T) applied during CMGs completely restored bladder capacity to the control level and significantly ($p < 0.05$) increased the duration of reflex bladder contractions to about 200% of control (Fig. 1). The excitatory peroneal-to-bladder reflex could also be activated by transcutaneous PNS using skin surface electrodes attached to the dorsal surface of the foot. When the bladder is distended at a volume about 90% of the bladder capacity, electrical stimulation (30 seconds, 2–4T, T= 3–7 V) applied to the dorsal skin surface of left foot activated the superficial peroneal nerve and induced large bladder contractions (50–100 cmH₂O) at frequencies of 0.5–3 Hz. On average, the foot stimulation at 1–2 Hz produced significantly ($p < 0.05$) larger bladder contractions than the contractions elicited by other frequencies. **Conclusions:** The excitatory peroneal-to-bladder reflex could also be activated by transcutaneous PNS using skin surface electrodes attached to the dorsal surface of the foot. These results raise the possibility of developing novel neuromodulation therapies to treat underactive bladder and non-obstructive urinary retention.

P21

Plasminogen activator inhibitor-1 (PAI-1) expression promotes tubular dysfunction in renal fibrosis

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Introduction: Plasminogen activator inhibitor-1 (PAI-1), overexpressed in tubular and interstitial cells during obstructive uropathy as seen in nephrolithiasis or ureteral stricture, is associated with renal fibrotic progression; however, precise mechanisms of how PAI-1 contributes to kidney injury progression are unknown. Surprisingly, in the kidney, PAI-1 contribution to fibrosis is uPA independent. Here, we test the hypothesis that PAI-1 overexpression in renal epithelial cells promotes dedifferentiation, growth inhibition, and fibrotic factor induction, ultimately leading to renal tubular dysfunction.

Methods: PAI-1 stably overexpressing HK-2 human kidney epithelial cells were created via lentiviral transduction to mimic persistent renal epithelial PAI-1 expression in ureteral obstruction. Stable cultures overexpressing PAI-1 were selected and maintained in puromycin media. Using Western blot, we analyzed expression levels and evaluated markers of fibrogenesis compared to non-PAI-1-overexpressing control cell lines. Morphological assessments and changes in cell growth were analyzed by microscopy and cell count analysis.

Results: PAI-1 stably overexpressing epithelial cells had a fibroblast appearance relative to control transductants, which maintained a typical cuboidal morphology. PAI-1 overexpression lead to gain of mesenchymal markers (fibronectin, vimentin, α -smooth muscle actin) and loss of epithelial markers (E-cadherin), as seen on Western blot. PAI-1 overexpression was associated with 50% growth inhibition compared to similarly seeded control transductants. Overexpression also promoted upregulation of the cell cycle arrest gene p21. PAI-1 induced fibrotic response seems to be dependent on SMAD3 activation, as SMAD3 inhibitor SIS3 attenuated induction of fibronectin by PAI-1 overexpression.

Conclusions: PAI-1 overexpression renders a dedifferentiated, fibrotic, and growth inhibited phenotype. Thus, targeted strategies to inhibit renal PAI-1 overexpression during kidney injury may represent a novel anti-fibrotic strategy.

P22

Comprehensive immune transcriptomic analysis in bladder cancer reveals subtype-specific immune gene expression patterns

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Introduction: Genome-wide profiling studies across cancers have been key to the increased understanding of tumor heterogeneity and recent efforts from large muscle-invasive bladder cancer (MIBC) cohorts have led to their classification into molecular subtypes displaying distinct genomic and transcriptomic features. Herein, we performed a comprehensive in silico immune transcriptomic profiling using publicly available datasets to identify immune gene expression patterns associated with molecular subtypes of MIBC.

Methods: We used the publicly available global transcriptomic sequencing (RNA-Seq) data from 412 MIBC cases, with the corresponding clinical information downloaded from The Cancer Genome Atlas (TCGA) data portal. Cases were divided into discovery (n=122) and validation (n=245) cohorts for downstream analysis and were divided into four previously described clusters based on their genomic profiles. To investigate the presence of subtype-associated immune gene expression patterns, we assembled a defined set of 828 immune-related genes, primarily consisting of genes involved primarily in Type I and II interferon pathways, in addition to other immune response and immune cell phenotype genes. All downstream data analysis was performed in R Bioconductor statistical environment. Gene expression data was \log_2 -transformed, median centered, and visualized using R heatmap.2 function. A one-way ANOVA was used to determine significantly differentially expressed genes with a Benjamini and Hochberg correction for false-discovery rate (FDR) correction of $q < 0.05$.

Results: In the 122-case discovery cohort, we identified a total of 452 genes differentially expressed among the four clusters with an FDR $q < 0.05$. The performance of these differentially expressed genes to accurately distinguish the four TCGA clusters was evaluated by unsupervised clustering of both genes and samples. The 64 top 20% of ranked genes were able to distinguish the four clusters in an unsupervised analysis of both the discovery and validation cohorts. The most enriched biological processes in the 452 gene list were response to IFN- γ , antigen processing and presentation, cytokine-mediated signalling, cell proliferation, NK cell and macrophage activation, and B cell-mediated immunity. The top five overrepresented pathways included, JAK/STAT signalling pathway, Toll receptor signalling pathway, interleukin signalling pathway, and T cell activation. Kaplan-Meier survival analysis revealed that in combination, higher expression of three genes, *SA100A7*, *S100A8*, and *SERPINB2* significantly associated with decreased survival only between clusters I and III in both discovery and validation cohorts.

Conclusions: Recent evolving findings from completed immunotherapy based clinical trials have emphasized the value of pre-existing tumor immune state that potentially determines response to treatment and survival. Our analyses reveal a grouping of immune gene expression patterns using both supervised and unsupervised clustering approaches. Given that specific genetic alterations associate with these molecular subtypes it seems that anti-tumor immune responses could be partly driven by oncogenic drivers. The findings provide further insights into the association between genomic subtypes and immune activation in MIBC and may open novel opportunities for their exploitation towards precise treatment with immunotherapy.

P23

Tertiary lymphoid structures in the tumor immune microenvironment of bladder cancer

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Introduction: Bladder tumors show extensive lymphocytic infiltration and therefore a good model to study the immunopathological distributions of immune cells to determine their prognostic associations. Extensive research in tumor immunology has focused on the role of T helper type 1 immune response led by cytotoxic T lymphocytes; however, the contribution of B-cell biology and associated T helper type 2 responses to tumor growth and metastasis is poorly understood in bladder cancer. Lymphoid neogenesis is a hallmark of an active immune response at tumor sites that sometimes leads to formation of ectopic/tertiary lymphoid structures (TLS) that have remarkable similarities to germinal center reactions formed during a classical immune response. Given the growing evidence on the role of B cell-associated anti-tumor, this study was conducted with an aim to investigate the presence and characteristics of TLS in bladder cancers, with a focus to compare and contrast the TLS response in treatment naive TaLG and T2HG bladder cancers.

Methods: The discovery cohort consisted of transurethral bladder resection tumor specimens from 28 patients. There were 12 patients in the TaLG group (10 males, two females); and 16 patients in the T2HG group

(15 males, one female). Lymphocytic infiltration in formalin-fixed specimens was initially confirmed by evaluation of hematoxylin and eosin stained formalin-fixed sections of the transurethral resection of bladder tumor (TURBT) specimens. Sections showing lymphoid aggregates were further subjected to a six-color immunohistochemistry for CD20+ B cells, CD3+ and CD8+ T cells, PNA⁺, CD208+, CD21+ dendritic cells to confirm the hallmarks of a germinal center.

Results: For the first time, we discovered definitive TLS in various stages of formation in a subset of higher-grade bladder cancer cases. The developmental continuum of TLS formation was noted in only via six-color IHC for all markers defining TLS and not by mere evaluation of H&E stained section. Our pilot study investigating the presence and characteristics of TLS in bladder cancer patients is the first to demonstrate that well-formed TLS are more common in T2HG tumors compared to TaLG tumors.

Conclusions: These findings are suggestive of B cell-mediated immune response in bladder cancer progression. An in-depth evaluation of B cells and associated antibody signatures will reveal novel information on neo-epitopes that are putatively seen by the B cells in bladder cancer.

P24

Effects of purified omega-3 fatty acid supplements on prostate cancer

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Introduction: Chronic inflammation is one of the contributing factors to prostate cancer (PCa). Anti-inflammatory omega (Ω)3 fatty acids (FA) appear promising against PCa, but Ω 3 subtypes or mechanisms driving these effects remains unknown. Our objectives were to study the effects of purified Ω 3 as compared to Ω 6 and Ω 9 supplements, on tumor growth, immune response and tumor gene expression in a murine PCa model.

Methods: 12 C57BL/6 mice per group were fed with a low-fat diet. In addition, purified monoglycerides of FAs, i.e., Ω 3-eicosapentaenoic acid (EPA), Ω 3-docosahexaenoic acid (DHA), Ω 6-arachidonic acid (AA), or Ω 9-rich high-oleic sunflower oil (HOSO) as a control, were administered daily by oral gavage until animal sacrifice. After two weeks of gavage, 2×10^6 TRAMP-C2 mouse PCa cells were implanted subcutaneously on each mouse flank. Tumor growth was measured every other day until sacrifice, i.e., when tumor volume reached 2 cm³. Blood and tumors were then collected. Red blood cells and tumors were analyzed for FA incorporation using capillary gas-liquid chromatography. Tumors were analyzed for cytokine profile using BioPlex Pro™ 23-plex and for gene expression transcriptome using high-throughput RNA sequencing.

Results: We measured a substantial incorporation of the specific FA of each group into red blood and tumor cells. Tumors of EPA-fed mice had a slower growth than HOSO-fed control mice, thus improving survival time. Tumors of DHA-fed mice and AA-fed mice did not grow significantly different as compared to control mice. Pro-inflammatory cytokines IL1b, IL3, IL5, IL10, KC (IL8), and TNF were expressed at a significantly lower level in tumors of Ω 3 EPA-fed mice compared to Ω 6 AA-fed mice. Principal component analysis (PCA) of gene expression showed that only EPA-fed mice group was distinct from the others. 63 genes were differentially expressed in tumors of this specific group compared to other groups. Top hits were angiogenesis markers, such as Kdr and Lrg1, all down-regulated in EPA-fed mouse tumors. Gene enrichment analysis also showed the angiogenesis pathway as the main pathway of down-regulated genes in EPA-fed mice group.

Conclusions: Dietary Ω 3 supplements of purified EPA reduce prostate tumor growth more effectively than DHA, the other anti-inflammatory Ω 3. This seems to be achieved by generating a better anti-cancer immune response and angiogenesis inhibition. EPA supplements appear the best FA intervention to be tested in PCa patients.

P25**Effects of zinc chelation and supplementation in presence of vitamin D, testosterone, and retinoic acid on growth of prostate cancer cells**Adam Schatz¹, Wei-Lin Wang², Martin Tenniswood², Charles Welliver³¹Albany Medical Center, Albany, NY, USA; ²SUNY University at Albany Cancer Research Center, Albany, NY, USA; ³Stratton VA Medical Center, Albany, NY, USA

Introduction: Zinc is an important micronutrient in normal prostate cells, with concentrations approximately 15 times that of any other cell in the body. Zinc concentration in prostate cancer cells is much lower than that in healthy prostate cells. Therefore, intracellular zinc levels may be an important modifier of cancer biology in the prostate. Previous work has shown that physiologic levels of vitamin D (D), testosterone (T), and 9-cis retinoic acid (RA) have an effect on expression of zinc transporters in prostate cancer cells, suggesting supplementation of these hormones may alter the responses of cancer cells to zinc chelation and supplementation.

Methods: This study interrogates the effects of zinc chelation and supplementation on two isogenic prostate cancer cell lines: the early aggressive LNCaP cells and the late aggressive C4-2b cells. The responses of these cells to D, T, and RA in the setting of zinc chelation by N,N,N',N'-Tetrakis(2-pyridylmethyl)ethylenediamine (TPEN) and zinc supplementation by zinc pyrithione (ZnP) are assessed by crystal violet assay to measure cell number.

Results: ZnP mediated import of zinc inhibits cell number in both LNCaP (IC50 ≈ 310 nM) and C4-2b (IC50 ≈ 90 nM) cells. Addition of T, D, and RA increases IC50 for both LNCaP (≈ 584 nM) and C4-2b (≈ 131 nM) cells. TPEN mediated chelation of zinc inhibits cell growth in both LNCaP (IC50 ≈ 6.3 μM) and C4-2b (IC50 ≈ 10.0 μM) cells. Addition of T, D, and RA increases IC50 in LNCaP (IC50 ≈ 70.0 μM) cells but not in the C4-2b cell line (IC50 ≈ 6.3 μM).

Conclusions: The late aggressive C4-2b cell line is more sensitive to both zinc chelation and supplementation than the early aggressive LNCaP cell line. Supplementation of D, T, and RA appears to provide a limited protective function to LNCaP cells against both zinc chelation and supplementation; however, this phenomenon is restricted to zinc supplementation in the C4-2b cell line. Since both early and late aggressive prostate cancer cells are sensitive to TPEN and ZnP treatment, manipulation of intracellular zinc levels may be a potential target for prostate cancer therapy or prevention. In addition, the diminished protective effect of D, T, and RA on late aggressive C4-2b cells suggests a loss of hormone-regulated homeostatic control of zinc transport as prostate cancer progresses.

P26**Twitter analytics are a poor proxy for predicting physician prescribing habits**Austin Lee¹, Omar Ayyash², Jathin Bandari², Nathan Hale², Bruce L. Jacobs², Benjamin J. Davies²¹University of Pittsburgh, Pittsburgh, PA, USA;²University of Pittsburgh Medical Center, Pittsburgh, PA, USA

Introduction: Social media may serve as a new outlet for healthcare providers to learn about new medical treatments. In August 2012, the FDA approved enzalutamide as a treatment for metastatic castration-resistant prostate cancer. Using enzalutamide as a proxy for knowledge dissemination, we examine if Twitter is a channel for medical professionals to learn about medications and subsequently influence their prescribing habits.

Methods: Using the 2013 Medicare Provider Utilization and Payment Data: Part D, Prescriber List, we identified 665 oncologists that prescribed enzalutamide. We then identified 24 physicians

with Twitter accounts through a Boolean search through the Google search engine. The primary outcome was total Medicare cost of enzalutamide. The secondary outcome was total claim count of enzalutamide.

Results: The total drug cost of enzalutamide was similar between prescribing oncologists with and without Twitter accounts (\$143 000 vs. \$162 000; p=0.55) (Fig. 1). Oncologists with Twitter accounts had a similar number of claim counts of enzalutamide compared to oncologists without Twitter accounts (17.5 vs. 20.7; p=0.38).

Conclusions: These findings suggest that having a Twitter account does not influence the number of enzalutamide prescriptions given out by oncologists. While Twitter may be a way to learn about new medical advancements, Twitter does not appear to be a driver of prescription habits.

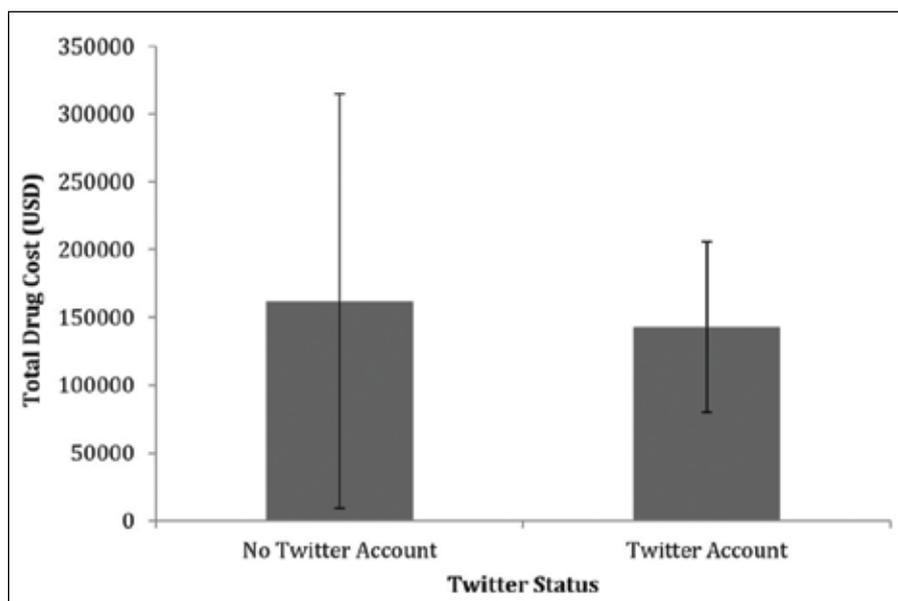
P27**Management of the post-pubertal undescended testis: An updated risk analysis**Ankur Shah¹, Paul Feustel², Jennifer Knuth³, Charles Welliver⁴¹Albany Medical College, Albany, NY, USA; ²Albany Medical College,

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Introduction: The undescended testicle (UDT) presents a problem in post-pubertal (PP) men, as it carries an increased risk of developing a testicular germ cell tumor (GCT). Management of the PP patient with an UDT must weigh the relative risk of perioperative mortality (POM) to remove the UDT against the lifetime risk of death from developing a GCT. The most recent analysis of this management dilemma is 15 years old and uses now outdated data. In their paper, investigators found that men who are healthy (ASA 1 or 2) should be advised to undergo orchiectomy, while those older than 50 should be advised to remain under close observation; however, newer studies on the prevalence of UDT, GCT mortality rates and POM risk may change this recommendation. We undertook an update to this previous report, as these more contemporary data may establish new criteria in the management of the PP UDT.

Methods: The most recent data on GCT mortality in the US were obtained from the National Center for Health Statistics. The lifetime risk of death from GCT in the male population was calculated for each five-year interval. Standard life tables were used to calculate the cumulative risk over a man's lifetime based on the age at presentation. The prevalence of UDT in PP males and the percentage of men with GCT who have a history of



P26. Fig. 1. Mean total drug cost of enzalutamide by prescribing physicians in 2013.

UDT were identified through literature search. The relative risk of GCT in men with UDT was expressed as the ratio of observed to expected prevalence of UDT among patients with GCT. The prevalence of UDT in GCT men was calculated as a weighted value based on the number of patients in each individual study. As there is no orchiectomy-specific POM data, we used data from patients undergoing similar ("low-risk") surgical procedures stratified by ASA class. Orchiectomy was considered a low-risk procedure based on the Cleveland Clinic cardiac risk stratification for non-cardiac surgery. Mortality rates were plotted to determine the age when ASA class specific POM exceeds the risk of mortality from GCT. **Results:** Lifetime risk of dying from GCT decreases with increasing age. POM exceeded risks of death from GCT for men after age 50 for ASA class 1 and age 35 for ASA class 2. Men with an ASA class 3 or greater have a higher risk of POM compared to GCT for all ages.

Conclusions: Previous evaluations in the management of men with PP UDT required updating. We found different ages can guide decision-making compared to the previous report. Thus, we advocate for prophylactic orchiectomy only in men who are under 50 years if ASA class 1 and under 35 years if ASA class 2. Men with an ASA class higher than 3 should always undergo observation.

P28

Prospective, randomized, controlled study of five-year results on prostatic urethral lift (PUL)

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Introduction: The prostatic urethral lift (PUL) is a rapidly delivered, durable, minimally invasive technology that mechanically addresses lower urinary tract symptoms (LUTS) secondary to benign prostatic hyperplasia (BPH). We present the five-year data from the largest prospective, multicenter, randomized, controlled study on PUL.

Methods: The PUL procedure involves transurethrally placing permanent UroLift® implants into the prostate to lift the lateral lobes away from the urethral lumen, reducing obstruction at the bladder outlet. Study enrollment criteria included age ≥ 50 years, International Prostate Symptom Score (IPSS) ≥ 13 , peak flow rate ≤ 12 ml/s, and prostate volume 30–80 cc. 206 men with symptomatic LUTS were randomized to PUL (n=140) or sham control (n=66) at 19 centers. Patients and assessors were kept blinded to treatment arm for three months. Assessments for PUL subjects continued through five years and included IPSS, quality of life (QoL), BPH Impact Index (BPH II), peak flow rate (Qmax), and adverse event reporting.

Results: The active treatment arm PUL cohort experienced symptom relief by one month (IPSS 44% and QoL 42%; $p < 0.001$) and remained improved through five years (IPSS 38% and QoL 54%; $p < 0.001$). Qmax remained improved 41% at five years. Adverse events were typically mild to moderate and transient in nature. Sexual function was preserved, as assessments show stable erectile function average score and improved ejaculatory function and ejaculatory bother average scores ($p < 0.001$). Further, no patient was found to experience new-onset, sustained erectile or ejaculatory dysfunction.

Conclusions: This long-term data on the PUL procedure demonstrates that this out-patient, minimally invasive, mechanical approach improves symptoms rapidly and durably. QoL, BPH II, and Qmax improvements are sustained. Erectile and ejaculatory function are preserved, as assessed by sexual function questionnaires and adverse event reporting. The final five-year analysis of this large study indicates stable symptom relief, minimal adverse effects, and further encourages PUL as a strong consideration treatment for obstructive BPH.

P29

Is testosterone an independent risk factor for nephrolithiasis? Results from NHANES

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Introduction: Low testosterone is increasing in prevalence in the US population and has been shown to be intimately linked with metabolic syndrome. Components of metabolic syndrome are known to increase the risk of nephrolithiasis; however, there is mixed literature on the effect testosterone levels may have in kidney stone risk. We hypothesize that higher testosterone levels will be associated with lower risk of nephrolithiasis.

Methods: The NHANES database was queried for all men from the years 2011–2012. Only men that had complete information regarding testosterone levels and kidney stone history were included. Men were stratified into two groups based on those that reported a history of kidney stone and those that did not. Demographics and medical history was compared between the groups using t-test and chi-square analysis for continuous and categorical variables, respectively. A multivariable logistic regression was performed to determine what effect testosterone level had in nephrolithiasis when adjusting for other factors.

Results: A total of 2737 men were available for analysis and 244 men reported a history of nephrolithiasis. The estimated stone prevalence in this population was 8.4% (95% confidence interval [CI] 6.8–10.3%). Patients that reported a kidney stone had significantly lower testosterone levels and on logistic regression higher testosterone levels were associated with a decreased risk of nephrolithiasis ($p < 0.0001$). On univariate analysis age, obesity and gout were associated with an increased risk of nephrolithiasis. When adjusting for these factors, higher testosterone level was associated with a lower rate of nephrolithiasis ($p = 0.02$).

Conclusions: When adjusting for factors known to be associated with nephrolithiasis, it appears that higher testosterone levels may be related to lower rates of kidney stones. With the increasing rates testosterone replacement therapy, it is possible that this may lower incidence of nephrolithiasis and warrants further study.

P30

Transurethral convective radiofrequency water vapor thermal therapy for symptomatic benign prostatic hyperplasia: Two-year outcomes of a randomized, controlled, and prospective crossover study

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Introduction: To report two-year outcomes of a multicenter, randomized, controlled trial (RCT) plus one-year results of a crossover trial after transurethral treatment using radiofrequency (RF)-generated convective water vapor thermal energy (Rezūm System) for lower urinary tract symptoms (LUTS) due to benign prostatic hyperplasia (BPH). Thermal water vapor injections were targeted to defined prostate zones including median lobe to achieve rapid tissue ablation.

Methods: In 15 centers, men ≥ 50 years old with International Prostate Symptom Score (IPSS) ≥ 13 , maximum flow rate (Qmax) ≤ 15 ml/s, and prostate volume 30–80 cc were randomized 2:1 to thermal therapy with the Rezūm System and control. Rigid cystoscopy with simulated active treatment sounds served as the control procedure. After unblinding at three months, control subjects were requalified for the crossover study. Thermal water vapor was injected into obstructive prostate tissue. The primary endpoint compared IPSS reduction at three months.

Results: Thermal therapy group (n=136) had a baseline IPSS of 22 ± 4.8 that decreased 11.3 points, compared to the control group (n=61) decrease of 4.3 points at three months vs. baseline 21.9 ± 4.7 ($p < 0.0001$); responses remained durable with 51% improvements at two years ($p < 0.0001$). Approximately 75% of all participants had severe LUTS (IPSS ≥ 19). Rezūm treatment provided a ≥ 5 - (moderate) and ≥ 8 -point (marked) IPSS decrease in 84% and 74% of men throughout 24 months, respec-

tively. Mean Qmax (9.9 ± 2.3 ml/s at baseline) and quality of life (QoL) measures improved by >50% at three months and remained significant and sustained over two years, $p < 0.0001$. Crossover subjects ($n=53$) had IPSS, Qmax, and QoL measures markedly improved after thermal therapy compared to the prior control procedure ($p < 0.024$ to < 0.0001). The median lobe was treated with thermal therapy in 58 of 188 (31%) men in RCT and crossover studies; subjects with and without median lobe treatment had similar reduced IPSS and improved Qmax. Sexual function assessments with the International Index of Erectile Function and Male Sexual Health Questionnaire (MSHQ-EJED) remained stable. No de novo erectile dysfunction was reported. Adverse events, such as dysuria and hematuria, were typically mild and transient.

Conclusions: Convective RF water vapor thermal therapy is a minimally invasive outpatient procedure requiring minimal anesthesia to achieve early, clinically meaningful LUTS relief that remains durable for at least two years and is applicable to the median lobe. Patients experience minimal morbidity. Rezūm thermal therapy conserves sexual function and presents an attractive alternative for men exploring a non-surgical option for moderate to severe LUTS/BPH.

