RPE-01

Long Term Safety and Efficacy of Clomiphene Citrate for the Treatment of Male Hypogonadism

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Introduction: Clomiphene citrate (CC) may be used as an off-label treatment for hypogonadism. There is little long-term data on the efficacy and safety of CC when administered for over three years. We aimed to assess improvements in testosterone and hypogonadal symptoms while on CC for extended periods of time.

Materials & Methods: Retrospective review identified patients treated with CC for hypogonadism (baseline testosterone < 300 ng/dL) at two institutions from 2010-2018. Duration of CC therapy, serum testosterone levels, improvement in symptoms, and side effects of CC were assessed. Patients were divided into subgroups of ≤ 3 and > 3 years therapy. Unpaired t-test was used to evaluate changes in testosterone between groups and Fisher's exact test compared side effects and symptom improvement.

Results: Four hundred patients underwent CC treatment for a mean duration of 26 months (range 0-84 months). Two hundred and eighty patients were treated with CC for ≤ 3 years (mean 13 months, S.D. 10 months), and 120 patients were treated with CC for > 3 years (mean 52 months, S.D. 11 months). On treatment > 3 years, 106 patients (88%) achieved normal serum testosterone levels, 92 patients (77%) reported improved symptoms, and 10 patients (8%) reported side effects. Results were not significantly different between patients treated for > 3 years or ≤ 3 years ($p < 0.05$). The most common side effects reported by patients treated > 3 years included changes in mood (n = 5), blurred vision (n = 3), and breast tenderness (n = 2). There were no significant adverse events in any patient treated with CC.

Conclusions: This study demonstrates that CC use is safe and effective with few side effects when used for durations up to 7 years. To our knowledge, our data represents the longest documented use of CC in the literature and suggests that CC may be offered as a long-term treatment for hypogonadism in men irrespective of fertility preservation.

RPE-03

Can Use of Intralesional Collagenase Clostridium Histolyticum in Patients with Severe Peyronie's Disease Alter the Surgical Course?

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Introduction: Patients with severe penile curvature due to Peyronie's disease (PD) face a dilemma when deciding from the many treatment options. Plaque incision and grafting (PIG) is typically the choice for curvatures greater than 60 degrees while lesser curvatures will undergo the less morbid tunica albuginea plication (TAP). Intralesional collagenase clostridium histolyticum (CCH) is FDA-approved for curvatures greater than 30 degrees. We report the outcomes of using intralesional CCH in patient's with severe PD and hypothesize that these improvements can alter the surgical course of the disease.

Materials & Methods: We retrospectively reviewed patients with PD treated with at least one course of CCH at our institution between April 2014 and October 2018. Severe PD was defined as curvature greater than 60 degrees. We report patient demographics, changes in curvature, and clinical course.

Results: Eighty-eight patients completed at least one course of CCH. Mean follow up was 13.7 months after CCH initiation. Nineteen patients (21.6%) had severe PD. Mean change of penile curvature was 24.6 degrees. Six patients (26%) with severe PD experienced curvature decrease to less than 45 degrees. Five of these six patients (83%) avoided surgical intervention while 1 (17%) underwent TAP. Nine patients (39%) with severe PD had curvature decrease to 45 to 59 degrees. Seven of these 9 patients (78%) avoided surgical intervention while 2 patients (22%) went on to have PIG.

Conclusions: Patients with severe PD often require surgical intervention. PIG involves a long recovery with significant morbidity, including risk for worsening ED. These data suggest that treatment with CCH may improve severe curvature to allow for the less morbid TAP. Most patients ultimately did not need any surgery. These results may help in counseling patients who have severe PD and would like to avoid the risks and morbidity of surgery.

RPE-02

The Influence of 18F-Fluciclovine Positron Emission Tomography on Salvage Therapy for Biochemical Recurrence of Prostate Cancer

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Introduction: We evaluate the influence of 18F-fluciclovine Positron Emission Tomography/Computed Tomography (PET/CT) on the planned treatment of patients with biochemically recurrent (BCR) prostate cancer (PCa) after curative intent primary therapy and negative or equivocal standard of care imaging.

Materials & Methods: A retrospective chart review was conducted on patients who developed BCR after curative intent primary therapy for PCa with negative standard of care imaging who then received a 18F-fluciclovine PET/CT scan. Patient records were analyzed to determine management changes resulting from 18F-fluciclovine PET/CT imaging.

Results: Between December 2017 and February 2019, 48 patients with a median age of 72 years and a median prostate specific antigen (PSA) of 3.95 ng/ml were evaluated. 18F-fluciclovine PET/CT avid lesions were detected in 34 of 48 patients (70.8%) (Figure 1a). Positive 18F-fluciclovine PET/CT scans increased with higher pre-PET PSA levels (Figure 1b). Significant differences in positivity after BCR in the prostate bed were noted between radical prostatectomy (14.2%), radiotherapy (65.3%) and cryotherapy (87.5%) patients ($p < 0.001$). Following 18F-fluciclovine PET/CT, planned management was revised in 31 of 48 patients (64.5%) and were associated with a positive PET/CT in 24 of 31 cases (77.4%). The most frequent change was from salvage or noncurative systemic therapy in favor of watchful waiting (10 of 31 patients; 32.2%), from noncurative systemic therapy to salvage therapy (7 of 31 patients; 22.6%), and from salvage therapy to noncurative systemic therapy (5 of 31 patients; 16.1%) (Figure 2).

Conclusions: 18F-fluciclovine PET/CT detected recurrent sites in most men with BCR PCa, often resulting in management plan changes.

Figure 1. 18-F-fluciclovine PET/CT detection rate by region **(a)**. 18-F-fluciclovine PET/CT detection rate by PSA **(b)**.

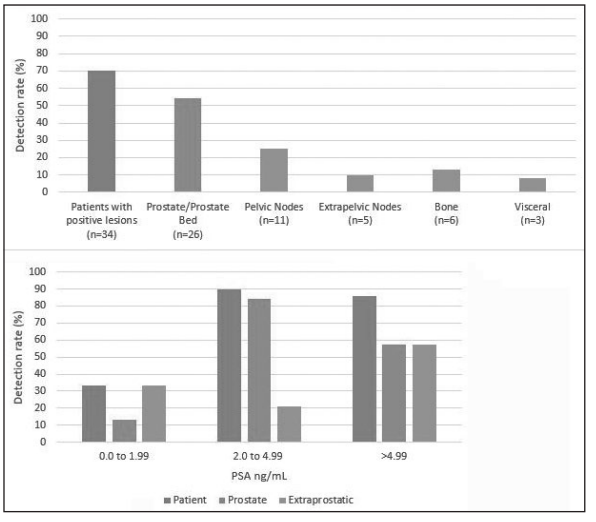
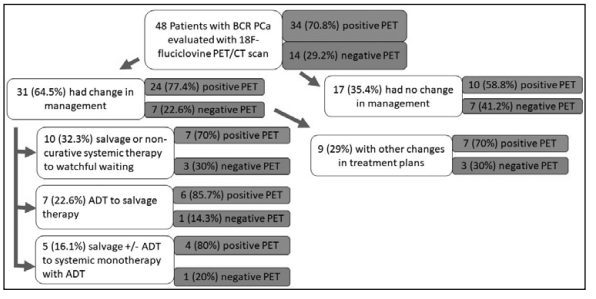


Figure 2. Change in management plans as a result of 18-F-fluciclovine PET/CT



RPE-04

Has the Use of Pre-operative Urodynamics for Stress Urinary Incontinence Surgery Changed Following the VALUE Study?

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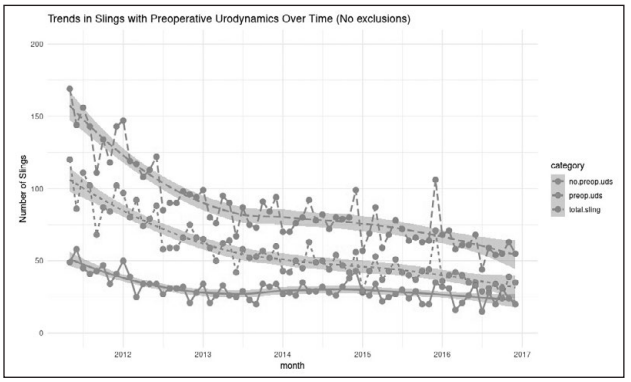
Introduction: In May 2012, the Value of Urodynamic Evaluation (VALUE) study was published suggesting that routine urodynamics (UDS) prior to sling procedures are not beneficial for uncomplicated, stress-predominant urinary incontinence (SUI). Accordingly, professional organizations have advocated against routine pre-operative UDS in "index" patients.

Materials & Methods: We identified female patients in the Virginia All Payers Claims Database diagnosed with SUI between 2011-2016 using ICD codes. CPT codes were used to identify UDS, concurrent prolapse/bulking agent procedures, and slings. Pre-operative UDS was defined as those performed within 6 months of sling placement. Non-index patients, including those with concurrent overactive bladder, urge incontinence, mixed incontinence, neurogenic bladder, or prior prolapse/bulking agent procedures were excluded. We compared the change in proportion of slings with pre-operative UDS following the VALUE study using beta regression with a logit link. We also used interventional ARIMA models with a step function at the time of publication.

Results: A total of 44,562 patients with SUI were identified. Among these, 7,197 (16.2%) underwent a sling procedure. A decrease in the annual number of slings, both with and without pre-operative UDS, was seen beginning in mid-2012 (Figure). The proportion of slings with pre-operative UDS decreased over the study (68%, 2011; 58%, 2016), with an estimated mean decrease in pre-op UDS by 0.93%/month ($p < 0.001$). Interventional ARIMA models showed a trend towards a significant decrease in pre-op UDS ($p = 0.057$) and a significant decrease in the no pre-op UDS ($p < 0.001$) slings after study publication.

Conclusions: Our study demonstrates a small, but significant decrease in the proportion of pre-operative UDS in uncomplicated patients following the VALUE study. Further research is needed to examine trends of pre-operative UDS and underlying influences.



RPE-05

Opioid Prescribing Practices Among Urology Residents in the United States

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Introduction: Opioid abuse is an epidemic in the United States, and urologists may contribute by overprescribing opioids for pain control after urologic procedures. Prescribing opioids post-operatively is often the responsibility of urology residents at academic institutions; however, opioid-prescribing habits, influencing factors, and training experience among urology residents remains ill-defined.

Materials & Methods: Electronic survey was distributed to current residents at accredited urology residency programs across the United States. Comparative statistical analysis was performed using paired t-test.

Results: A total of 104 urology residents participated in the survey. The most common opioid prescribing influences included: standard prescribing habit for certain operation (80%), attending/senior resident preference (62.1%), and immediate post-operative pain (54.7%). Residents prescribed on average 56.2 morphine milligram equivalents (MME) for uncomplicated ureteroscopic stone treatment, 114 MME for percutaneous nephrolithotomy, 39.7 MME for vasectomy, 55.8 MME for transurethral resections, 121.1 MME for inflatable penile prosthesis, 79.5 MME for female sling, 134.2 MME for robotic surgeries, and 167.9 MME for open abdominal surgeries. Only 15.5% of residents reported having formal algorithms for opioid prescribing at their respective programs. 51.6% received no formal opioid prescribing education, and only 42.1% routinely assess their patients' risk for abuse. Residents receiving education on opioid prescribing gave less MME overall than those who had not (742.6 vs. 798.8), and assessed opioid abuse risk more frequently (46.8% vs. 37.5%, $p = 0.358$).

Conclusions: Urology residents commonly prescribe opioids, yet over half received no formal education on opioid prescribing. The majority of residents routinely give standard amounts of opioids to all patients for certain procedures, yet few utilize any algorithms for prescribing at their institution. Residents who received safe opioid education prescribed less opioids overall, and assessed risks for abuse more often. Implementing standardized post-operative opioid prescription protocols and increasing resident education on safe opioid prescribing practices may help improve these prescription trends among urology residents.

RPE-06

PTEN Loss with ERG-negative Status is Associated with Lethal Disease after Radical Prostatectomy

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Introduction: The loss of PTEN tumor suppressor gene often occurs with ERG rearrangement and is associated with increased risk of biochemical recurrence after radical prostatectomy (RP). However, few studies have investigated the combined effects of PTEN and ERG status on more clinically meaningful outcomes for prostate cancer (PCa) in surgically treated patients. Here, we examined the association of PTEN/ERG status with lethal PCa in patients treated with RP.

Materials & Methods: We included 791 patients with clinically localized PCa treated with RP at a single institution. Genetically validated immunohistochemistry (IHC) assays for PTEN and ERG were performed on tissue microarrays. Cox proportional hazard models assessed the association of PTEN/ERG status with lethal PCa (defined as metastasis or PCa-specific death). Multivariate models were adjusted for age at RP, race, pathologic grade and stage, and surgical margin status.

Results: Median follow up for the cohort was 12.8 years. Twenty-five percent of cases (203/791) demonstrated PTEN loss, and 43% (330/776) had ERG-positive rearrangements. On multivariate analysis, PTEN loss (HR 1.9, 95% CI 1.2-3.0, $p = 0.012$) but not ERG expression (HR 0.6, 95% CI 0.4-1.1, $p = 0.11$) was associated with increased risk of lethal PCa. When analyzing both PTEN and ERG status together, the association of PTEN loss with lethal disease only remained among men with ERG-negative tumors (HR 2.3, 95% CI 1.3-4.1, $p = 0.005$) and not ERG-positive tumors (HR 1.1, 95% CI 0.6-2.1, $p = 0.81$). There was no significant interaction between PTEN and ERG in predicting lethal disease ($p_{interaction} = 0.9$).

Conclusions: PTEN loss is associated with an increased risk of lethal PCa in surgically treated patients, and this risk is most pronounced in the subgroup of patients with ERG-negative tumors. This work corroborates the use of both PTEN and ERG IHC assays as prognostic tools for risk stratification and treatment management post-RP.

RPE-07

Gender and Racial Disparities in the Treatment and Outcomes of Muscle Invasive Bladder Cancer

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Introduction: While men are more likely to be diagnosed with bladder cancer, women are more likely to have aggressive disease, increased recurrence, and increased cancer-specific mortality. Black patients have also been found to have worse outcomes. The causes of these disparities remain unknown. Utilizing a large population-based database, we sought to identify disparities in the treatment of muscle-invasive bladder cancer (MIBC) by gender and race.

Materials & Methods: Data from the National Cancer Database was used to identify patients diagnosed with bladder cancer from 2004-2014. Patients were excluded if they had non-muscle invasive disease or missing gender. Treatments analyzed included no treatment, cystectomy alone, neoadjuvant chemotherapy followed by cystectomy (optimal treatment), or radiation therapy with chemotherapy. 30- and 90-day mortality were analyzed using logistic regression. Logistic models were also used to evaluate sexual disparities in receiving optimal treatment.

Results: 47229 patients were identified and included. Most patients were male (73.4%) and had cystectomy alone as their first treatment (69.2%). Logistic regression estimated no difference in the odds of receiving optimal treatment between male and female patients (OR 0.988, 95% CI 0.93-1.05), but detected that black patients had a lower odds of optimal treatment (OR 0.844, 95% CI 0.79-0.98). Further, female patients were estimated to have a higher odds of 30-day and 90-day mortality (ORs 1.134 and 1.224 respectively) while black patients had a higher odds of 90-day mortality only (OR 1.161, 95% CI 1.01-1.34).

Conclusions: This study shows that male and female patients are equally likely to receive optimal treatment for MIBC, and thus treatment disparities cannot explain differences in outcomes between genders. However, black patients were less likely to receive optimal treatment, and both female and black patients had increased risk of mortality. Further study is needed to determine variables leading to worse outcomes in females and identify impediments to black patients receiving optimal treatment.

RPE-09

Phases of Decompensation During Acute Ischemia in an Ex-Vivo Porcine Bladder Model

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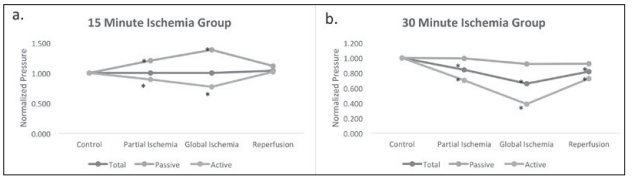
Introduction: The natural history of voiding dysfunction in the setting of acute to chronic ischemia has never been established. Therefore, the aim of this project was to develop an ex vivo porcine bladder model to test the effects of increasing durations of acute ischemia.

Materials & Methods: Porcine bladders were perfused through bilateral vesical arteries at standard physiologic flow (4 ml/min). Bladders were filled to 250 ml through a urethral catheter and intravesical pressures were continuously recorded. At 250 ml, contractions were induced using KCl solution vesical arterial infusion, and the bladder was emptied. Total, passive, and active pressures were recorded for each contraction and data were normalized to the control fill. Bladders underwent the following perfusion protocol: Equilibration (Fill 1: 4 ml/min), control (Fill 2: 4 ml/min), partial ischemia (Fill 3: 2 ml/min), global ischemia (Fill 4: 0 ml/min) and reperfusion (Fill 5: 4 ml/min). Perfusion periods were held for 15 min or 30 min and results compared.

Results: Porcine bladders (N = 19) including 8 (15 min group) and 11 (30 min group) were used. With 15 min ischemia, passive pressure increased 39% ($p = 0.03$) and the active pressure decreased 23% ($p = 0.002$). However, total pressure remained constant, identifying a compensated phase. Values returned to baseline with reperfusion. (Figure 1a). With 30 min ischemia, passive pressure remained unchanged. However, there was a decrease in total pressure 34% ($p < 0.001$) and active pressure 61% ($p < 0.001$), identifying a decompensated phase with incomplete recovery upon reperfusion (Figure 1b).

Conclusions: In the perfused porcine bladder, 15 min ischemia resulted in a compensated phase and 30 min ischemia resulted in a decompensated phase of detrusor function. This study provides mechanistic insight into the natural history of ischemia-mediated voiding dysfunction.

Figure 1. Normalized total (blue line), passive (orange line) and active (grey line) pressures during physiologic perfusion (Control: 4ml/min), partial ischemia (2ml/min), global ischemia (0ml/min), and reperfusion (4ml/min). Time periods were held for 15min (a) and 30 min (b). *p<0.05.