P31

Phenazopyridine: An easier way to identify ureteral orifices

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Introduction: Urologists commonly use intravenous methylene blue to identify ureteral orifices (UOs) intraoperatively; however, waiting for excretion of methylene blue can increase operating time. Additionally, at high doses it can induce methemoglobinemia and interfere with pulse oximetry. Phenazopyridine is a commonly prescribed urinary analgesic that discolors the urine orange. It can be administered orally preoperatively and is very safe for short-term use. We evaluated the utility of phenazopyridine in identifying the UOs and the optimal timing of administration.

Methods: Adult patients undergoing urological endoscopic procedures at the Stratton VA were prospectively enrolled. Preoperative metabolic panels were reviewed. Exclusion criteria were: renal insufficiency (CrCl < 50 ml/min), severe hepatitis or severe liver disease, G6PD deficiency, previous hypersensitivity to phenazopyridine, or pregnancy. In Phase 1, patients undergoing office flexible cystoscopy were administered 200 mg phenazopyridine the morning of the procedure. Due to the robust orange color of the urine, Phase 2 was implemented. In Phase 2, patients undergoing rigid cystoscopy in the operating room took 200 mg phenazopyridine at 7:00 pm the night before surgery. Upon entry into the bladder, UOs were identified and urine color was graded (0=no dye, 1=weak, 2=moderate, 3=strong). Patients were assessed postoperatively for side effects.

Results: 23 patients met inclusion criteria and were enrolled in the study. In Phase 1, 12 patients were enrolled, six of whom were excluded. Mean time from phenazopyridine dose to cystoscopy was 180 minutes. One-third of patients had excretion of Grade 3 orange urine, which obscured inspection of the bladder mucosa. Therefore, study design was adjusted and we transitioned to Phase 2. 11 patients were enrolled in Phase 2, only one was excluded. Mean time between phenazopyridine dose and cystoscopy was 920 minutes. 80% of patients had Grade 2 efflux from the UOs, and only one patient had Grade 0 efflux. No patient in Phase 2 had Grade 3 efflux. No adverse events were reported.

Conclusions: Phenazopyridine can successfully identify UOs at time of endoscopic procedure. Given the robust orange color produced, we recommend administration the evening prior to procedure.

P32

Compliance and factors associated with compliance when utilizing a home-based post-vasectomy sperm test

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Introduction: Approximately 350 000 men undergo a vasectomy annually in the US. AUA guidelines recommend a post-vasectomy semen analysis (PVSA) to confirm sterility; however compliance is low, with roughly 50% of patients providing required PVSA. In effort to improve patient compliance, we recently began using a home test PVSA, as we believe this will be more convenient for patients. In this study, we analyze patient compliance with this new type of testing and identify for factors that affect compliance.

Methods: We retrospectively identified patients who underwent a vasectomy between December 2014 and January 2017 by two surgeons at our institution. Each patient was offered purchase of a home immunochromatographic PVSA kit (SpermCheck[®]). Compliance was ascertained via monthly reports generated by patient-vendor communication documenting purchase and completion. As part of a quality control initiative, we obtained demographic data from our medical records including age at vasectomy, insurance type, geographic location (zip code), body mass index (BMI), number of children, and whether or not a postoperative call or visit occurred. Group comparison was by t-test or chi-square, with outcome predictors evaluated by logistic regression.

Results: We identified 285 patients who underwent a vasectomy by two surgeons at our institution, 149 patients who underwent vasectomy by Surgeon 1, and 136 patients who underwent a vasectomy by Surgeon 2. Compliance with required PVSA was at 36%. Age at vasectomy ($p=0.025$), number of children ($p=0.022$), and surgeon ($p=0.022$) were found to influence PVSA compliance. The completion of PVSA was increased by a factor of 1.04 per year of age at which vasectomy was performed (95% confidence interval [CI] 1.01–1.08). The completion of PVSA was decreased by each child by a factor of 0.70 (95% CI 0.56–0.87). Patients treated by Surgeon 2 were less likely to complete PVSA than Surgeon 1 (odds ratio [OR] 0.56; 95% CI 0.34–0.92). No significant difference was found between patient zip code, insurance type, BMI, or if a postoperative call was placed.

Conclusions: At our institution, compliance with PVSA home test was low. Age at vasectomy, number of children, and surgeon were found to influence PVSA completion rate. These findings may help surgeons identify groups at higher risk for non-compliance with completion of a PVSA and improve patient counselling pre-vasectomy.

P33

Predictors of postoperative urinary incontinence after holmium laser enucleation of the prostate: Short and intermediate followup

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Introduction: Overactive bladder (OAB) symptoms and benign prostatic hyperplasia (BPH) are commonly associated. Bladder outlet surgeries for BPH have been shown to involve various rates of postoperative OAB symptoms and urinary incontinence (UI): usually transient and associated with either stress or urge. To improve patient counselling and anticipated management of postoperative symptoms at short (0–6-month) and intermediate (6–12-month) followup, we sought to identify pre- and peri-operative factors associated with postoperative UI after holmium laser enucleation of the prostate (HoLEP).

Methods: We retrospectively reviewed our single-center, single-surgeon HoLEP database from December 2014 to September 2016. UI was defined as one or more pads per day at six-week, six-month, and 12-month followup. We included 71 patients with preoperative urodynamics and six months or longer followup. Patients were evaluated based on age, body mass index (BMI), preoperative UI, maximum flow (Qmax), post-void residual (PVR), maximum detrusor voiding pressure (Pdet), detrusor insta-

bility (DI), catheter dependence, and International Prostate Symptom Score (IPSS), as well as enucleation/morcellation time and resected volume.

Results: Preoperative variables associated with UI at six weeks included previous UI ($p=0.001$), higher Qmax ($p=0.017$), lower PVR ($p=0.044$), higher Pdet ($p=0.002$), and absence of catheter dependence ($p=0.033$). Age, BMI, DI, IPSS, enucleation/morcellation time, and resected volume were not significant for predicting UI at six weeks. Preoperative variables associated with UI at six months included previous UI ($p=0.002$), lower PVR ($p=0.046$), and higher Pdet ($p=0.034$). Age, BMI, Qmax, DI, catheter dependence, IPSS, enucleation/morcellation time, and resected volume were not significant for predicting UI at six months. Preoperative variables associated with UI at 12 months included previous UI ($p=0.006$) and higher Pdet ($p=0.033$). Age, BMI, Qmax, PVR, DI, catheter dependence, IPSS, enucleation/morcellation time, and resected volume were not significant for predicting UI at 12 months.

Conclusions: Patient counselling regarding expectations of postoperative urinary symptoms after any bladder outlet procedure is prudent. Patients can be advised that after HoLEP, pre-operative UI, and higher voiding pressures may predict possible UI at short and intermediate postoperative followup.

P34

Treatment of men with hypogonadism with aromatase inhibitors: Our experience

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Introduction: Testosterone deficiency in the aging male is a well-documented phenomenon, with 20% of men over 60 years old estimated to have low testosterone levels. Treatment of hypogonadism has been shown to improve sexual function and libido, mitigate fatigue, increase lean body mass, increase bone mineral density, decrease depression scores, and improve mood and quality of life; however, significant controversy

exists over the long-term safety of testosterone replacement therapy. Alternatively, male reproductive specialists have used aromatase inhibitors (AIs) in place of exogenous testosterone administration. Despite their widespread off-label use, there is a paucity of data on predictors of response.

Methods: A retrospective chart review was performed on patients seen between January 2013 and January 2017 in the outpatient setting at the Community Care Physician (CCP) Urological Institute of Northeastern New York for hypogonadism and aromatase inhibitor therapy. 62 patients were identified and their clinical course was monitored. Demographics, comorbidities, and physical characteristics, such as body mass index (BMI), testicular volume, presence of varicocele, semen analyses, and bone mineral density, were recorded. Laboratory values have been collected for total testosterone, free testosterone, luteinizing hormone (LH), follicle-stimulating hormone (FSH), and estradiol. Evaluation of patient symptoms and adverse effects were documented by validated questionnaires.

Results: Of the 62 patients, pretreatment testosterone level averages were 401.57 ng/dl total and 20.61 pg/ml free. Post-treatment testosterone level averages were 557.26 ng/dl total and 57.23 pg/ml free. This indicates an average increase in 155.79 ng/dl total and 36.62 pg/ml free testosterone. Pre- and post-treatment levels of LH were 4.16 mIU/ml and 6.29 mIU/ml, respectively. Pre- and post-treatment FSH levels were 5.49 mIU/ml and 7.92 mIU/ml, respectively. Pre- and post-treatment estradiol levels were 17.65 pg/ml and 20.82 pg/ml, respectively.

Conclusions: Initial data demonstrates that anastrozole is a safe and efficacious treatment modality for men suffering from hypogonadism. Objective data regarding pretreatment hormone levels, physical characteristics, and previously attempted therapies helps identify patient groups that are most likely to benefit from off-label use of medications. Validated questionnaires also demonstrate that patients mount a subjective clinical response to anastrozole therapy as well.

Moderated poster session 3: Oncology 1

Friday, October 13, 2017

7:30–9:00 am

P35

Mortality within one year of prostate cancer diagnosis: High rate of cancer-specific mortality in the elderly

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Introduction: Current AUA guidelines on the early detection of prostate cancer recommend against routine prostate-specific antigen (PSA) screening in men 70+ years of age. This is based on the absence of evidence that screening in this population shows benefit, and the clear evidence that the ratio of harm to benefit increases with age. It is believed that competing comorbidities are more likely to cause mortality before prostate cancer. We sought to evaluate characteristics of patients at our institution who were diagnosed with prostate cancer and subsequently died within one year of diagnosis.

Methods: After obtaining IRB approval, we retrospectively identified the records of all patients diagnosed with prostate cancer at the Stratton Veterans Affairs Medical Center, in Albany New York between January 1, 2000 and December 31, 2009. A total of 563 patients were identified from our tumor registry. Demographic data were collected, including initial PSA, stage of disease, Gleason grade, followup visits, and treatment plan. Patients who were diagnosed with prostate cancer and subsequently died within one year of diagnosis were identified. A determination of their prostate cancer risk stratification was performed using D'Amico criteria. Death records were used to determine cause of death and verified through review of the electronic medical record.

Results: We identified 31 out of 563 patients (5.5%) who were diagnosed with prostate cancer and subsequently died within one year of diagnosis. A total of 24/31 (77.4%) were age 70+, 22/24 (91.2%) of this age group had high-risk disease, and none underwent potentially curative therapy (surgery, radiation with or without androgen-deprivation therapy, active surveillance). For comparison, high-risk disease was noted in 4/7 (57.1%) of patients age <70, and 2/7 (28.6%) of this age group underwent potentially curative therapy. Prostate cancer was found to be the cause of death in 17/24 (70.8%) of patients age 70+ vs. 2/7 (28.6%) of patients age <70.

Conclusions: In our cohort of prostate cancer patients, this disease was not innocuous in the elderly. Of those patients age 70+, prostate cancer was found to be the cause of death in 70.8%, and these patients were virtually all in the D'Amico high-risk category. There is a tendency to consider that elderly men will die of other comorbidities and not of prostate cancer. These results support the idea that men with prostate cancer should be evaluated base on physiological rather than chronological age when determining screening and treatment options.

P36

Liquid biopsy for the detection of renal cell carcinoma

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Introduction: Circulating tumor DNA (ctDNA) displays characteristics of an ideal serum biomarker. We sought to develop whole-exome sequencing of ctDNA to interrogate commonly mutated genes in renal cell carcinoma (RCC) for early tumor detection through a single blood sample.

Methods: Patients with solid renal tumors and healthy controls provided 40 mL blood, and purified plasma cell-free DNA was prepared. A multiplex bar-coded polymerase chain reaction amplification using the Fluidigm Access Array was performed to prepare sequencing libraries for the Illumina HiSeq platform. Galaxy workflow was then used to identify mutations within the plasma cell-free DNA samples and results were compared to buffy coat sequencing containing control DNA for each individual's sample. The following genes were queried: *VHL*, *PBRM1*, *SETD2*, *BAP1*, *KDM5C*, *KIT*, *NFE2L2*, *MET*, *TP53*, *CDKN2A*, *FGFR3*, *PIK3CA*, *BRAF*, *MUC4*. Criteria for calling mutations included adequate frequency by overall count and percentage of reads, identification in all overlapping sequences, and presence of buffy coat-derived control DNA for comparison with <0.5% containing the mutation.

Results: Of the preoperative RCC patients, 20/30 (67%) had detectable somatic mutations compared to 2/48 (4.2%) controls. These included non-synonymous, frameshift, stop-gain, and splice site mutations. Mutations were detected in RCC patients with both early and advanced stage disease, including a patient with a 1.1 x 0.7 x 0.5 cm tumor. Mutations were seen in all genes assayed.

Conclusions: The majority of RCC patients of various stages and histology had ctDNA detected in a single preoperative blood sample. Comparatively, only two of the control patients sampled were ctDNA-positive. Developing such non-invasive methods for RCC detection has the potential to enhance both the diagnosis and surveillance of renal malignancy, even in the setting of small renal masses.

P37

Invasive adenocarcinoma arising within an Indiana pouch: Two-case series

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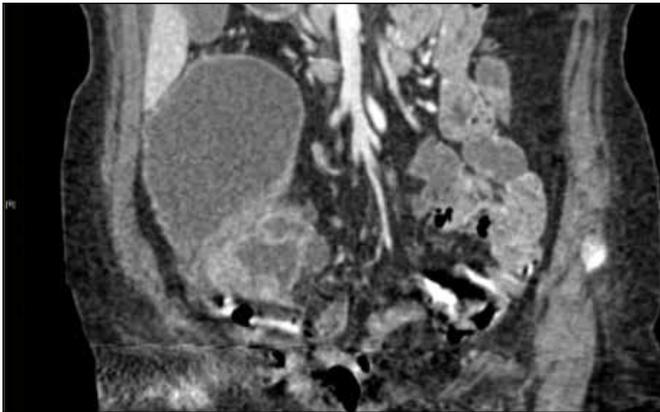
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Introduction: Invasive adenocarcinoma arising within an Indiana pouch has a relatively rare occurrence, with only 13 published cases to date. We present two cases, both treated conservatively with a continence function-preserving partial pouchectomy.

Methods: Patient records were accessed via hospital electronic health records.

Results:

Case 1: 78-year-old female with history of radical cystectomy with Indiana pouch formation for treatment of T2aNOM0 high-grade invasive urothelial carcinoma. She presented 12 years after Indiana pouch formation with gross hematuria. Computed tomography (CT) abdomen pelvis (Fig. 1) revealed a 4 cm mass in right lower quadrant of her Indiana pouch. Flexible pouchoscopy identified the mass (Fig. 2), which was biopsied to be



P37. Fig. 1. Computed tomography scan of the abdomen pelvis revealed a 4 cm mass in right lower quadrant of the patient's Indiana pouch.



P37. Fig. 2. Flexible pouchoscopy identified the mass, which was biopsied to be benign inflammatory tissue.

benign inflammatory tissue. For treatment, the patient underwent an open partial pouchectomy with mesenteric lymph node dissection. The mass was excised taking wide margins and reclosed preserving pouch integrity. Lymph node bundles were dissected from the mesentery supplying the continence reservoir and the surrounding tissues. Final surgical pathology returned pT2N0M0 moderately differentiated malignant adenocarcinoma with negative surgical and lymph node specimens. Following surgery, the patient maintained a fully functioning continence reservoir with no recurrence of disease during a followup period of 2.5 years.

Case 2: 86-year-old male with history of endoscopic resection with wide excision for a tubulovillous adenoma arising within his Indiana pouch created after radical cystectomy for pT3bN2M0 small cell carcinoma. The patient was initially treated with endoscopic resection of a tubulovillous adenoma followed by flexible pouchoscopy every three months. Three years after initial excision, a screening biopsy returned with moderately

differentiated invasive adenocarcinoma of enteric type. The patient underwent an open partial colectomy of the Indiana pouch with ureter re-implantation. Final surgical pathology returned pT3N0M0 moderately differentiated adenocarcinoma. Surgical margins were negative. The patient has followed up for a period of nine years without disease recurrence with his Indiana pouch maintaining continence function.

Conclusions: Treatment of invasive adenocarcinoma in an Indiana pouch with partial pouchectomy may allow for successful oncological and continence function outcomes. Further application of the technique with followup reporting is needed due to the rarity of disease occurrence and limited currently published literature.

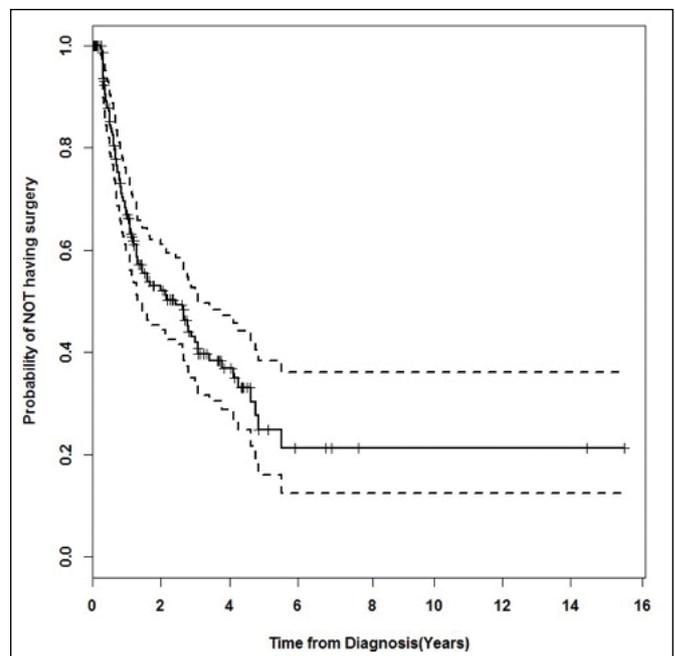
P38
Importance of long-term followup after endoscopic management for upper tract urothelial carcinoma and factors leading to surgical management

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Introduction: Patients undergoing endoscopic management (EM) for upper tract urothelial cell carcinoma (UTUC) often progress to definitive therapy with radical nephroureterectomy (RNU). The objective of this study was to determine rate of progression from EM to RNU and define risk factors for transitions in treatment over time.

Methods: Retrospective review of databases at two large tertiary referral centers identified patients undergoing EM for UTUC. Patients were assessed for progression to RNU. We compared baseline differences in characteristics between the EM and RNU patients using Chi-square analysis. Kaplan-Meier method was used to identify the probability of patients undergoing EM for UTUC not progressing to RNU. Cox proportional hazards were used to identify factors associated with progression to RNU.

Results: From the two institutions, 81 patients were identified having EM alone for UTUC and 89 progressed to RNU. The mean age of those remaining on EM was 72 years compared to 69 for those that had sub-



P38. Fig. 1. Kaplan-Meier curve of the estimated probability of not having definitive surgery.

sequent RNU. There was no difference in prior history of bladder cancer or Charlson Comorbidity Index between the two groups of patients. Positive urinary cytology, ureteroscopic visualization, and biopsy grade was higher in those progressing to RNU ($p < 0.001$) on Chi-square analysis. On hazard modelling, those with a positive biopsy (hazard ratio [HR] 11.8; 95% confidence interval [CI] 2.4–59.5; $p = 0.003$) or visible lesion on ureteroscopy (HR 8.4; 95% CI 3.0–23.9; $p < 0.001$) were more likely to transition to RNU. Patients with a higher Charlson Comorbidity Index were less likely to have RNU. On Kaplan-Meier modelling, the estimated probability of not having definitive surgery with RNU at two years after being on EM is 50% and is 20% at five years (Fig. 1).

Conclusions: Those patients that progress to RNU after EM have fewer comorbid conditions at baseline and changes in disease status, including visible lesions on ureteroscopy and positive biopsies. At five years after initial EM, 80% of patients progressed to RNU. This reinforces the underlying need for long-term followup of disease status in those having EM for UTUC.

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Impact of the Affordable Care Act on insurance status and initial staging in patients with bladder cancer

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Introduction: Insurance status is a known barrier in access to healthcare for patients with bladder cancer and is associated with differences in initial staging. The objective of this study is to examine the impact the Affordable Care Act (ACA) and the associated Medicaid expansion has had on the insurance status and staging of bladder cancer patients

Methods: Data from the National Cancer Database (NCDB), a national hospital-based cancer registry, was used to examine the insurance status and initial staging of bladder cancer patients from 2004–2014. Patients were grouped by treatment location into two cohorts: the 25 states and the District of Columbia that expanded Medicaid in 2014 and the states that did not expand Medicaid in 2014. The proportion of bladder cancer patients by insurance type was trended by year for each of the two cohorts and compared. Proportion of initial staging for each cohort was compared from years prior to the announcement of the ACA (2004–2009) vs. 2014 when the Medicaid expansion was implemented in select states.

Results: In 2014, the expanded Medicaid cohort had an increase in the proportion of bladder cancer patients with Medicaid vs. the non-expanded cohort (4.4% vs. 2.6%). Additionally, there was a decrease in the proportion of uninsured patients in the expanded Medicaid cohort vs. non-expanded cohort (0.9% vs. 2.4%). Examination of the proportion of initial staging of patients did not reveal differences between the two cohorts, nor any change within each cohort 2004–2009 vs. 2014.

Conclusions: In its first year of implementation in 2014, the Medicaid expansion under the ACA appears to have been effective in decreasing the number of uninsured bladder cancer patients. While this has shifted the payer burden off the hospitals, it has not appeared to have an impact on staging at initial presentation.

P40

Impact of MRI/ultrasound fusion-guided biopsy on prostate cancer detection in a community-based large urology group practice

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Introduction: Transrectal ultrasound-guided (TRUS) prostate biopsy for prostate cancer (PCa) detection is associated with an appreciable false-negative rate. Use of multiparametric magnetic resonance imaging (mp-MRI) and MRI/US fusion-guided biopsy have been displayed to increase the detection of PCa, particularly intermediate- and high-risk PCa with the degree of suspicion on mp-MRI as a strong predictor of final pathology. Much of these findings have been produced in large academic centers, using 3.0T magnets. The present study will assess the impact of targeted

MR/US fusion biopsy on the overall rate of PCa, while comparing the rate of PCa detection in targeted ROIs to that of the standard TRUS biopsy in a community-based large urology group practice association.

Methods: All patients receiving a MR/US fusion biopsy underwent mp-MRI using a 1.5T magnet and endorectal coil. PI-RADS scoring was used as the diagnostic criteria for identifying suspicious lesions. 562 MR/US fusion-guided biopsy procedures performed using the Artemis platform (Eigen/Hitachi) from September 29, 2015 through March 2, 2017. The pathological findings from these procedures were compared to that of a historical cohort of 1562 standard TRUS biopsies performed at the same practice from January 1, 2014 through December 31, 2014.

Results: PCa detection for all MR/US fusion biopsies, including both standard and targeted cores, was 50.4% (283 of 561). Standard TRUS biopsy rate of PCa detection was 41.2% (644 of 1562). In 438 cases, both targeted and standard biopsies were performed. Targeted regions diagnosed 36.3% less Gleason 6 disease while diagnosing 51.3% more Gleason ≥ 7 disease than that of the sextant biopsy cores. Standard extended-sextant biopsy missed 48 cases (11.0%) of PCa that were diagnosed by targeted biopsy cores during the same procedure, 26 (54.2%) of which were GS ≥ 7 . The final biopsy pathology resulted in a diagnosis of cancer in 37.1% (103) of cases with PIRADS 3 lesions, 65.2% (75) of cases with PIRADS 4 lesions, and 86.7% (39) of cases with PI-RADS 5 lesions. Of these cases, PCa with Gleason score ≥ 7 was diagnosed in 36.9% (38), 62.7% (47), and 84.6% (33) of cases, respectively.

Conclusions: MR/US fusion-biopsy compared with that of standard biopsy alone was associated with increased detection of PCa. Targeted lesions were associated with increased detection of high-/intermediate-risk PCa and a decreased detection of low-risk PCa. The degree of suspicion on mp-MRI was a strong predictor of overall PCa detection, as well as the rate of intermediate- and high-risk PC detection.

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Focal prostate brachytherapy with cesium 131

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Introduction: Focal therapy has been proposed to treat small-volume prostate cancer while minimizing the morbidity associated with whole-gland therapy. The present study reports the initial results in patients undergoing focal prostate brachytherapy (PB) with cesium 131 (^{131}Cs).

Methods: Patients in the study underwent PB with ^{131}Cs as focal treatment. Inclusion criteria for consideration of focal PB were prostate-specific antigen (PSA) < 10 ng/mL, clinical stage $\leq \text{T2a}$ and Gleason score $\leq 3 + 4 = 7$ with ≤ 2 positive cores and no more than 50% involvement of any core. Upon diagnosis, all patients underwent a multiparametric prostate magnetic resonance imaging (MRI) to ensure the disease was confined to one region of the prostate and consistent with the biopsy findings. Treatment was directed based on the location of positive cores from their prostate biopsy and the MRI findings. Seeds were positioned to provide dosimetry to 25% of total prostate volume, encompassing the location of disease. Post-treatment, a PSA was obtained every three months for the first year, and every six months thereafter. Morbidity was assessed using the American Urologic Association symptom score (AUA-SS), the Expanded Prostate Cancer Index Composite (EPIC) urinary and bowel surveys, and the Sexual Encounter Profile (SEP).