RPE-08

Urinary Incontinence and Sexual Dysfunction Outcomes in the Bariatric Surgical Patient: A Systematic Review and Meta-Analysis

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Introduction: Data suggests the potential of bariatric surgery-related weight reduction to improve lower urinary tract symptoms (LUTS) and sexual dysfunction in men and women. The aim of this review and meta-analysis is to assess the urinary and sexual dysfunction outcomes in the bariatric surgical patient.

Materials & Methods: Systematic review via PUBMED was performed in English for search terms urinary incontinence and sexual dysfunction in patients undergoing bariatric surgery. No standardization performed of surveys or procedures across studies, and questionnaires were evaluated on an individual basis. Analyses performed based on weighted numbers of subjects per study. Effect of change of body mass index (BMI) on LUTS was analyzed with univariate fixed effects regression. Paired t-tests assessed changes in BMI. Pearson correlation described the relationship between absolute BMI change and LUTS percent change.

Results: Outcomes were reported for 7971 patients, with mean followup of 29.7 months. The mean change in BMI was 14.1 kg/m^2 ($p < .05$) after surgery. At baseline, 28.5% of patients reported LUTS with a decrease of 15.3% after treatment ($p < .05$). This resulted in a statistically significant ($p < 0.01$, $r = 0.63$) correlation between decrease in BMI and percent improvement in LUTS. The International Consultation on Incontinence Questionnaire (ICIQ) was the most common validated survey for LUTS. The International Index of Erectile Function (IIEF) score was the most common survey used to assess sexual function.

Conclusions: Literature demonstrates that patients undergoing bariatric surgery have the potential to improve sexual dysfunction and reduce LUTS secondary to BMI reduction. There remains a paucity of high-quality evidence evaluating these relationships. Future studies with greater homogeneity in treatment protocol and outcomes reporting are necessary to guide therapeutic expectations in this population.

Table 1. Patient Characteristics, Questionnaire Usage, & Symptomatology Results

Total Patients	7971
Roux-en-y	535
Sleeve gastrectomy	730
Roux-en-y, Sleeve gastrectomy, or Lap Band	6706
ICIQ	1210
IIEF	277
Follow up (months)	24
Mean Age (years)	45.3
Pre-Operative BMI (kg/m^2)	46.5
Post-Operative BMI (kg/m^2)	32.8
ICIQ Δ (mean)	5.01
Baseline LUTS (%)	28.5
Follow up LUTS (%)	13.2

RPE-10

Evaluation of Hydronephrosis Grading Systems: Familiarity and Preferences Among Pediatric Urologists

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Introduction: The Urinary Tract Dilation (UTD) system was created in 2014 to address variability in hydronephrosis grading. We sought to assess familiarity, preference, and contemporary practice patterns for various hydronephrosis grading systems.

Materials & Methods: A 25-question survey was created via consensus, piloted and iteratively revised. A final version was sent via email to the Society for Pediatric Urology listserv. Questions assessed respondent practice demographics and experience, familiarity with various grading systems, preferences for pre- and post-natal grading systems, opinion on the importance of a unified system and if so, which system should be used. Descriptive statistics were calculated, and sub-group analyses were performed using Mann-Whitney U and Kruskal-Wallis tests.

Results: Response rate was 43% (n = 137). Respondents were familiar with a median of 4 of 7 (IQR 2,5) grading systems, with Society for Fetal Urology (SFU) grading system being most well-known (92%; Table 1). There was variation in grading system preference for both prenatal and postnatal imaging and only 19% reported an established protocol for describing hydronephrosis in their practice. Most respondents believe a unified classification system is "very" or "extremely" important (86%), and would prefer SFU (58%) or UTD (34%) if selecting a pre-established system. There were no differences in unified grading system preference based on experience (p = 0.43), geography (p = 0.27), or practice setting (p = 0.37).

Conclusions: Despite the establishment of the UTD system, the majority of respondents still use SFU for grading hydronephrosis. Pediatric urologists consider the establishment of a unified grading system very important, but there is no consensus on which system that should be. SFU and UTD are the leading options for a unified system, but a small subset is not even familiar with the UTD system.

Table 1. Hydronephrosis grading system familiarity and preferences among 138 responding pediatric urologists.

	Familiar with System*	Pre-Natal Preference*	Post-Natal Preference*	Unified System Preference
	n(%)	n(%)	n(%)	n(%)
SFU	126 (92%)	81 (59%)	110 (80%)	80 (58%)
APD	92 (67%)	70 (51%)	33 (34%)	2 (1%)
UTD	80 (58%)	35 (26%)	46 (34%)	46 (34%)
MMS	81 (59%)	20 (15%)	21 (15%)	9 (7%)
Pelviectasis/ Calyectasis	69 (50%)	8 (6%)	12 (9%)	0 (0%)
ESPR	3 (2%)	0 (0%)	0 (0%)	0 (0%)
Onen	6 (4%)	0 (0%)	1 (1%)	0 (0%)

**Respondents had option to choose multiple*
SFU, Society for Fetal Urology; APD, Anterior-Posterior Diameter; UTD, Urinary Tract Dilation; MMS, Mild-Moderate-Severe; ESPR, European Society of Pediatric Urology

PDA-01

An Alternative Injection Paradigm for the Treatment of Overactive Bladder with OnabotulinumtoxinA is Associated with a Low Incidence of Clean Intermittent Catheterization in Female Patients

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Introduction: Results from three phase 3 and one phase 4 trial demonstrated that onabotulinumtoxinA (onabotA) 100U, administered as 20 evenly spaced intradetrusor injections avoiding the trigone, significantly reduced urinary incontinence (UI) and improved quality of life in patients with overactive bladder (OAB). The clean intermittent catheterization (CIC) rate in the pooled female population was 5.2%. This study tested the hypothesis that targeting more afferent nerves via trigonal/peri-trigonal injections could be effective and have a lower CIC incidence versus the standard injection paradigm.

Materials & Methods: This multicenter, randomized, double-blind trial (NCT03052764) included adults with OAB and UI inadequately managed with an anticholinergic. Eligibility criteria were identical to prior studies. Patients were randomized 2:1 to onabotA 100U or placebo, administered as 2 trigonal and 8 peri-trigonal injections.

Results: Of 115 randomized females (96% of population), 112 were included in this efficacy analysis. There was no CIC use in the first 12 weeks in females in either the onabotA or placebo group. Baseline UI (episodes/day) was 6.02 for onabotA (n = 73) and 6.34 for placebo (n = 39). A significantly higher least squares mean reduction from baseline in UI was observed with onabotA versus placebo at week 12 (-3.07 versus -0.15 episodes/day; p < .0001). The proportions of patients with 100% reduction in UI episodes/day at week 12 were 14.3% and 2.7%, respectively. Adverse events were predominantly mild/moderate; urinary tract infection was most common (onabotA, 37.0%; placebo, 25.6%).

PDA-02

Preventing Excess Narcotic Prescriptions in New Robotic Surgery Discharges (PENN): A Prospective Cohort Quality Improvement Study

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Introduction: In the setting of the opioid epidemic, there is increasing interest in non-opioid postoperative pain strategies, particularly for minimally invasive robotic surgeries. We hypothesized that the majority of these patients do not require opioids for pain control.

Materials & Methods: This prospective study aimed to reduce opioids prescribed at discharge after robotic radical prostatectomy (RARP), robotic radical nephrectomy (RARN) and robotic partial nephrectomy (RAPN). Prior to 9/2018, 100% of patients were discharged on varying amounts of oxycodone (range: 75-337.5 oral morphine milligram equivalents [MME]). We implemented a standardized non-opioid analgesia pathway with escalation options (Figure 1). To assess the safety of our approach, we analyzed pain scores, telephone encounters and ED visits in our cohort.

Results: Our cohort (n = 170) consisted of patients undergoing RARP (n = 87), RARN (n = 25), RAPN (n = 58) between 9/2018-1/2019. Overall, 67.7% were discharged without opioids, 24.4% with ten pills of tramadol (50 MME) and 8.2% with ten pills of oxycodone (75 MME). Figure 2 illustrates the percentage of patients who required discharge with opioids for each procedure. On multivariable analysis, older age (OR: 0.961, 95% CI: 0.923-0.995, p = 0.026) was associated with lower odds of needing opioids at discharge. There was no difference in pain scores at the post-operative outpatient visit (p = 0.66) or postoperative telephone encounters (p = 0.45) between those discharged with and without opioids. There were too few ED visits overall to analyze.

Conclusions: The majority of robotic surgery patients do not require opioids upon discharge. An escalation protocol allows for a patient centered approach to reduce narcotic prescribing while still addressing surgical pain.

Figure 1. PENN pilot post-operative pain pathway.

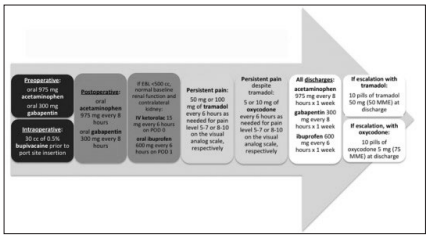
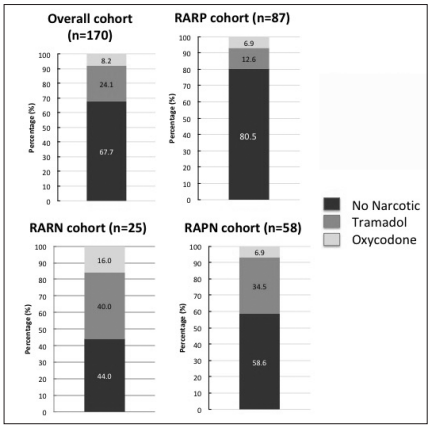


Figure 2. Percent of patients discharged with opioids after implementation of your pathway.



Conclusions: Although not a direct comparison, post-treatment CIC use in females who received onabotA 100U with the new trigonal/peri-trigonal injection paradigm was lower than that reported in phase 3 or 4 studies which used the traditional paradigm (0 versus 5.2%), possibly because in the new paradigm treatment was more targeted to afferent nerves. The efficacy of the new onabotA injection paradigm is similar to that seen in previous trials.

PDA-03

Oxytetracycline Disrupts Sperm Motility and In Vitro Fertilization

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Introduction: Environmental toxins have been implicated with the published decline in semen parameters in men. The widespread use of oxytetracycline, a broad-spectrum antibiotic used in animal husbandry, portends frequent human exposure with unknown health and fertility consequences. The aim of this study was to investigate the effects of oxytetracycline on sperm progressive motility and in vitro fertilization capacity using mouse epididymal sperm.

Materials & Methods: Caudal epididymal sperm were isolated from > 10 week-old C57BL/6 mice and incubated with DMSO (control) or 0.1-2 uM oxytetracycline for 30 minutes. Progressive motility was assessed with microscopy. Control and exposed sperm were used to inseminate oocytes from super-ovulated C57B/6 mice. Percentage of two-cell embryos was analyzed after 24 hours. Streptavidin conjugated with Texas Red was used for analysis with fluorescent microscopy. Effect of oxytetracycline on sperm death was evaluated with straining for 7AAD (necrosis) and cleaved caspase-3 (CC3; apoptosis).
Results: Progressive motility was 56% in control sperm compared to 4% in 0.1 uM oxytetracycline and 0% in 0.25-2 uM oxytetracyline. Fertilization rates were 75% in control sperm compared to 0% in 2 uM oxytetracycline group. Oxytetracycline detected phosphatidylethanolamine (PtdE) under fluorescent microscopy on the mid-piece of mouse sperm exclusively. Sperm death as assessed by 7AAD staining was 2% (S.D. 2%) in control sperm compared to 14% (S.D. 4%) with oxytetracycline. CC3 was not detected.

Conclusions: Oxytetracycline significantly impairs mouse sperm motility even at very low concentrations. This may explain the resultant incapacity to fertilize oocytes. Oxytetracycline induces cell necrosis on a fraction of sperm, but this cannot explain the complete disruption of sperm motility. Since oxytetracycline only binds the sperm mid-piece where PtdE is exposed, it is possible that it disrupts mitochondrial activity, leaving sperm immotile but alive. Future studies are needed to examine the presence of oxytetracycline in our food chain.

PDA-05

Impact of Social Media Visual Abstracts on Research Dissemination and Audience Engagement in The Journal of Urology

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Introduction: Many medical journals are using social media visual abstracts to increase reader interest in and discussion of published articles. The Journal of Urology (JU) was the first urology journal to publish visual abstracts on Twitter beginning in 11/2016. This study assesses the impact of visual abstracts on the dissemination of and reader engagement with JU research articles.

Materials & Methods: Cross-sectional review of all original posts ("tweets") by the JU Twitter account, 7/2016-9/2018. All tweets were coded as follows: tweets containing a visual abstract; tweets containing a non-visual abstract graphic (eg, a figure or table); and tweets about research articles without any media. For each tweet, we analyzed the following impact metrics: impressions, a metric for dissemination and the audience size; engagements, a metric for interaction, such as retweets and full article visits; and engagement rate, the frequency of interactions accounting for audience size. To assess potential "spillover effect" of visual abstracts on other JU content, we compared the metrics of tweets four months before and after implementing visual abstracts.

Results: Among 3419 total tweets, tweets about research articles containing visual abstracts averaged 3107 impressions, 128 engagements, and 3.8% engagement rate. These tweets significantly outperformed tweets with non-visual abstract graphics (mean 2741 impressions, 113 engagements, 3.6% engagement rate, $P < 0.001$) and tweets without media (mean 2289 impressions, 58 engagements, 2.3% engagement rate, $P < 0.001$). Compared to tweets without media, visual abstract tweets increased readers' overall engagement rate by 65%. Visual abstracts had a positive spillover effect on all JU articles; non-visual abstract tweets averaged 1672 impressions and 25 engagements prior to implementing visual abstracts, versus 2197 impressions (31% increase) and 63 engagements (152% increase) after.

Conclusions: The introduction of visual abstracts has increased readers' dissemination of and engagement with JU content. The impact of other media such as videos or podcasts on reader engagement merits further study.

PDA-04

Patient Safety Education and Perceptions of Safety Culture in US Urological Residency Training Programs

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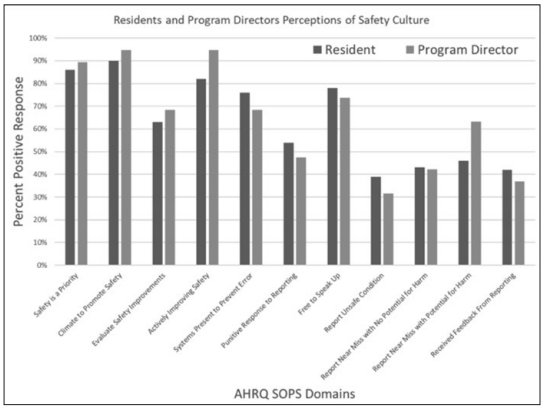
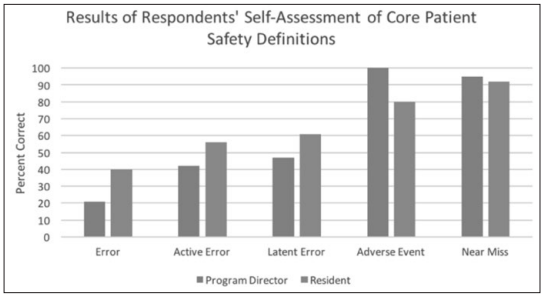
Introduction: ACGME has mandated that knowledge of patient safety (PS) principles be a core competency of residency training. The perception of PS culture and the infrastructure to support PS education remains unknown. We sought to assess attitudes of PS culture and organizational support for PS education within accredited US urological residency programs.

Materials & Methods: Experts in patient safety developed a needs assessment about prior training in the PS principles, perceived value of learning PS, components of an ideal PS curriculum, and resources necessary to facilitate learning in PS. Select items from the validated AHRQ Survey on Patient Safety Culture™ (SOPS) were included to identify how perceptions of PS culture may influence available PS resources. The anonymous survey was distributed electronically (12/2018-2/2019) by the AUA to all urology residents (RES) and program directors (PD).

Results: A total of 25 PD (25/140 = 18%) and 100 RES (100/1,772 = 6%) responded. RES received more PS training than PD (79% vs. 32%). The majority of RES and PD felt that PS was an important educational competency (RES = 89%; PD = 68%) and a pathway for academic success (RES 74%; PD 64%). For both, the preferred curricular topic was error causation models (RES = 42%; PD = 68%) using case-based vignettes (RES = 56%; PD = 63%). The median number of safety events submitted within the last year was 1 (IQR:0-2). Figure 1 shows the perceptions of safety culture and Figure 2 shows self-assessment results of core PS definitions.

Conclusions: PS education and practice are priorities of learners and educators. This study highlights the opportunities to improve knowledge in PS when developing a national PS curriculum.





PDA-06

Impact of Surgical Management of Upper Tract Urothelial Carcinama (UTUC) in Octagenerians

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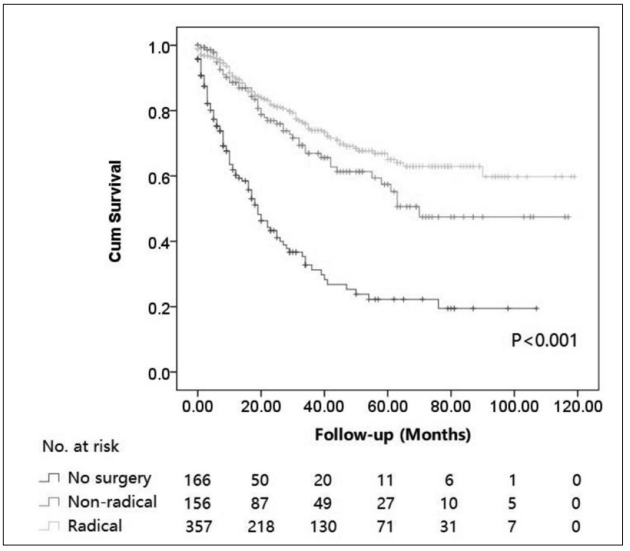
Introduction: UTUC is an aggressive disease with a high progression rate. The standard management is nephroureterectomy. In men with limited life expectancy, the potential harm of UTUC progression must be weighed against surgical morbidity and mortality. Thus more conservative approaches such as nephron sparing/non-radical surgery may be elected. The aim of this study is to investigate whether patients older than 80 years with localized UTUC could benefit from radical and more conservative surgery.

Materials & Methods: The SEER-18 database was searched for patients older than 80 years and diagnosed with localized (T1-2N0M0) UTUC as the only malignancy from 2006 to 2015. Patients were divided into 3 groups: Group 1:No surgery; Group 2: Non-radical surgeries (local tumor excision, partial or subtotal nephrectomy, partial ureterectomy); Group 3:Radical surgeries (complete nephrectomy or nephroureterectomy). Demographics and cancer-related parameters were gathered. Kaplan-Meier survival analysis and COX regression were conducted.

Results: 679 patients were included, with 166 in Group 1, 156 in Group 2, and 357 in Group 3. Surgically managed patients had longer median OS (overall survival) (13, 42, and 48 months in Group 1, 2, and 3, respectively, $p < 0.001$) and 5-year DSS (22%, 57%, and 65% in Group 1, 2, and 3, respectively, $p < 0.001$). There is no significant difference of median OS, 5-year OS, and 5-year DSS between group 2 (non-radical) and 3 (radical surgery). Multivariate analysis showed that radical resection (HR = 0.346, $p < 0.001$) and non-radical resection (HR = 0.396, $p < 0.001$) were associated with improved survival while controlling for age and grade of disease.

Conclusions: Patients older than 80 years with localized UTUC could benefit from surgery for a longer survival. Radical and non-radical resection seem to have a similar OS and DSS. Thus when clinically indicated in this population a more conservative approach may be reasonable.

Figure 1. Patient disease specific survival (DSS)



PDA-07

Patient Satisfaction with Telemedicine in the Management of GU Malignancies

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Introduction: Telemedicine (TME) has been shown to be an efficacious method of delivering medical care over a video-conference system. The amenability of TME to evaluate genitourinary malignancies have not been studied. We examine patient satisfaction in the evaluation of genitourinary cancer patients using TME.

Materials & Methods: From March 2017 to June 2018, our urology department conducted 667 TME visits via the EPIC® EMR platform. Post-encounter satisfaction surveys, with responses scaling from 1-5 (5 = highest satisfaction), were sent to all patients. Encounters were stratified according to cancer organ and reason for visit. Descriptive statistics were used to analyze satisfaction within cancer type and reasons for visit.

Results: 104 subjects (16%) completed the satisfaction survey, of which 49 (47%) had a primary diagnosis of genitourinary malignancies (40 males, 9 females). Median age was 69 years and median distance from clinic to home was 27 miles. There was no significant difference in satisfaction among cancer types ($p = 0.07$) and among reasons for visit within cancer types (Table 1). In a subset of patients (n = 8), TME satisfaction scores remain high ($\mu = 4.75$) even with discussion of newly diagnosed or upgrading of cancers on biopsies. With TME, 49% of patients reported a total time saved of > 3 hours when compared to office visits, while 100% reported having saved >1 hour. Patient age ($p = 0.09$), being a first-time TME user ($p = 0.31$) or being a social media user ($p = 0.25$) was not associated with patient satisfaction.

Conclusions: Our results suggest the versatility of TME in the management of genitourinary malignancies at various stages of disease. Future efforts should be aimed at assessing the cost savings of TME and its role in other urologic diagnoses.

	Reason for visit	Number of encounters	Overall (μ) satisfaction	p-value
A	**Prostate Cancer**	25	4.72	
1	Discussion of biopsy/labs/imaging results	11	4.91	
2	Routine follow up	10	4.50	0.2298
3	Post-op visit	4	4.75	
B	**Renal Cancer**	16	4.81	
1	Discussion of biopsy/labs/imaging results	3	5.00	
2	Routine follow up	6	4.83	0.7692
3	Post-op visit	7	4.71	
C	**Others (Bladder, Testicular, etc)**	8	4.25	
1	Discussion of biopsy/labs/imaging results	3	4.00	
2	Routine follow up	3	4.67	0.5067
3	Post-op visit	2	4.00	
No significant difference in overall satisfaction among types of cancers				0.0737

PDA-08

Patients with Small Renal Masses Undergoing Active Surveillance: Is Yearly Chest Imaging Necessary?

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Introduction: Renal cell carcinoma can metastasize to the lungs, so yearly chest imaging has been indicated for the follow-up of patients with small renal masses (SRM) in active surveillance programs. The hypotheses of this analysis include, 1) routine chest imaging is unlikely to detect pulmonary metastases in patients with SRM that do not progress by size and 2) patients with SRM may undergo unnecessary, costly work-up if receiving yearly chest imaging.

Materials & Methods: Patient data were collected via the DISSRM (Delayed Intervention and Surveillance for Small Renal Masses) registry. Chest imaging reports were examined to identify patients with abnormal findings, which were determined to be actionable or non-actionable based on receipt of further clinical investigations/interventions.

Results: Upon analysis of the 74 abnormal images, 32 were actionable (43%). Actionable findings included pulmonary nodules > 5 mm (N = 20, 63%), anterior mediastinal masses (N = 2, 6%), thyroid nodules (N = 8, 25%), and infection (N = 2, 6%). Actions included further chest CT (N = 16, 50%), lung biopsies (N = 6, 19%), thyroid ultrasound imaging (N = 8, 25%), or fungal/bacterial culture with treatment (N = 2, 6%). None of these patients were found to have metastatic RCC. There were 42 non-actionable findings (57%), which included < 5 mm, pulmonary nodules (N = 24, 58%), atelectatic (N = 6, 14%) or scarring/post-inflammatory changes (N = 8, 19%), pulmonary hypertension (N = 3, 7%), and subcutaneous breast nodules (N = 1, 2%).

Conclusions: Routine chest imaging did not reveal metastatic disease in patients with SRM. Nonetheless, yearly chest imaging "for cause" is still appropriate in: (1) patients with indeterminate pulmonary findings on baseline imaging, (2) patients with growing SRM, especially those that exceed 0.5cm/year or cross size thresholds of 3cm or 4cm, due to an increased risk of pulmonary metastases, and (3) patients electing crossover to surgical intervention for accurate re-staging prior to intervention. Otherwise, we conclude that the morbidity and cost of frequent chest imaging in these patients outweigh the chance of detecting metastasis.

PDA-09

The Pennsylvania Urologic Regional Collaborative Active Surveillance Eligibility (PURCASE) Score: An Objective Scoring System to Identify Candidates for Active Surveillance

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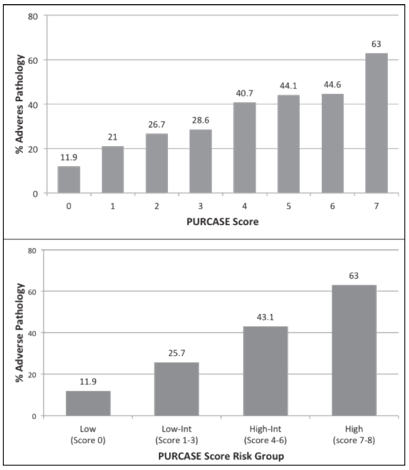
Introduction: There are no universally accepted criteria to identify men eligible for active surveillance (AS), and eligibility criteria at many institutions are based on expert opinion as opposed to empiric data. We used a regional prostate cancer collaborative to develop an objective scoring system that can be used to identify AS candidates.

Materials & Methods: We identified men from the Pennsylvania Urologic Regional Collaborative (PURC) with low and favorable intermediate-risk prostate cancer who underwent radical prostatectomy (RP). Logistic regression was used to identify factors associated with adverse pathology after RP (grade group ≥ 3, T-stage ≥ T3, or lymph node positivity). This model was used to develop the PURC Active Surveillance Eligibility (PURCASE) score, with points assigned proportional to the z-value for each variable.

Results: Of 1135 men treated with RP, 388 (34.2%) had adverse pathology. The table shows the logistic regression model of factors associated with adverse pathology, and the PURCASE score developed from this model. The PURCASE score ranges from 0-8, with higher scores indicating an increased risk of adverse pathology. The Figure shows the likelihood of adverse pathology by PURCASE score and risk group, ranging from 11.9% in the low-risk group to 63.0% in the high-risk group.

Conclusions: We developed the PURCASE score, an objective scoring system that can be used to identify potential AS candidates. Although this scoring system requires validation, it was developed using empiric data rather than expert opinion, and may be useful in counseling patients considering AS for newly-diagnosed prostate cancer.

Variable		Coefficient	Standard Error	Z-value	p-value	PURCASE Score Points
Age	< 65	Reference	Reference	Reference	Reference	0
	≥ 65	0.35	0.15	2.37	0.02	1
PSA	0 – 5	Reference	Reference	Reference	Reference	0
	5 – 10	0.32	0.14	2.23	0.03	1
	> 10	1.41	0.37	3.86	<0.01	2
Biopsy Grade Group	1	Reference	Reference	Reference	Reference	0
	2	0.87	0.16	5.45	<0.01	3
Maximum % Biopsy Core Positive	< 50%	Reference	Reference	Reference	Reference	0
	>50%	0.65	0.15	4.5	<0.01	2



PDA-10

A Family History of Prostate Cancer More Likely Among Black Subjects in a Large Urban PSA Screening Program: A Report from the Howard University Hospital "Men Take Ten" Prostate Cancer Screening Program

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Introduction: Black men continue to have increased prevalence and mortality from Prostate Cancer (PCa) compared to other ethnicities. Reasons for this disparity remain unclear. Our objective was to identify and analyze common PCa risk factors from a community outreach screening program in Washington DC.

Materials & Methods: Data from the Howard University Cancer Center (HUCC) institutional database for PCa screening through community outreach programs in Washington DC from 2009-2016 were analyzed. Participants were dichotomized into two groups according to ethnicity: Black versus Non-black. Chi square and Fisher's exact tests were used to determine differences between both groups. Differences with p-values less than 0.05 were considered statistically significant.

Results: Of a total of 2485 participants, 78.6% of participants identified as Black (Table 1). While other screening tools such as abnormal prostate specific antigen (PSA) and abnormal digital rectal exam (DRE) were not statistically different, a significant difference (p=0.005) was noted between the percentage of Black men (38.0%) with family history of PCa compared to other races (29.7%) (Table 2).

Conclusions: Our data from a predominantly Black cohort demonstrates that Black men have significantly higher rates of family history of PCa. Given the similarity in rates of abnormal DRE and PSA in our cohorts, the importance of taking a thorough family history at the time of PSA screening remains vital to the identification of subjects at highest risk for being diagnosed with prostate cancer. These data highlight the need for further research into the genomics and biology of prostate cancer in Black men.

Table 1. Demographics by Ethnicity

Ethnicity	Black		Non-black		
	(n)	(%)	(n)	(%)	P- Values
Totals					
	1953	78.59	532	21.41	
Age Group					0.166
<40 years	44	2.26	6	1.13	
40-49 years	473	24.34	119	22.37	
50-59 years	781	40.20	204	38.35	
60-69 years	504	25.94	160	30.08	
70-75 years	109	5.61	30	5.64	
>75 years	32	1.65	13	2.44	
	1943		532		
Marital Status					0.001
Not married	539	38.92	98	30.43	
Married	525	37.91	164	50.93	
Separated	64	4.62	11	3.42	
Divorced	226	16.32	41	12.73	
Widowed	31	2.24	8	2.48	
	1385		322		
Highest Education level					<0.001
Less than HS diploma	108	5.69	56	11.02	
HS diploma/GED	583	30.73	83	16.34	
Less than 4 yrs. Of college	487	25.67	88	17.32	
4 years of college or more	719	37.90	281	55.31	
	1897		508		
Household Annual Income					<0.001
Less than $36K	680	42.66	215	51.07	
$36K-$55,999	292	18.32	83	19.71	
$56K- $75,999	184	11.54	34	8.08	
$76K or more	438	27.48	89	21.14	
	1594		421		
Body Mass Index (BMI)					<0.001
Underweight (<19.0)	27	1.48	3	0.63	
Healthy weight (19-24)	412	22.62	146	30.67	
Overweight (25-29)	747	41.02	223	46.85	
Obese (30-39)	558	30.64	101	21.22	
Extremely obese (>40)	77	2.03	3	0.63	
	1821		476		
Primary Care Physician					<0.001
No	754	39.87	262	51.07	
Yes	1137	60.13	251	48.93	

Table 2. PCa Risk Factors and Screening Tools

Ethnicity	Black		Non-Black		
	(n)	(%)	(n)	(%)	P-Value
Family History of Pca					p= 0.005
No	749	62.00	237	70.33	
Yes	459	38.00	100	29.67	
Erection Problems					p= 0.374
No	956	62.16	278	64.50	
Yes	582	37.84	153	35.50	
History of Abnormal PSA					p= 0.694
No	1513	90.98	413	91.57	
Yes	150	9.02	38	8.43	
History of Abnormal DRE					p= 0.711
No	1526	94.84	404	94.39	
Yes	83	5.16	24	5.61	
Prostate Size (Digital Rectal Exam)					p=0.208
Normal	464	54.08	118	59.00	
Enlarged	394	45.92	82	41.00	
Prostate Specific Antigen (PSA) ≥ 4.0 ng/mL					p=0.394
No	1805	93.81	489	92.79	
Yes	119	6.19	38	7.21	

PDB-01

ARCHES: Efficacy of Androgen Deprivation Therapy (ADT) with Enzalutamide (ENZA) or Placebo (PBO) in Metastatic Hormone-Sensitive Prostate Cancer (mHSPC) by Disease Characteristics

A. Stenzl[1], R. Szmulewitz[2], D. Petrylak[3], J. Holzbeierlein[4], A. Villers[5], A. Azad[6], A. Alcaraz[7], B. Alekseev[8], T. Iguchi[9], N. Shore[10], B. Rosbrook[11], B. Baron[12], F. Kunieda[13], A. Armstrong[14]
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Introduction: ENZA, a potent androgen receptor inhibitor, has demonstrated benefit in men with metastatic and nonmetastatic castration-resistant prostate cancer. Additional trials were designed to explore the clinical benefits of ENZA with ADT in men with mHSPC.

Materials & Methods: In ARCHES, a global, double-blind, PBO-controlled phase 3 study (NCT02677896), patients with mHSPC were randomized 1:1 to ENZA (160 mg/day) + ADT or PBO + ADT and stratified by disease volume and prior docetaxel therapy. The primary endpoint was centrally assessed radiographic progression-free survival (rPFS) or death within 24 weeks of treatment discontinuation. rPFS was further analyzed for prespecified subgroups (Table). Treatment continued until disease progression or unacceptable toxicity.

Results: 1150 men were randomized in total (ENZA + ADT, n = 574; PBO + ADT, n = 576). Baseline characteristics were balanced between groups: 63% had high-volume disease, 18% had prior docetaxel, and 66% had a Gleason score of ≥ 8. Median follow-up was 14.4 months. ENZA + ADT significantly improved rPFS (P < .0001), with similar significant improvements reported in subgroups with low or high disease volume or a Gleason score of < 8 or ≥ 8 (Table). Grade 3-4 adverse events (AEs) were reported in 23.6% of ENZA-treated patients vs. 24.7% of PBO-treated patients, with no unexpected AEs.

Conclusions: ENZA + ADT significantly improved rPFS vs. PBO + ADT regardless of disease volume or Gleason score, indicating a clinical benefit in men with mHSPC with low- or high-volume disease. Safety analysis appears consistent with the safety profile of ENZA in previous CRPC trials.

rPFS	ENZA + ADT	PBO + ADT	HR (95% CI)
Overall population, no.	574	576	
Median, mo	NR	19.4	0.39 (0.30-0.50)
Low volume,[a] no.	220	203	
Median, mo	NR	22.1	0.24 (0.13-0.45)
High volume,[a,b] no.	354	373	
Median, mo	NR	13.8	0.44 (0.33-0.57)
Gleason score[c] < 8, no.	171	187	
Median, mo	NR	NR	0.42 (0.25-0.70)
Gleason score[c] ≥ 8, no.	386	373	
Median, mo	NR	16.6	0.36 (0.27-0.48)

Abbreviations: CI, confidence interval; HR, hazard ratio; NR, not reached. [a]Disease volume at study entry. [b]High volume of disease defined as metastases involving the viscera or, in the absence of visceral lesions, ≥ 4 bone lesions (of which ≥ 1 must be in a bony structure beyond the vertebral column and pelvic bone). [c]Gleason score at initial diagnosis.

PDB-02

18F-Fluciclovine Positron Emission Tomography/Computed Tomography (PET/CT) in Patients with Suspected Biochemical Recurrence of Prostate Cancer: Detection of Bone Metastases and Impact on Patient Management Plans in the LOCATE Study

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Introduction: In patients with suspected biochemical recurrence of prostate cancer, accurate localization of disease helps guide management. 18F-fluciclovine is a positron emission tomography (PET) tracer approved in the US and Europe for patients with rising PSA levels post-treatment. LOCATE (NCT02680041), a 15-center US prospective study, assessed the impact of 18F-fluciclovine PET/CT on disease detection in, and planned management of, such patients. Here we report on 18F-fluciclovine PET identification of prostate cancer bone metastases.

Materials & Methods: Altogether 213 men (age ≥ 18 years; rising PSA after curative-intent primary treatment; negative or equivocal conventional imaging in the 60 days pre-enrollment) underwent 18F-fluciclovine PET/CT. Before and after 18F-fluciclovine scans, treating physicians completed questionnaires to examine the scan's impact on clinical management recommendations.

Results: Overall, 18F-fluciclovine PET/CT was positive in 122 patients (57%), and changed management plans in 126 (59%). Of men with positive scans, 23 (19%) had 18F-fluciclovine-avid bone metastases; pre-enrollment conventional bone imaging had been negative in 21, equivocal in 1, and not performed in 1 of these patients. Table 1 summarizes numbers and sites of bone metastases detected by 18F-fluciclovine PET/CT. In the 23 patients with bone lesions, median (minimum–maximum) PSA concentration was 1.5 (0.2-70.4) ng/mL; PSA was < 1.0 ng/mL in 7/23. Based on 18F-fluciclovine PET/CT findings, recommended management changed for 15/23 patients (65%): 9/15 (60%) were switched to a different treatment modality, while 6/15 (40%) had regimen modification of already-contemplated treatment.