Results: 10 patients have completed focal PB to date. Nine patients had a Gleason score of $3 + 3 = 6$, while one patient had a Gleason score of $3 + 4 = 7$. Mean pre-treatment PSA was 5.03 ng/mL (range 2.10–8.87), which decreased to 2.21, 1.72, 1.61, and 1.79 ng/mL at three, six, nine, and 12 months post-treatment, respectively. Pre-treatment mean AUA-SS was 6.70, which increased to 11.4 at two weeks post-treatment, then declined to 5.9 and 4.3 at three and six months post-treatment, respectively. EPIC urinary scores were 85 pre-treatment and 72, 91, and 93 at two weeks, three months, and six months post-treatment, respectively. EPIC bowel scores were 95 pre-treatment and 91, 98, and 99 at two weeks, three months, and six months post-treatment, respectively. Four patients reported being sexually active prior to treatment, all of whom reported no change in their erectile function from baseline.

Conclusions: Initial results in patients undergoing ¹³¹Cs focal prostate brachytherapy are promising. At up to one year post-treatment, patients have experienced a decline in PSA with no residual urinary, bowel, or erectile morbidity. Focal PB with ¹³¹Cs may be a feasible treatment for patients with low- and intermediate-risk prostate cancer that is confined to one area of the prostate, but larger cohorts with longer-term results are required.

P42
Exploring the obesity paradox in prostate cancer: A study of a population of high-risk African-American men

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Introduction: The “obesity paradox” postulates that obesity plays a protective role in the prognosis among patients with malignancy, including colorectal, kidney, and prostate cancer (PCa). Since the PCa obesity paradox has not been studied in high-risk African-American men, we aim to evaluate the association between obesity status and the severity of PCa at presentation and cancer progression in this population.

Methods: Demographic, clinical, and pathological data were collected retrospectively from 470 men treated for PCa at two institutions between 2012 and 2015. Bivariate analyses were used to compare patient demographic and clinical characteristics across three body mass index (BMI) categories (normal weight, overweight, and obese). Two multivariable logistic regression models that accounted for potential confounders were used to test the association between BMI and risk of high-grade malignancy (defined as ≥ 7 Gleason score) and risk of metastasis.

Results: A total of 470 men met inclusion criteria: 165 (35%) and 102 (22%) were overweight and obese, respectively. Approximately 40% of patients developed metastatic disease during followup. Overweight and obese patients were less likely to present with high-grade PCa, with 29% and 31% decreased odds, respectively, when compared to normal weight patients (Table 1). Furthermore, overweight and obese patients were 48% and 59% less likely to develop metastases as compared to normal weight patients, while holding all demographic and treatment characteristics constant (Table 1). Interestingly, having hypertension was also associated with decreased risk of high-grade PCa and development of metastases.

Conclusions: In this study, we found that obesity appears to provide a protective effect against the development of high-grade PCa in African-American men. In addition, our results suggest that obese African-Americans with high-grade PCa may experience an enhanced response to hormonal ablation when compared with normal weight patients. Further studies are required for validation and for understanding mechanistic underpinnings of this phenomenon.

P42. Table 1. Odds ratios for high-grade prostate cancer outcomes by BMI category

BMI category	Outcome: High-grade prostate cancer	Outcome: Development of metastatic disease
	Adjusted odds ratio (95% CI)	
Normal weight	1.00 (reference)	1.00 (reference)
Overweight	0.71 (0.59, 0.98)	0.52 (0.25, 0.95)
Obese	0.69 (0.35, 0.96)	0.41 (0.10, 0.88)

BMI: body mass index; CI: confidence interval.

P43
Evaluation of e-cigarette users’ urine for known bladder carcinogens

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Introduction: Traditional cigarette smoking is a well-established cause of bladder cancer. E-cigarette use is gaining popularity as a substitute for traditional cigarette smoking in part due to the perception it represents a safer alternative. Initial studies have shown the composition of e-cigarette liquids to be complex and may contain nitrosamines, formaldehyde, acrolein, metals, and acetaldehyde, many of which are known bladder carcinogens. We compared the urine of e-cigarette users to non-smoking and non-e-cigarette using controls for known bladder carcinogens to begin to understand the risk profile of e-cigarette use and bladder cancer.

Methods: Urine samples and demographics information were collected from 13 non-smoking, e-cigarette-using volunteers and 10 non-smoking, non-e-cigarette-using controls. Samples were acidified, hydrolyzed, extracted, and dried. They were resuspended in dichloromethane for LC-MS and GC-MS analysis. Five molecules known to be bladder carcinogens that are either present in traditional cigarettes or common solvents believed to be used in some e-cigarette formulations were targeted for analysis. These included benz(a)anthracene, benzo(a)pyrene, 1-hydroxypyrene, o-toluidine, and 2-naphthylamine (limit of detection 1 ng/ml in solvent).

Results: Subjects in the study were predominantly male with a mean age of 39.4 years. All subjects had abstained completely by self-report from traditional cigarettes for at least six months prior to specimen collection. Most subjects used a variety of e-cigarette products with a frequency of >28 times per week (Table 1). The LC-MS protocol reliably identified standard compounds added to control urine specimen. There was significantly more o-toluidine and 2-naphthylamine in the urine of e-cigarette users than non-e-cigarette user controls (p=0.0006 and p=0.007, respectively) (Table 2). The other three tested urinary carcinogens were not identified in either subjects or controls.

Conclusions: E-cigarettes are historically unregulated with a wide variety of formulations. Previous studies have identified nitrosamines in low levels in e-cigarette formulations. In the present study, there was significantly more aromatic amines (o-toluidine and 2-naphthylamine) in the urine of e-cigarette users than controls. Many of these subjects (9/13) were long-term non-smokers (>12 months). Further study is needed to clarify the safety profile of e-cigarettes and their contribution to the development of bladder cancer given the greater concentration of carcinogenic nitrosamines in the urine of e-cigarette users in this pilot study.

P43. Table 1. Demographics of e-cigarette users

Age	39.4 ± 13.5
Gender (% male)	69.2
Duration of traditional cigarette use, years	19.9 ± 11.9
Packs/day when smoking	1.3 ± 0.4
Time since last traditional cigarette use, months	15.1 ± 15.2
Duration of e-cigarette use, months	26 ± 11.3
Frequency of e-cigarette use, % >28 per week	84.6
E-vape nicotine concentration, mg/ml	6.8

P43. Table 2. Urinary excretion of 2-naphthylamine and 0-toluidine in e-cigarette users vs. controls

	E-cigarette users	Non-e-cigarette using controls
o-Toluidine		
N	13	9
Mean concentration (ng/ml) ± SD	2.33 ± 0.92	1.00 ± 0.45
Range (ng/ml)	0.94–4.23	0.42–1.67
2-naphthylamine		
N	13	10
Mean concentration (ng/ml) ± SD	1.46 ± 0.23	1.13 ± 0.36
Range (ng/ml)	1.05–1.76	0.40–1.69

SD: standard deviation.

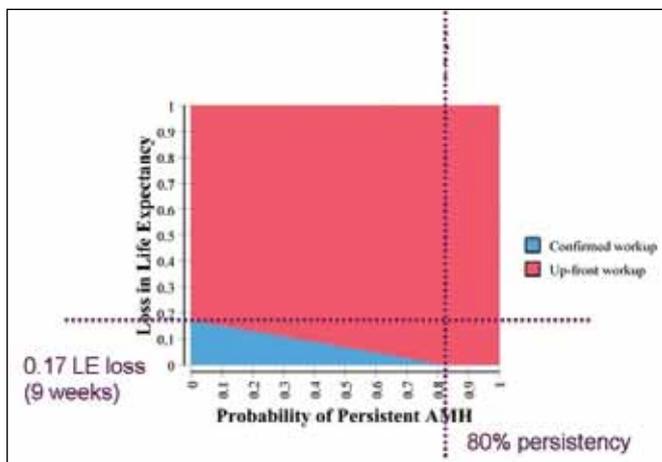
P44 Evaluating the cost-effectiveness of the asymptomatic microhematuria guidelines by sex

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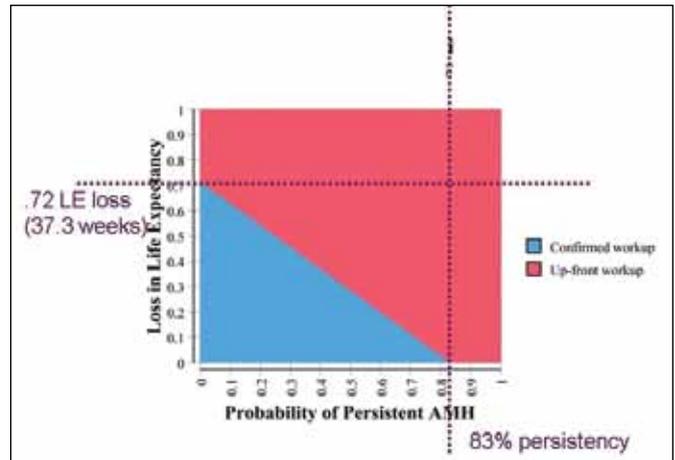
Introduction: On April 3, 2017, the American College of Obstetricians and Gynecologists and American Urogynecologic Society released a combined statement recommending against the full workup of asymptomatic microhematuria in low-risk women. This statement sharply criticized American Urological Association guidelines for ignoring sex-specific differences in urinary tract cancers. Obtaining a confirmatory urinalysis prior to initiating workup may improve the cost-effectiveness of workup.

Methods: We used a decision tree model to compare an immediate microhematuria evaluation based on a single positive urinalysis (up-front) vs. a delayed evaluation requiring a confirmatory positive urinalysis (confirmed). Cancer detection rates were estimated from studies on asymptomatic microhematuria and stratified according to sex. Costs were based on national Medicare reimbursement. Two-way sensitivity analyses were performed on critical estimated inputs.

Results: The up-front workup was 20% more costly than confirmed (\$793 vs. \$663/patient), while gaining 0.001 life-years, for an incremental cost-effectiveness ratio of \$125 105/life-year gained. In males, this ratio was \$94 777 and in females \$390 954. The analysis was sensitive to variation of two uncertain parameters: loss in life expectancy due to delay/intermittency in the confirmed strategy and rate of persistence of microhematuria.



P44. Fig. 1. Sensitivity analysis on loss in life expectancy and persistence (males).



P44. Fig. 2. Sensitivity analysis on loss in life expectancy and persistence (females).

When simultaneously varying them in a two-way sensitivity analysis with a \$100 000/life-year threshold, up-front is favored if life expectancy loss is ≥9 weeks and persistence is ≥ 80% in males (Fig. 1), and ≥37.3 weeks and ≥83% in females (Fig. 2).

Conclusions: A single urinalysis prior to initiating microhematuria workup may be cost-effective in males, but not for females or the population as a whole. In females, large life expectancy losses due to delay/intermittency and persistence of microhematuria would be required for single urinalysis to be favored. Sex-specific guidelines may improve the cost-effectiveness of national guidelines.

P45 Effects of purified fatty acid subtypes on prostate cells and their implication in prostate cancer progression

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Introduction: Prostate cancer (PCa) is the third leading cause of death by cancer among Canadian men. The essential long-chain omega-3 (LCn3) polyunsaturated fatty acids (PUFA) are mostly reported to be beneficial against prostate cancer development and progression; however, the specific role of LCn3 subtypes remains to be characterized. This project aimed to decipher mechanisms of various subtypes of purified LCn3 and LCn6 on healthy and tumor prostate cells in vitro.

Methods: Immortalized murine PCa cell-line TRAMP-C2, human PCa cell lines LNCaP, DU145, and PC3, as well as a non-cancerous primary epithelial cell culture (PrEC) from prostatic biopsies of patient were cultured. Cells were seeded in six-well plates (25000–35000 cells per well). At 60% confluence, PCa cells were starved for 16h in 0.2% FBS media. PrEC were not starved as they are growing in a serum free media. All cell lines were then treated with several subtypes of purified PUFA (LCn3: Eicosapentaenoic acid [EPA]; docosahexaenoic acid [DHA], and LCn6: arachidonic acid [AA]) at various concentrations of 100, 50, 25, 12.5, 6.25 μM (0.1%v/v DMSO) and time points (24–48–72–96 hours). The effect of purified PUFA on cell growth over time was determined by automated cell count. Specific fatty acid incorporation in treated-cell membranes was determined by capillary gas-liquid chromatography.

Results: We measured a substantial incorporation of the specific PUFA into treated-cell membranes. All tested purified PUFA decreased cell growth of both human and murine PCa cells in a dose-dependent manner. LCn3 showed a greater inhibitory power after a short-term treatment. Furthermore, LCn3 kept its inhibitory power over time contrasting to LCn6. Finally, unlike cancer all cell lines, PrEC viability was not affected by LCn3 exposure.

Conclusions: Our results suggest a beneficial effect of LCn3 against PCa through a decrease of PCa cell growth in vitro. Interestingly, LCn3 did not affect normal epithelial prostate cell viability. More studies are required to decipher mechanisms underlying these effects.

P46

Effects of patient gender on urologist decision-making for treatment of the localized renal mass

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Introduction: Gender disparity in the proportion of patients receiving nephron-sparing strategies (NSS) for the treatment of localized renal masses has been demonstrated in large population series, as well as in single centers of excellence. Reasons for the discrepancy remain elusive. We aimed to assess urologist treatment patterns for localized renal masses in both genders to gauge the existence of provider-based gender biases.

Methods: Urologists were randomly emailed one of two surveys, including six vignettes of various patients with renal masses. Both surveys were identical other than the vignette patient gender (VPG), which was male in 50% and female in 50%. Self-selected respondents chose the single best treatment option from the following choices: active surveillance (AS), open partial nephrectomy (PN), minimally invasive (MI) PN, open radical nephrectomy (RN), MIRC, and percutaneous or laparoscopic ablation (ABL). Fisher's exact test was used to assess differences in treatment recommended based on VPG. Nominal logistic regression was performed to assess the magnitude of differences.

Results: Of the 423 urologists who completed the survey, there was an even response to both surveys (210 vs. 213). Most respondents were male (93%), married (89%), and in private practice (44%). Age and time practicing were evenly distributed and median number of nephrectomies done per year was 15. There were no differences in demographics between the respondents of the two surveys. When comparing AS, PN, RN, and ABL the only vignette that differed based on VPG was question 3 ($p=0.019$). If VPG was female, the recommended treatment was 2.45 times more likely to be AS over PN. Comparison of any NSS vs. RN in question 3 showed male VPG was 1.67 times more likely to be recommended RN ($p=0.040$). Urologist gender had no effect on these findings. Comparison of any MI strategy vs. open yielded no VPG-based differences.

Conclusions: In this survey study of practicing urologists, we found that male patient gender increased recommendations for radical surgery and less nephron-sparing strategies in a hypothetical older patient with a localized renal mass. The majority of vignettes produced no gender-based biases.

P47

Effects of a dietary intervention to increase omega-3 intake compared to dutasteride in men with low-risk prostate cancer under active surveillance: Preliminary results on fatty acid intake and fatty acid profiles of red blood cells and prostate tissue

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Introduction: Low-risk prostate cancer (PCa) patients under active surveillance (AS) could benefit from dietary and lifestyle interventions to prevent cancer progression. An omega-3 (Ω 3)-rich diet could help modulate prostate tissue inflammation. The objective of the study was to evaluate the effect of a dietary intervention as compared to 5 α -reductase inhibitor (5-ARI) dutasteride on Ω 3 intake and fatty acid (FA) profiles of red blood cell (RBC) and prostate tissue.

Methods: A phase 2, randomized, controlled trial (RCT) was conducted on 120 low-grade PCa patients under AS (Gleason ≤ 6) randomized to either a dietary intervention group (diet) or dutasteride group (5-ARI) for a six-month period. For the subsequent six months, all men received the combined interventions for a total of one-year followup. The dietary intervention aimed at increasing intake of Ω 3, especially long-chain Ω 3 (LCn3), while decreasing intake of omega-6 (Ω 6), saturated and trans fats.

Patients allocated to diet met with a nutritionist at baseline and at three months. A validated food frequency questionnaire (FFQ) was completed at baseline and quarterly the following year. Biological specimens (blood, urine, prostate biopsies) were collected at baseline, six- and 12-months followups. Changes in patients' total LCn3 intake (in grams), as measured by FFQ at six months, were compared between diet and 5-ARI groups using the Wilcoxon test. Changes in LCn3 level, expressed as a proportion of total FA in RBC and prostate tissue, were also compared similarly.

Results: For the diet group at six months, intake of total Ω 3 increased and total Ω 6 decreased, both significantly. The same associations were observed for RBC FA profile. No differences were observed for FA intake and RBC profile in the 5-ARI group. Mean LCn3 daily intake increased from 0.40 g to 0.85 g (diff=0.45; $p<0.0001$) in diet, while it remained unchanged (0.50 g) in 5-ARI group (diff=0.00; $p=0.98$). Mean RBC LCn3 increased from 7.63% to 8.56% (diff=0.93; $p<0.0001$) in diet, while remaining unchanged (7.95% to 7.96%; $p=0.46$) in 5-ARI. However, LCn3 did not significantly increase in the prostate tissue of the diet group. After 12 months, 14 and 17 patients had progressed (Gleason ≥ 7) in the diet group and 5-ARI group, respectively.

Conclusions: A dietary intervention in men with low-grade PCa under AS resulted in a significant increase of LCn3 intake in the dietary intervention group compared to the 5-ARI group. This also translated in higher level of LCn3 in RBC, but not in prostate tissue.

P48

Contemporary outcomes of palliative transurethral resection of the prostate in patients with locally advanced prostate cancer

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Introduction: Prostate cancer (PCa) progression can cause significant local complications that impact quality of life. Urinary obstruction and hematuria are important sequelae of locally advanced PCa that can be addressed through palliative transurethral resection of prostate (pTURP); however, most studies on pTURP are small and date to a time when effective systemic chemotherapy and potent androgen receptor pathway inhibitors were not in widespread use. We therefore performed a detailed review of our contemporary outcomes at our tertiary care center.

Methods: Using hospital coding data, we identified patients with a diagnosis of PCa who underwent a TURP at Hotel-Dieu Hospital in Quebec City between 2006 and 2016 for detailed chart review. Comorbidities were classified using the Charlson Comorbidity Index (CCI). Logistic regression analyses was used to assess predictors of perioperative mortality and morbidity.

Results: 58 patients were included in our study. Mean patient age was 74 years; 27(47%) men had castrate-resistant prostate cancer (CRPC) and 28(48%) were metastatic at time of pTURP. Mean followup was 2.2 years, with an estimated five-year overall survival (OS) of 18% from time of pTURP. CRPC, CCI ≥ 5 , and age predicted poorer OS. Indication for pTURP was urinary obstruction (69%) or hematuria (22%). Postoperative Clavien 0, 1, 2, 3, 4, 5 complications occurred in 20 (34%), 16(28%), 18(31%), 3(5%), 0 (0%), and 1(2%) patients, respectively. CRPC was a significant predictor for presentation to the emergency department due to hematuria (hazard ratio [HR] 3.03; 95% confidence interval [CI] 1.02–8.99) and clot retention (HR 6.31; 95% CI 1.74–22.92). No other factors were significant predictors of complications, repeat TURP, or indwelling catheter postoperatively. One year following pTURP, 11(23%) men had an indwelling catheter and 10(17.2%) experienced ≥ 2 urinary tract infections. Overall, 17(27%) men underwent ≥ 1 redo pTURP and 16(28%) ultimately had an indwelling catheter. Nephrostomy tubes or ureteral stents in place prior to pTURP remained indefinitely in all cases.

Conclusions: Our series pTURP remains an important surgical option to relieve bladder outlet obstruction in patients with locally advanced PCa; however, it appears ineffective to relieve ureteral obstruction. Our contemporary series of pTURP outcomes provides important information for counselling patients.

P49**Association of anesthetic and recurrence rates after transurethral resection of bladder tumors**

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Introduction: The association between cancer recurrence and anesthetic technique has been an intriguing area of investigation in the past decade. Various perioperative factors have been implicated in negatively modulating the immune system to promote cancer cell growth, including surgical inflammation, volatile anesthetics, and opioid use. On the other hand, regional anesthesia has been suggested to reduce perioperative immunosuppression, improve the function of cancer-killing immune cells, and reduce the use of volatile anesthetics and opioids. The aim of our study was to determine if anesthetic type (general vs. subarachnoid block) would influence our primary outcome of cancer recurrence following transurethral resection of bladder tumors (TURBT).

Methods: Following research ethics board approval, this observational, retrospective study enrolled 231 patients who underwent TURBT for non-muscle invasive bladder cancer (NMIBC) at a single center between 1996 and 2014. Variables collected included stage, grade, size, number of tumors, anesthetic type, age, and ASA classification. Chi-square tests were conducted to test for associations between patient characteristics and incidence of recurrence, progression, and overall mortality. Kaplan-Meier estimates were conducted for time to recurrence, time to progression, and time to mortality. Logistic regression and a Cox proportional hazards regression model were used to explore the association between anesthetic type and recurrence.

Results: In univariable analysis, patients under spinal anesthesia (n=135) had a longer median time to recurrence (42.1 months vs. 17.2 months; p=0.014) compared to those who had a general anesthesia (n=96). As anticipated, carcinoma in situ (p=0.004), chemotherapy (p=0.003), and risk stratification (p=0.042) were all associated with recurrence rates. In multivariable analyses, incorporating key a priori variables, including cancer risk (amalgam of stage, grade, presence of carcinoma in situ, number and size of tumors), perioperative chemotherapy, and adjuvant immunotherapy, patients under general anesthesia had a higher incidence of recurrence (odds ratio [OR] 2.062; 95% confidence interval [CI] 1.14–3.74; p=0.017) and earlier time to recurrence (hazard ratio [HR] 1.57; 95% CI 1.13–2.1; p=0.008) compared to patients under spinal anesthesia. Anesthetic type was not associated with cancer progression or overall mortality.

Conclusions: Patients receiving a general anesthetic had higher incidence of recurrence and earlier time to recurrence following TURBT for NMIBC. These findings should prompt large-scale, prospective studies to further delineate this association.

P50**An independent, multi-institutional, prospective study in the Veterans Affairs Health System confirms the 4Kscore accurately predicts aggressive prostate cancer**

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Introduction: The 4Kscore test was previously validated in a large, prospective trial; however, this study enrolled a limited number of African-American (AA) men. We conducted a multi-institutional, prospective trial to validate the 4Kscore test within the Veterans Affairs (VA) Health System, where a large proportion of those receiving care are AA.

Methods: Men undergoing prostate biopsy were enrolled at eight VA sites throughout the nation, with phlebotomy for 4Kscore obtained prior to biopsy. We assessed the discrimination, calibration, and clinical utility of the 4Kscore test for predicting Gleason 7 or higher (G7+) prostate cancer compared to a base model consisting of age, digital rectal exam (DRE), and prostate-specific antigen (PSA). Additionally, we compared the 4Kscore performance in AA and non-AA men.

Results: Of the 403 enrolled, 366 had complete data available for analysis. Among these men, 208 (56%) were AA, and 134 (36%) had G7+ prostate cancer. The 4Kscore exhibited better discrimination (area under the curve [AUC] 0.81 vs. 0.74; p=0.011) and higher clinical utility on decision analysis than the base model. There was no difference in the discrimination of the 4Kscore test between AA and non-AA men (0.80 vs. 0.84; p=0.32). The 4Kscore may underestimate the risk of G7+ prostate cancer in AA men though discrimination (0.80 vs. 0.72; p=0.013) and clinical utility were still higher than the base model.

Conclusions: In a multi-institutional, prospective trial in the VA Health System, we confirmed that the 4Kscore accurately predicts the likelihood of aggressive prostate cancer and outperforms standard clinical information for biopsy decision-making in both AA and non-AA men.

Moderated poster session 4: Stones & endourology/Infertility Friday, October 13, 2017 7:30–9:00 am

P51 WITHDRAWN

P52 Dual usage of a stone basket: Stone capture and retropulsion prevention

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Introduction: Stone migration during ureteroscopy (URS) for proximal ureteric calculi is a constant challenge. Several retropulsion prevention devices have been developed in order to optimize URS outcomes. Our technique involves capturing the stone within a four-wire Nitinol stone basket and then performing laser lithotripsy to dust the stone while it is engaged in the basket. The dusted fragments wash out with the irrigation fluid and once small enough, the remaining stone is removed intact.

Methods: A retrospective chart review was performed of all proximal URS procedures performed with semi-rigid URS for a solitary calculus (2000–2016). Patient characteristics, procedure time, stone size and composition, retropulsion rate, use of flexible URS, stone-free rate, and complications were collected. We compared our new technique introduced in 2010 to URS control procedures that did not use retropulsion prevention techniques or devices. Chi-squared analysis and ANOVA were used for statistical analysis.

Results: 152 patients (97 males and 55 females) underwent URS for proximal ureteric calculi. Mean stone diameter was 9.3 ± 3.4 mm with similar impaction rate between both groups (44.3% vs. 42.5% control; $p=0.587$). The mean surgical procedure time was $53.3 \text{ min} \pm 17.9$ for the new technique and $65.2 \text{ min} \pm 29.2$ for the control group ($p=0.005$). Compared to the new technique, the control group had a higher rate of retropulsion (16.5% vs. 34.3%, respectively; $p=0.011$) and required flexible URS more often to exclude or remove residual fragments (24.1% vs. 59.1%, respectively; $p=0.001$). Using the new technique stone free rates were higher (78.2% vs. 68.5%; $p=0.177$) and there was a lower likelihood of leaving residual fragments both <3 mm and ≥ 3 mm ($p=0.002$). Rate of ureteric injury and secondary procedures were similar between both techniques.