Conclusions: In men with biochemical recurrence of prostate cancer and negative or equivocal conventional imaging, 19% (23/122) of positive 18F-fluciclovine scans demonstrated 18F-fluciclovine-avid bone metastases. 18F-fluciclovine PET detection of bone metastases led to a change in management plans in nearly two-thirds (15/23, 65%) of cases.

Variable	*Value*
Number of bone metastases per patient	n of patients in category
1	18
2	3
3	2
Sites of bone metastases	Total n of fluciclovine-avid lesions
Ilium	**10**
Right ilium	*8*
Left ilium	*2*
Vertebrae	**8**
Lumbar vertebrae	*5*
Thoracic vertebrae	*3*
Sacrum	**3**
Rib	**2**
Ischium	**2**
Right	*1*
Left	*1*
Proximal femur	**1**
Left pubic body	**1**
Right superior pubic ramus	**1**
Site not specified	**2**

PDB-03

Race as a Predictor of Pathologic Response to Neoadjuvant Chemotherapy at time of Cystectomy for Bladder Cancer

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Introduction: Complete pathologic response (pT0) at time of cystectomy after neoadjuvant chemotherapy (NAC) has been associated with significantly improved clinical outcomes. The goal of this study is to examine patient and disease factors that predict pT0 response to NAC at time of cystectomy.

Materials & Methods: We retrospectively analyzed the records of patients diagnosed with a urothelial cell bladder cancer in the National Cancer Database (NCDB) who underwent a cystectomy from 2006 to 2014. The cohort was stratified by whether the patient received NAC prior to cystectomy. Univariate and multivariate logistic regression models were used to identify predictors of pathologic complete response after NAC.

Results: We identified 38,826 patients of which 6,132 patients (15.8%) were treated with NAC prior to cystectomy. The rate of pT0 in the surgery only group was 2.2% compared to 6.1% ($p < 0.001$) for patients treated with a single agent and 15.0% ($p < 0.001$) for patients treated with multiple agents of NAC. On multivariate analysis, predictors of pT0 after NAC include treatment in the Middle Atlantic (OR = 1.71, 95% CI: 1.21 – 2.43, p = 0.003), African American race (OR = 0.64, 95% CI: 0.43 – 0.96, p = 0.029) and preoperative clinical T stage ($p < 0.001$) when controlling for age, socioeconomic status, and tumor grade.

Conclusions: Our results demonstrate significant racial discrepancies in pathologic complete response to NAC prior to cystectomy.

		Univariate		Multivariate	
Variable		**Odds Ratio (95% Confidence Interval)**	**p-value**	**Odds Ratio (95% Confidence Interval)**	**p-value**
Neoadjuvant Chemotherapy	Single Agent	1.00		1.00	
	Multi Agent	2.70 (1.81 – 4.02)	< 0.001	2.79 (1.87 – 4.18)	< 0.001
Age (years)	< 60	1.00		1.00	
	60-64	0.97 (0.78 – 1.20)	0.77	0.95 (0.76 – 1.19)	0.65
	65-69	0.88 (0.71 – 1.08)	0.23	0.81 (0.62 – 1.06)	0.13
	70-74	0.84 (0.67 – 1.04)	0.11	0.78 (0.59 – 1.03)	0.09
	> 75	0.83 (0.66 – 1.03)	0.10	0.76 (0.57 – 1.05)	0.06
Sex	Male	1.00			
	Female	0.99 (0.84 – 1.17)	0.92		
Race	Caucasian	1.00		1.00	
	African-American	0.62 (0.42 – 0.91)	0.015	0.64 (0.43 – 0.96)	0.029
	Asian	1.56 (0.88 – 2.77)	0.13	1.69 (0.89 – 2.88)	0.12
Treatment Location[b]	New England	1.00		1.00	
	Middle Atlantic	1.68 (1.18 – 2.37)	0.003	1.71 (1.21 – 2.43)	0.003
	South Atlantic	0.93 (0.65 – 1.32)	0.69	1.01 (0.71 – 1.44)	0.94
	Central	1.21 (0.88 – 1.68)	0.24	1.29 (0.93 – 1.81)	0.13
	Mountain	0.72 (0.42 – 1.23)	0.24	0.74 (0.43 – 1.27)	0.28
	Pacific	1.11 (0.88 – 1.88)	0.18	1.41 (0.96 – 2.07)	0.08
Median Income Quartile (2012)	<$38,000	1.00		1.00	
	$38,000-$47,999	1.19 (0.92 – 1.54)	0.18	1.03 (0.87 – 1.46)	0.37
	$48,000-$62,999	1.27 (0.99 – 1.63)	0.06	1.17 (0.90 – 1.50)	0.23
	$63,000 +	1.29 (1.02 – 1.64)	0.034	1.08 (0.87 – 1.44)	0.38
Insurance	Medicare	1.00		1.00	
	Not Insured	0.67 (0.39 – 1.16)	0.15	0.57 (0.32 – 1.01)	0.05
	Private Insurance	1.21 (1.04 – 1.41)	0.015	1.04 (0.84 – 1.30)	0.72
	Other Government	0.92 (0.67 – 1.26)	0.60	0.76 (0.57 – 1.11)	0.16

PDB-04

Risk of Intra-abdominal Recurrence of Urothelial Carcinoma Following Extirpative Surgery Based on Disease Stage and Operative Approach: A Population-Based Study

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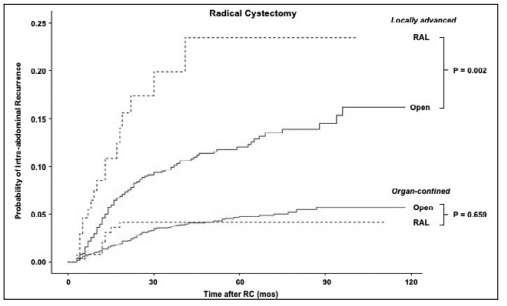
Introduction: Minimally invasive surgery for invasive or high-grade urothelial carcinoma has increased. Studies examining intra-abdominal recurrence of disease (IAR) following extirpative surgery for urothelial carcinoma based on operative approach are limited. Our objective was to evaluate IAR in patients undergoing radical cystectomy (RC) for bladder cancer (open or robotic-assisted laparoscopic (RAL)) or extirpative surgery for upper tract urothelial carcinoma (UTUC) (open, laparoscopic, or RAL).

Materials & Methods: Patients with non-metastatic UC undergoing definitive RC or UTUC surgery were identified using Medicare-linked data from the Surveillance Epidemiology and End Results Program (2004-2013). Patients were categorized based on operative approach using CPT codes, and IAR was defined using ICD-9 code 197.6. Kaplan-Meier methods were used to evaluate time to development of IAR. Independent predictors of IAR were determined using multivariable Cox proportional hazards regression analyses. We performed subset analyses to determine differences in locally-advanced (≥ T3 or N+) or organ-confined (≤ T2, N-) cohorts.

Results: A total of 6,444 and 4,257 patients met inclusion criteria for the RC and UTUC cohorts, respectively. RAL was associated with an increased rate of IAR in both RC ($p = 0.037$) and UTUC ($p = 0.012$). On multivariable analysis, RAL was associated with an increased risk of IAR compared to open surgery in RC (Hazard Ratio (HR) 1.63, p = 0.018) and also in UTUC surgery (HR 2.27, p = 0.005). In the locally-advanced subset, the risk of IAR in RAL compared to open was significantly higher for RC (HR 2.32, p = 0.001) and UTUC surgery (HR 3.32, p = 0.001). No difference was seen in either analysis of the organ-confined subsets.

Conclusions: Extirpative robotic-assisted surgery for UC was associated with a higher risk of IAR in locally-advanced cases. The RAL approach may be best suited for localized disease.



PDB-05

Recent Presence of Female Authorship Within the Urologic Literature

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Introduction: While there has traditionally been an overrepresentation of men within the field of urology, there has been significant increase in women entering urologic training and the workforce over the past two decades. To further evaluate female representation in academic urology, we assessed gender and authorship in recent urologic literature.

Materials & Methods: We examined all articles published in 2017 from 5 urologic journals: The Journal of Urology (JU), Journal of Endourology (JE), Neurourology and Urodynamics (NU), Urologic Oncology (UO), and Urology (UR). Gender was recorded for first, supplemental, and last authors. If any supplemental authors were female, supplemental authorship was recorded female. Articles were categorized by subspecialty as follows: female/voiding dysfunction/prolapse/incontinence (FVPI), endourology, infertility, oncology, pediatrics, reconstruction, or general. Chi-square and Kruskal testing were used to assess for differences in female authorship.

Results: Across 1,375 articles analyzed, women accounted for 25.4%, 63.1%, and 15.8% of first, supplemental, and last authors, respectively. Female first authorship was highest in FVPI (43.5%) compared to other subspecialties ($p < 0.05$ except pediatrics), with similar findings seen across supplemental and last authorship (Table 1). Similarly, female first authorship was highest in NU (46.2%) compared to other journals ($p < 0.001$). Female authorship was lowest in endourology articles and JE articles. There was no statistically significant difference in the number of times an article was cited based on gender for any authorship.

Conclusions: In general, females comprise a significant proportion of primary, supplemental, and last authorship across urology journals. Female authors had the highest representation in articles about FVPI and in NU, with the lowest representation in endourology articles and in JE. Gender of the author did not impact how often an article was cited in the literature.

Table 1: Percentage of Female Authors by Journal and Subspecialty

		Female Authorship (%)		
Journal	**Papers (n)**	***First***	***Supplemental***	***Last***
JE	186	13.2	45.9**	6.3***
JU	300	23.0	68.4	13.7
NU	257	46.2*	70.8	26.8**
UO	198	21.0	65.5	14.0
UR	433	22.3	60.9	15.5
Subspecialty	**Papers (n)**	***First***	***Supplemental***	***Last***
Endourology	248	14.4	49.8††	8.8
FVPI	347	43.5†	69.4	26.4†††
General	100	19.6	64.5	18.2
Infertility	55	20.4	62.5	18.5
Oncology	460	19.2	64.9	11.7
Pediatrics	95	29.5	70.5	18.3
Reconstruction	69	23.2	54.7	10.3

*p<0.001
**p<0.02
***p<0.02 for JE vs. NU + UR

†p<0.05 except FVPI vs. Pediatrics
††p<0.05 for Stones vs. FVPI + Oncology + Pediatrics
†††p<0.002 for FVPI vs. Stones + Oncology + Reconstruction

JE, Journal of Endourology; JU, Journal of Urology;
NU, Neurourology and Urodynamics;
UO, Urologic Oncology; UR, Urology;
FVPI, Female/Voiding dysfunction/Prolapse/Incontinence

PDB-07

Gender Difference in Compensation for Urologists: Could Office Visit Coding be Contributing?

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Introduction: Gender differences in compensation exist within urology exist, with studies showing that females receive significantly less compensation after controlling for work hours, call frequencya, age, practice setting and type, fellowship training, and Advance Practice Provider employment. We studied the distribution of current procedural terminology (CPT®) to determine if differences in coding for non-surgical patient encounters, and therefore reimbursements, could contribute to the gender differences in financial compensation.

Materials & Methods: We utilized the ProPublica Treatment Tracker, which collects financial and treatment data on individual physicians from the Centers for Medicare and Medicaid Services. We obtained data for 8,108 urologists during the year of 2013. The data includes any patient interaction during which the physician charged Medicare part B for the services performed. For providers who had more than 100 visits with established patients in a specific year, the Treatment Tracker shows the number and distribution of evaluation and management CPT codes for all patient encounters on Medicare beneficiaries. Encounters are coded and billed on a 1-5 scale created by the American Medical Association, with level 5 being the most time-consuming or complicated encounters.

Results: Percentages of office visit coding intensity for established patients did not show statistical significance across males and females ($p = 0.817$). Average Medicare submitted charges were $680,758.19 for males, compared to $496,735.41 for females. The average amount of reimbursement for male urologists was $181,890.60 compared to $122,836.99, the average reimbursement for female urologists.

Conclusions: There is no significant difference in non-surgical coding practices between male and female urologists. Although our analysis only included patients with Medicare, it is unlikely that the difference in compensation for female versus male urologists could be explained by coding distribution. Gross reimbursement from Medicare is approximately 50% higher for male urologists. The difference in compensation may be accounted for by higher Medicare reimbursements for male urologists.

PDB-06

Chromometric Mapping of Porcine Bladder Vasculature

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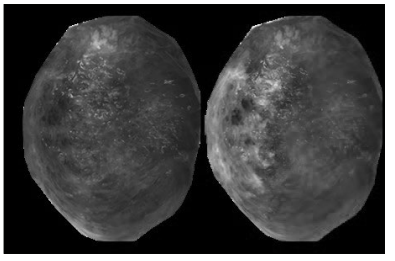
Introduction: Lower urinary tract systems, including both detrusor overactivity and detrusor underactivity, have been associated with chronic pelvic ischemia. The creation of a Boari flap involves sacrifice of the contralateral vascular pedicle and depends on sufficient collateral circulation to preserve of bladder perfusion. The present study tested the hypothesis that porcine bladders have two hemispheres that are each fed by a separate vesical artery.

Materials & Methods: Bladders with their associated vasculature were harvested from pigs immediately after slaughter at an abattoir. The vascular system was flushed with cold Krebs-Henseleit buffer. Each bladder was bilaterally cannulated in the superior vesical arteries, the ureters were ligated, the urethra was catheterized and the bladder was filled to 250 mL. One vesical artery was perfused with 50 mL of green food dye at 10 mL/min. The other vesical artery was perfused with 50 mL of red dye. Bladder images (Fig 1A) were collected and divided into halves along the midline. A custom chromometric algorithm quantified the average hue for each half. In addition, color saturation was maximized to enhance visualization (Fig 1B).

Results: Hue values for bladder halves for 5 adult pigs were normalized to yellow (midway between green and red on the hue, saturation, brightness color scale). Average normalized hues of the green and red bladder halves were statistically different (28° and -58°, respectively, $p < 0.05$).

Conclusions: This study supports the hypothesis that porcine bladders consist of two approximate hemispheres that are each principally fed by a separate vesical artery, and provides evidence that the bladder might be more affected by compromise of one vesical artery than previously expected. Future studies are needed to determine the effects of hemi-ischemia on bladder biomechanics.



PDB-08

Outcomes and Recurrence of Urethral Stricture after First-Time and Redo Urethroplasty

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Introduction: We sought to evaluate our experience with patients undergoing redo urethroplasty, including a comparison of outcomes to those undergoing first-time urethroplasty.

Materials & Methods: We retrospectively reviewed our IRB-approved database of patients undergoing urethral reconstruction at MedStar Washington Hospital Center by a single surgeon. We recorded peri-operative complications, stricture recurrence, time to recurrence, length of stay, operative time, and estimated blood loss in those undergoing first-time and redo urethroplasty with minimum of 12 months follow-up.

Results: From September 2012 to April 2018, 221 urethroplasties were performed. Twenty-three (10.4%) procedures were redo urethroplasties and 198 (89.6%) were first-time urethroplasties, with a mean follow-up time of 37.3 and 37.0 months respectively (p = 0.955). Mean age and BMI were not statistically different between the two groups (p= 0.791, p = 0.365). Thirty-eight (19.2%) patients undergoing first-time urethroplasty and one (3.5%) patient undergoing redo urethroplasty experienced perioperative complications (p = 0.088). In first-time urethroplasty, 14.6% of patients had stricture recurrence, with mean time to recurrence of 9 months. In redo urethroplasty, 21.7% had recurrent stricture, with mean 6.2 months time to recurrence. There was no significant difference in time to recurrence or recurrence rate (p = 0.513, p = 0.363). Length of stay, operative time, and estimated blood loss were not significantly different, as seen in Table 1 (p = 0.270, 0.540, 0.752).

Conclusions: Redo urethroplasty is a viable option for patients when stricture recurs after initial urethroplasty. It is safe, with complications being rare and stricture recurrence occurring at acceptably low rates. There does not appear to be any significant difference from first-time urethroplasty. Patients and surgeons alike would be wise to still consider redo urethral reconstruction as their best option even if initial urethroplasty fails.

	First-Time Urethroplasty	Redo Urethroplasty	P-Value
Peri-Operative Complications	*38 (19.2%)*	*1 (4.3%)*	*0.088*
Recurrence of Stricture	*29 (14.6%)*	*5 (21.7%)*	*0.363*
Mean Time to Recurrence (months)	*9*	*6.2*	*0.513*
Mean Length of Stay (days)	*1.25*	*1.87*	*0.270*
Mean Operative Time (minutes)	*190.8*	*203.9*	*0.540*
Mean Estimated Blood Loss (ccs)	*252.9*	*270.7*	*0.752*
Mean Follow-Up (months)	*37.3*	*37.0*	*0.955*

PDB-09

Mohs' Resection of Low Risk Penile Squamous Cell Carcinoma Can Achieve a Low Recurrence Rate and Limit the Need for Formal Reconstruction: Experience at a Tertiary Referral Center

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Introduction: Penile squamous cell carcinoma (SCC) is an aggressive disease requiring complete excision and early identification of those at risk for progression. Historical cohorts suggest an ~30% recurrence rate of SCC and carcinoma in situ (CIS) after Mohs' surgery, resulting in hesitance to adopt this technique. We hypothesized that Mohs' resections of penile cancer could actually offer good oncologic control of lower risk lesions while limiting the need for significant reconstruction.

Materials & Methods: A retrospective review was conducted including all GU Mohs' cases from 2005-2018 at a single center. We identified all patients with biopsy-proven penile SCC/CIS. Demographics, procedure details and pathology, need for additional surgery, complications, and recurrence/progression were reviewed.

Results: There were 73 patients who underwent resection of 78 tumors. Patients were upstaged in 9.1% of cases, and 6.8% had positive margins requiring subsequent radical resection. Nearly 70% were closed primarily, while the remainder were closed with grafting or tissue flaps. At a median 2.0 years (IQR 0.8-5.2) follow-up, local recurrence rates were very low, with the sole local recurrence cleared by repeat Mohs'. Two of 5 patients with high risk pathology progressed and 1 died of metastatic disease.

Conclusions: To our knowledge, this is the largest reported series of penile SCC/CIS managed with Mohs'. In contrast to prior reports, Mohs' offered excellent oncologic control while still identifying high risk patients early. Most patients underwent a simple primary closure. Mohs' yields promising intermediate-term results in this cohort. Prospective studies are needed to determine the best role for Mohs' in managing penile malignancies.

PDB-10

Retzius-Sparing Robotic Radical Prostatectomy Shortened Recovery of Patient Continence Without Compromise of Oncologic Outcomes

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Introduction: Retzius-sparing robot-assisted radical prostatectomy (RS-RARP) is reported to improve functional outcomes faster over standard RARP. However, there are reports of increased positive surgical margins in the early portion of the surgical learning curve. We report initial single-surgeon outcomes of RS-RARP compared with the same surgeon's recent standard robot-assisted radical prostatectomy (RARP) outcomes.

Materials & Methods: Perioperative and long-term outcomes were gathered in a prospectively collected database by research assistants not involved in clinical care. Long-term functional outcomes were assessed using the Expanded Prostate Cancer Index-Clinical Practice (EPIC-CP) questionnaire. Time to continence, defined as both 0 and 0-1 safety pad, was compared between techniques by two-tailed T-test assuming unequal variance.

Results: 32 RS-RARP were performed between January 2018-January 2019 and compared to most recent 50 standard RARP by a single surgeon. Between cohorts, there were no significant differences in age, preoperative PSA, biopsy Gleason score, preoperative urinary function, or preoperative erectile function. Intraoperatively, there were no differences in console time (126.5 vs. 127 minutes), however there was significantly lower estimated blood loss for RS-RARP vs. RARP (100 vs. 250 mL, p < 0.001). Oncologically, there were no significant differences in positive surgical margins (31.3% vs. 30%) or biochemical recurrence (15.6% vs. 18%, median follow-up 2.6 vs. 30 months). While there were no significant differences in postoperative erectile function or long-term continence, there was a significant decrease in time to continence for RS-RARP vs. RARP as defined by 0-1 safety pad (46 days (IQR 14-52) vs. 75 days (IQR 50-149), p < 0.001) as well as 0 pads per day (50 days (IQR 20-65) vs. 164 days (IQR 103-236), p < 0.001).

Conclusions: RS-RARP leads to a significant decrease in time to regained continence without compromising oncologic outcomes. Additionally, there is less blood loss given avoidance of dorsal vein transection. While these outcomes are promising, longer-term follow-up is needed to ensure oncologic efficacy.

Table 1: Patient and tumor characteristics

	N (%) or Mean / Median (IQR)		
	Total	Invasive SCC	CIS
Number of Patients	73 (100%)	21 (28.8%)	52 (71.2%)
Age (years)	60 / 64 (50 – 70)	64 / 66 (56 – 77)	59 / 60 (50 – 68)
Ethnicity			
Caucasian	52 (71.2%)	11 (52.4%)	41 (78.8%)
African American	14 (19.2%)	6 (28.6%)	8 (15.4%)
Hispanic	3 (4.1%)	2 (9.5%)	1 (1.9%)
Asian American	2 (2.7%)	2 (9.5%)	0
Other/Unknown	2 (2.7%)	0	2 (3.8%)
Immunosuppressed or Immunocompromised	16 (21.9%)	5 (23.8%)	11 (21.2%)
HIV/AIDS	7 (9.6%)	2 (9.5%)	5 (9.6%)
Organ Transplant	9 (12.3%)	3 (14.3%)	6 (11.5%)
HPV Positive	13 (17.8%)	3 (14.3%)	10 (19.2%)
Circumcised	55 (75.3%)	13 (61.9%)	42 (80.8%)
Smoking Status			
Never	25 (34.2%)	9 (42.9%)	16 (30.8%)
Former	27 (37.0%)	8 (38.1%)	19 (36.5%)
Current	16 (21.9%)	4 (19.0%)	12 (23.1%)
Unknown	5 (6.8%)	5 (23.8%)	0
TUMOR CHARACTERISTICS			
Recurrence of Prior Local Disease	6 (8.2%)	2 (9.5%) *	4 (7.7%) **
Locations Involved			
Glans	24 (32.9%)	16 (76.2%)	8 (15.4%)
Prepuce	11 (15.1%)	4 (19.0%)	7 (13.5%)
Shaft	48 (65.8%)	10 (47.6%)	38 (73.1%)
Preoperative Biopsy Pathology			
Invasive SCC	16 (21.9%)	16 (76.2%)	0
CIS	55 (75.3%)	5 (23.8%)	50 (96.2%)
Indeterminate	2 (2.7%)	0	2 (3.8%)

* Prior T1a disease, treated previously with laser ablation in both cases
** Prior CIS, treated with laser ablation, excision, or topical imiquimod

Table 2: Pathologic and clinical outcomes

	N (%) or Mean / Median		
	Total	Invasive SCC	CIS
Final Pathology			
CIS	52 (71.2%)	0	52 (100%)
T1a	15 (20.5%)	15 (71.4%)	0
T1b	4 (5.5%)	4 (19.0%)	0
T2	0	0	0
T3	1 (1.4%)	1 (4.8%)	0
Final Margins			
(+) Carcinoma	3 (4.1%)	3 (14.3%)	0
(+) CIS	3 (4.1%)	1 (4.8%)	2 (3.8%)
Dysplasia	1 (1.4%)	1 (4.8%)	0
Complications			
Bleeding/hematoma	2 (2.7%)	0	2 (3.8%)
Infection	1 (1.4%)	0	1 (1.9%)
Poor wound healing	9 (12.3%)	3 (14.3%)	6 (11.5%)
Meatal stenosis	2 (2.7%)	1 (4.8%)	1 (1.9%)
Other	1 (1.4%)	0	1 (1.9%)
Local Recurrence	1 (1.4%)	0	1 (1.9%)
Disease Progression			
Invasive (from CIS)	0	0	0
Nodal	2 (2.7%)	2 (9.5%) *	0
Metastatic	1 (1.4%)	1 (4.8%) *	0
Death			
Disease-related	1 (1.4%)	1 (4.8%) *	0
Unrelated	3 (4.1%)	1 (4.8%)	2 (3.8%)

* T1b pathology treated with radical resection after Mohs', both patients refused initial inguinal lymph node dissection

Moderated Poster Session 1: Oncology: Diagnosis, Imaging and Surveillance

MP1-01

Validation of an MRI-Based Prostate Cancer Gleason Score Predictive Nomogram

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Introduction: Gleason score grading is a cornerstone of risk stratification and management of patients with prostate cancer (PCa). In this work, we derive and validate a nomogram that uses Multiparametric Prostate (MP)-MRI and clinical characteristics to predict biopsy Gleason scores (bGS).

Materials & Methods: A predictive nomogram was derived from 143 biopsy naïve men who underwent MP-MRI and then validated on an independent cohort of 235 men from another institution who underwent MP-MRI for PCa workup. Screen positive lesions (SPLs) were defined as lesions scoring 3 or greater on T2W and DWI sequences on MP-MRI. PSA density (PSAD), number of SPLs, and MRI suspicion were associated with PCa bGS and used to generate a predictive nomogram. The independent cohort was tested on the nomogram and most likely bGS noted.

Results: The mean PSA in the independent cohort was 9.25 ng/ml vs. 6.8 ng/ml in the original cohort ($p = 0.001$). In the original group, 41% of men had no cancer on biopsy, whereas 20%, 17%, and 22% had Gleason 6, 7, and ≥ 8 disease compared to a distribution of 52%, 19%, 19%, and 10% in the independent group ($p = 0.7$). In the original cohort, the most probable nomogram generated Gleason score agreed with actual pathologic bGS findings in 61% of men versus 51% in the independent cohort. The nomogram correctly identified any PCa vs. no PCa 63% of the time and clinically significant (Gleason score ≥ 7) PCa 69% of the time.

Conclusions: A pre-intervention nomogram based on PSA and MRI findings can help narrow the likely pathologic finding on biopsy. Validation of the nomogram demonstrated significant ability to correctly identify the most likely bGS. This feasibility study demonstrates the potential of pre-biopsy prediction of bGS and its impact on risk stratification for PCa.

MP1-02

Is Pelvic MRI Sufficient Axial Imaging for Staging Intermediate and High-Risk Prostate Cancer?

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Introduction: The American Urological Association (AUA) and National Comprehensive Cancer Network (NCCN) provide staging imaging guidelines for prostate cancer (PCa). However, recommendations are vague as to type (CT vs. MRI) and extent (abdomen vs. pelvis) of axial imaging. We explored the utilization and findings of staging imaging in intermediate (IR) and high-risk (HR) PCa to understand if guidelines can be more specific.

Materials & Methods: 493 PCa patients diagnosed between 2011-2017 were stratified according to AUA and NCCN IR and HR groups. Frequency of redundant (CT + MRI) and abdominal staging imaging was determined. Significance of findings were classified as non-urologic, non-significant urologic, and PCa significant.

Results: Among AUA and NCCN risk groups, 82 (35.7%) and 95 (37.3%) patients, respectively, experienced redundant imaging, of which only 7 in AUA and 9 in NCCN risk groups had an abnormal CT with normal MRI (Table 1). A total of 157 (68.2%) AUA and 178 (69.8%) NCCN IR and HR patients received abdominal scans, of which only 35 and 38 were abnormal among AUA and NCCN risk groups, respectively (Table 2). Among abnormal abdominal scans, only 8 showed PCa significant findings of which half were bone metastasis and likely identifiable on bone scan.

Conclusions: Due to non-specific IR and HR PCa staging guidelines, approximately 1/3rd of patients may be receiving redundant imaging. Due to few PCa significant findings with CT and abdominal imaging, our exploratory analysis suggests that narrowing recommendations to pelvic MRI and bone scan may reduce redundancy while maintaining sufficient staging.

Table 1. Frequency of Redundant Axial Imaging in Intermediate and High-Risk Prostate Cancer and the Significance of Findings

	REDUNDANT CROSS-SECTIONAL IMAGING				
	Total Patients (%)	Abnormal CT + Normal MRI	Non-Urologic Findings	Non-Significant Urologic	PCa-Significant
AUA Risk Group					
AUAIR-favorable (n=82)	21 (25.6)	3	1	1	1
AUAIR-unfavorable (n=47)	19 (40.4)	0	0	0	0
AUAHR (n=101)	42 (41.6)	4	1	1	2
NCCN Risk Group					
NCCNIR-favorable (n=89)	24 (27)	5	1	1	3
NCCNIR-unfavorable (n=136)	60 (44.1)	3	0	3	0
NCCNHR (n=28)	10 (35.7)	0	0	0	0
NCCN-veryHR (n=2)	1 (50)	1	0	0	1

MP1-03

Prostate Cancer Detection Rates And Treatment Planning Impact of 18F-Fluciclovine PET/CT in the LOCATE Study (NCT02680041): Association With Patient Factors And Center-To-Center Variation

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Introduction: The prospective,15-center US LOCATE study assessed prostate cancer detection rates and impact on planned patient management of 18F-fluciclovine PET/CT in men with suspected biochemical failure after prostate cancer treatment. We report on the associations of patient factors and variation among study centers with these endpoints.

Materials & Methods: Eligible patients were ≥ 18 years old with rising PSA after curative-intent primary treatment and had negative or equivocal conventional imaging in the 60 days preceding enrollment. Altogether 213 men underwent 18F-fluciclovine PET/CT. Investigators prospectively completed questionnaires to examine scans' impact on clinical management recommendations.

Results: Median (minimum–maximum) PSA was 1.0 (0.2–93.5) ng/mL; 57% of patients (122/213) had 18F-fluciclovine-positive lesions, and 59% (126/213) had changed management plans after 18F-fluciclovine scanning. Table 1 shows patient-level prostate cancer detection rates and management plan change rates by patient-related and center-related variables. 18F-fluciclovine PET/CT identified prostate cancer when PSA was as low as 0.2 ng/mL. However, disease detection rates rose in broad proportion with PSA levels. Management plan changes occurred most often in patients with PSA > 1.0-5.0 ng/mL. 18F-fluciclovine-positive scans were more frequent among non-prostatectomy versus prostatectomy patients. Nonetheless, management plan changes were comparably frequent in these subgroups. Disease detection and management plan change rates were comparable in academic versus private practice. However, individual study centers varied substantially in these endpoints, especially in patients with PSA ≤ 1.0ng/mL.

Conclusions: 18F-fluciclovine scanning frequently detected recurrent prostate cancer across PSA levels including ≤ 0.5 ng/mL, and showed comparable utility in treatment planning in non-prostatectomy versus prostatectomy patients. Individual centers vary considerably in disease detection rates. Beyond PSA and prostatectomy status, differences may stem from imaging equipment, CT protocols, and/or reader experience, but appear unrelated to practice type (academic versus private).

Table 1. Prostate cancer detection rates and management plan change rates by patient factor and study center: data from the LOCATE study (N = 213)

Subgroup	n	Patient-level prostate cancer detection rate	Post-fluciclovine PET/CT disease management change
PSA concentration category			
≤ 0.5 ng/mL	81	31% (25/81)	47% (38/81)
> 0.5–1.0 ng/mL	26	50% (13/26)	58% (15/26)
> 1.0–2.0 ng/mL	29	66% (19/29)	69% (20/29)
> 2.0–5.0 ng/mL	35	77% (27/35)	71% (25/35)
> 5.0–10.0 ng/mL	23	87% (20/23)	65% (15/23)
> 10 ng/mL	19	95% (18/19)	68% (13/19)
Prostatectomy status			
Post-Prostatectomy	164	49% (81/164)	57% (94/164)
Intact prostate	49	84% (41/49)	65% (32/49)
Practice type			
Academic	132	55% (73/132)	58% (77/132)
Private	81	60% (49/81)	60% (49/81)
LOCATE study center			
5 centers with largest cohorts			
1	33	55% (18/33)	55% (18/33)
2	31	77% (24/31)	90% (28/31)
3	28	68% (19/28)	46% (13/28)
4	24	63% (15/24)	63% (15/24)
5	21	62% (13/21)	71% (15/21)
Other 10 sites	76	43% (33/76)	49% (37/76)

Table 2. Frequency of Abdominal Imaging in Intermediate and High-Risk Prostate Cancer and the Significance of Findings

	ABDOMINAL IMAGING				
	Total Patients (%)	Abnormal Abdominal CT/MRI	Non-Urologic Findings	Non-Significant Urologic	PCa-Significant
AUA Risk Group					
AUAIR-favorable (n=82)	47 (57.3)	6	1	4	1
AUAIR-unfavorable (n=47)	33 (70.2)	7	6	1	0
AUAHR (n=101)	77 (76.2)	22	13	3	6
NCCN Risk Group					
NCCNIR-favorable (n=89)	52 (58.4)	8	2	4	2
NCCNIR-unfavorable (n=136)	103 (75.7)	23	16	3	4
NCCNHR (n=28)	21 (75)	6	4	1	1
NCCN-veryHR (n=2)	2 (100)	1	0	0	1

MP1-04

Cognitive Freehand Ultrasound-Guided Transperineal Prostate Biopsy: A Preliminary Case Series

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Introduction: Interest in the use of transperineal prostate biopsy (TPPB) due to decreased infection risk and improved cancer detection rates, and concurrently, interest in the use of prostate MRI for prostate cancer (PCa) diagnosis and surveillance (AS) has prompted increased research in the field. Currently, there is no widely available fusion platform for freehand TPPB. Platforms and stepper units increase cost and procedural time. The current study presents the first safety, feasibility and outcomes study of cognitive MR/ultrasound fusion-guided freehand trans-perineal prostate biopsy (FTPB).

Materials & Methods: Retrospective review of FTPB procedures between January 1, 2012 and April 30, 2014 who underwent prostate MRI prior to biopsy. MRIs were obtained at a rural community radiology practice, utilizing a Philips Ingenia 3.0T HD MRI magnet, that provided target lesion location information without formal scoring.

Results: Patient, procedural and outcome data were assessed (Table 1). 20 lesions were identified on 27 prostate MRIs. 27 cognitive TPUS biopsies were performed, in conjunction with the standard "12-core" biopsy. Overall cancer detection rate was 81.5% with MRI correlation of 18/20 (86%). New diagnoses of prostate cancer occurred in 10 patients with 6 positive after previous negative transrectal biopsy. No complications, Clavien grade ≥ 2 occurred.

Conclusions: Cognitive FTPB, for suspicion or AS of PCa, is feasible, effective and safe. Further studies to evaluate long-term effectiveness are recommended.

Table 1: Patient and Procedural Results

	N(%) or Mean ±STD
Patient	
Total	27
Age (yrs)	67.2 ±7.4
BMI	29.9 ±5.4
Prostate Size (cm^3)	41.4 ±17.4
PSA (ng/dL)	11.4 ±6.4
FamHx	2 (7.4)
Abnormal DRE	4 (15)
Active Surveillance	14 (52)
Previous Biopsy	20 (74)
Procedure	
Total Procedures	27
Procedure time (min)	9.0 ±3.8
Number of cores	16.3 ±4.3
Time per core (seconds)	33
Positive for Ca	22 (81.5)
New Diagnosis	10
MRI Target Lesions	20
MRI Correlation	18 (90)

N: Number
STD: Standard Deviation
Ca: Cancer
BMI: Body Mass Index
PSA: Prostate Specific Antigen
FamHx: Family History
DRE: Digital Rectal Exam
MRI: Magnetic Resonance Imaging

MP1-06

Provider Variability in MRI-guided Biopsy Prostate Cancer Detection Rates: Is it a Limiting Factor?

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Introduction: Although studies have described the institutional learning curve of multiparametric-MRI (mpMRI) transrectal ultrasound (TRUS) fusion-guided biopsy (Fbx), provider variability on prostate cancer (PCa) detection remains unknown. We assess if there is a difference in targeted biopsy CDR between individual urologists.