Conclusions: Our novel technique results in shorter operative times, lower retropulsion rates, and decreases postoperative residual stone fragments.

P53 Improvement of surgical outcomes after preoperative rehearsal using 3D printed patient-specific simulation for percutaneous nephrolithotomy

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Introduction: Percutaneous nephrolithotomy (PCNL) is the standard procedure for large renal calculi and is considered one of the most complex endourology procedures with a significant learning curve. This steep learning curve is the result of a procedure with high rates of complications, the rates of which are only significantly reduced after approximately 45 cases. Surgical simulation is known to enhance technical skills and this effect is typically strongest for novices learning complex procedures, such as PCNL. While there is a clear benefit of simulation for resident performance, it is unclear how preoperative rehearsal can impact operative and patient outcomes in the hands of experienced practitioners. We present our initial

experience of a novel concept using high-fidelity 3D printed patient-specific simulations for surgical rehearsal prior to patients undergoing PCNL.

Methods: A total of 19 consecutive patients underwent PCNL by a single endourology fellowship-trained urologist. Before the live procedure, 10 patient-specific simulations were performed for preoperative rehearsal. Patient-specific models were created by converting DICOM images into stereolithography files and 3D printing components for assembly. In addition to the patient's pelvicalyceal system and staghorn calculi, their kidney, spine, and subcutaneous tissues were also fabricated to create a complete procedural simulation. All steps of a PCNL were practiced, including fluoroscopic access, nephroscopy, and lithotripsy. Procedure-specific metrics, such as radiation time and number of needle attempts, were collected for live and simulation events. Outcomes from the first nine patients without prior rehearsal were compared to 10 patients with preoperative practice.

Results: The mean fluoroscopy time was significantly lower in the rehearsal group (5.68 vs. 13.49 mins; $p \leq 0.01$). The average combined time of fluoroscopy for simulation and live cases was still lower than the mean time for unrehearsed group (9.63 vs. 13.49 mins; $p=0.17$). Similarly, the average number of percutaneous needle access attempts was lower in the rehearsed group (1.9 vs. 5.0 attempts; $p < 0.001$). The total number of complications, additional procedures, and readmissions was higher in the unrehearsed group (5 vs. 1, 9 vs. 1 and 4 vs. 0, respectively). There were no differences in mean patient age, body mass index, or stone size between the two groups.

Conclusions: In this limited cohort, patient-specific rehearsal improved operative performance and enhanced patient safety during a complex endourologic procedure, even for an experienced surgeon. There was a significant reduction in the fluoroscopy time, percutaneous needle access attempts, and complication rate, without a significant increase in radiation exposure. Advances in 3D printing technology permit its routine use for simulation of complicated operations and possess the ability to directly impact patient outcomes.

P54 Randomized, control trial comparing narrow vs. wide focal zones for shock wave lithotripsy of renal calculi

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Introduction: The Modulith SLK-F2 Electromagnetic lithotripter (Storz Medical AG, Tägerwil, Switzerland) is the first lithotripter on the market with a unique design that allows for a dual-focus system with the option of either a narrow or wide focal zone. Ex-vivo data on the SLK-F2 lithotripter shows that disintegration capacity and renal vascular injury are independent of the focal diameter of the SW generator at the same peak positive pressure and disintegration power. The objective of this study is to compare the single-treatment success rates of narrow and wide focal zones for shock wave lithotripsy of renal stones.

Methods: 263 patients with a previously untreated ≥ 5 mm radio-opaque solitary stone located within the collecting system were randomized to receive narrow- or wide-focus lithotripsy, while maintaining a constant overall energy level of 6. Patients were followed with KUB x-rays and renal ultrasound at two and 12 weeks post-lithotripsy to assess stone area and stone-free status. Primary outcome was success rate, defined as stone-free or adequate fragmentation (sand or asymptomatic fragments ≤ 4 mm) at three months following a single SWL treatment.

Results: 130 patients were randomized to narrow-focus lithotripsy vs. 133 to wide-focus lithotripsy. The groups were similar in baseline character-

istics. The overall success rates were statistically different at two weeks post-treatment (narrow: 69.2% vs. wide: 57.1%; $p=0.042$) and also at three months (narrow: 69.2% vs. wide: 57.1%; $p=0.042$). For smaller stones (area $<100\text{ mm}^2$), there was a greater benefit with narrow-focus lithotripsy (72.6% vs. 60.3%; $p=0.05$). The SWL retreatment rate for the same stone within three months was significantly higher when wide-focus was used (44.4% vs. 30.8%; $p=0.023$). Overall, the complication rates were comparable in both groups (narrow: 23.3% vs. wide: 15.9%; $p=0.135$); however, the narrow group required significantly fewer ancillary procedures within the initial three-month followup period (narrow: 30.8% vs. wide: 42.9%; $p=0.042$).

Conclusions: Narrow-focus lithotripsy yields better outcomes than wide focus lithotripsy, particularly for stones $<100\text{ mm}^2$, with lower retreatment rates and without increased in morbidity.

P55

Markers of renal injury during shock wave lithotripsy with narrow vs. wide focal zones

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Introduction: The Modulith SLK-F2 Electromagnetic lithotripter (Storz Medical AG, Tägerwilien, Switzerland) is the first lithotripter on the market with a unique design that allows for a dual-focus system with the option of either a narrow or wide focal zone. Ex-vivo data on the SLK-F2 lithotripter shows that the disintegration capacity and the renal vascular injury are independent of the focal diameter of the SW generator at the same peak positive pressure and disintegration power. We report on a subset of patients from our larger randomized trial for whom data on markers of renal injury were available.

Methods: A subset of 134 patients (out of 263 total patients randomized in the trial) with previously untreated radio-opaque solitary stone located within the renal collecting system, measuring at least 5 mm were randomized to receive narrow- or wide-focus lithotripsy while maintaining a constant overall energy level, and also collected urinary markers of renal injury. Patients were followed with renal ultrasound at two weeks post-lithotripsy to assess for the development of perinephric hematoma. Urinary markers of renal cellular damage (microalbumin, creatinine, beta 2-microglobulin, microalbumin/creatinine ratio and Beta 2-microglobulin/creatinine ratio) were measured pre-SWL, immediately post-procedure in the recovery room, 24 hours post-SWL, and seven days post-treatment. Data was analyzed using ANOVA and repeated measures ANOVA, Chi-square statistic and linear regression where appropriate, controlling for presence of diabetes as a confounder.

Results: 68 patients were randomized to narrow-focus lithotripsy vs. 66 patients to wide-focus. The groups were similar in baseline characteristics including age, gender, body mass index, stone size and density, skin-to-stone distance, and diagnosis of diabetes. Overall complication rates were comparable between the two groups (narrow: 23.5% vs. wide: 12.1%; $p=0.085$), including similar rates of perinephric hematoma (narrow: 2.9% vs. wide: 4.5%; $p=0.624$) and Steinstrasse (narrow: 7.4% vs. wide: 4.5%; $p=0.493$). Urinary markers of renal injury did change after SWL, and then normalized within seven days; however, there were no differences in the magnitude, timing, or degree of change between the narrow and wide focal zone groups.

Conclusions: The degree of renal injury as assessed by renal cellular markers and by ultrasound assessment of perinephric hematoma is comparable when using the narrow or wide focal zone of the Modulith SLX-F2.

P56

Conservative management of staghorn calculi: Is it safe?

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Introduction: We aimed to describe the clinical characteristics, infectious and kidney function patterns, and overall outcomes in a cohort of patients with staghorn calculi treated conservatively.

Methods: Staghorn calculi managed non-operatively between January 2009 and January 2017 were identified. A retrospective analysis of demographics, comorbidities, renal function, clinical characteristics, treatments, and outcomes was completed.

Results: 29 patients were identified (16 male, 13 female). Mean age was 71 years (interquartile range [IQR] 61–81). Mean followup was 24 months (IQR 1–34). 59% (17/29) had complete staghorn calculi, with 21% (6/29) bilateral. Mean body mass index was 29.4 (IQR 24.8–31.7). Of the 29 patients, 14 were treated conservatively due to comorbidities, 12 refused treatments, and three were due to aberrant anatomy. Additionally, three patients had advanced age (>85 years old) and three were on anticoagulation. The age-adjusted Charlson Comorbidity Index (CCI) score demonstrated seven high-risk patients with a CCI of 6 or 7, and three patients with a CCI >8 . Overall, kidney function remained clinically stable for all patients; none of the patients in the study required hemodialysis. During followup, 38% of patients became symptomatic. Two patients reported having flank pain, five reported gross hematuria, and six had urinary tract infections. No patients in the cohort developed an abscess, nor were any patients on daily prophylactic antibiotics. There was only one related admission for a complication of a staghorn stone during the study; this was for pyelonephritis. There were two deaths during the study period. One death was unrelated cardiac death and the other was from urosepsis in a non-compliant patient.

Conclusions: Our study shows that conservative treatment of staghorn stone in frail patients is feasible with plausible outcome. Future efforts should be directed toward standardization of this approach using frailty scores and outcome measurements.

P57

Practice patterns for management of urolithiasis in patients with spina bifida: Single-institution experience

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Introduction: Patients with spina bifida (SB) are at increased risk of stone formation with high recurrence rates. Management of stones should include a metabolic evaluation including 24-hour urine analysis and, if necessary, tailored dietary or pharmacological intervention. The objective of this study is to determine the practice patterns of stone management in this complex population. We hypothesize that the majority of patients are not undergoing full evaluation to guide appropriate management.

Methods: We performed a retrospective review of pediatric patients with SB who were diagnosed with urolithiasis and underwent definitive stone management from 2000–2016. We evaluated the extent of medical evaluation, referral patterns, types of management, and compliance to therapy. In our institution, medical management of stones is mostly performed by nephrologists based on urologist referral.

Results: A total of 24 patients with SB underwent a total of 58 procedures for kidney and/or bladder stones. Most patients were white (92%) males (54%), and the majority of stones were located in the bladder (54%), with fewer in the kidney (25%) or both locations (21%). Eight patients (33%) were referred to nephrology for stone management; the remainder were managed by urology. Of those referred, only five (63%) actually saw nephrology in consultation. Surprisingly, only four patients (17%) completed a 24-hour urine analysis, all of whom were managed by nephrology. Two were placed on medical management by nephrology, none by urology. Of 19 patients managed by urology, eight (42%) were managed with bladder irrigation, while the remainder received no stone

P57. Table 1. Management patterns for spina bifida patients with a history of treated urolithiasis

Total patients	24
Urology managing	19/24
Nephrology referrals	8/24
Completed nephrology consultation	5/8
Number with 24-hour urinalysis	4
Stone prevention strategy	
None	11
Bladder irrigation	10
Medication	2
Recurrence at 1 year	16/24

prevention therapies. 16 patients (67%) had recurrence of their stones within one year of treatment (Table 1).

Conclusions: Stone prevention in pediatric patients with SB at our institution is insufficient. Lack of referral to pediatric nephrology, incomplete metabolic evaluation by the managing service, and poor patient compliance are potential areas of improvement. Larger studies including other institutions are warranted to assess the generalizability of this problem and to determine optimal management strategies in this population.

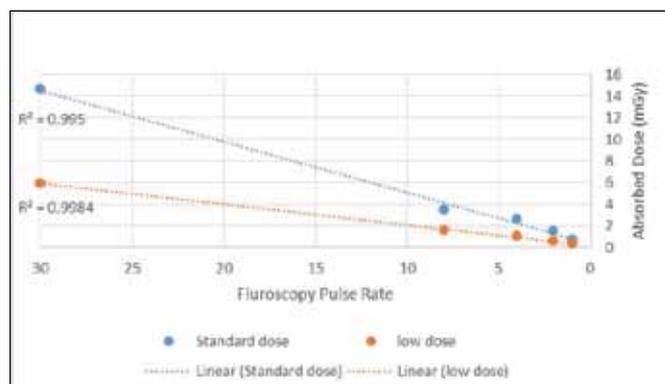
P58 Identifying the relationship between fluoroscopy pulse rate and radiation-absorbed dose

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Introduction: Techniques in reducing overall radiation dose during fluoroscopy are important for both patients and surgeons. Modern fluoroscopy units have settings that can be modified to lower radiation exposure, including low-dose and pulsed fluoroscopy. Prior studies have demonstrated that reducing pulse rate yields reductions in radiation dose that are less than would be expected if pulse rate and radiation dose had a linear relationship. It is unclear to what extent this finding stems from automated exposure adjustments performed by C-arm devices, changes in surgeon behavior, or limitations in using proxy measurements, such as fluoroscopy time or C-arm-reported radiation dose. We aimed to identify the relationship between fluoroscopy pulse rate and radiation absorbed dose in a controlled setting with equivalent exposure behaviors.

Methods: Using a simulated patient model, 60 second stopwatch timed fluoroscopy exposures were performed using pulse rates of 30, 8, 4, 2,



P58. Fig. 1. Fluoroscopy pulse rate vs. radiation-absorbed dose.

and 1 pulse(s) per second (pps). Each experiment was performed using both standard- and low-dose settings using a GE OEC 9800 plus C-arm. To validate results, each exposure was performed in triplicate. Landauer nanoDot™ OSL dosimeters were used to measure the radiation absorbed dose. The relationship between fluoroscopy pulse rate and radiation absorbed dose was analyzed for both standard- and low-dose settings. The correlation between radiation absorbed dose and proxy measurements, including fluoroscopy time and C-arm-reported radiation dose, was evaluated.

Results: Fluoroscopy pulse rate and radiation absorbed dose demonstrated a near-perfect linear correlation for both standard- ($R^2=0.995$) and low-dose ($R^2=0.998$) settings (Fig. 1). For any given pulse rate, using the low-dose setting reduced radiation absorbed dose by $58 \pm 2.8\%$. Fluoroscopy time demonstrated a linear relationship with radiation absorbed dose for both standard- ($R^2=0.996$) and low-dose ($R^2=0.990$) settings; however, for any given pulse rate fluoroscopy time did not change with the use of the low-dose setting. C-arm-reported radiation dose correlated linearly with radiation absorbed dose ($R^2=0.999$), but consistently underestimated measured values by an average of $49 \pm 3.5\%$. Using a combination of 1pps and low-dose fluoroscopy reduced radiation-absorbed dose by an average of $97.7 \pm 0.1\%$.

Conclusions: With equivalent exposure times, radiation-absorbed dose decreases linearly with fluoroscopy pulse rate. While fluoroscopy time correlates with absorbed radiation dose, it does not account for the effect of the low-dose setting. These findings allow for surgeons to make an informed decision when selecting fluoroscopy settings to optimize the trade-off between radiation exposure and image quality during endourological procedures.

P59 Stone composition and risk factors in patients with ureteropelvic junction calculi

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Introduction: Concomitant lithiasis in patients with ureteropelvic junction obstruction (UPJO) is not uncommon. The mechanism of stone formation in this subgroup of patients is an issue of debate among the urological community. We sought to assess the stone composition and associated urine milieu in this subset of patient.

Methods: We retrospectively reviewed the medical records of all patients who presented with simultaneous stone and UPJO between 2005 and 2016. We included patients with preoperative radiological studies and/or reports that demonstrate UPJO and a concurrent renal calculus. The stone type was defined by the predominant stone component, represented by at least 60% of all components.

Results: We identified 42 patients with UPJO and renal calculi. The male to female ratio was 1:1.1. The chemical composition of stones were calcium oxalate in 64.3% of the cases, calcium phosphate in 28.7%, and uric acid in 7.0%. Of those, 12 patients completed comprehensive metabolic workup. Metabolic abnormality was observed in 75% of the cases. The percentage of patients with hypercalciuria, hypocitraturia, low urine PH, and hyperoxaluria was 41.6%, 41.6%, 33.3%, and 25%, respectively.

Conclusions: A substantial number of UPJO patients who present with concomitant stone have metabolic abnormalities. Early identification of these abnormalities may direct the medical treatment to decrease stone recurrence rate.

P60**Assessment of adherence to metabolic evaluation guidelines in patients with nephrolithiasis: Results of a national multicentric study**

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Introduction: The rate of recurrence after a single stone episode is estimated to be as high as 50% at five years, making the role of stone prevention a high priority. The AUA and CUA guidelines recommend that clinicians perform metabolic testing in high-risk and recurrent stone formers, and in interested first-time stone formers; however, adherence to

these guidelines has not been confirmed. The purpose of this study was to evaluate metabolic workup patterns in a Canadian population, to assess not only its use, but also patients' understanding of their disease and their interest in following a diet or treatment to prevent future stone events.

Methods: Patients presenting to participating hospitals for shock wave lithotripsy treatment were administered a short questionnaire to identify risk factors of stone disease recurrence and to assess the use of metabolic workup evaluations for patients who require it according to the CUA and AUA guidelines. Furthermore, patients were asked if they received explanations about the results of their metabolic workup, if they understood these explanations when given, and if they were interested in following a diet or treatment to prevent future stone events. Statistical analyses were used to calculate percentages of patients for each of the preceding categories.

Results: Results were obtained for 202 patients. 76% of participants had an indication to get a metabolic evaluation and an additional 17.8% of patients were interested in knowing more about their disease. Among patients with any kind of indication for a metabolic workup, only 27.7% had one performed (23.7% in community-based centers and 31.3% in academic centers). 62.5% of metabolic evaluations were prescribed by a urologist. 60.7% of patients who had a metabolic evaluation received explanations about their results; however, only 63.6% of participants understood these explanations. 87.1% of the participants are interested in having more explanations about their kidney stones disease, and 83.7% are interested in following a diet or taking a medication to prevent further stone disease (Table 1).

Conclusions: Results of this study demonstrate that adherence to CUA and AUA guidelines is suboptimal and that explanations given to patients about their stone disease may not be adequate. Most patients with nephrolithiasis are interested in knowing more about their stone disease and are willing to follow a diet or a treatment to prevent future stone events.

P60. Table 1. Participant characteristics

Total number of patients	202.0
Age, median (years)	56.0
Sex, %	
Female	45.0
Male	55.0
Referring urologist, %	
Community-based center	49.5
Academic center	50.5
Unknown	0.5
Indications for metabolic evaluation, %	
Multiple/bilateral stones	62.4
Non-calcium stones	2.0
Family history of stones	28.2
Single kidney/chronic kidney disease	2.0
Poor kidney function	5.9
Stones during pregnancy	2.5
Systemic disease	10.4
Intestinal surgery	3.5
Occupation with risk for public safety	2.0
Percentage of patients with ≥1 indication	76.0
Cause of stone disease explained, %	19.3
Patients interested in more information about disease, %	87.1
Patients interested in following a diet or taking medications for disease, %	83.7
Metabolic evaluation, %	
Received when indication present	27.7
Explained when receiving	60.7
Understood by patient	63.6
Type of prescribing physician, %	
Urologist	62.5
Nephrologist	25.0
Family doctor	16.1
Date of metabolic evaluation	
≤1 year	53.6
1–5 years	16.1
5–10 years	5.3
≥10 years	23.2

P61**Contemporary trends in utilization and outcomes of percutaneous nephrolithotomy in the United States from 2003 to 2014**

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Introduction: Contemporary data has demonstrated that flexible ureteroscopy (URS) is increasingly challenging percutaneous nephrolithotomy (PCNL) in the treatment of medium- to large-sized kidney stones. Despite this, PCNL remains the standard of care for kidney stones >2 cm. A recent meta-analysis found that standard PCNL, compared to RIRS, conferred higher stone-free rates, albeit at the expense of higher complication rates, more blood loss, and longer hospital stay; however, limited updated data on contemporary utilization rates and outcomes of PCNL exists. In this study, we aimed to characterize national utilization trends, perioperative outcomes, and costs using a contemporary population-based cohort for symptomatic patients with a total renal stone burden >20 mm.

Methods: Using the Premier Healthcare Database, we identified 225 321 patients diagnosed with kidney/ureter calculus who underwent PCNL at 447 different hospitals across the US from 2003–2014. Baseline characteristics are listed in Table 1. Outcomes included 90-day postoperative complications (as classified by the Clavien-Dindo system), prolonged hospital length of stay, operating room time, blood transfusions, and direct hospital costs. Temporal trends were quantified by estimated annual percent change (EAPC) using least squares linear regression analysis. Multivariable logistic regression was performed to identify predictors of outcomes.

Results: PCNL utilization rates initially increased from 6.7% (2003) to 8.9% (2008) (EAPC +5.60%; p=0.02), before plateauing at 9.0% (2008–2011), then declining to 7.2% in 2014 (EAPC -4.37%; p=0.02). Overall (Clavien

P61. Table 1. Baseline characteristics of patients who underwent PCNL from the Premier Healthcare Database in the U.S. from 2003–2014

Patient characteristics	n	%
Mean age	55.1	0.10
Gender		
Male	106 126	47.1
Female	119 195	52.9
Race		
White	167 177	74.2
Non-White	58 144	25.8
Marital status		
Married	98 377	43.7
Non-married	126 944	56.3
Insurance status		
Medicare	94 597	42.0
Medicaid	26 789	11.9
Private	86 556	38.4
Other	17 377	7.7
Charlson comorbidity score		
0	108 474	48.1
1	52 232	23.2
≥2	64 614	28.7

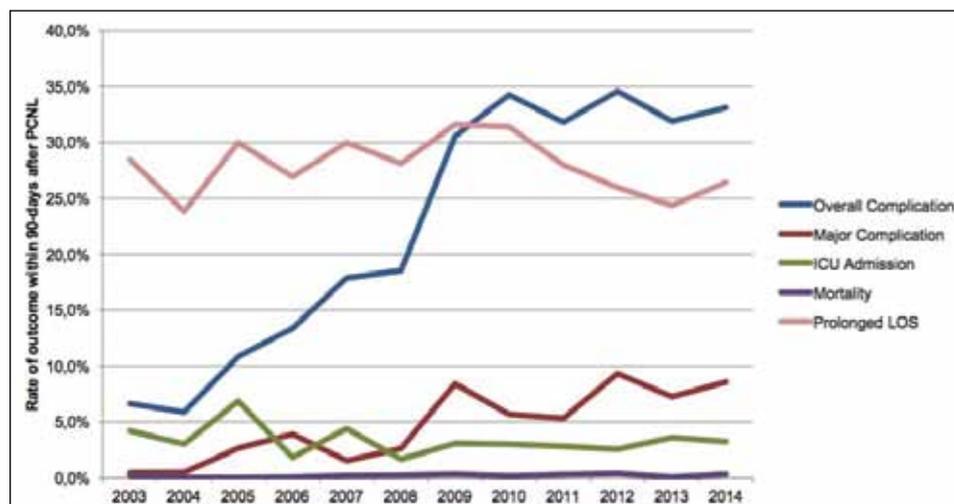
P61. Table 1 (cont'd). Baseline characteristics of patients who underwent PCNL from the Premier Healthcare Database in the U.S. from 2003–2014

Hospital characteristics	n	%
Teaching status		
Teaching	78 447	34.8
Non-teaching	146 874	65.2
Bed size		
<300 beds	57 674	25.6
300–499 beds	98 391	43.7
≥500 beds	69 256	30.7
Location		
Urban	216 617	96.1
Rural	8704	3.9
Region		
Midwest	55 050	24.4
Northeast	45 938	20.4
South	90 135	40.0
West	34 198	15.2
Volume		
Mean annual volume	13.2	0.07
Surgical characteristics		
Surgeon volume		
Mean annual volume	4.5	0.03
Year of surgery		
2003–2006	68 448	30.4
2007–2010	80 938	35.9
2011–2014	75 935	33.7

≥1) and major complication (Clavien ≥3) rates rose significantly (EAPC: +12.2% and +16.4%, respectively; both $p < 0.001$). Overall/major complication and blood transfusion rates were 23.1%, 4.8%, and 3.3%, respectively. Median operating room time and 90-day costs were 221 mins (interquartile range [IQR] 4) and \$12734 (IQR \$9419), respectively. Significant predictors of overall complications include higher Charlson Comorbidity Index (CCI) (CCI ≥2: odds ratio [OR] 2.08; $p < 0.001$) and more recent year of surgery (2007–2010: OR 3.20, 2011–2014: OR 4.39; both $p < 0.001$). Higher surgeon volume was significantly associated with decreased overall (OR 0.992; $p < 0.001$) and major (OR 0.991; $p = 0.01$) complications (Fig. 1).

Conclusions: Contemporary decrease in utilization of PCNL may be due to an increase in the use of flexible URS. Possibly, increasing complex cases being managed with PCNL may contribute to the rise in complication rates. It remains to be seen whether patients with poor CCI

might benefit from staged flexible URS procedure instead of a more morbid PCNL procedure. Surgeon volume is an important factor in decreasing complications and prolonged hospital length of stay. Numerous patient, hospital and surgical characteristics affect complication rates and may have implications on referral patterns and patient selection.



P61. Fig. 1. Trend of 90-day postoperative outcome (rate of overall complication, major complications, intensive care unit [ICU] admission, mortality, prolonged length of stay [LOS]) among patients who underwent percutaneous nephrolithotomy (PCNL) from the Premier Healthcare Database in the U.S. from 2003–2014.