Materials & Methods: A retrospective chart review was conducted on the first 250 mpMRI-TRUS Fbx performed at our institution. Most MRIs were interpreted by one fellowship-trained radiologist according to PI-RADSv2. Three providers performed Sbx and Fbx according to standardized clinical pathways using UroNav Fusion Biopsy System (Phillips, Invivo). Clinically significant (CS) PCa was defined as a tumor containing Gleason score (GS) 3+4 or higher PCa. Fisher's exact tests were performed to assess if provider variability was significant.

Results: The overall (Fbx and Sbx) cancer detection rate (CDR) was 56% (n = 250). The CDR for Fbx was 45% and the CS CDR was 33%. The CDR for Sbx was 39% and the CS CDR was 28%. Fbx missed 20% PCa and 21% CS PCa. Sbx missed 30% PCa and 46% CS PCa. In Fbx, PCa detection rates for PI-RADS 3/4/5 lesions were 19%, 51%, and 78%, respectively ($p < 0.01$) and CS CDR were 13%, 33%, and 55%, respectively ($p < 0.01$) (Table 1). There was no significant difference in the overall or CS CDR between the urologists (Table 2).

Conclusions: MRI targeted biopsy prostate cancer detection rate by individual urologists are comparable. A community center may not require a dedicated fusion biopsy provider.

Table 1: Fusion biopsy cancer detection rate per PIRADS lesion

	Any cancer, % (n)	Significant cancer, % (n)
PIRADS 3	18.6%, (16/86)	12.8%, (11/86)
PIRADS 4	50.8%, (38/114)	33.3%, (38/114)
PIRADS 5	77.5%, (38/49)	55.1%, (27/49)
	p < 0.01	p < 0.01

Table 2: Cancer detection rates on targeted biopsy by individual urologists

	Urologist 1	Urologist 2	Urologist 3	p value
PIRADS 3				
Any cancer, % (n)	7.7 (1)	9.1 (3)	29.3 (12)	0.06
Significant cancer, % (n)	0 (0)	9.1 (3)	17.0 (7)	0.25
PIRADS 4				
Any cancer, % (n)	52.0 (13)	54.0 (20)	50.0 (26)	0.97
Significant cancer, % (n)	36.0 (9)	43.2 (16)	40.4 (21)	0.83
PIRADS 5				
Any cancer, % (n)	81.2 (13)	80.0 (12)	72.2 (13)	0.83
Significant cancer, % (n)	81.2 (13)	60.0 (9)	66.6 (12)	0.43

MP1-05

Real-world Impact of Genomic Prostate Score® Assay on Use and Persistence of Active Surveillance

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Introduction: We assessed the effect of Oncotype DX Genomic Prostate Score® (GPS) assay on active surveillance (AS) use and persistence in community and academic practices.

Materials & Methods: We retrospectively audited charts of GPS-tested men with low- and intermediate-risk (LR, IR) prostate cancer in 12 centers from June 2013 - September 2017. Collection included decision to go on AS (primary endpoint; AS in chart or lack of treatment within six months of diagnosis). A second, prospective collection in five centers assessed persistence. Treatment-free interval was estimated with Kaplan-Meier, with log-rank test for effect of age and National Comprehensive Cancer Network® (NCCN®) on persistence. AS use and persistence were compared to historical controls.

Results: 2,253 men underwent GPS testing; 561 (25%) had lower or higher risk than their clinical risk after GPS testing and 1,369 (61%) went on AS. Among the 1,567 LR, 1,098 (70%) went on AS; among the 686 IR, 271 (40%) went on AS. AS persistence was available for 695 men (Table). Persistence was not significantly different between NCCN® risk ($p = 0.166$) or age groups ($p = 0.388$).

Conclusions: Real-world evaluation of GPS testing among LR and IR revealed higher numbers pursuing AS compared to historic controls. AS persistence in GPS-tested men was high across risk and age groups at three years and comparable with published studies (ProtecT).

AS Persistence	12 months	18 months	24 months	30 months	36 months
All (n=695)	96%	90%	85%	80%	76%
NCCN Very Low/Low* (n=579)	97%	92%	85%	81%	77%
NCCN Intermediate (n=116)	91%	83%	81%	73%	70%

**referred to as "LR" in the text.*

MP1-07

Prostate Cancer in Men with Treated Advanced Heart Failure: Should we Keep Screening?

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Introduction: Prostate cancer (PCa) is the leading cancer in men, but is often indolent. MedStar Washington Hospital Center (MWHC) screens left ventricular assist device (LVAD) and heart transplant (HT) candidates for malignancies prior to intervention, including PCa. With increasingly favorable 10-year life expectancies among severe heart failure patients who undergo LVAD or HT, we analyzed the outcomes of LVAD/HT patients at MWHC who developed PCa post-implant.

Materials & Methods: Patients who underwent LVAD/HT at MWHC from 2007-2018 were identified. Serum PSA, biopsy results, PCa diagnosis, and treatment of patients 18-90 years old at time of LVAD/HT were de-identified and organized. Survival in patients diagnosed with PCa was compared using Kaplan-Meier curves and log-rank test.

Results: Post-LVAD/HT PSA data was available in 34 patients. Median age was 53 [IQR = 51-58]. 52.9% were African American/Black. Median follow-up was 77 mo (95% CI = 40-87 mo). Six men had post-implant PSA values > 4 (mean = 5.3; SD = 8.5) and 4/6 were diagnosed with PCa (Table 1). Median age of PCa diagnosis was 59 [IQR = 58.5-62). 31/34 patients were living in 2018, and none died from PCa. Five-year survival was 96% in those without PCa and 100% in those with PCa (log-rank p = 0.6; Figure 1).

Conclusions: Our cohort represents the largest known cohort with heart failure treated by LVAD/HT and PCa. Our median age of 59 at PCa diagnosis is considerably younger than the national median of 66. Of the 4 individuals diagnosed with PCa, 3 had high grade. Given the excellent long-term survival of these patients post-LVAD/HT, age-appropriate treatment for PCa should be continued post-implantation.

Figure 1. Kaplan-Meier survival analysis of LVAD/HT patients diagnosed with prostate cancer. Five-year survival was 96% in those without prostate cancer and 100% in those with prostate cancer (log rank p=0.6)

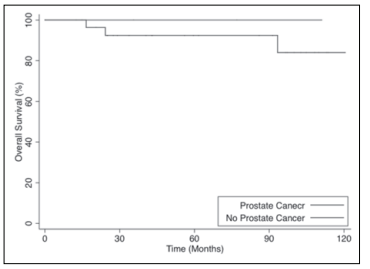

Table 1. Patients diagnosed with prostate cancer post-implant

Patient	Age	Time from implant to cancer (months)	Stage	Gleason	Treatment PSA	Treatment	Outcome	Recurrence	Follow-up time from implant (months)	Follow-up time from cancer diagnosis (months)
1	65	60	T2bN0M0	7	10.7	Radiation	Alive	No	77	17
2	59	8	T1cNxM0	6	6.2	Active Surveillance	Alive	N/A	12	4
3	58	26	T3aN0M0	9	17	RALP	Alive	No	35	9
4	59	36	T3aN0M0	7	4.2	RALP	Alive	No	111	75

MP1-08

Progression to Definitive Treatment Among Men Undergoing Active Surveillance for Low-Risk Prostate Cancer in a Regional Collaborative

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Introduction: Active surveillance (AS) is a preferred management strategy for men with low-risk prostate cancers. We analyzed a regional prostate cancer collaborative to determine rates of definitive treatment among men undergoing initial AS. We compared these rates by age, race, and disease risk.

Materials & Methods: The Pennsylvania Urologic Regional Collaborative (PURC) is a voluntary collaborative of 9 urology practices across Pennsylvania and southern New Jersey. We identified all patients with prostate cancer initially managed by AS and those who ultimately underwent definitive treatment. Kaplan-Meier (KM) curves were produced to compare rates of definitive treatment by age, race, and AUA Risk groups. Differences between Caucasian and African American men were further assessed with age and risk-adjusted KM curves.

Results: Of the 932 patients placed on AS in the collaborative, 111 (11.9%) patients underwent treatment over a median follow-up of 10 (range 7-16) months. The two-year treatment free survival rate for all men was 89%. Figure 1 shows the KM curves of treatment free survival stratified by age, race, and AUA risk groups. The probability of progression to definitive treatment was higher among men with low-risk than those with very low-risk prostate cancer. This difference was not significant between the age or race categories.

Conclusions: We characterized short-term AS outcomes across a large regional prostate cancer collaborative Two-year treatment free survival was high among men in PURC initially managed with AS. Men with very-low risk disease were less likely to undergo definitive treatment, however the likelihood of treatment did not differ significantly by age or race. Additional follow up is needed to determine whether these findings will persist over time.

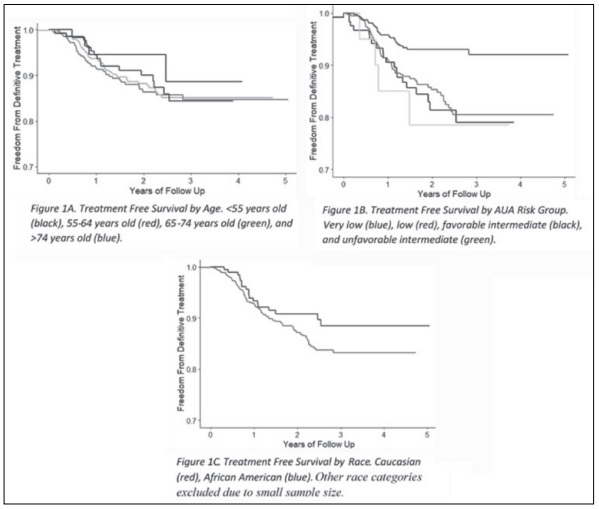

Figure 1A. Treatment Free Survival by Age. <55 years old (black), 55-64 years old (red), 65-74 years old (green), and >74 years old (blue).

Figure 1B. Treatment Free Survival by AUA Risk Group. Very low (blue), low (red), favorable intermediate (black), and unfavorable intermediate (green).

Figure 1C. Treatment Free Survival by Race. Caucasian (red), African American (blue). Other race categories excluded due to small sample size.

MP1-09

Predictors of Prostate Cancer Reclassification Among Men Managed with Active Surveillance

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Introduction: A significant percentage of men undergoing initial active surveillance (AS) for low risk prostate cancer, will show evidence of disease reclassification over time, in which case a transition to definitive treatment is often recommended. Unfortunately, there are no universally-accepted protocols for following patients on AS. We aimed to assess how the type and intensity of follow-up protocols are associated with reclassification rate for patients undergoing AS.

Materials & Methods: We analyzed the Pennsylvania Urologic Regional Collaborative (PURC), a group of 9 urology practices in Pennsylvania and southern New Jersey, to identify men with prostate cancer initially managed with AS. Reclassification was defined as an increase in Gleason scores on surveillance, compared to initial, prostate biopsy. We used conditional logistic regression analysis to test for associations between the rate of surveillance biopsies, PSA tests, and rectal exams with the likelihood of disease reclassification.

Results: Of 922 patients initially managed with AS, 89 (9.7%) reclassified over a median follow up of 12 (range 8-17) months. Results of the conditional logistic regression model are shown in Table 1. The number of surveillance biopsies, rate of PSA testing, advanced age, and longer time on AS were significantly associated with reclassification. The other variables studied were not significantly associated with disease reclassification in the model.

Conclusions: A moderate number of AS patients were noted to have disease reclassification over short term follow up. The frequency of surveillance biopsies and PSA testing were associated with reclassification rates, along with increasing age and time on AS. Future efforts should focus on identifying surveillance protocols that optimize the detection of higher risk tumors with minimizing patient morbidity.

Table 1: Adjusted Conditional Logistic Regression Model. * denotes significance. Other race categories excluded due to small sample size.

Variable	OR (95% CI)	p-value
Number of Biopsies (per biopsy)	7.33 (3.76, 14.31)	<0.001*
Rate of PSA Tests (tests per year)	3.21 (1.56, 6.61)	0.05*
Age (per year increase)	1.20 (1.02, 1.18)	0.02*
Time (years)	0.99 (0.98, 0.99)	<0.001*
Positive Digital Rectal Exam	1.46 (0.64, 3.31)	0.36
BMI (per unit increase)	1.00 (0.92, 1.10)	0.95
Positive Family History	0.56 (0.17, 1.85)	0.34
African American Race	0.70 (0.16, 3.11)	0.64

MP1-11

Outcomes of Renal Mass Biopsy in Anatomically Complex Renal Masses

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Introduction: The decision to pursue a renal mass biopsy (RMB) often depends on multiple factors including the likelihood of diagnostic success based on a tumor's anatomic complexity. We compare diagnostic accuracy of core biopsies of anatomically complex renal masses to their "non-complex" counterparts.

Materials & Methods: Our prospective, Institutional Review Board (IRB) approved renal cancer database was queried to identify all patients who underwent RMB between 2005-2018 and have a nephrometry score. Complex anatomy was defined as (1) small (< 2 cm), (2) entirely endophytic (nephrometry E = 3), (3) hilar (h) or (4) partially endophytic (E = 2) and anterior. Lesions without the criteria were "non-complex." Demographic and pathologic data were compared between the groups. In cases with available surgical pathology, biopsy data were compared to final surgical pathology for oncological, histological, and grade concordance. Pearson Chi-Square test was used for analysis with SPSS V. 22.

Results: A total of 239 RMBs were identified, of which 146 (61%) were complex. Surgical pathology from partial or radical nephrectomy was identified in 196 (82%) of the cases. Overall, core RMB was diagnostic in 97% (231/239) cases with concordance rates of 92% (181/196) for the diagnosis of cancer, 91% (179/196) for subclass histology and 67% (131/196) for nuclear grade compared with final surgical pathology. In comparison, there were different rates of oncologic concordance in 89% (106/119) for complex lesions and 97% (75/77) for "non-complex" lesions (p = 0.03), histologic concordance 87% (104/119) for complex and 97% (75/77) for "non-complex" lesions (p = 0.02), and grade concordance in 62% (74/119) versus 74% (57/77) (p = 0.09).

Conclusions: RMB is diagnostic and accurate in small, endophytic, hilar and anterior anatomically complex renal masses, but the concordance rates with respect to identification of malignancy and histologic subtype are worse. RMB should not be deferred in cases of anatomically complex lesions where additional data can improve clinical decision making.

MP1-10

Genomic Prostate Score® Testing Reveals Broad Heterogeneity of Risk Among NCCN® Favorable Intermediate Risk Patients

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Introduction: Recently-updated NCCN® Prostate Cancer Guidelines include a subclassification of Intermediate-Risk (IR), termed Favorable-Intermediate Risk (FIR), for whom active surveillance may be considered. FIR patients are distinguished from Low Risk (LR) patients by the presence of one of three IR features: presence of Gleason Score (GS) 3+4 disease, clinical stage T2b/c, or PSA 10-20 ng/ml. This group is thus heterogeneous, and whether all IR features bear equivalently on patient risk is unclear. We looked at the probability of having adverse pathology as measured by the Oncotype DX Genomic Prostate Score® (GPS) test in a large cohort of FIR patients who submitted biopsies for commercial laboratory testing.

Materials & Methods: Commercial reports for > 4900 NCCN FIR patients tested with the GPS assay between 5/15/2017 and 5/28/2018 were reviewed for GPS result and post-test risk categorization. Methods for score generation and risk group definitions have been described elsewhere.

Results: GPS result spanned the full range (0 to 100), with median score of 27. 17 and 16% of patients' results placed them in High Risk (HR) and LR, respectively. GS 3+3 patients had 9% HR and 26% LR results; GS 3+4 subset had 20% HR and 13% LR.

Conclusions: The wide range of GPS results in this FIR patient subset shows diversity of risk based on tumor biology. Notably, score distributions and resulting risk classification for patients with GS 3+3 and 3+4 disease differ. GPS testing identifies FIR patients whose risk more resembles that of low or high-risk patients, aiding treatment decisions in this heterogeneous group.

MP1-12

Implications of AS Eligibility Among African American Men: Analysis of the Pennsylvania Urologic Regional Collaborative Database

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Introduction: Due to the disparate outcomes of prostate cancer (PCa) with regards to risk stratification and management, the implications of active surveillance (AS) among black men remains controversial. Utilizing the Pennsylvania Urologic Regional Collaborative (PURC) database, we investigated radical prostatectomy (RP) outcomes in AS eligible men with special attention to black race.

Materials & Methods: Men with biopsy GG 1-2 PCa who underwent RP were identified within the PURC database. Patient demographics, clinical T-stage, PSA, biopsy core data and RP pathology were analyzed with serial adjustments of increasing GG, cT, PSA, and # positive cores. Primary outcomes were RP GG score 3-5, pT3-4, pN+ or composite adverse surgical pathology (CASP), which was defined as any of the prior 3 adverse features.

Results: 1027 patients met inclusion criteria (430 GG1, 597 GG2). On multivariate analysis, age, biopsy GG, and PSA level were strong predictors of CASP; cT and # positive cores were weaker predictors; race was not a predictor (Table 1). Utilizing strict NCCN and AUA criteria, risk of CASP for the entire cohort and black patients (n = 220) were similar at 17.71-18.27% and 17.65-18.75%, respectively (Table 2). With current AS criteria, 60% of men potentially harbor GG2 disease, while only 8% of men with GG2 disease on biopsy get downgrade to GG1 on final pathology.

Conclusions: Our findings suggest that the risk of CASP among black men is similar to that of the general cohort. Further studies with biomarkers and longer follow-ups are necessary to further characterize low-risk disease in black men.

Table 1: Multivariable logistic regression analysis indicating predictors of CASP

Variables		N (%)	OR (95% CI)	P-value
Age		1027 (100.0)	1.03 (1.01-1.05)	0.004
Race	Caucasian	752 (73.2)	Reference	
	Black	220 (21.4)	0.94 (0.67-1.32)	0.730
	Asian	11 (1.1)	0.70 (0.18-2.82)	0.618
	Other	25 (2.4)	0.63 (0.25-1.59)	0.330
	Unknown	19 (1.9)	0.79 (0.28-2.22)	0.653
PBx GG	1	899 (87.5)	Reference	
	2	128 (12.5)	2.52 (1.86-3.42)	<0.001
cT Stage	1	430 (41.9)	Reference	
	2	597 (58.1)	0.68 (0.45-1.05)	0.079
PSA, ng/dL	<5	510 (49.7)	Reference	
	5.1-10	401 (39.0)	1.27 (0.95-1.71)	0.110
	11.1-15	64 (6.2)	2.25 (1.28-3.94)	0.005
	>15	52 (5.1)	2.94 (1.58-5.47)	0.001
# of positive PBx cores (of 12 cores)	1	187 (18.2)	Reference	
	2	173 (16.8)	0.93 (0.56-1.55)	0.785
	3	136 (13.2)	1.76 (1.05-2.95)	0.031
	4	137 (13.3)	1.43 (0.85-2.40)	0.182
	5	105 (10.2)	1.46 (0.84-2.55)	0.185
	6	101 (9.8)	2.06 (1.18-3.59)	0.011
	>6	188 (18.3)	1.97 (1.22-3.18)	0.006

Table 2: CASP with current AS eligibility criteria

Guidelines	Risk stratification	Criteria	N	CASP (%)	
				Entire cohort (n=1027)	Black patients (n=220)
NCCN	Very-low, Low	GG1, cT1, PSA≤10, ≤3 positive biopsy cores	288	17.71	18.75
	Favorable intermediate	GG2, cT2, PSA≤20, ≤50% positive biopsy cores	1022	33.37	35.02
AUA	Very-low, Low	GG1, cT1, PSA≤10, ≤34% positive biopsy cores	301	18.27	17.65
	Favorable intermediate	GG1, cT2, PSA≤20	430	20.47	20.78
		GG2, cT2, PSA≤10	1013	33.46	35.38

MP1-13

Increasing Incidence of Papillary Type 2 RCC: Call for Reclassification of Histological Subtypes of Papillary RCC Based on Nuclear Grade

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Introduction: Papillary RCC (pRCC) is the second most common renal cancer. Two distinct variants of pRCC were described in 1989 and are classified based on histological differences. Our objective was to compare the incidence and outcomes of papillary RCC subtypes at our institution.

Materials & Methods: Patients who underwent nephrectomy for localized RCC from 2000-2018 with pRCC on final histopathology were included. We compared the incidence of pRCC subtypes between 2000-2006, 2007-2012, and 2013-2018. We also compared the demographic variables, nephrometry scores, pathologic variables, and Cox proportional hazard regression models to assess predictors of mortality and relapse.

Results: A total of 438 patients had pRCC on final pathology. 39.2% were classified as Type 1 pRCC, while 60.8% harbored type 2. The incidence of pRCC type 2 increased from 48.8% between 2000-2006 to 73.4% between 2013-2018 ($p < 0.001$). The incidence of type 1 declined from 51.2% to 26.6% ($p < 0.001$). Type 2 pRCC was associated with larger mean tumor size (5.5 cm vs. 4 cm), higher pathologic stage ≥ T2 (34.3% vs. 13.4%, $p < 0.001$), and a higher likelihood to receive radical nephrectomy (39.6% vs. 23.4%, $p < 0.001$). At a median follow-up of 40 months (Interquartile range 11-80), 53 (12.1%) patients experienced relapse and 40 (9.1%) patients had died of pRCC; 7 with type 1 and 33 with type 2 ($p = 0.037$). A total of 101 (19.2%) patients died from non-RCC causes. pRCC subtype was not a predictor of relapse-free (RFS), cancer-specific (CSS), and overall survival (OS) rates on multivariate cox proportional hazard regression analysis.

Conclusions: There is an increasing incidence of pRCC type 2 at our center. Reasons for this trend may be multifactorial and require further study. Our data confirm previous work suggesting that the current histological classification of pRCC subtypes does not predict RFS, CSS nor OS. Reclassification of pRCC subtypes based on nuclear grade may have more prognostic significance.

MP1-14

Implications of Discordant Diagnostic to Final Surgical Pathology in High-Grade Upper Tract Urothelial Carcinoma

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Introduction: Accurate diagnostics to guide management are a technical challenge for many patients with upper tract urothelial carcinoma (UTUC). Some patients who undergo radical nephroureterectomy (RNU) and ultimately have high-grade (HG) UTUC can have non-diagnostic or low-grade (LG) UTUC (discordant pathology) at initial endoscopic evaluation. Stage distribution and survival of HG UTUC patients with discordant pathology may have important implications in the management of HG UTUC.

Materials & Methods: We retrospectively analyzed 191 UTUC patients with HG disease on surgical pathology who underwent endoscopic diagnostic biopsies prior to RNU from 2003 to 2018. The proportion of patients with muscle-invasive (≥ pT2) disease on final pathology was compared in those with concordant versus discordant ureteroscopic pathology using Pearson's chi-squared test. Overall survival estimates for the two groups were obtained using the Kaplan-Meier method and compared using log-rank test.

Results: There were 58 patients (30.1%) with discordant pathology and 133 patients with concordant pathology between ureteroscopy and RNU. No significant difference in overall survival was found between the two groups ($p = 0.9$). Mean time from ureteroscopic biopsy to RNU was longer by 6 days for patients with discordant pathology ($p = 0.8$). The proportion of ≥ pT2 disease was not significantly different between patients with concordant and discordant pathologies (55.6% and 48.3% respectively, $p = 0.3$). This was also seen after controlling for neoadjuvant chemotherapy use. A sensitivity analysis using preoperative urine cytology grade instead of biopsy grade did not show significant differences either.

Conclusions: Technical limitations in endoscopy can yield substantial rates of discordance between ureteroscopic and RNU pathology. HG UTUC patients with concordant compared to discordant pathology, however, have no significant differences in overall survival and ≥ pT2 disease prevalence. These results suggest the importance of prompt evaluation and consideration for RNU in patients for whom there is a high clinical suspicion of HG disease, despite low-grade or non-diagnostic biopsy or urine cytology results.

MP1-15

Variation in the Time Interval from Diagnosis to Treatment of Prostate Cancer Across the Pennsylvania Urologic Regional Collaborative (PURC).

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Introduction: Delay in treatment of prostate cancer (CaP) may impact oncologic and functional outcomes. We characterize the variation and evaluate for racial disparity in the time interval from diagnosis to definitive treatment of CaP across a large regional collaborative.

Materials & Methods: PURC is a prospective regional collaborative comprised of nine academic and private urology practices in Southeastern PA and NJ, launched in 2015. Demographic and clinicopathologic data for men with clinically localized CaP were abstracted and interval from last prostate biopsy to Radiotherapy (RT) or Radical Prostatectomy (RP), was evaluated. Fisher's exact t-test, ANOVA, Wilcoxon rank sum test and generalized linear model with log link were utilized for univariable and multivariable analyses, respectively.

Results: Between January 2015 and May 2018, 6109 eligible patients were enrolled in PURC. Patients with clinically localized CaP that went on to RT or RP and had sufficient information were included, resulting in 1841 men in the cohort of interest. Median intervals from diagnosis to treatment were 92 days and 86 days for AA and Caucasian men, respectively ($p = 0.018$). On multivariable analysis, Caucasian race ($p = 0.015$), higher AUA risk category ($p < 0.001$), treatment at a practice site with lower patient throughput ($p < 0.002$) and treatment with RP ($p < 0.001$) were independently associated with shorter time interval to treatment, Table 1. Large variation was observed across individual practices.

Conclusions: Median time interval between diagnosis and definitive treatment of prostate cancer across a large regional collaborative was 3 months. Clinically significant racial disparity in this time interval was not observed, although a large variation between treatment sites was noted. Understanding such treatment patterns is critical to assure high standards in quality of care.

Table 1. Multivariable analysis - generalized linear model with log link

Variable	Coefficient	p-value
Age (yr)	0.9968	0.279
Race	0.9126	0.015*
Charlson score	1.008	0.9578
AUA Risk Group	0.9382	<0.001*
Practice Site Volume	1.0014	0.0018*
Treatment type (ref: XRT)	0.819	<0.001*

MP1-16

Factors Associated with Active Surveillance as Initial Management Strategy for Men with Newly Diagnosed Prostate Cancer: Data from the Pennsylvania Urologic Regional Collaborative (PURC)

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Introduction: Prior studies have shown significant variation among providers in the use of AS for managing men with low risk prostate cancer. We aimed to characterize factors associated with the use of AS among men with newly diagnosed prostate cancer in a regional collaborative.

Materials & Methods: We analyzed the Pennsylvania Urologic Regional Collaborative (PURC), a voluntary collaborative of urology practices in Southeastern Pennsylvania and New Jersey. We identified men with newly diagnosed NCCN very-low, low, and intermediate risk prostate cancer, and determined the initial treatment modality used to manage these men. Multivariable logistic regression analysis was used to identify factors associated with the use of AS as initial management strategy.

Results: A total of 1880 men with low/intermediate risk prostate cancer were identified from PURC. Table 1 shows patient demographics and initial management strategy, stratified by disease risk. Table 2 shows the results of multivariable logistic regression of factors associated with the use of AS. Patient age was inversely associated with AS, whereas no associations were observed with race or family history. With the exception of clinical stage, more advanced disease-specific parameters were strongly associated with a decreased use of AS.

Conclusions: Within PURC, AS was the most common treatment modality for men with NCCN low risk prostate cancer. Patient age and measures of disease risk (biopsy grade group, PSA, tumor volume on biopsy) were strongly associated with AS. Studies of large collaborative datasets such as PURC may allow for better understanding of the factors underlying practice and provider-level variation in the use of AS.

Table 1. Patient demographics and initial management strategy, by disease risk

		NCCN Disease Risk			Total
		Very-Low Risk	Low Risk	Intermediate Risk	
Age	< 60	56 (25.9%)	245 (43.1%)	343 (31.3%)	644 (34.3%)
	60 – 65	78 (36.1%)	172 (30.3%)	369 (33.7%)	619 (32.9%)
	> 65	82 (38.0%)	151 (26.6%)	384 (35.0%)	617 (32.8%)
Race/Ethnicity	Caucasian	137 (63.4%)	415 (73.1%)	728 (66.4%)	1280 (68.1%)
	African American	44 (20.4%)	120 (21.1%)	277 (25.3%)	441 (23.5%)
	Hispanic	14 (6.5%)	18 (3.2%)	34 (3.1%)	66 (3.5%)
	Asian and Pacific Islander	7 (3.2%)	4 (0.7%)	18 (1.6%)	29 (1.5%)
	Unknown/ Other	14 (6.5%)	11 (1.9%)	39 (3.6%)	64 (3.4%)
Initial Management Strategy	Active Surveillance	179 (82.9%)	271 (47.7%)	85 (7.8%)	535 (28.4%)
	Radical Prostatectomy	29 (13.4%)	260 (45.8%)	816 (74.4%)	1105 (58.8%)
	External Beam Radiation Therapy	8 (3.7%)	36 (6.3%)	184 (16.8%)	228 (12.1%)
	Brachytherapy	0	1 (0.2%)	10 (0.9%)	11 (0.6%)
	High Intensity Focused Ultrasound	0	0	1 (0.1%)	1 (0.1%)
Total		216 (11.5%)	568 (30.2%)	1096 (58.3%)	1880

Table 2. Multivariable logistic regression analysis of factors associated with AS utilization

		Odds Ration (95% CI)	p-value
Age	< 60	Reference	Reference
	60 - 65	2.10 (1.44 – 3.06)	<0.001
	> 65	2.43 (1.66 – 3.54)	<0.001
Race/Ethnicity	Caucasian	Reference	Reference
	African American	0.83 (0.57 – 1.21)	0.34
	Hispanic	1.17 (0.53 – 2.59)	0.69
	Asian/Pacific Islander	0.67 (0.23 – 1.94)	0.46
	Other/Unknown	2.19 (0.94 – 5.07)	0.07
Family History of Prostate Cancer	No	Reference	Reference
	Yes	1.05 (0.73 – 1.51)	0.78
Clinical Stage	T1	Reference	Reference
	T2a	0.98 (0.58 – 1.66)	0.94
	T2b/c	0.37 (0.09 – 1.44)	0.15
Biopsy Grade Group	1	Reference	Reference
	2	0.07 (0.05 – 0.11)	<0.001
	3	0.02 (0.01 – 0.06)	<0.001
PSA	< 5	Reference	Reference
	5 – 10	0.74 (0.54 – 1.02)	0.07
	> 10	0.32 (0.19 – 0.55)	<0.001
Percent of Positive Biopsy Cores	< 25	Reference	Reference
	25 - 50	0.38 (0.25 – 0.58)	<0.001
	> 50	0.11 (0.07 – 0.15)	<0.001
Maximum Percent Biopsy Core Positive	< 25	Reference	Reference
	25 - 50	0.47 (0.32 – 0.68)	<0.001
	> 50	0.27 (0.17 – 0.43)	<0.001

Moderated Poster Session 2: Education and Best Practice

MP2-01

Novel Renal Collecting System Model for Procedural Training Under Ultrasound Guidance

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Introduction: In recent years, there has been increasing interest in the use of ultrasound-guidance for percutaneous procedures. Kidney mockups are normally incompatible with ultrasound imaging. We created a simple reproducible method to manufacture an ultrasound-compatible collecting system.

Materials & Methods: Positive and negative molding methods were used. A 3D digital model of a urinary collecting system and the overlying skin surface were segmented from computed tomography (CT) of a patient. A containment mold (negative) was made to follow the shape of the skin surface using a 3D printer. A collecting system mold (positive) was also printed with a 3D printer, but made of a dissolvable material. The containment mold was filled with a gelatin formula with the collecting system mold submersed in-situ within. After the gelatin solidified, a solution was used to dissolve the collecting system mold, but not the gelatin, leaving a cavity of the collecting system. The gelatin was then extracted from the container mockup and the collecting system cavity was filled with water. The mockup was imaged with ultrasound to assess echogenicity and suitability for simulating ultrasound-guided procedures.

Results: A clear shape corresponding to the collecting system was observed inside the gel structure. Structural integrity was maintained with no observable manufacturing marks or separation seams. Ultrasound images of the mockup demonstrated clear differentiation at the gelatin-water interface. A mock stone was placed in the collecting system and targeted with a needle to simulate percutaneous needle access.

Conclusions: We developed a simple method to manufacture a personalized mockup of the renal collecting system of a patient that can be used in ultrasound-guided percutaneous access. This mockup can enhance training and simulation in ultrasound-guided procedures.

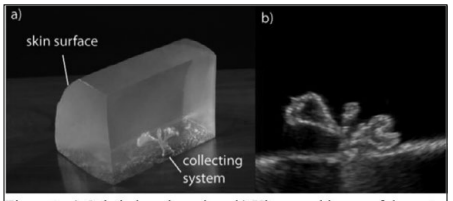

Figure 1: a) Gelatin based mockup, b) Ultrasound image of the water filled collecting system in the mockup

MP2-03

Buyer Beware: Evidence-Based Evaluation of Dietary Supplements for Nephrolithiasis

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Introduction: An increasing number of commerically available dietary supplements carry claims to treat or prevent kidney stones. However, the evidence for these claims is not clear. This study assesses the scientific evidence behind dietary supplements for patients with stone disease.

Materials & Methods: The online marketplaces Amazon and Google were queried for dietary supplements to treat, alleviate, or prevent stone disease. Product labels were reviewed to compile stone-related claims and non-pharmacological active ingredients (excluding vitamins and ion salts) in each supplement. We queried Google Scholar with all non-pharmacological active ingredients to assess the scientific evidence from published and lay sources. Two reviewers independently performed the searches and analyses.

Results: Of 113 products reviewed in the searches, 27 dietary supplements containing 56 non-pharmacological active ingredients were analyzed. Products made a variety of claims: 12 (44%) claimed to dissolve stones, 7 (26%) claimed to prevent stone formation, 6 (22%) claimed to reduce stone symptoms, and the majority (19, 70%) could be used to "support kidney health." The mean 30-day cost was $32 (range $4-$189). Ten (37%) products offered a money-back guarantee. Of the 56 non-pharmacological ingredients, 9 (16%) had any published studies for use in stone disease, and 5 (9%) had exclusively studies supporting their use. A total of 18 scientific publications about the ingredients were identified, of which 6 showed mixed or no benefit for stone disease. In the other 12 publications supporting use in stone formers, only 5 were human studies. Overall, among the 27 supplements, 18 (67%) contained ingredients with conflicting, refuting, or absent evidence of benefit in stone disease.

Conclusions: In this analysis of commercially available dietary supplements claiming to treat or prevent kidney stones, two-thirds contained ingredients with conflicting or no scientific evidence to support these claims. The findings may assist clinicians in counseling stone formers about the use of these unregulated products.

MP2-02

Learning Curve and Surgeon Proficiency for Holmium Laser Enucleation of the Prostate (HoLEP)

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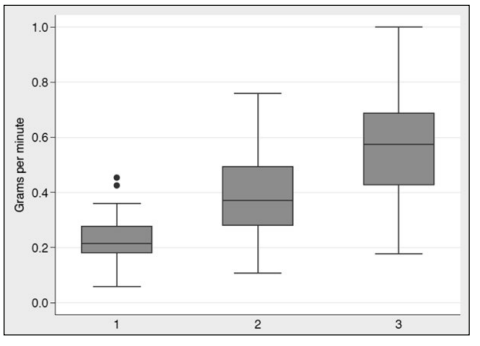
Introduction: Holmium laser enucleation of the prostate (HoLEP) is an excellent surgical option for BPH, particularly for patients with prostates too large for the standard TURP. Despite published success HoLEP is a difficult procedure to master and is associated with a steep learning curve.

Materials & Methods: We retrospectively reviewed data collected in an IRB approved database of patients who underwent HoLEP by a single surgeon from 2015-2019. Operative time was recorded and prostate resection weight was obtained from pathology reports and intra-operative weight measurement. Operatively specimen weight was compared to pre-operative prostate size estimated on transrectal ultrasound. A total of 131 patients underwent HoLEP, and 3 were excluded due to incomplete data. We compared the first 40 cases, second 40 cases and last 48 cases. Kruskall-Wallis analysis was used to analysis variance between groups for grams/minute resected.