P62 Ambulatory percutaneous nephrolithotomy: A cost-reducing innovation

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Introduction: Globally, growth in health-care expenditures is becoming unsustainable. In 2016, Canada's health-care expenditure was estimated at \$228 billion (\$6299 per person) or 11% of gross domestic product. The shift from inpatient

to outpatient surgical care — largely led by urology — has helped reduce healthcare costs. Ambulatory percutaneous nephrolithotomy (aPCNL) is a relatively new innovation that offers potential cost savings and has been shown to be safe and effective in properly selected patients. Our objective was to quantify potential cost savings of aPCNL in Canada.

Methods: A review of the databases and reports of the Canadian Institute for Health Information (CIHI), an independent, not-for-profit organization that provides essential information on Canadian healthcare systems) was performed to determine multiple estimated data points, including: number of PCNL cases performed annually; average total cost of a single PCNL operation; average length of stay for PCNL in Canada; average daily cost of an overnight stay in a standard hospital bed. The formula used was as follows: cost of aPCNL = total cost of standard PCNL - cost of post-operative hospital stay. These calculations were based on the following assumptions: cost of an average postoperative hospital stay provides an estimate of the cost savings of aPCNL; patients were not admitted to the intensive care unit postoperatively; aPCNL has the same ER visit and readmission rates as standard PCNL.

Results: An estimated 6000 adult PCNL cases occur annually in Canada. The average length of stay for PCNL in an adult is 5.1 days and the average estimated daily cost of a standard hospital bed is \$2000 per day. Excluding hospital stay, CIHI's estimated average cost of PCNL is \$9212 — the estimated cost of aPCNL. The total cost of standard PCNL is calculated at \$19 412. The resulting potential cost savings of aPCNL is approximately \$10 200 per case in Canada.

Conclusions: With potential savings of over \$10 000 per PCNL case in Canada, aPCNL represents an innovative surgical approach that could reduce costs across North American healthcare systems. Understandably, not all patients are suitable for same-day discharge following PCNL, but if even 5% of PCNL cases could be performed on an outpatient basis, an estimated potential cost savings greater than \$3 million per year (300 cases x \$10 200/case) could be realized in Canada alone.

P63

PCNL in kidneys with borderline renal function: A single-institution experience

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Introduction: Prior to the treatment of staghorn calculi, the American Urological Association recommends urologists obtain a functional imaging study if clinically significant loss of renal function in the involved kidney is suspected. Furthermore, it endorses nephrectomy for kidneys with poor function, as they may act as source of infection and pain. We sought to investigate the feasibility of percutaneous nephrolithotomy (PCNL) in kidneys with borderline renal function, particularly with regards to postoperative complications.

Methods: We performed a retrospective review of patients with borderline kidney function (split function <35%) who underwent PCNL between 2003 and 2015. Inclusion criteria necessitated workup with functional imaging (dimercaptosuccinic acid [DMSA] scan). PCNL was offered as a treatment option for patients who refused nephrectomy or observation.

Results: 27 patients with borderline functional kidneys underwent PCNL during the study period. The median age of the patients was 53 years (interquartile range [IQR] 40–61); male to female ratio was 1:1.4. The percentage of patients in our cohort with a split function of 10–19, 20–29, and 30–35 was 26%, 44.4%, and 29.6%, respectively. In 26% of the cases, interventional radiology inserted a nephrostomy tube preoperatively. A second look procedure was performed in 52% of cases. 78% of the cases were stone-free after immediate postoperative imaging; three out of the six cases with residual fragments underwent retrograde ureteroscopy/laser lithotripsy. One case developed immediate postoperative bleeding that was treated conservatively. The median creatinine at one month postoperative followup was 0.9 (Table 1).

Conclusions: For staghorn calculi in kidneys with borderline function, PCNL is a feasible treatment option with minimal risk of complications,

P63. Table 1. Study results

N	27 (<35)
Split renal function to the affected area	
30–35	8
20–29	12
<20	7
Age, media (IQR)	53 (61–40)
Male	11 (41%)
Female	16 (59%)
Average operative time, minutes	172.8 (83–246)
Access by IR	7/27 (26%)
Single access	27/27 (100%)
Occlusion balloon	19 /27 (70%)
Tubeless	6/27 (22%)
Second look	14/27 (52%)
Minor complications <30 days	5 (18.5%)
Major complications <30 days	1 (bleeding; required 1 unit)
SFR	21/27 (78%)
Residual fragments required URS	3/27 (11%)/50%
Cr, median	0.9

Cr: creatinine; IQR: interquartile range; SFR: stone-free residual; URS: ureteroscopy.

including bleeding and repeat procedures. Future prospective studies should assess the long-term benefit of salvaging borderline functional kidneys in patients with nephrolithiasis.

P64

Characterization of upper tract urolithiasis in patients following urinary diversion

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Introduction: Urinary diversion has been implicated in causing several metabolic derangements that may hasten stone formation. We sought to characterize the stone type and urinary lithogenic risk factors.

Methods: We queried our institutional stone database (January 2010–December 2016) for urinary diversion patients who had stone-related surgery. We included patients who were diagnosed with upper tract stones and had a stone analysis or 24-hr urine collection. We excluded patients with a stone in the urinary diversion, struvite stone formers, and those with augmentation cystoplasty. The stone type was defined by the predominant stone component, represented by at least 60% of all components.

Results: 21 patients were included in the final analysis (five female, 16 male). Median age was 65.3 years (interquartile range [IQR] 59–75.9). Median body mass index was 28.8 (IQR 22.9–32.8). 16 patients had an incontinent diversion, and five patients had a continent urinary diversion. All patients had at least one abnormality on 24-hr urine collection study. The percentage of patients in this cohort with high urine pH, hypocitraturia, and hyperoxaluria was 87%, 75%, and 37.5%, respectively. Calcium phosphate, calcium oxalate, and mixed stone were observed in 41%, 35%, and 24% of the analyzed stone, respectively.

Conclusions: Patients with urinary diversion harbor significant metabolic abnormalities that predispose them to metabolic stone formation. The astute urologist should exclude metabolic disorder in the clinical management of patients with urinary diversion.

P65
Routine complete blood count has limited value post-percutaneous nephrolithotomy in identifying hemorrhagic or infectious complications

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Introduction: Percutaneous nephrolithotomy (PCNL) is a minimally invasive procedure with low complication rates reported by high-volume centers; hemorrhage and sepsis rates are typically <5%. Yet postoperative bloodwork, including complete blood count (CBC), is routinely performed in the early postoperative period at most centers. We set out to determine how effective routine postoperative CBC was in identifying complications after PCNL, as it may represent a low-value care practice.

Methods: A retrospective chart review was performed of all PCNL procedures at our center from January 2014–December 2015. PCNL cases performed on renal transplant patients and percutaneous renal access cases for strictures or urothelial tumors were excluded from the analysis. Patient demographic and stone characteristics were collected for analysis along with postoperative outcome data.

Results: 248 patients (134 female, 114 males) underwent PCNL for urolithiasis. Mean age was 55.9 years, mean ASA score 2.5, and mean length of stay in hospital was 1.59 days (± 3.6). Most patients (208, 83.9%) had neither ureteric stent nor percutaneous tube prior to PCNL. Postoperatively, five (2%) patients required extended CBC monitoring and two (0.8%) patients required transfusion, one of whom required embolization (0.4%). All patients that required transfusion demonstrated abnormal vital signs (tachycardia or hypotension). Of the five patients that required only extended CBC monitoring, one had abnormal vital signs and four had normal vital signs. Mean hospital length of stay for patients undergoing CBC monitoring was 2.2 (± 1.6) days compared to 1.54 (± 3.7) days for those with a normal postoperative course. When comparing patients with no sign of postoperative hemorrhage to those requiring monitoring or intervention, preoperative anticoagulation or antiplatelet therapy was associated with a higher risk of complication (1.0 vs. 1.13; p<0.001). Only nine (3.6%) patients developed systemic inflammatory response syndrome (SIRS) or sepsis post-PCNL. All of these patients developed abnormal vital signs post-PCNL (fever, tachycardia, or hypotension). Patients that developed either SIRS or sepsis were more likely to have a positive preoperative urine culture (p=0.015).

Conclusions: Routine postoperative CBC after PCNL does not improve identification of hemorrhage or infection. Abnormal vital signs alone identified all patients that required transfusion or embolization after PCNL and the development of SIRS or sepsis. Length of stay for patients undergoing CBC monitoring in the setting of normal vital signs, was a full day longer and resulted in no clinical benefit. Postoperative CBC might be beneficial in anti-coagulated patients.

P66
Hypogonadal men with idiopathic infertility have more sperm than eugonadal men

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Introduction: 15% of all couples are subfertile, with most men diagnosed with idiopathic infertility and many presenting with hypogonadism. A 2013 meta-analysis demonstrated an inverse correlation between body mass index (BMI) and sperm concentration. The aromatization of testosterone (T) to estradiol results in a hypogonadotrophic hypogonadism-related drop in both testosterone production (Luteinizing hormone [LH]) and spermatogenesis (follicle-stimulating hormone [FSH]). Since testicular function requires a testosterone-rich environment, the hypothesis that hypogonadal men would have both a lower sperm concentration and greater BMI was retrospectively analyzed.

Methods: With IRB approval, 68 males presenting over a 12-month period for evaluation of male factor infertility were retrospectively analyzed. A total of 38 hypogonadal men (total T <300 ng/dL) were compared to eugonadal infertile men (total T >300 ng/dL) regarding BMI and initial sperm concentration. 30 males with confounding diagnoses were excluded (Table 1). Statistical analysis (Table 2) was performed using a t-test comparing continuous variables, with a p<0.05 determining statistical significance.

Results: There was an inverse relationship between BMI and T levels (p=0.032). Although not statistically significant, hypogonadal men had a higher mean sperm concentration compared to those with a total T over 300 ng/dL (p=0.07).

Conclusions: As expected, there is an inverse relationship between hypogonadal infertile men (total T <300 mg/dL) and BMI (p=0.032). Surprisingly, there was no significant relationship between sperm concentration in hypogonadal men when compared to eugonadal men in our population; however, the data does trend toward hypogonadal men having a greater sperm concentration when compared to eugonadal men (p=0.07). Larger studies are required to determine if hypogonadal infertile men have a significant increase in sperm concentration when compared to eugonadal men.

P67
A randomized, double-blinded, placebo-controlled trial between anastrozole and clomiphene to evaluate improvement in hypogonadal symptoms and erectile function using ADAM, IIEF, and EHS validated scales

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Introduction: Testosterone (T) replacement and restoration have gained popularity in recent years. While T replacement focuses on the use of exogenous T, T restoration increases endogenous T production through stimulation of the hypothalamic-pituitary axis via aromatase inhibitors (AI) or selective estrogen receptor modifiers (SERMS). While both classes reduce estrogen feedback inhibition at the level of the pituitary, SERMS cause an increase in serum estradiol, whereas AIs inherently reduce estradiol levels. While both of these medications have similar ease of administration and occupy a similar place in the treatment paradigm for men with hypogonadism, there have been few direct comparisons with regards to treatment efficacy or superiority. We performed a double-blinded, randomized, placebo-controlled trial to determine the improvement in

P66. Table 1. Excluded

	n (%)
Testosterone replacement	4 (13)
Klinefelters	3 (10)
Cystic fibrosis	2 (7)
Y-chromosome microdeletion	1 (3)
Prolactinoma (>25 ng/dL)	1 (3)
Vasectomy	10 (33)
Missing data	9 (30)

P66. Table 2. Statistical analysis

	Mean	95% confidence interval	p
Body mass index (kg/m ²)			0.032
T <300 ng/dL	32.47	28.10043–36.8329	
T >300 ng/dL	27.44	25.62074–29.26126	
Sperm concentration (M/cc)			0.07
T <300 ng/dL	13.39	4.058552–22.73034	
T >300 ng/dL	4.69	2.072124–7.316765	

hypogonadal symptoms and laboratory values in men who are taking either clomiphene (SERM), anastrozole (AI), or placebo.

Methods: A total of 25 individuals with hypogonadism (baseline T 150–350 ng/dL on two separate assays) aged 18–70 years, positive baseline Androgen Deficiency in Aging Males (ADAM) score, body mass index (BMI) <40, and Sexual Health Inventory for Men (SHIM) >7 and <21 were randomized to AI, SERM, or placebo for eight weeks in a cross-over fashion for a total study duration of 24 weeks. At the conclusion of each eight-week period, hormone assays consisted of total testosterone (TT), free testosterone (FT), estradiol (E2), luteinizing hormone (LH), follicle-stimulating hormone (FSH), and sex hormone-binding globulin (SHBG). Additionally, patients completed the ADAM, International Index of Erectile Function (IIEF), Erection Hardness Score (EHS), and at least four Sexual Encounter Profile questionnaires for each eight-week visit. Our primary outcome was an improvement in IIEF score of four points after eight weeks of treatment as compared to placebo. Secondary outcomes included: normalization of T, decreased affirmative responses to ADAM questionnaire, improved EHS and SEP scores.

Results: The average age of participants was 46.7 years (range 31–65). At study onset, SHIM scores and number of affirmative responses to ADAM

questionnaire at screening averaged 15 points and 6.13, respectively. Use of SERM was associated with a 26% reduction in positive ADAM response, while use of AI was associated with 14% reduction; however, neither were statistically significant compared to placebo ($p=0.615$). No significant change in EHS or IIEF scores were noted between either of the study agents vs. placebo ($p=0.361$ and $p=0.755$, respectively). At time of screening, the average serum TT among the study group was 275.2 ng/dL (range 95–428); both study agents were found to improve serum TT, FT, FSH, and LH compared to placebo, while use of SERM was superior to AI in increasing serum TT and LH levels ($p=0.01$). Only SERM had a significant effect on serum E2 and SHBG levels ($p=0.0001$).

Conclusions: Use of both SERM and AI were noted to produce eugonadal levels of serum TT and FT. The drug groups also had improvements in ADAM questionnaire response, with use of SERM producing a greater impact than use of AI; however, this did not reach statistical significance. Neither agent significantly affects EHS or IIEF compared to placebo or screening score.

Moderated poster session 5: Oncology 2 Saturday, October 14, 2017 7:30–9:00 am

P68

Vanishing prostate cancer: Quantifying the relationship between biopsy disease volume and absence of disease in radical prostatectomy specimens

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Introduction: Vanishing prostate cancer is a phenomenon whereby biopsy-proven prostatic adenocarcinoma is not ultimately present in the surgical specimen following radical prostatectomy. Significant research has demonstrated the epidemiological impact of this phenomenon, as well as several theories for plausible explanation. Little has been done to elucidate key clinical findings in the preoperative period that may portend higher likelihood of its occurrence. Within a population of low-grade, low-volume prostate cancer patients diagnosed via transrectal ultrasound-guided prostate (TRUSP) biopsy, we aimed to show a relationship between quantitative volume of disease in biopsy specimens and absence of pathology in radical prostatectomy specimens.

Methods: Using the database of an NCCN Designated Cancer Center, we identified the percent volume of Gleason grade 3 + 3 = 6 prostatic adenocarcinoma in patients with one positive core on TRUSP biopsy who ultimately underwent radical prostatectomy. We then compared these percent volumes to their respective final pathology reports following radical prostatectomy. Additionally, we identified all recorded cases of vanishing prostate cancer and compared them to preceding TRUSP biopsy results. Demographic data were also collected for secondary analysis.

Results: We were able to demonstrate an inverse relationship between the volume of disease within a single-core Gleason grade 3 + 3 = 6 prostate cancer TRUSP biopsy specimen and the likelihood of having a radical prostatectomy specimen demonstrating no evidence of disease. Furthermore, a TRUSP biopsy threshold of less than 20% volume of disease in a single core of 3 + 3 = 6 prostate cancer was shown to capture the vast majority of these cases of vanishing prostate cancer.

Conclusions: With so much focus on the overtreatment of prostate cancer and the utility of active surveillance, a rapidly evolving management strategy, prognosticators of clinically insignificant disease are in high demand. Our work demonstrating a correlation between volume of disease in single-core Gleason grade 3 + 3 = 6 prostate cancer biopsy specimens and absence of disease in radical prostatectomy specimens highlights an important, previously undescribed relationship with potentially significant counselling implications at the time of initial presentation.

P69

Trends in the management of small renal masses: A survey of members of the Endourological Society

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Introduction: Treatment modalities for the small renal mass include open or minimally invasive radical or partial nephrectomy, and laparoscopic or percutaneous ablations. We surveyed members of the Endourological Society to evaluate how practitioner and clinical practice characteristics affected the management of small renal masses over time.

Methods: The survey assessed characteristics of urologists (recency of

residency and fellowship training, clinical practice type and location, and treatment modalities available) and their management of small renal masses over the past year and over the course of the year five years prior. We used chi-square test of independence and McNemar's test for analysis.

Results: A total of 1495 survey invitations were extended via email, of which 129 respondents ultimately completed the survey. A summary of respondent characteristics is shown in Table 1. Within the last year, comparing academic, non-academic (hospital-based), and private practice settings yielded similar frequencies in usage of the various treatment modalities. When comparing the last year of practice to five years ago, there were similar changes in the use of each treatment modality across practice type (Table 2). Compared to five years ago, robotic surgery was more available in the past year (96% vs. 84%; $p=0.002$), with significantly more urologists using robotic partial nephrectomy for the majority of small renal masses (66% vs. 38%; $p<0.001$). The frequency with which percutaneous ablation was used has not changed over the last five years ($p=0.881$); however, the usage of laparoscopic ablation decreased ($p<0.001$).

Conclusions: The availability and usage of robotic surgery have increased significantly over the last five years. The usage of percutaneous ablation has remained the same while the usage of laparoscopic ablation has decreased. Future studies will assess use and cost efficiency in the context of oncological and surgical outcomes.

P70

Trends in penile cancer diagnosis in the era of the ACA

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Introduction: The Patient Protection and Affordable Care Act (ACA) was signed into law in 2010, and with it brought provisions for increased health-care coverage for previously uninsured Americans. This study examines the cohorts of men diagnosed with penile cancer in Medicaid expanding and non-expanding states in 2014 under the ACA. We hypothesized that Medicaid-expanding states would increase healthcare access for their constituents, and this cohort would be less likely to be uninsured and more likely to present at earlier stages. We additionally studied if these changes especially impacted traditionally marginalized populations.

Methods: Data was obtained by querying the National Cancer Database benchmark reports for penile cancer for 2004–2009 and 2014. All diagnosis types and hospital cohorts were included. Data was obtained by individual state, and divided into Medicaid-expanding states and non-participants. Numbers of men diagnosed by age, disease stage, insurance type, race, and household income were grouped by participants and non-participants. Chi-square analysis was used to compare cohorts, with significance set at $p<0.05$.

Results: Data from 572 men from Medicaid-expanding states and 664 from non-participating states was obtained for 2014. No individual data was available for nine states. On comparing aggregate 2014 data to pre-ACA years, significant differences were only seen in proportion of uninsured ($p=0.034$) and stage at diagnosis ($p<0.001$). In 2014, no significant difference was seen in overall proportion of men under vs. over 60 ($p=0.46$); however, when looking at men under age 60, participating states showed higher proportions of males ages 20–29 and 30–39 ($p=0.01$). Difference in proportion uninsured vs. insured was also significant ($p=0.01$). Difference in race distribution (White, Black, Hispanic) was significant ($p=0.01$), with ACA-participating states reporting a higher proportion of White males. No significant difference was noted in proportion of patients with income less than \$28 000 ($p=0.44$) or stage at diagnosis ($p=0.61$).

P69. Table 1. Summary of respondent training and practice characteristics

Variable	Respondents, n (%) (N=129)
Resident timeframe	
0–5 years ago	56 (43.4)
6–10 years ago	28 (21.7)
11–15 years ago	20 (15.5)
>15 years ago	25 (19.4)
Fellowship training	
Endourology	53 (41.1)
Robotics	5 (3.9)
Reconstructive	4 (3.1)
Oncology	22 (17.1)
Transplant	1 (0.8)
Female urology	2 (1.6)
Infertility	0 (0.0)
Pediatrics	4 (3.1)
Research	5 (3.9)
Other	1 (0.8)
No fellowship	39 (30.2)
Fellowship timeframe	
0–5 years ago	44 (50.6)
6–10 years ago	16 (18.4)
11–15 years ago	14 (16.1)
>15 years ago	13 (14.9)
Region	
West	24 (18.6)
Midwest	34 (26.4)
Northeast/New England	36 (27.9)
South	33 (25.6)
Other	2 (1.6)

Conclusions: In 2014, the ACA changed the landscape of healthcare coverage in America. Early Medicaid-expanding states reported new diagnosis of penile cancer in significantly higher proportions of White and young males (20–39), and lower proportions of uninsured. No significance was seen in stage at diagnosis or proportion of lowest income bracket. Further studies are needed to understand the underlying causes, as well as to see if these findings are persisting.

P71

The utility of urine cytology in female patients with vaginal atrophy and asymptomatic microhematuria

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Introduction: Vaginal atrophy is a common and underdiagnosed condition associated with decreased estrogenization of vaginal tissue following menopause. Population studies have demonstrated asymptomatic microhematuria occurs in 13% of post-menopausal patients. Many urologists rely on urine cytology in the initial evaluation of asymptomatic microscopic hematuria. The questionable reliability of the test and the indeterminate significance of an atypical result often lead to unwarranted anxiety and further invasive procedures and is therefore recommended against in routine screening. Urine cytology can be considered in patients with risk factors for carcinoma in situ (CIS). Irritative symptoms of CIS may be difficult to distinguish from those of vaginal atrophy. The cytology specimens in female patients with vaginal atrophy and microhematuria

P69. Table 1 (cont'd). Summary of respondent training and practice characteristics

Variable	Respondents, n (%) (N=129)
Practice type	
Academic	63 (49.2)
Non-academic/hospital-based	23 (18.0)
Private practice	42 (32.8)
Practice setting	
Metropolitan	103 (80.5)
Non-metropolitan	25 (19.5)
Number of patients per week	
<50	27 (20.9)
50–75	44 (34.1)
76–100	36 (27.9)
101–125	16 (12.4)
126–150	5 (3.9)
>150	1 (0.8)
Percentage of patients with BMI >30	
<10	3 (2.3)
10–25	17 (13.3)
25–50	67 (52.3)
50–75	39 (29.7)
75–100	3 (2.3)

BMI: body mass index.

were examined in order to determine the utility of urine cytology in this understudied population.

Methods: The electronic health record system of a single institution was queried for female patients between 2013 and 2016 with ICD diagnoses of vaginal atrophy, ICD diagnosis of hematuria, and patients using topical vaginal estrogen cream as a surrogate for vaginal atrophy. Patients included were age 45 or greater who had a positive microscopic urinalysis (≥ 3 RBCs/hpf), a negative corresponding urine culture, and documented vaginal atrophy or vaginal estrogen use, on whom urine cytologies were performed as part of a microhematuria evaluation. Patients with gross hematuria were excluded. No patients had previous history of urothelial carcinoma.

Results: 315 patients were identified, of which 42 met inclusion criteria. Mean age was 62 years (range 46–89). 24/42 patients had a smoking history. Of these 42 patients, 17 patients had at least one atypical cytology specimen (40.4%). A total of 93 urine cytologies were obtained from these 42 patients, 21/93 were deemed atypical (22.5%). Upon further evaluation of patients with an atypical cytology specimen, 12 completed microscopic hematuria workup, including computed tomography intravenous pyelogram (CT IVP) and cystoscopy, none of which resulted in any evidence of urologic malignancy.

Conclusions: The rate of atypical cytology in pooled urine cytologies is comparable in patients with vaginal atrophy to reported rates of atypical cytology in the general population (~20%). Obtaining urine cytology in patients with vaginal atrophy and microhematuria is of little diagnostic significance. This should be avoided, as it may bring unwarranted anxiety and unnecessary further diagnostic tests to these patients.

P69. Table 2. Summary of respondent practice patterns for small renal masses within the past five years

Variable	Within the past year	Five years ago
	Respondents, n (%) (N=124)	Respondents, n (%) (N=87)
Number of renal masses		
<5	6 (4.8)	4 (4.6)
5–10	10 (8.1)	6 (6.9)
11–20	20 (16.1)	11 (12.6)
21–30	15 (12.1)	17 (19.5)
31–40	22 (17.7)	14 (16.1)
>40	51 (41.1)	35 (40.2)
Unavailable treatment options		
Robotic surgery	5 (4.0)	14 (16.5)
Laparoscopic surgery	4 (4.0)	3 (3.5)
Percutaneous ablation	11 (8.9)	10 (11.8)
Laparoscopic ablation	26 (21.0)	15 (17.6)
All available	92 (74.2)	56 (65.9)
Active surveillance, %		
0	3 (2.4)	6 (7.2)
10	65 (52.4)	51 (61.4)
25	43 (34.7)	23 (27.7)
≥50	13 (10.5)	3 (3.6)
Open partial nephrectomy, %		
0	49 (42.2)	17 (21.3)
10	55 (47.4)	34 (42.5)
25	7 (6.0)	22 (27.5)
≥50	5 (4.3)	7 (8.8)
Open radical nephrectomy, %		
0	59 (50.9)	24 (30.0)
10	46 (39.7)	46 (57.5)
25	10 (8.6)	8 (10.0)
≥50	1 (0.9)	2 (2.5)

P69. Table 2 (cont'd). Summary of respondent practice patterns for small renal masses within the past five years

Variable	Within the past year	Five years ago
	Respondents, n (%) (N=124)	Respondents, n (%) (N=87)
Laparoscopic partial nephrectomy, %		
0	96 (82.8)	51 (63.8)
10	8 (6.9)	16 (20.0)
25	7 (6.0)	8 (10.0)
≥50	5 (4.3)	5 (6.3)
Laparoscopic radical nephrectomy, %		
0	30 (25.9)	14 (17.5)
10	40 (34.5)	18 (22.5)
25	38 (32.8)	36 (45.0)
≥50	8 (6.9)	12 (15.0)
Robotic partial nephrectomy, %		
0	10 (8.6)	20 (25.0)
10	5 (4.3)	8 (10.0)
25	25 (21.6)	22 (27.5)
≥50	76 (65.5)	30 (37.5)
Robotic radical nephrectomy, %		
0	72 (62.1)	58 (72.5)
10	23 (19.8)	14 (17.5)
25	15 (12.9)	6 (7.5)
≥50	6 (5.2)	2 (2.5)
Percutaneous ablation, %		
0	37 (31.9)	27 (33.8)
10	61 (52.6)	42 (52.5)
25	18 (15.5)	10 (12.5)
≥50	0 (0.0)	1 (1.3)
Laparoscopic ablation, %		
0	100 (86.2)	50 (62.5)
10	14 (12.1)	23 (28.8)
25	2 (1.7)	6 (7.5)
≥50	0 (0.0)	1 (1.3)

P72

The use of brachytherapy with cesium 131 in patients with significant baseline lower urinary tract symptoms and large-volume prostates

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Introduction: Long-standing relative contraindications for prostate brachytherapy (PB) have been bothersome pre-treatment voiding symptoms and large prostate volumes due to concerns for significant treatment-related urinary morbidity. The present study presents our experience with PB in men with significant baseline lower urinary tract symptoms (LUTS) and/or a large prostate volume.

Methods: Patients undergoing PB with cesium 131 (¹³¹Cs) at our institution with either baseline moderate or severe voiding symptoms, as determined by an American Urological Association symptom score (AUA-SS) ≥15, or a prostate volume >50 cc on transrectal ultrasound were included in our retrospective analysis. At each post-treatment followup, patients completed both an AUA-SS and an Expanded Prostate Cancer Index Composite (EPIC) urinary survey to assess voiding symptoms.

Results: 43 patients with a pre-treatment AUA-SS ≥15 and 114 patients with a prostate volume >50 g and minimum followup of six months

were included in this analysis. In the patients with bothersome voiding symptoms, mean pre-treatment AUA-SS was 18.8. AUA-SS increased to a mean of 22.6 at two weeks post-treatment in these patients, and then returned to baseline at three and actually improved at six months post-treatment, with means of 17.0 and 13.7, respectively. At three and six months post-treatment, 82% and 94% of patients, respectively, reported they were back-to-baseline in terms of their voiding pattern. Patients with prostate volumes >50 cc had a pre-treatment mean prostate volume of 62.1 cc (range 50.1–89.5), and had a pre-treatment AUA-SS mean of 8.0 and an EPIC urinary score mean of 87. At two weeks post-treatment, mean AUA-SS and EPIC urinary scores were 19.5 and 52, and improved significantly at three months post-treatment to 12.0 and 78. At six months post-treatment, scores approached back-to-baseline, with an AUASS mean of 8.2 and an EPIC urinary score of 79, which remained stable at five-year followup (7.1 and 84, respectively).

Conclusions: The present study suggests PB with ^{131}Cs can be offered to patients with moderate to severe baseline LUTS and/or large prostate volumes. Despite widespread belief to the contrary, LUTS in these patients were greatly improved by three months post-treatment and approached back-to-baseline levels at six months, with long-term sustainability to five years. Men with moderate to severe pre-treatment voiding symptoms actually had improved voiding symptoms at six months when compared to their baseline.

P73

The prevalence and biopsychosocial predictors of suicidality in men with prostate cancer

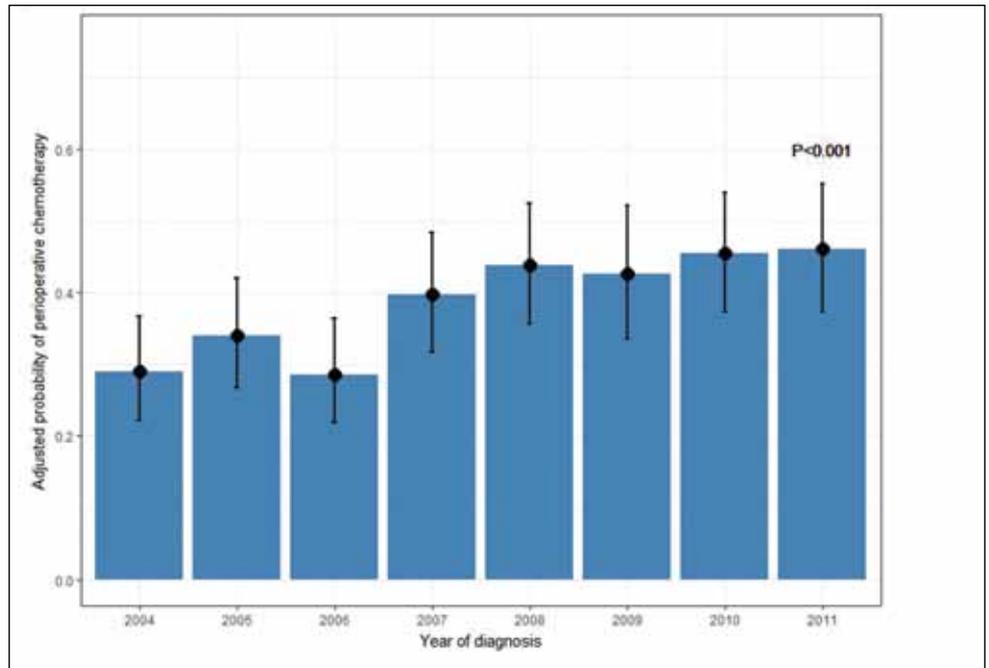
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Introduction: Prostate cancer (PCa) is associated with depression above levels reported in the general population. There is a positive association between PCa diagnosis and suicide. The first aim of this study is to establish a point prevalence for suicidality among patients diagnosed with PCa. The second aim is to evaluate what biopsychosocial variables best predict greater risk of suicidality in men with PCa.

Methods: Participants were recruited from the ambulatory PCa clinics at Queen's University and through direct invitation from an online PCa support group (Prostate Cancer Canada). All willing participants were directed to the online survey. Hierarchical regression was used to predict suicidality (SBQ-R), with stage of PCa, length of diagnosis, number of comorbidities, number of treatments, exposure to suicide, functional, emotional and social well-being subscales of the FACT-P, hopelessness, stress catastrophizing, fears about death, and perceived interpersonal burdensomeness and thwarted belongingness scales (INQ-10).

Results: At time of submission, 229 participants began but 110 participants completed the survey (48.3% response rate), with one participant removed due to missing data. 86 (77.5%) participants were diagnosed with curative PCa and 24 (21.6%) with advanced PCa. The most common treatments received were prostatectomy (61.3%), radiotherapy (40.5%), and androgen-deprivation therapy (37.8%). In regard to suicidality, 18.9% were classified as at-risk cases using a general population cut-score, while 12.6% were classified as at-risk cases using an inpatient population cutoff. The regression analyses indicated that thwarted belongingness ($\beta=0.45$) was the strongest predictor of suicidality [$F(97, 2)=12.12$; $p<0.01$; $adj\ r^2=0.38$], with previous exposure to suicide ($\beta=0.23$), emotional well-being ($\beta=0.20$) as other significant considerations. Cancer stage was not a significant predictor of suicide behaviors.

Conclusions: Although exposure to suicide and reduced emotional well-being were associated with greater suicidality, thwarted belongingness, or the extent to which individuals believe their need to belong is met or unmet, appears to be a more salient clinical target. Screening and identifying troublesome cognitive patterns in patients with PCa may be beneficial in reducing suicidality.



P74. Fig. 1. Adjusted probability of perioperative chemotherapy by year. *Adjusted by age, gender, race, comorbidity, marital status, county education level and median household income, tumor grade, tumor stage, and nodal status.

P74

The evolving landscape of perioperative chemotherapy usage in bladder cancer patients treated with radical cystectomy

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Introduction: The use of cisplatin-based perioperative chemotherapy (POC) in the neoadjuvant and adjuvant setting for muscle-invasive bladder cancer (MIBC) is supported by high-quality evidence showing a survival benefit. We investigate trends in POC use in a more contemporary cohort.
Methods: Using Surveillance, Epidemiology, and End Results (SEER)-Medicare data, we identified patients with an initial diagnosis of non-metastatic MIBC between 2004 and 2011 that received radical cystectomy (RC). POC was defined as systemic chemotherapy within one year of diagnosis. A multivariable logistic regression model was fit to assess for predictors of POC use over time.

Results: We identified 2004 patients initially diagnosed with non-metastatic MIBC that received RC (59.3% RC alone and 40.7% RC with POC). The adjusted probability of POC use by year significantly increased over time (Fig. 1). Pairwise comparisons show a significant increase in POC usage between 2004 and 2007; however, there was no significant change after 2007. In multivariable analysis, stage pT3 (odds ratio [OR] 1.7; 95% confidence interval [CI] 1.3–2.1; $p<0.001$), stage pT4 (OR 2.7; CI 1.9–3.7; $p<0.001$), and node-positive disease (OR 5.3; CI 4.0–7.0; $p<0.001$) were independent predictors of POC use. The odds of receiving POC decreased for older, unmarried patients with increasing Charlson Comorbidity Index.

Conclusions: Consistent with prior studies, our findings show increasing use of POC in the treatment of non-metastatic MIBC treated with RC. We are the first to show a plateau in usage after a long period of increased awareness and administration of POC in this population. This plateau effect may reflect unmet educational needs or socioeconomic barriers to patient care that warrant further investigation.

P75

The comparative effectiveness of quadratus lumborum blocks and paravertebral blocks in radical cystectomy patients

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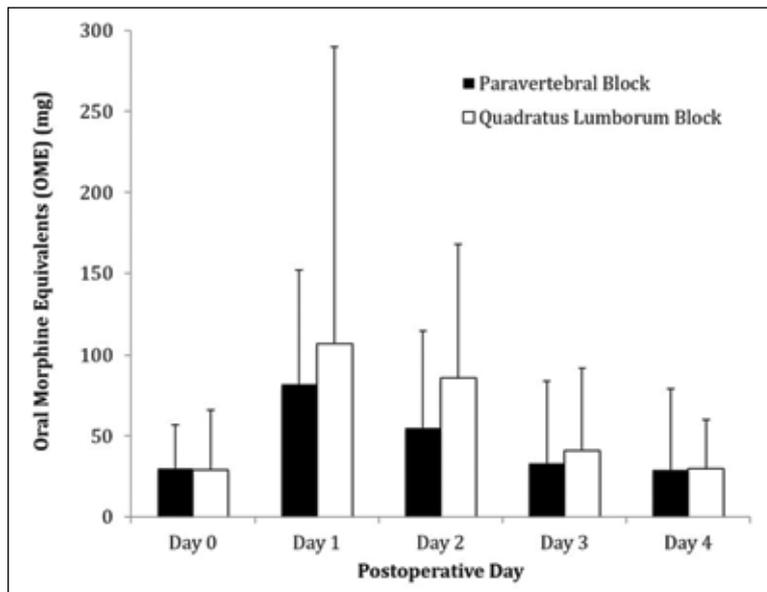
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Introduction: Multimodal analgesia is an effective way to control pain and limit opioid use after surgery. The quadratus lumborum block and paravertebral block are two regional anesthesia techniques that leverage multimodal analgesia to improve postoperative pain control. We sought to compare the efficacy of these blocks for pain management following radical cystectomy.

Methods: We performed a retrospective review of radical cystectomy patients who received bilateral, continuous paravertebral blocks (n=125) or bilateral, single-shot quadratus lumborum blocks (n=50) between 2014 and 2016. Our institution transitioned from paravertebral blocks to quadratus lumborum blocks in January 2016. The primary outcome was postoperative opiate consumption on Day 0. Secondary outcomes included self-reported pain scores and hospital length of stay.

Results: Quadratus lumborum block patients had similar opioid use on postoperative Day 0 compared with paravertebral block patients (29 mg vs. 30 mg; p=0.90) (Fig. 1). Pain scores on postoperative Day 0 were similar between quadratus lumborum block and paravertebral block groups (4.0 vs. 3.8; p=0.72); however, the paravertebral block group had lower pain scores on Days 1–3 compared with the quadratus lumborum block group (all p<0.05). Hospital length of stay was similar between groups (6.6 days vs. 6.2 days; p=0.41).

Conclusions: There were no differences in opioid consumption among patients receiving bilateral, single-shot quadratus lumborum blocks and bilateral, continuous paravertebral blocks after radical cystectomy. These data suggest that the quadratus lumborum block is a viable alternative for delivering multimodal analgesia in cystectomy patients.



P75. Fig. 1. Mean postoperative opioid use on postoperative Days 0–4. Error bars represent standard deviation. No statistical differences between groups. Opioid use was converted to oral morphine equivalents (OME) through the following: 1 mcg fentanyl IV = 0.2 mg morphine PO; 1 mg hydromorphone IV = 17.5 mg morphine PO; 1 mg hydrocodone PO = 5 mg morphine PO; Day 0 represents the day of the surgery and Day 1 represents the first full postoperative day. P values for continuous variables generated from t tests.

P76

Temporal trends in management and outcomes of testicular cancer: A population-based study

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Introduction: Treatment guidelines for early-stage testicular cancer have increasingly recommended de-escalation of therapy. We sought to describe changes in routine clinical practice and whether this has compromised survival in the general population.

Methods: The Ontario Cancer Registry was linked to electronic records of treatment to identify all patients diagnosed with testicular cancer and treated with orchiectomy in Ontario from 2000-2010. Treatment after orchiectomy was classified as radiotherapy (RT), retroperitoneal lymph node dissection (RPLND), chemotherapy, or none. Stage of disease at diagnosis was not available. Cancer-specific (CSS) and overall survival (OS) were measured from date of orchiectomy. The chi-squared test was used to evaluate temporal trends in practice patterns; the log-rank trend test was used to evaluate whether outcomes changed over time.

Results: Orchiectomy pathology reports were available for 86% (2821/3281) of all cases in Ontario; the study population included 1580 and 1105 cases of seminoma and non-seminoma (NSGCT); other histologies were excluded. Median age was 34 years. Among patients with seminoma, there was a significant increase in the proportion of patients with no active treatment after orchiectomy (from 33% to 66%; p<0.001). Use of RT decreased over time (57% to 18%; p<0.001) and use of chemotherapy remained stable (from 16% to 17%; p=0.344). Post-orchiectomy practice patterns remained relatively stable among patients with NSGCT: no treatment 29% to 41% (p=0.221); chemotherapy 69% to 55% (p=0.203); RPLND 27% to 26% (p=0.308). Among the 296 patients undergoing RPLND, 61% were performed in the post-chemotherapy setting; this proportion remained stable over time (p=0.423). OS for the entire cohort at five and 10 years was 96% and 94%. CSS at five and 10 years was 97% and 97%. There was no significant change in OS or CSS for seminoma (98% and 99%, respectively) or NSGCT (96% and 96%) over the study period.

Conclusions: Since 2000, there has been de-escalation of treatment among men with seminoma, with surveillance alone predominating in recent years. Practice patterns for NSGCT have remained stable since 2000. Outcomes achieved in the general population are very good and have not decreased over time with de-escalation of therapy.

P77

Prostate brachytherapy with cesium 131

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Introduction: The present study reports long-term outcomes in a large cohort of patients undergoing prostate brachytherapy (PB) with cesium 131 (¹³¹Cs) at a single institution.

Methods: All patients who underwent PB with ¹³¹Cs at our institution and had a minimum of five years of followup were included in the analysis. Patients were stratified into low-risk (Gleason sum score ≤6, prostate-specific antigen [PSA] <10 ng/mL, and clinical T1–T2a disease), intermediate-risk (Gleason sum score 7 or PSA 10–20 ng/mL or clinical T2b–T2c disease), and high-risk (Gleason sum score ≥8 or PSA ≥20 ng/mL or clinical T3 disease) categories. Patients with low-risk disease and patients with intermediate-risk disease and Gleason 3 + 4 = 7 generally underwent PB as monotherapy; patients with intermediate-risk disease and Gleason 4 + 3 = 7 generally were treated with combination therapy (external beam radiotherapy followed by PB); and patients with high-risk disease were generally treated with trimodal therapy (androgen-deprivation therapy with external beam radiotherapy followed by PB). The Phoenix definition (absolute nadir PSA plus 2 ng/mL) was used to define biochemical freedom from disease (BFFD).

Post-treatment PSA was evaluated every three months for the first year, every six months until year five, and then annually.

Results: 620 patients have undergone PB with ^{131}Cs at our institution. 245 patients (39.5%) had low-risk disease, 326 patients (52.5%) had intermediate-risk disease, and 49 patients (8.0%) had high-risk disease. The five- and seven-year BFFDs were 98.2% and 98.2%, respectively, for the low-risk group; 92.9% and 92.9%, respectively, for the intermediate group; and 80.3% and 71.4%, respectively, for the high-risk group. 442 patients (71.3%) underwent PB monotherapy with five- and nine-year BFFD of 97.8% and 97.0%, respectively; 119 patients (19.2%) underwent combined therapy with a five- and nine-year BFFD of 88.7% and 88.7%, respectively; and 59 patients (9.5%) underwent trimodal therapy with five- and seven-year BFFD of 88.1% and 88.1%, respectively.

Conclusions: The present study includes a large cohort of patients undergoing PB with ^{131}Cs at a single institution with long-term followup, and demonstrates excellent oncological outcomes in patients across all risk categories.

P78

Oncological outcomes after partial cystectomy for bladder cancer

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Introduction: While radical cystectomy with urinary diversion remains the gold standard for management of invasive bladder cancers, partial cystectomy is an alternative option for those unwilling or otherwise unable to undergo the more invasive procedure.

Methods: We performed a retrospective review of the partial cystectomies performed by a single surgeon for bladder cancer between 2000 and 2016. Subjects were identified via the surgeon's case logs. Subject data was acquired via complete review of all archived records within the institutional electronic medical record. Statistical analysis of binary variables was performed using chi-squared tests.

Results: 64 subjects were identified; 57 had records adequate for analysis. 38 (67%) were male and the median age at the time of partial cystectomy was 71 years (range 43–90). 84% (48/57) of subjects had urothelial cell carcinoma (UCC) on final pathology. Of those, 14 were noted to have variant UCC histology on final pathology. Of non-UCC cancers, six were adenocarcinoma, two small-cell carcinoma, and one leiomyosarcoma. At the time of partial cystectomy, 31 subjects underwent concomitant urological procedures: 22 ureteral reimplantations, eight diverticulectomies, five urachectomies, and one suprapubic prostatectomy. Specific chemotherapy regimen, if delivered, was determined by medical oncologists with specialty training in urological cancers. The median time of followup was 32 months (range 3–188). 10 subjects died of bladder cancer. 21 subjects experienced recurrence of cancer (38%). Median time to recurrence was 10 months. Two with recurrence ultimately underwent cystectomy. Five underwent partial cystectomy with known carcinoma in situ (CIS) prior to partial cystectomy; of these, two experienced recurrence. Compared to no CIS prior to surgery, this was not statistically significant ($p=0.903$). CIS recurrence was managed with intravesicle bacillus Calmette–Guerin (BCG) and neither required cystectomy. Stage pT2 or greater cancer within the partial cystectomy specimen was found to be statistically correlated to recurrence ($p=0.012$), but not for death from bladder cancer ($p=0.07$) when compared to stage pT1 or less. Partial cystectomy with diverticulectomy for tumors within a diverticulum showed no difference in either recurrence or death from bladder cancer compared to those without diverticulectomy. Delivery of chemotherapy was correlated with recurrence ($p=0.006$).

Conclusions: Only stage of cancer was correlated with cancer recurrence after partial cystectomy. The presence of CIS away from the partial cystectomy site did not correlate with recurrence of bladder cancer. Delivery of chemotherapy was correlated with cancer recurrence; however, this likely represents selection bias, as those with more aggressive tumors were chosen to receive any form of chemotherapy.

P79

Omega-3 fatty acids and risk of prostate cancer progression during active surveillance

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Introduction: Prostate cancer (PCa) is the most common cancer among men in Canada. Improved lifestyle, particularly diet, would contribute to reduce the development and progression of this disease. Although observational studies are controversial, preclinical and clinical experimental studies show that high omega-3 ($\Omega 3$) intake would have protective effects against PCa, probably via their anti-inflammatory properties. The objective of this study was to identify the association between the consumption of $\Omega 3$ and PCa progression.

Methods: 189 men initially diagnosed with low-grade PCa who chose an active surveillance program underwent a new prostate biopsy session 3–12 months after their initial low-grade diagnosis (called second biopsy session). Blood sample was collected, as well as additional biopsies in the normal area of the prostate. At this second biopsy session, participants were also asked to answer a validated web-based food frequency questionnaire (FFQ) to assess dietary intake over the past month. The fatty acid profile was measured in red blood cells and in the prostate tissue using capillary gas-liquid chromatography. Logistic regression was used to evaluate the associations.

Results: At the second biopsy session, cancer of 55 patients had progressed to a more aggressive form (Gleason score ≥ 7). Multivariable models, adjusted for age, prostate-specific antigen (PSA) level, smoking status, body mass index (BMI), education, and time between the initial and the second biopsy session, showed that men classified in the highest eicosapentaenoic acid (EPA-a long-chain $\Omega 3$ subtype) quintile measured in the prostate tissue had a lower risk of PCa progression than men classified in the lowest quintile (odds ratio [OR] 0.14; 95% confidence interval [CI] 0.03–0.71; $p=0.02$). Multivariate models also showed that men classified in the highest $\Omega 3$ quintile measured in the prostate tissue had a lower risk of PCa progression than men classified in the lowest quintile (OR 0.20; 95% CI 0.05–0.87; $p=0.03$).

Conclusions: These associations suggest that $\Omega 3$ fatty acids in the prostate tissue, especially EPA, may be protective against cancer progression in men with low-risk PCa. This provides a rationale for LCN3-rich dietary intervention in men diagnosed with low-risk PCa in order to reduce the risk of progression.

P80

Novel use of PSA velocity to substratify PI-RADS 3 lesions

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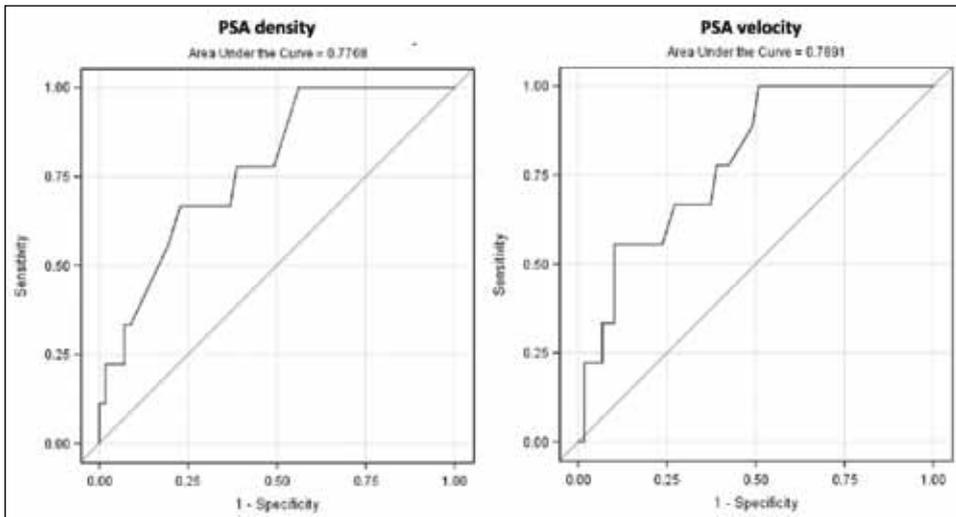
Introduction: Multiparametric magnetic resonance imaging (mpMRI) with targeted biopsy is an increasingly used modality in prostate cancer diagnostics. Although this technology improved the sensitivity and specificity of prostate biopsy, Prostate Imaging Reporting and Data System (PI-RADS) 3 lesions present a new challenge in clinical management. We sought to examine the role of prostate-specific antigen velocity (PSAv) as a clinical predictor of biopsy outcome in PI-RADS 3 lesions.

Methods: We conducted a retrospective review of our institution's electronic medical record and identified 70 patients with a PI-RADS 3 lesion on mpMRI who underwent MRI/ultrasound (US) fusion biopsy between August 2015 and January 2017. We excluded 12 patients on active surveillance and six patients with missing data. We assessed demographic and clinical characteristics of the patient population, as well as radiographical characteristics and pathological outcomes of MRI lesions targeted for

P80. Table 1. Subgroup cancer detection rates

Overall cancer detection rate (%)	Clinically significant cancer detection rate (%)	Clinically significant cancer detection rate, PSA _d ≥0.15 (%)	Clinically significant cancer detection rate, PSA _v ≥1.0 (%)	Clinically significant cancer detection rate, PSA _d ≥0.15 & PSA _v ≥1.0 (%)
14.7	13.2	19.5	23.1	30.0

PSAd: prostate-specific antigen density; PSAv: prostate-specific antigen velocity.



P80. Fig. 1. Receiver operating characteristic analysis demonstrating an area under the curve for prostate-specific antigen (PSA) density (d) and velocity (v).

biopsy. MpMRI results are based on the radiological interpretation at the time of evaluation and were reported by two experienced uro-radiologists using PI-RADS V2. Receiver operating characteristic (ROC) curves were generated for PSA_v and PSA_d to assess the sensitivity and specificity of these parameters for clinically significant prostate cancer (Gleason ≥7) at various thresholds.

Results: 52 patients with 68 PIRADS 3 lesions were included in the final analysis. Median age was 63 years (interquartile range [IQR] 8.5), median PSA was 8.2 ng/mL (IQR 4.3), median PSA_d was 0.16 ng/mL² (IQR 0.11), median PSA_v was 1.1 (IQR 1.7), and eight (15.3%) patients were biopsy-naïve. Clinically significant cancer was identified in nine lesions (13.2%) (Table 1). ROC analysis demonstrated an area under the curve of 0.78 for PSA_d and 0.79 for PSA_v (Fig. 1). 100% sensitivity for clinically significant cancer was achieved using a PSA_d and PSA_v cutoff of 0.15ng/mL² and 1.0 ng/mL/yr, respectively. At these cutoffs, PSA_v achieved a higher specificity than PSA_d (49% vs. 44%).

Conclusions: These data demonstrate that PSA_v may be a useful adjunct tool to identify PI-RADS 3 lesions that harbor clinically significant prostate cancer. Future prospective study and a larger sample size are needed to validated these findings.

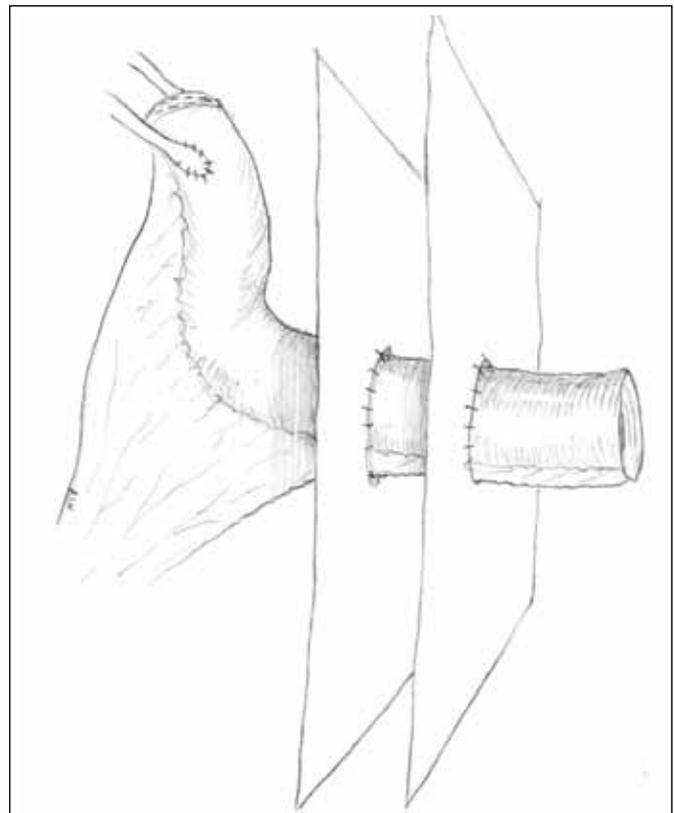
**P81
Novel creation of a non-everted stoma during ileal conduit urinary diversion: Technique and short-term outcomes**

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Introduction: Radical cystectomy with urinary diversion is a morbid operation with up to 60% complication rate. While ileal conduit is generally considered the most straightforward urinary diversion, it can be very difficult in overweight patients with thick abdominal walls and short mesenteries. One essential aspect of stoma creation is providing adequate protuberance of the stoma to ensure good fit of the appliance. Poorly protuberant stomas and stoma retraction result in appliance leakage, skin irritation, and increased risk of stomal stenosis. While a turnbull stoma is an option in these patients, it often lies flush with the skin and

requires a bar for several weeks, making initial appliance fitting a challenge. We report our experience with a “non-everted” stoma technique that provides increased protuberance in patients with thick abdominal walls, ideally allowing for less appliance leakage and associated complications.

Methods: We retrospectively reviewed all patients from January 2016 to March 2017 who underwent radical cystectomy with ileal conduit or stoma revision using the non-everted stoma technique. We recorded demographic and perioperative information, including 30-day postoperative complications. Operative technique: the stoma site was marked and prepared in a standard fashion. The distal end of the conduit was pulled through the rectus fascial and abdominal wall. Four 2-0 braided absorbable sutures were used to secure the seromuscular layer of the conduit to the rectus fascia. Additional



P81. Fig. 1. Schematic of a non-everted stoma during ileal conduit urinary diversion.

2-0 sutures secured the seromuscular layer of the conduit to the skin. The stoma was not everted and left protuberant similar in appearance to a "chimney" (Fig. 1).

Results: A total of 18 patients underwent non-everted stoma creation (16 cystectomy with ileal conduit, two stoma revisions). 13 patients were male (72%). Median values for age, body mass index (BMI), preoperative albumin, and abdominal wall thickness were 77 years, 30.5, 3.8, and 3.65, respectively. For cystectomy with ileal conduit, the median operating room time was 215 minutes, estimated blood loss 500cc, and length of hospital stay 4.8 days. Median followup for all patients was 6.5 months. Nine patients had a complication (53%). Only one patient (6%) had a stoma complication, which was a bleeding vessel at the fascia that occurred three weeks after surgery. Short-term outcomes include pink and everted stomas in 17 patients (94%) and one narrow stoma (6%).

Conclusions: Ileal conduit creation with a non-everted "chimney" stoma provides increased stoma protuberance in patients with a thick abdominal wall and/or thickened mesentery. This allows for better appliance fit and hopefully improves patient quality of life. Short-term functional and cosmetic outcomes are promising. Long-term followup is needed to ensure this technique is not associated with increased rates of late stoma complications.

P82

MRI-TRUS fusion biopsy in active surveillance: Can we predict disease progression without biopsy?

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Introduction: Despite that one in seven men will develop prostate cancer (PCa), survival rates exceed 98%. For this reason, many men with low-risk PCa are opting for active surveillance (AS) protocols. Multiparametric magnetic resonance imaging (mpMRI) with MRI-transrectal ultrasound (TRUS)-guided fusion biopsy (FBx) has emerged to stratify those harboring aggressive prostate disease that may be better managed with treatment. PCa progression rates are reported to occur in 30% of AS subjects who undergo FBx. Given that the status of two-thirds of men will remain unchanged, we aim to predict if disease progression can be predicted prior to FBx.

Methods: Following IRB approval, we conducted a retrospective cohort study of 358 men who underwent prostate mpMRI between 2013 and 2017 at our institution, of which 88 met inclusion criteria of: MRI indication of AS and a completed FBx. Demographic, clinical, mpMRI, and FBx features were captured in our database. Disease progression was primarily defined as re-classification and upgrade of National Comprehensive Cancer Network (NCCN) risk group; secondarily, it was defined as upgrade to International Society of Urological Pathology (ISUP) Gleason grade 3-5 (ISUPGG). T-tests, chi-square, and logistic regression models were used to compare men with upgraded vs. non-upgraded risk, as well as upgrades in ISUPGG vs. non-upgraded men. A $p < 0.05$ was statistically significant.

Results: Among the 88 subjects in our study, 34% were upgraded in NCCN risk group after FBx, with 9/30 (30%) upgraded on MRI target biopsy alone. Ultimately, 56% of upgraded subjects underwent treatment. There were no significant difference in age, race, prostate-specific antigen (PSA), PSA volume, number of lesions in peripheral or transition zone, MRI suspicion score, or changes in core number or percent positive. Logistic regression model showed no significant predictors of risk upgrade. Among those with upgrade to ISUPGG (13%), no significant differences were seen. Logistic regression models found age at diagnosis to be predictive of upgrade in ISUPGG ($p = 0.03$).

Conclusions: Consistent with other mpMRI literature, approximately one-third of AS subjects progressed after FBx. Prior studies have reported that PSA density, time between biopsies, and progression on MRI may predict upgrade, but this was not seen in our series. Given that more than half of upgraded subjects opted out of AS and underwent treatment, we plan to continue FBx for appropriate low-risk subjects enrolled in AS protocol. As our AS cohort grows and matures, we will continue to assess for more predictors of progression.

P83

MRI fused cone beam CT-guided biopsy of the prostate: A novel method of prostate biopsy

Jason P. Izard, D. Robert Siemens, Michael Di Lena, Michael J. Leveridge, Alexandre Menard

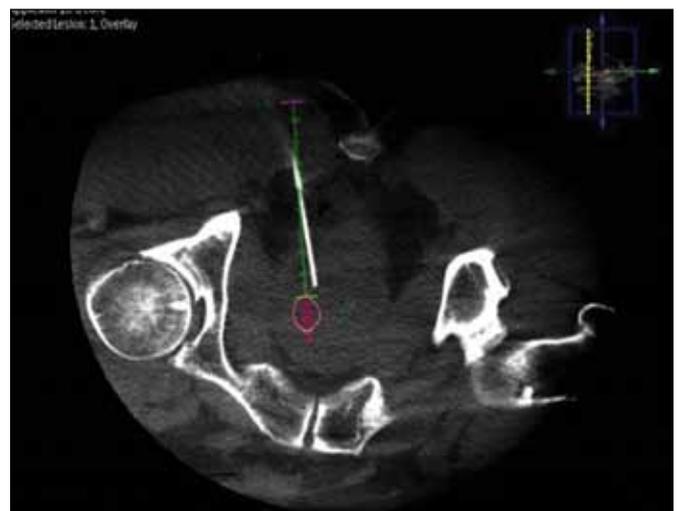
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Introduction: Real-time 3D fluoroscopy guidance using a cone beam computed tomography (CT) fused to a magnetic resonance image (MRI) can project an MRI-detected lesion on to the screen of a cone beam CT scan. This allows an operator to advance a needle directly into the software-generated lesion using real-time fluoroscopy to confirm biopsy needle placement within the lesion (Fig. 1). To date, there have been no reports or investigations on the use of this new technology for prostate biopsies. We assessed the safety and feasibility of MRI fused cone beam CT-guided prostate biopsies.

Methods: We retrospectively analyzed our prospectively maintained dataset and identified 24 patients who had either negative transrectal ultrasound of the prostate (TRUSP) biopsies or TRUSP biopsies showing small volume Gleason 6 disease with a clinical suspicion of higher volume, higher-grade disease. All patients had an MRI showing a Prostate Imaging Reporting and Data System (PI-RADS) 4 or 5 lesion in the prostate. Patients underwent site directed MRI fused cone beam CT-guided biopsies through a transgluteal approach. Biopsy results and immediate and 30-day complication rates were recorded.

Results: The biopsies were well-tolerated by all patients. No patient experienced an immediate or 30-day complication. Of the 24 patients who underwent a median of one previous TRUSP biopsy (range 1-5), 14 had previous negative biopsies and 10 had biopsies harboring low-volume Gleason 6 disease. Of the 14 patients with previous negative TRUSP biopsies, seven patients (50%) had a positive CT-guided biopsy, with three patients having Gleason ≥ 7 disease and four having Gleason 6 disease. Of the 10 patients with low-volume Gleason 6 disease, six patients had CT-guided biopsies showing prostate cancer (60%), four patients with similar low-volume Gleason 6 disease, and two patients were upgraded to Gleason ≥ 7 disease. In the 11 patients with PI-RADS 5 lesions, prostate cancer was detected in eight (73%), of whom four patients (50%) had Gleason ≥ 7 prostate cancer.

Conclusions: MRI fused cone beam CT-guided biopsy of the prostate appears to be technically feasible with a reasonable safety profile. Additional experience will be required to further delineate the diagnostic accuracy of this novel method of prostate biopsy. To our knowledge, this represents the first report on the use of this novel method of prostate biopsy.



P83. Fig. 1. Real-time cone beam computed tomography with biopsy needle in place. This image shows the real-time feedback available and the need to reposition the biopsy needle to adequately sample the target lesion. Green graduated marker represents the planned needle tract. Orange perimeter indicates the lesion identified on magnetic resonance imaging. Magenta elongated oval represents the expected biopsy trajectory through the lesion.

Moderated poster session 6: Trauma/Education Saturday, October 14, 2017 7:30–9:00 am

P84

Two-institution study examining the association of low testosterone and anterior urethral stricture

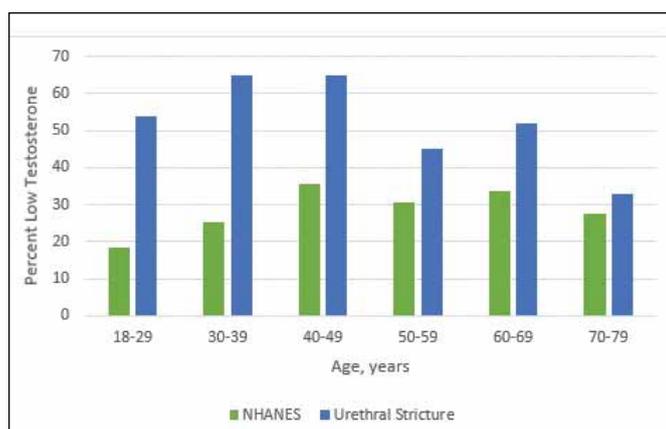
Jeffrey Spencer¹, Joseph Mahon², Timothy Byler¹, Michael Daugherty¹, Laura Chang-Kit², Stephen Blakley¹, Andrew McCullough², Dmitriy Nikolavsky¹
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Introduction: Testosterone plays a key role in urethral development and has been investigated in mucosal healing and the inflammatory process. Although there are known risk factors for stricture formation, the true biological processes involved in stricture formation are unknown. This study is aimed to evaluate a hypothesis regarding an increased prevalence of low testosterone in men with anterior urethral strictures, which could help explain stricture formation mechanisms.

Methods: Patients from two institutions who underwent anterior urethroplasty or DVIU by two surgeons (AM and DN) between 2011 and 2017 were identified. All men with anterior urethral strictures were offered serum total testosterone level check prior to urethral stricture treatment. Patients with radiation-induced stricture, prior prostatectomy, prior urethroplasty, or pelvic fracture urethral disruption injuries were excluded. Patients on testosterone replacement were also excluded. A serum testosterone level of less than 300ng/dL was used to define low serum testosterone. An age-matched cohort from a national database (NHANES) was used as a reference.

Results: 213 men with anterior urethral strictures were identified and 35 were excluded. Of the remaining 178 patients, 127 (71%) agreed to preoperative testosterone level measurements. The mean age is 49 years (range 18–81). Overall, low testosterone was found in 69/127 (54%) men in the urethral stricture group and in 27.5% of men in the national database. Fig. 1 describes the prevalence of low testosterone in our cohort and the NHANES database stratified by age group.

Conclusions: Hypogonadism is more common in patients with anterior urethral strictures than can be expected in the general population based on a national database. Further investigation is warranted into the relationship between serum testosterone and urethral stricture formation.



P84. Fig. 1. Prevalence of low testosterone in study cohort and the NHANES database stratified by age group.

P85

Transvesical ventral buccal mucosa graft inlay cystoplasty for reconstruction of refractory bladder neck contractures after benign prostatic hyperplasia surgery: Surgical technique and preliminary results of combined institution data

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Introduction: Bladder neck contracture (BNC) following benign prostatic hyperplasia (BPH) surgery is a complication often managed by chronic catheterization or diversion with suprapubic tube. Refractory cases are challenging to treat. Those wishing to avoid traditional management may be treated with reconstructive surgery using an open approach. The aim of this study is to introduce a novel surgical technique for the reconstruction of refractory BNC using buccal mucosal graft (BMG) inlay through a transvesical approach.

Methods: We conducted a retrospective analysis of patients that underwent open reconstructive surgery for refractory BNC after BPH surgery from 2010–2016 by surgeons from two institutions (BJF, DN). Steps of the procedure included: transvesical ventral wedge resection of the fibrotic bladder neck contracture and spread fixation of appropriately sized BMG inlay. The patients were followed for postoperative complications and stricture recurrence with uroflowmetry, post-void residual (PVR), cystoscopy, and outcome questionnaires. Outcome measures included length of followup, surgical technique, operative time, hospital stay, complications, and subsequent need for catheterization.

Results: 14 patients underwent reconstruction with transvesical ventral BMG inlay bladder neck reconstruction. Prior BPH surgery included transurethral resection of the prostate (78%), plasma vaporization of prostate (21%), and open prostatectomy (7.1%). Urinary retention (72%) was the most common presenting symptom and 79% of patients were using a catheter (Foley, suprapubic, self-catheterization) preoperatively. An average of 2.3 endoscopic procedures were performed before BNC reconstruction. Overall, BNC diameter was 9.8 Fr. The average BMG size was 11.3 cm², operative time was 360 minutes, and hospital stay was 2.9 days. Postoperatively, one patient was unavailable for followup. Those with four or more months of followup were included for postoperative analysis, for a total of 11 patients. Of these, four patients had transient urinary retention and two had epididymorchitis. At a mean followup of 19.8 months (range 4–62), only two patients had chronic retention and were considered a procedure failure.

Conclusions: BNC after BPH surgery is challenging complication with opportunity for surgical correction in refractory cases. Transvesical ventral BMG inlay bladder neck reconstruction is a feasible option in this scenario. This graft augmentation technique using BMG provides good outcomes with low morbidity for patients that previously failed multiple endoscopic treatments.

P86**One-sided urethral dissection dorsal onlay urethroplasty through a subcoronal incision for distal urethral strictures**

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Introduction: Penile urethral strictures are a challenging entity regardless of etiology. The paucity of urethral spongiosum distally, difficulty accessing the glanular urethra, poor tissue quality in the setting of lichen sclerosis, and prior hypospadias repair limit treatment options. We evaluate one-sided urethral dissection through a subcoronal incision and dorsal onlay urethroplasty with buccal mucosal graft (BMG) for treatment of this complex problem.

Methods: We identified patients with isolated distal penile urethral strictures who underwent urethroplasty at two institutions by two surgeons (BJF and DN). Included patients had a one-sided urethral dissection, dorsal onlay BMG urethroplasty, as described by Kulkarni, however performed through a 2 cm subcoronal incision. Patient characteristics and short-term patency outcomes are reported.

Results: 20 men, mean age 54 years (range 23–80), were included in this study. Mean stricture length was 4.6 cm (range 2–10). All strictures involved the urethral meatus, fossa navicularis, and/or penile urethra. The most common etiologies were lichen sclerosis (n=7) and failed hypospadias repair (n=5). 10 patients (50.0%) had undergone prior urethroplasty at this site. 18 of 20 (90.0%) patients were stricture-free at median followup of 18 months. Two patients (10.5%), both with lichen sclerosis and prior urethroplasty, experienced stricture recurrence, one at two months and one at four months after surgery. Both were treated with urethral dilation. No operative complications or urethrocutaneous fistulae occurred.

Conclusions: Dorsal onlay BMG urethroplasty with one-sided urethral dissection performed through a subcoronal incision is a viable option for select patients with isolated distal penile urethral strictures. This technique has a high success rate with few complications.

P87**Histological characterization of the radiation-induced urethral stricture in men with prostate cancer**

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Introduction: Urethral stricture disease that develops as a result of radiation therapy for prostate cancer occurs in the bulbomembranous urethra. These strictures are difficult to treat due to ischemic changes in the local tissues. Characterization of membranous strictures related to radiation have not been compared to those from other causes. Distinct histopathological parameters for characterizing radiation-induced strictures were examined.

Methods: The urethral stricture database from a single institution was retrospectively reviewed between the years of 2013 and 2017 and identified patients with bulbomembranous urethral strictures. Specimens of the urethral scar were taken at the time of urethroplasty. A single pathologist was blinded to the etiology and reviewed the specimens. The specimens were reviewed for histological changes of inflammation and tissue ischemia.

Results: 45 patients who underwent repair of membranous urethral strictures from a single reconstructive urologist were identified. 13/45 patients had radiation-induced strictures and 12/13 had specimens taken at the time of urethroplasty. 30 specimens were examined in non-irradiated patients for comparison. Post-radiation strictures had higher collagen density (100% vs. 64%), higher collagen organization (88% vs. 64%), and hyalinized fibrosis (100% vs. 68%). Low vascularity was found in 62.5% of radiation specimens compared to 18% of non-radiation. Spindle cell change with elongated, wavy nuclei was seen in 75% of post-radiation strictures vs. 47% without radiation. Radiation strictures also had a higher rate of necrosis (50% vs. 32%), fat entrapment within fibrous connective tissue (88% vs. 42%), and tissue hemorrhage (88% vs. 58%). Fibrous connective tissue degenerative change with vacuolation

was seen in 63% of radiation-induced strictures and was not observed in strictures without irradiation.

Conclusions: There are distinct histological differences in radiation-induced strictures compared to non-radiation strictures. These changes may contribute to the poor tissue quality and difficulty with repair.

P88**Prefabricated composite gracilis-buccal mucosa flap for reconstruction of devastated urethra: Outcomes from two institutions at medium-term followup**

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Introduction: Surgical options for devastated bulbous urethra (i.e., spongionecrosis, failed skin tube repairs, watering can perineum) are limited. Techniques after prior failed repairs include buccal mucosa-dartos composite flap, radial forearm composite flap, enterourethroplasty, perineal urethrostomy, or diversions. The outcomes at a minimum 12-month followup of a novel technique to reconstruct devastated bulbar urethra from two institutions are presented. This two-stage technique involves creation of two independently vascularized urethral hemi-plates lined with buccal mucosa (BMG).

Methods: In the first stage, the affected urethra is dissected and removed or prepared for a dorsal inlay augmentation. Two BMG segments are harvested. One graft is quilted on corpora cavernosa and urethra, creating an augmented perineal urethrostomy. The second BMG is quilted on the exposed distal gracilis muscle. Stage two is performed 6–8 weeks later, in which gracilis-BMG composite is harvested. The muscle is passed into the perineal incision to create a ventral portion of urethral plate. The BMG edges on the flap are anastomosed to the edges of the dorsal urethral plate. Preoperative and postoperative patient characteristics, stricture characteristics, and functional outcomes were reviewed retrospectively.

Results: Five patients with mean age of 50 years (range 46–56) underwent two-stage repairs at two institutions. Stricture etiologies were traumatic in 4/5 and iatrogenic in 1/5 patients. Patients had a mean of 3.2 (range 1–9) prior open repairs with use of local skin flaps. Mean stricture length was 7.4 cm (range 6–9). Two patients had concurrent perineal urethrocutaneous fistulae on presentation. All patients preoperatively had suprapubic tubes. Time between first- and second-stage repairs was 6.4 weeks (range 1–10). At a mean followup of 20 months (range 12–30) there were no complications or recurrences, mean uroflow was 25.7 cc/sec (range 9–42), post-void residual 120 cc (range 8–291). Two of five patients were sexually active preoperatively. Both patients maintained the same erectile function postoperatively with Sexual Health Inventory for Men (SHIM) scores of 22 and 19 on follow up at 30 months and 12 months, respectively.

Conclusions: We demonstrated feasibility and medium-term durability of using prefabricated BMG-gracilis composite flap for repair of devastated urethra in five patients. This technique avoids use of hair-bearing skin or GI segments. Gracilis provides vascular bed ventrally and reduces the risk of developing ventral diverticulum. Independently vascularized urethral hemi-plates require minimal dissection to achieve tension-free anastomosis.

P89**Surgical management of adult acquired buried penis: Impact on urinary and sexual quality of life outcomes**

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Introduction: Adult acquired buried penis (AABP) is a morbid condition and affected patients have poor sexual function, urine dribbling with skin breakdown, and mood disturbance. Weight loss is often futile and many patients ultimately require surgical intervention to improve hygiene and function. Reports of surgical treatment to date have mostly focused on safety and feasibility outcomes, including penile graft take, perioperative complications, and change in penile length. Studies assessing postopera-

tive patient-reported quality of life outcomes are limited. We hypothesize that surgical treatment of AABP results in significant improvements in urinary and sexual quality of life.

Methods: A retrospective review was conducted of patients who underwent surgical treatment of AABP. The urinary and sexual domains of the Expanded Prostate Cancer Index (EPIC) questionnaire were completed at each followup visit postoperatively. Patients were also asked to retrospectively complete questionnaires to define preoperative symptoms. EPIC is validated for local treatment of prostate cancer. This was chosen to measure quality of life in AABP because it allows assessment of function and bother in both urinary and sexual domains following an intervention on the pelvis and urethra. The urinary and sexual domains contain 12 and 13 questions, respectively. Questions are scored 1–5, with higher scores indicating better quality of life. Preoperative scores were compared to the latest postoperative scores.

Results: 13 patients completed pre- and postoperative questionnaires. Mean age, body mass index (BMI), operative time, blood loss, and hospital length of stay (LOS) were 47.9 years, 42.6 kg/m², 290 minutes, 292 mL, and 5.1 days, respectively. Mean time from surgery to questionnaire was 11.4 months. There was a significant improvement in the median scores for 10 of 12 urinary and 10 of 13 sexual quality of life questions (Figs. 1, 2). 11 of 13 patients (85%) reported significant improvement in overall sexual function (median score changed from 1 to 5; p=0.001). Similarly, 11 of 13 patients (85%) reported significant improvement in overall urinary function (median score changed from 1 to 5; p=0.001).

Conclusions: AABP is a challenging condition to treat and often requires surgical intervention to improve hygiene and function. As more experience is gained and surgical techniques are refined, there arises a need for concurrent assessment of patient-reported quality of life outcomes. We found that surgical management of AABP results in significant improve-

ments in both urinary and sexual quality of life outcomes. Further study is needed, including development of questionnaires dedicated to this condition.

P90 Post-TURP urethral strictures can be managed successfully with urethroplasty

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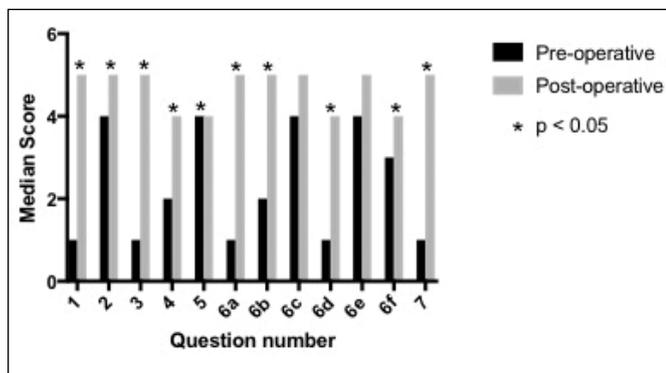
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Introduction: Urethral stricture disease is seen in 2–9% of patients after transurethral resection of the prostate (TURP), but data is limited as to treatment outcomes. Our purpose is to establish patterns of disease severity and treatment for post-TURP stricture among seven high-volume centers.

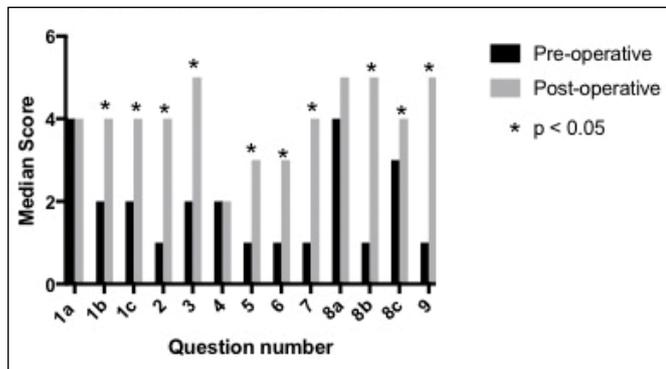
Methods: A retrospective database was created for patients who underwent management of post-TURP strictures at seven reconstructive urology centers. Data consisted of demographics, TURP method, location/length of urethral strictures, interventions prior to urethroplasty, surgical technique used for urethroplasty, and outcomes. Exclusion criteria included age <18 and followup period <1 year. Success was defined as no need for intervention within the observation period. Data analysis was done from seven institutions for a total of 130 patients.

Results: Mean age was 68 years (range 41–86). 77% (n=100) of patients underwent monopolar TURP. Other modalities reported were: 10% (n=13) bipolar TURP, 3% (n=4) GreenLight™ laser, 3% (n=4) holmium laser, 2% (n=3) other lasers, and 5% (n=6) unknown modality. Urethral stricture locations were: 29% (n=38) bulbar urethra, 17% (n=22) membranous urethra, 11% (n=15) penile urethra, 5% (n=6) fossa navicularis urethra, and 38% (n=49) multiple locations. The average intraoperative length of strictures was 4.4 cm (range 1–23). Average number of endoscopic interventions prior to urethroplasty is 3.6 (range 0–36). Urethroplasty techniques were: anastomotic (33%, n=43), dorsal graft (39%, n=51), ventral graft (15%, n=19), flap (6%, n=8), and perineal urethrostomy (2%, n=3). 5% of patients underwent advanced reconstructive techniques, such as: double graft, augmented dorsal anastomotic, Duckett, or first-stage Johanson (n=6). Overall success rate was 85%, with an average time-to-failure of 23 months (range 2–151). Success rate for patients who had prior endoscopic intervention (urethrotomy or dilation) was 83% vs. those with no prior endoscopic intervention, who had a success rate of 100% (p>0.05). Complications were reported in 17% of patients, including recurrent urinary tract infection, erectile dysfunction, urinary incontinence, and penile shortening.

Conclusions: Our study represents the first multi-institutional report on the severity and management of post-TURP urethral strictures. Our data shows that the majority of post-TURP strictures are successfully managed with urethroplasty, with 85% success. Better success rates are seen in patients with no prior endoscopic intervention, suggesting early urethroplasty or referral to a reconstructive urology center is warranted.



P89. Fig. 1. Change in urinary domain scores.



P89. Fig. 2. Change in sexual domain scores.

P91**A multi-institutional study of the clinical and patient-reported outcomes of Kulkarni urethroplasty for long-segment urethral strictures**

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Introduction: One-stage stricture repair for long urethral strictures described by Kulkarni et al is reported to have excellent long-term surgical success rates and low complication rates; however, little is documented on patient-reported outcome measures (PROMs) after this repair. We present a multi-institutional study of clinical outcomes of long stricture repair, as well as patient-reported urinary and sexual outcomes.

Methods: Patients from four institutions who underwent single-stage repairs for long urethral strictures (>8 cm) involving both the bulbar and penile urethra from January 2002 to October 2016 were reviewed. These repairs were undertaken using the technique described by Kulkarni et al. Clinical outcomes included maximum uroflowmetry rates (Qmax) and post-void residuals (PVR). PROMs included voiding assessments with International Prostate Symptom Score (IPSS) survey, erectile function with Sexual Health Inventory for Men (SHIM) scores, and ejaculatory function as measured by the ejaculation domain in the Male Sexual Health Questionnaire, short-form (MSHQ-EJS). Additionally, patients were asked about qualitative questions assessing overall improvement after urethroplasty.

Results: 77 consecutive patients with a minimum of four months of followup were included. The mean age was 57 years (range 21–80). The mean stricture length was 13.8 cm (range 8–21). At a mean followup of 40 months (range 4–162), there were nine stricture recurrences (88.2% success). At the last follow up, Qmax improved from mean of 5 mL/sec to 18 mL/sec ($p < 0.001$) and mean PVR changed from 124 mL to 45 mL ($p < 0.001$). The mean baseline IPSS score was 23 (severe) (range 7–24) and decreased to 10 (moderate) (range 1–17) on last followup ($p < 0.001$). The quality of life due to urinary symptom (i.e., bother) score improved from a mean of 5 (unhappy) to 2 (mostly satisfied) ($p < 0.001$). There was no significant change in sexual function based on SHIM score (22 to 19; $p = 0.49$). Ejaculatory function on MSHQ-EJS was found to improve after urethroplasty from 8 preoperatively to 11 postoperatively ($p = 0.03$). The GRA survey indicated that all patients had moderate or markedly improvement after urethroplasty. Post-void dribbling and chordee occurred in 50% and 24% of patients, respectively.

Conclusions: We report clinical outcomes that echo previous reports describing durable patency in most patients. Patient-reported outcome measures in our series indicate an improvement in sexual function and urinary function; however, transient chordee was evident in nearly one in four patients.

P92**Surgical management of coexistent panurethral stricture disease and adult acquired buried penis: Kulkarni urethroplasty with subsequent escutcheonectomy and penile split-thickness skin graft**

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Introduction: Adult acquired buried penis (AABP) is a morbid condition with increasing incidence. Affected patients have poor sexual function, urinary dribbling, skin breakdown, mood disturbance, and poor quality of life (QoL). Lichen sclerosis develops, causing subsequent panurethral stricture disease. Weight loss is ineffective due to lymphedema of the suprapubic fat pad (termed the escutcheon). We present a staged surgical approach including panurethral urethroplasty with buccal mucosa (Kulkarni urethroplasty) followed by escutcheonectomy, scrotoplasty, and

P92. Table 1. Kulkarni urethroplasty surgical outcomes

Mean followup, months	23.0 ± 7.8
Mean stricture length, cm	9.0
Stricture recurrence requiring intervention, %	1/3 (33)
Mean EBL, cc	100
Mean operative time, minutes	368.3 ± 67.5
Mean LOS, days	0.7

EBL: estimated blood loss; LOS: length of stay.

P92. Table 2. Adult acquired buried penis surgical outcomes

Mean followup, months	9.0 ± 4.4
Wound dehiscence	0/3
STSG take rate, %	96.70
Mean EBL, cc	133
Operative time, minutes	257.3 ± 54.8
LOS, days	3.66

EBL: estimated blood loss; LOS: length of stay; STSG: split-thickness skin graft.

penile degloving with split-thickness skin graft (STSG) to provide definitive comprehensive repair.

Methods: A retrospective chart review was conducted of patients managed surgically for AABP and panurethral stricture from 2015–2017. Outcomes evaluated were surgical complications, reburying of the penis, graft take rate, need for supplemental urethral procedures, and urinary symptoms.

Results: Three patients underwent augmented buccal panurethral urethroplasty followed by repair of AABP. The etiology of AABP was due to morbid obesity with or without post-circumcision cicatrix formation. All patients had extensive lichen sclerosis as a result of their AABP. The mean time between urethroplasty and repair of AABP was 14 months. Mean followup from Kulkarni urethroplasty and AABP repair were 23 and nine months, respectively. At a mean followup of nine months from their AABP repair, all three patients had durable unburying of their penis and patent strictures, with one patient requiring a subsequent endoscopic revision (Tables 1, 2).

Conclusions: AABP with subsequent panurethral stricture disease from lichen sclerosis is a challenging condition to treat. Limited surgical repairs can lead to reburying of the penis, need for further procedures, and the progression of urethral disease with voiding dysfunction. Kulkarni urethroplasty followed by escutcheonectomy, scrotoplasty, and STSG has encouraging intermediate-term outcomes with durable unburying of the penis and resolution of urethral stricture disease. Further followup in larger series is needed.

P93**Checklist to improve informed consent in pediatric surgery: Results of a pilot study**

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Introduction: Informed consent is an ethical and legal requirement for surgery. In this pilot study, we proposed to assess the comprehensiveness of the pediatric surgical informed consent process and to evaluate a new checklist-based consent.

Methods: We created a comprehensive 17-item checklist that followed College of Physicians and Surgeons of Ontario and Canadian Medical Protective Agency guidelines, after institutional QI board approval. A two-phase, pre- and post-intervention evaluation of two separate services, pediatric surgery (S) and pediatric urology (U), where the primary intervention was explaining elements of this checklist and how they would be incorporated to stakeholders in each service was carried out. An anonymous four-point Likert scale, nine-item questionnaire reviewing patient

satisfaction with the consent process and anxiety with the surgery in both phases was completed.

Results: Discussion of three components of the checklist were significantly improved after the introduction of the checklist for both S and U, namely: the explanations of alternative treatment, the consequences of not pursuing surgery, and the explanation of the role of trainees. There was a 98% response rate to survey. Mean satisfaction score was significantly improved between the two phases in S, but not U or within the overall sample. There was no significant change in average anxiety levels with the implementation of our checklist.

Conclusions: The consent checklist improved and allowed standardization of vital components of the checklist without affecting documentation, overall satisfaction about the consent discussion, or anxiety about the surgery for two pediatric surgical subspecialties, and should be further tested among other specialty groups.

P94

Distance travelled for an outpatient clinic visit as a predictor for telemedicine alternatives

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Introduction: Attending outpatient clinic visits can be time- and cost-consuming for many families/patients when distance is an issue. Our tertiary Canadian center is responsible for the care of children residing over vast areas, often >1000 km from our center. Telehealth options, however, are available over most of the province, but are likely underused. We sought to: 1) evaluate costs incurred by families for a single visit; 2) determine family attitudes towards alternative visit strategies; and 3) identify links that might promote telehealth visits in lieu of in-person visits.

Methods: A survey was piloted and approved by our Quality Improvement Committee and voluntarily administered to patients/families visiting our tertiary care pediatric urology outpatient clinic. The survey measures included: distance traveled, personal money spent on travel and incidentals, work time missed, participants' perceived overall cost and value of visit, comfort with social communication options, and preferences for telehealth vs. in-person clinic visits.

Results: 1032/1574 (27%) families responded. 42% of families travelled >100 km and 19% >200 km for a visit. Roughly 75% of families missed work or took personal time off in order to attend the visit. 1/3 of respondents felt that the cost of a visit was high and of marginal value. 83% felt comfortable communicating "electronically," i.e., by telehealth, using email, cell phone and/or computer video conferencing; however, only 1/3 preferred those options over an in-person visit, despite costs and time off work. There was a significant positive correlation supporting a preference for telehealth with greater distance travelled to attend the clinic.

Conclusions: Distance travelled to a tertiary care outpatient clinic is a predictor of costs incurred by families. Distance, more importantly, is a predictor for choosing telehealth alternatives over in-person clinic visits if offered. Most families have access and comfort with some aspect of telehealth and therefore this option should be offered to a family, along with in-person clinic visits.

P95

Educating primary care providers about AUA guidelines for imaging of undescended testes is effective in changing practice patterns

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Introduction: Ultrasound or other imaging for undescended testes (UDT) is proven to be inaccurate in locating testes and does not change management. Despite this, it has been shown that primary care providers (PCPs) frequently obtain imaging as part of their UDT evaluation. In 2014, the AUA published new guidelines for UDT, clearly stating that providers should not obtain ultrasound or other imaging prior to referral to a surgical specialist. We hypothesized that despite these guidelines, PCPs continue to order imaging prior to referral, and that adherence with these guidelines is improved by a brief educational conference for PCPs.

Methods: A retrospective review was performed of all new pediatric patients seen at our pediatric urology clinic for UDT or retractile testes within a six-month interval before and after a CME conference given regarding the 2014 AUA UDT guidelines to our county's pediatric society. We excluded patients who had scrotal imaging obtained for other reasons. We calculated rates of UDT imaging prior to pediatric urology referral, and compared rates before and after the CME conference. Statistical significance was calculated using Fisher's exact test.

Results: Results are summarized in Table 1. There were 321 patients in our cohort. PCPs overall ordered imaging for UDT prior to referral in 35.8% of cases. Attendees of the CME conference obtained UDT imaging 31% of the time prior to the conference and 0% of the time after the conference (p=0.05). No significant difference was observed for PCPs who did not attend the conference.

Conclusions: PCPs continue to order imaging for UDT despite the recent guidelines stating this should not be done. A single brief CME conference making PCPs aware of these guidelines is effective in changing practice patterns and improves adherence with the recent AUA guidelines.

P96

Accounting for equity options in the Sunshine Act

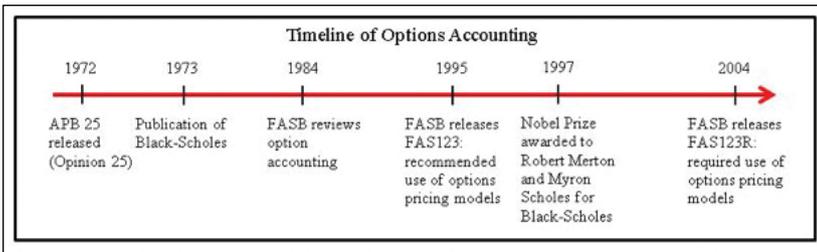
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Introduction: The history of conflicts of interest is extensive, and its current form in medicine dates back to the 1972 Anti-Kickback statute applied to hospitals and nursing homes. The statute attempted to limit gifts or monetary incentives from influencing practice patterns, and in 1977 the penalty for violation was escalated from misdemeanor to felony. Regulatory goals aimed to limit criminal behavior without impeding benefits, such as promoting drug discovery and medical devices. Nevertheless, within the last decade, there have been reports of sham consulting contracts, kickbacks for publications, and prescription fraud. The Sunshine Act, through use of disclosure rather than penalties, attempts to circumvent the ambiguities associated with prior laws; however, it does not fully consider accounting standards in calculating dollar denominated values. Accounting for stock options offers the highest potential for abuse.

P95. Table 1. Study results

	% patients with imaging for UDT, referred before CME conference, n (%)	% patients with imaging for UDT, referred after CME conference, n (%)
PCPs who attended CME conference	26 (30.8)	10 (0.0)
PCPs from within our country	79 (30.4)	55 (27.3)
PCPs from other countries	98 (38.8)	89 (42.7)
All PCPs	177 (35.0)	144 (36.8)

CME: continuing medical education; PCP: primary care providers; UDT: undescended testes.



P96. Fig. 1. Abbreviated timeline of options accounting from 1972–2004. APB: Accounting Principles Board; FASB: Federal Accounting Standards Board; FAS: Financial Accounting Standards.

options to prescribers were publicly traded. Historical controversies in accounting would suggest that the Centers for Medicare and Medicaid Services is not well-equipped for accounting guidance (Fig. 1). Dollar values for stock options should be in accordance with Generally Accepted Accounting Principles (GAAP) established by the Federal Accounting Standards Board (FASB). Consistency should be established between the varying Sunshine Act databases in ownership stakes (Fig. 2).

Conclusions: Stock options are inherently leveraged equity stakes and require additional disclosures within the Sunshine Act. Relying on good faith for manufacturers to calculate value is inadequate, and adopting FASB standards is an attractive alternative. Furthermore, stock options should be recognized and treated as both a form of compensation and ownership stake within public disclosures.

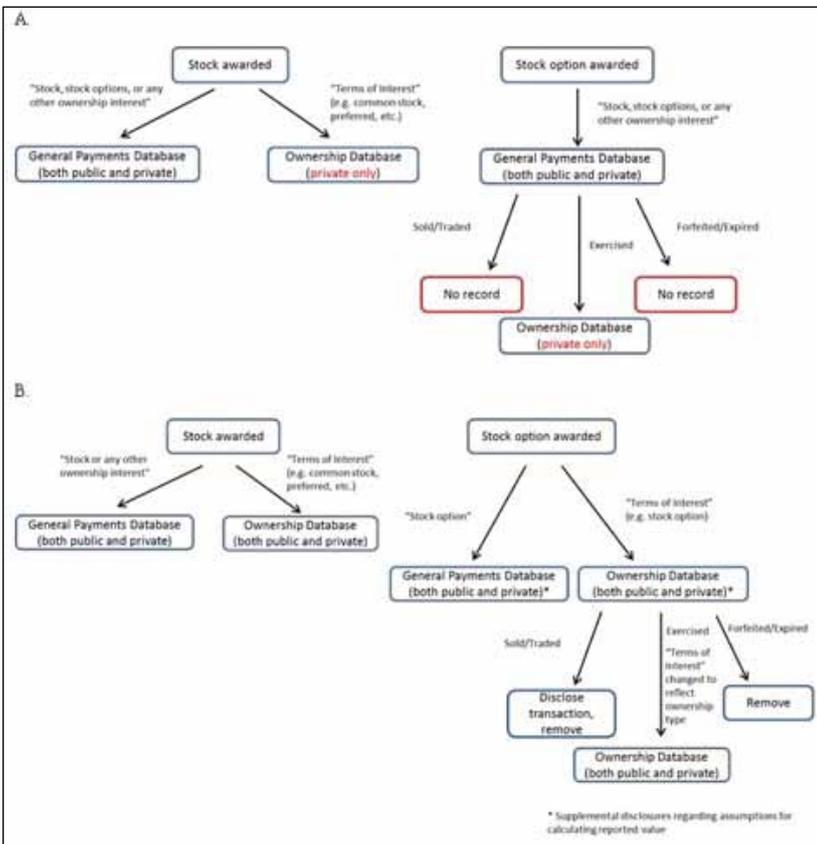
P97 Narrative comments about urologists on physician rating websites provide insight into what drives patient satisfaction surveys

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Introduction: In recent years, patient scored Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) surveys and their relationship to hospital reimbursement have sparked a need to understand patient satisfaction ratings. Previous studies and surveys have shown that physician review websites (PRWs) are a commonly used resource by patients and that the number of reviews on PRWs is increasing over time. Narrative comments on PRWs may provide valuable insight as to what motivates patients to provide positive or negative feedback.

Methods: All NSUAU-affiliated urologists practicing in New York State, as identified by the published membership list, were included in this study (n=244). Searches of providers were done across five major PRWs and narrative comments were classified by reviewers as positive, neutral, or negative and assessed for mention of seven factors: punctuality/ease of appointment, bedside manner, time spent with the patient, communication/education skills, quality of staff, technical aspects of care, and followup care. Providers without narrative comments or who could not be confirmed to be currently practicing in NY were excluded. Results were analyzed using two-tailed paired t-tests. Subgroups were analyzed using unpaired t-tests.

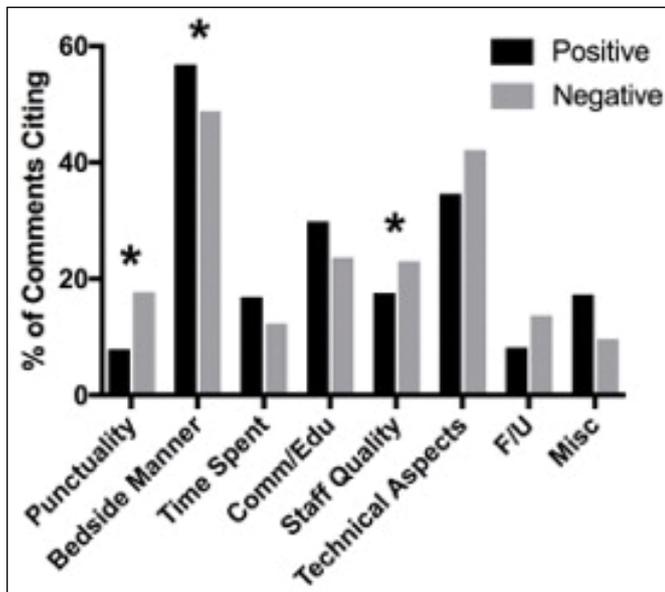
Results: 155 urologists met inclusion criteria for the study. 1069 narrative comments across 4234 online ratings were analyzed. 734 (68.7%) were positive and 299 (27.9%) were negative (Fig. 1). Positive comments were more likely to cite bedside manner in their review than negative comments (p=0.016). Negative comments were more likely to cite timeliness (punctuality/ease of appointment) (p=0.0034) and staff quality (p=0.0062) in their review than positive comments. Time spent, communication/education skills, technical aspects of care, and followup care were not significantly more important in motivating either type of comment. Miscellaneous comments that did not cite any specific factors were more likely to be positive (p=0.0039). Urban urologists were more likely to receive narrative comments than rural urologists (p=0.0018). Female urologists were more likely have quantitative online feedback than male urologists (p<0.0001), however, women and men were equally likely to receive narrative comments.



P96. Fig. 2. (A) Current Sunshine Act disclosures for equities and options. Current standards categorize stock, stock options, and other equity interests in the same category. The Ownership Database tracks equity stakes in private not public companies. Options are not considered ownership interest until exercise and sales, trades, expiry, and forfeitures are not disclosed. **(B)** The authors' proposed restructuring. Stock options are separated into its own category with supplemental disclosures for calculating the reported value. The Ownership Database covers both private and public companies. Option awards are immediately recognized as an ownership in the Ownership Database, rather than deferring until exercise. Sold or traded option contracts are disclosed prior to removal from database.

Methods: We performed a review of the current standards for accounting within the Sunshine Act, with focus on stock options. We also reviewed the literature on controversies surrounding options accounting, including political controversies surrounding the Enron scandal, which shaped current standards. Based on this review, we proposed improvements to disclosures on stock option accounting within the Sunshine Act.

Results: In 2014 there were \$49 million of stock and stock options and other ownership interests issued. 59% of companies who paid stock/



P97 Fig. 1. Study results. F/U: followup.

Conclusions: We found that certain aspects of patient care, such as bedside manner and staff quality, are more likely to garner feedback from patients, yet, time spent with patient, communication, and followup care did not. Further work in this area should identify aspects of the patient experience that are the most valuable targets for urologists as they work to improve their patient care, HCAHPS scores, and online representation in an era where it is poised to have a dramatic impact on patients' impression of their physicians.

P98
Publish or perish

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Introduction: It is an accepted axiom that academics must publish to be considered successful and open-source journals are quickly gaining traction in the scientific community as an effective way to disseminate important research. The open-access movement includes many successful, well-respected, and trustworthy operations, but has also spawned a plethora of journals, some predatory and others that appear to be amateurish, low-impact academic traps. We provide a first look at open-source journals, both reputable and predatory, specifically pertaining to urology.

Methods: A review of the email inbox of a single academic urologist was examined for journal article solicitations over a four-month span (September–December 2016). Journals were excluded if they did not pertain to urology. Urology journals were analyzed according to journal-centered (impact factor, number of documents published per year, cost of publication, total citations over three-year period, origin of journal) and author-centered (h index) metrics over one publishing year (2015).

Results: A total of 32 journals contacting a single academic urologist were included in this review. The majority of journals originated outside North America with a mean cost of \$1567 CDN. Analysis of journal-specific metrics show a wide range of journal H index (2–18), total documents published over one year (10–131), and number of citations per document (0.02–1.27). Some publications were found to make false claims of citation in related literature and have been listed in vetted academic databases.

Conclusions: Choices for open-source journal publication are rapidly increasing in the field of urology. They are not all created equal. Publication in many of these journals will increase the risk of seeing academic careers perish rather than flourish.