Results: We identified 128 patients who met inclusion criteria. Group 1 (first 40) had the lowest grams resected per minute of operative time (0.22 ± 0.8) with increases across Group 2 (0.38 ± 0.13) and 3 (0.57 ± 0.19). The top interquartile range for group 1 (0.35) was below the average for group 2, while the top interquartile range for group 2 (0.57) was the same as the average for group 3. The top interquartile range for group 3 (0.91) approaches published surgical excellence (1.0).

Conclusions: There appeared to be significant improvement in resection as surgeon experience progressed. The average gram of prostate resected per minute increased despite increasing size of prostate gland and within 100 cases the surgeon approached high volume surgical excellence



Case #	Avg age	Avg prostate size on TRUS	Avg g/min (25^{th}-75^{th})
1-40	70.65±7.65	66.6±26.1	0.226±.09 (.09-0.35)
41-80	70.08±6.7	100.4±42.7	0.386±0.14 (0.24-0.57)
81-128	68.83±7.7	113.3±44.8	0.571±0.20 (0.31-0.90)
P value	-	-	P<0.001

MP2-04

The Use of Hemostatic Agents Does Not Impact Likelihood of Hemorrhagic Complications Following Partial Nephrectomy

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Introduction: Hemostatic agents (HA) are used to limit bleeding complications following partial nephrectomy (PN). The ability of these agents to prevent bleeding complications during and after PN remains debatable. We review a cohort of PN cases to define the use of HA and factors associated with post-operative bleeding complications.

Materials & Methods: The charts of 429 PN were reviewed for clinical, pathologic, and perioperative variables. HA use and bleeding complications were annotated. Wilcoxon rank sum and two-sample t-tests identified factors associated with HA use. Univariate and limited multivariate logistic regression determined variables associated with bleeding complications.

Results: Median patient age was 57 years with a median RENAL score 6. Distribution of surgical approach included robotic (46%), open (38%), and laparoscopic (15%). HA were used in 288 (67%) cases ranging from single (39%), two (58%), or three agents (2%). Use of HA was associated with longer OR duration, longer ischemia time, higher EBL, and method of PN (OPN and LPN > RPN) (all p values < 0.001), but not RENAL score (p = 0.859) or preoperative anticoagulation (p = 0.647). Post-PN bleeding complications occurred in 25 (5.8%) patients with management being conservative (n = 17), embolization (n = 5), and re-operative (n = 3). On bivariate analysis, neither HA use (OR 1.04, p = 0.92) nor the number of HA agents used (p = 0.75) were associated with bleeding complications. Further, a multivariable model revealed increasing RENAL score (p = 0.013) and surgical approach (RPN vs. OPN [p = 0.009] and LPN [p = 0.002]) were independently associated with bleeding complications while HA use was not (p = 0.29).

Conclusions: The use of HA during PN was not associated with lower rates of bleeding complications following surgery. While HA use may be appropriate in specific case scenarios, routine utilization during PN is likely not warranted.

Table: Multivariate model for variables associated with hemorrhage following PN

Variable	OR	95% CI	p value
Renal score	1.30	1.06 – 1.60	0.013
Surgical Approach			
RPN (Ref)			
OPN	5.17	1.51 – 17.76	0.009
LPN	8.17	2.19 – 30.52	0.002
Hemostatic agent	0.594	0.23 – 1.57	0.294

MP2-05

Annual Use and Costs of Hemostatic Agents for Partial Nephrectomy

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Introduction: Hemostatic agents (HA) are used to theoretically limit bleeding complications following partial nephrectomy (PN). The ability of these agents to prevent bleeding complications remains debatable with inherent cost incurred from use. We review a cohort of PN cases to determine the frequency of HA use and allocation of costs by surgical method and product type.

Materials & Methods: The charts of 428 PN performed from 2002 to 2018 were reviewed for clinical, pathologic, and perioperative variables. HA use, surgical approach, and HA cost were determined from operative notes and perioperative business records.

Results: Median patient age was 58 years with a relatively equal gender distribution (54% male, 46% female). Median tumor size was 2.8 cm with RENAL score of 6 (range, 4-11). Distribution of surgical approach included robotic-assisted (RAPN) (46%), open (OPN) (38%), and laparoscopic (LPN) (16%). HA were used in 288 (67%) cases ranging from single agent (39%), two agents (58%), and three agents (3%). Average annual HA expenditure was $4855 with the peak being in 2010 where expense was $14,086. Mean annual costs for HA use were greater for OPN vs. RAPN starting in 2013 ($2964 vs. $594, p = 0.02, Figure 1). Across the spectrum of HA, while Surgicel was used most frequently, Floseal often accounted for the majority of HA costs. Post-PN bleeding complications occurred in 25 (5.8%) patients. HA use was not associated with post-operative bleeding events (OR 1.043, 95% CI 0.44-2.48, p = 0.93).

Conclusions: Annual HA costs for PN are almost $5000 annually with a proportionally increasing use in OPN in the contemporary era. Given the lack of association with post-PN bleeding events, judicious use in a case specific manner is requisite to limit potentially unnecessary operative cost.

MP2-06

Understanding the Continuum of Health Related Quality of Life Dimensions in Stone Formers

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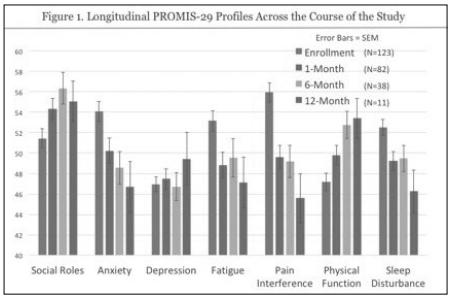
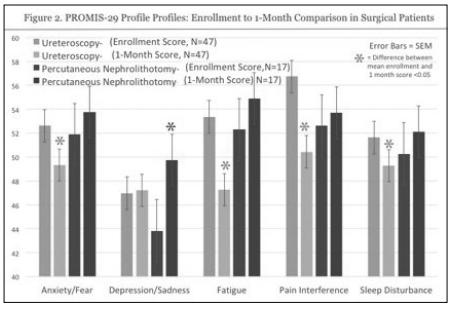
Introduction: Assessing health-related quality of life (HRQOL) in patients with nephrolithiasis is important, as objective indices of disease may not correlate with symptoms.

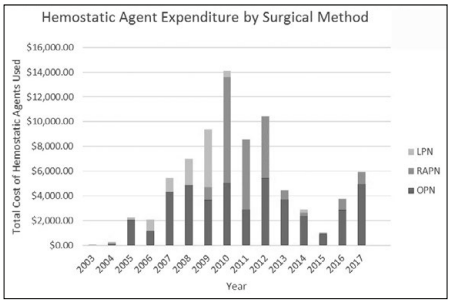
Materials & Methods: A longitudinal cohort study began enrolling adult patients with renal/ureteral stones in 10/2017. Exclusion criteria included inability to speak English or to use a computer independently. Subjects completed generic HRQOL instruments (PROMIS-29;7-dimensions, reported as T-score, normalized to US population) at enrollment, 1, 6, and 12-months. Treatment options included active surveillance (AS), spontaneous passage (SP), ureteroscopy (URS), or nephrolithotomy (PNL), completed within 1-month. Association of demographic characteristics with measured dimensions at enrollment was determined (1-way ANOVA). Scores were compared against normalized US population mean scores at enrollment (T-test), and between enrollment and 1-month stratified by surgical treatment (paired T-test).

Results: Of 192 subjects screened, 123 completed the initial instrument. 66% (82/123) of subjects responded at 1-month. At enrollment, dimensions of anxiety (+4.1), fatigue (+3.2), pain interference (+5.9), physical function (-2.8), and sleep disturbance (+2.5) were degraded compared to population means ($p < 0.05$). Depression was improved (-3.0, $p < 0.05$). Female gender was associated with worse anxiety (+6.4), depression (+3.9), fatigue (+4.9), and physical function (-4.5) compared to males ($p < 0.05$). Figure 1 shows PROMIS-29 means over the course of the study. Of 1-month responders, 12%, 8%, 58%, and 21% elected AS, SP, URS, and PNL, respectively. Figure 2 displays changes in mean scores from enrollment to 1-month in surgical patients.

Conclusions: Patients experience their stone disease differently, but dimensions of pain interference, anxiety, fatigue, and physical health are degraded. These may improve with treatment.







MP2-07

Implications of Overutilization of Imaging in Low Risk Prostate Cancer: More Harm than Good?

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Introduction: The American Urological Association (AUA) and the National Comprehensive Cancer Network (NCCN) do not recommend staging imaging for very low risk (VLR) and low risk (LR) prostate cancer (PCa). However, there is concern for imaging overutilization in these groups. Thus, we explored the utilization of staging imaging and its ramifications in newly diagnosed VLR and LR PCa.

Materials & Methods: 493 PCa patients diagnosed between 2011-2017 were stratified to AUA and NCCN VLR and LR groups. Computed tomography (CT), magnetic resonance imaging (MRI) and bone scan performed following diagnosis was captured and guideline compliance was evaluated. The significance of radiologist interpreted findings, by imaging type, were classified as non-urologic, non-significant urologic, and PCa significant.

Results: Over 75% of patients among each of these risk groups underwent imaging at time of diagnosis. Specifically, a total of 58 (75%) AUA-VLR, 67 (75.3%) AUA-LR, 51 (75%) NCCN-VLR, and 74 (75%) NCCN-LR had imaging and thus, showed non-compliance with guidelines. Bone scan was performed in up to 30 (30%) of patients with no scans showing PCa-significant findings and the majority being normal (Table). MRI was the most utilized scan in low risk groups, occurring in up to 47 (70%) of patients. Although, the majority were normal, up to 25 scans showed non-significant urologic findings, and only 7 showed PCa significant findings.

Conclusions: Among VLR and LR PCa patients there is high overutilization of imaging at time of diagnosis despite guideline recommendations against use. Most yielded minimal PCa significant findings and caused further workup for incidental results. This exploratory analysis gives awareness that formal staging imaging in VLR and LR PCa patients may do more harm than good.

Table 1. Utilization of Staging Imaging in Low Risk Prostate Cancer Patients and the Significance of Findings

	CT				MRI				Bone Scan			
	Total Patients (%)	Non-Urologic Findings	Non-Significant Urologic	PCa-Significant	Total Patients (%)	Non-Urologic Findings	Non-Significant Urologic	PCa-Significant	Total Patients (%)	Non-Urologic Findings	Non-Significant Urologic	PCa-Significant
AUA Risk Group												
AUA-VLR (n=80)	27 (33.8)	0	5	1	35 (43.8)	0	17	4	20 (25)	3	0	0
AUA-LR (n=89)	32 (36)	3	2	2	47 (70.1)	0	22	3	25 (28.1)	3	0	0
NCCN Risk Group												
NCCN-VLR (n=68)	21 (30.1)	0	4	1	32 (47.1)	0	16	2	15 (22.1)	1	0	0
NCCN-LR (n=99)	38 (38.4)	3	3	2	50 (50.5)	0	25	3	30 (30.2)	5	0	0

MP2-08

Initiative to Improve Allergy Reaction Documentation within the Penn Urology Division

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Introduction: Evidence suggests that a substantial proportion of allergy reactions are actually disease related adverse events or side effects, and not true Type I-IV hypersensitivity reactions. In the case of PCN allergies, 80-90% of patients are not allergic when skin tested, and of these patients, the chance of cross reaction to cephalosporins is 5%. Reliable allergy history and allergy reaction documentation impacts our antibiotic choices for the prevention of surgical site infections. The aim of this initiative was to improve allergy reaction documentation. The two objectives were to increase the allergy documentation from 17% to 35% in three months and to clarify the allergy reaction.

Materials & Methods: The method included application of Deming's Cycle of PDSA [Plan/Do/Study/Act], for learning and improvement of process, as the model for this QI Initiative. The plan aimed to improve allergy reaction documentation during the intake process. Nurses, APPs, residents, and urologists were engaged through recommended articles and educational in-services, which included presentation of actual Penn Urology ambulatory allergy data. The study and analysis examined flow and barriers to documentation and apprised the allergy reaction documentation through quantitative and qualitative analysis.

Results: Data analysis included 13,976 charts pre-intervention and 13,248 charts post-intervention. The results demonstrated a statistically significant improvement, P = < 0.001 using a Z-test. The pre-intervention group showed only 20% documentation versus 99% post-intervention. There was a 79% increase in allergy reaction documentation post-intervention in three months. Ninety-nine percent of allergy reactions were clarified in the post-intervention group versus 20% pre-intervention, also demonstrating a significant improvement.

Conclusions: An initiative for allergy reaction documentation through educational in-services demonstrated a significant improvement within the Penn Urology Division. Results should encourage other divisions and the health system to implement this initiative as a Best Practice. Future phases may include a cost analysis related to perioperative delays due to poor allergy reaction documentation.

MP2-09

Incidence of Urge Symptoms in Patients Undergoing Holmium Laser Enucleation of the Prostate (HoLEP)

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Introduction: Holmium laser enucleation of the prostate (HoLEP) remains an excellent surgical option for BPH management. We sought to describe the incidence of urge-related symptoms following HoLEP. We hypothesize that a subset of men will have higher IPSS (urge) and increased used of anti-spasmodic medications following HoLEP.

Materials & Methods: We retrospectively reviewed data from an IRB-approved database of patients who underwent HoLEP by a single surgeon from 2015-2019. 131 patients were identified, and the first 50 cases were excluded. Patients with a minimum of 3 month follow up, who had complete pre/post medication use and IPSS scores were included. We also specifically examined patients who were on an anti-spasmodic (anti-cholinergic/Mirebegron) pre-operatively and those that required an anti-spasmodic post-operatively.

Results: A total of 45 patients met all inclusion criteria. Average IPSS was 20.2 and 6.7 pre and post operatively respectively. Four of the 7 patients on pre-op anti-spasmodics were able to stop at 3 months post op. Eleven patients who were previously not taking anti-spasmodics converted and required anti-spasmodics post op. These men had significantly worse symptomatic outcomes from HoLEP - post op IPSS 14.8 v 7.25 with bother 3 vs. 1.6. Those patients who required post op anti-spasmodics were also more likely to experience urge incontinence (54% v 22%).

Conclusions: Men who have poor improvement in IPSS following HoLEP experience significantly more urge symptoms, and about 25% of patients will require new anti-spasmodic medications. Men should be counselled on post-operative urge symptoms, particularly those not on pre-operative anti-spasmodics. Future study will examine the durability of urge symptoms post-HoLEP in these men.

	All	No pre-op Anti-spasmodic	On Pre-op Anti-spasmodic	P	Conversion	No Conversion	P
N	45	38	7	-	11	27	-
Age; Mean (SD)	69 (7.5)	69 (6.4)	70 (12)	0.43	68 (5.8)	69 (7.8)	0.29
Gland size (g)	92 (42)	96.4 (49.4)	69 (32)	0.05	100 (44.6)	87.5 (38.7)	0.19
Pre-op IPSS Total	20.2 (7.1)	20.8 (8.1)	17.3 (4.7)	0.08	16.18 (7.8)	21.74 (6.5)	
Pre-op Urge	2.7 (1.3)	2.7 (1.6)	2.3 (0.6)	0.21	2.4 (1.5)	2.9 (1.4)	0.22
Pre-op Bother	4.4 (1.5)	4.41 (1.7)	4.0 (1.1)	0.24	4.5 (1.9)	4.3 (1.3)	0.33
Post-op IPSS Total	9.13 (6.9)	9.16 (7)	9.0 (7.9)	0.48	14.8 (7.7)	7.25 (5.9)	<0.01
Post-op Urge	1.4 (1.4)	1.3 (1.9)	2.16 (1.0)	0.08	2.5 (1.9)	1.0 (1.1)	<0.01
Post-op Bother	1.8 (1.7)	1.8 (1.6)	1.85 (1.3)	0.47	3 (1.1)	1.6 (1.4)	<0.01
Post-op Treatment with Anti-Cholinergic	13	10	3	0.26	11	0	-
Post-op Treatment with Mirabegron	6	6	0	<0.01	6	0	-
Urge urinary incontinence at 3 months	13	10	3	0.29	6 (54%)	6 (22%)	<0.01

MP2-10

Opioid Prescribing Patterns for Patients with Symptomatic Nephrolithiasis: Use of a Prescription Drug Monitoring Program

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Introduction: The opioid epidemic of addiction and overdose is a growing problem in the United States. There is a high rate of opioid oversupply for the treatment of symptomatic nephrolithiasis that is partly due to patients being seen by multiple providers who may be unaware of prior prescriptions. In Pennsylvania, there are efforts to integrate a prescription drug-monitoring program (PDMP) within the electronic medical record (EMR). The objectives of this study were to evaluate prescribing practices for opioids for symptomatic kidney stones at our institution and the incidence of opioid prescriptions not documented within our EMR.

Materials & Methods: Adults who presented for treatment of symptomatic nephrolithiasis were sequentially evaluated from May - October 2017 at our institution. With IRB approval, we performed a retrospective review of opioids prescribed within our EMR as well as those documented only through the PDMP for each stone episode. We calculated daily morphine milligram equivalents (MME) and total MME available to patients.

Results: 301 patients were identified (52.2% male) with an average age of 50.0 ± 16.7. 82.7% of patients were prescribed narcotics with an average of 226.8 ± 232.2 for the duration of their stone episode treatment. Of patients that were prescribed narcotics, 19% had additional narcotics prescribed to them that were not entered into our EMR and later identified on the PDMP. The average additional opioid prescribed was 371.8 ± 404.2 total MME.

Conclusions: The majority of patients were prescribed an opioid for a symptomatic kidney stone episode, with a wide range of the amount prescribed. Providers have an important role in controlling oversupply of opioids. Almost one-fifth of patients were receiving opioids from other providers that were not documented in our EMR. PDMP, or similar resources, should be utilized prior to prescribing narcotics to minimize opioid prescriptions and reduce oversupplying patients.

MP2-11

Health-related Quality of Life in Patients with Indwelling Ureteral Stents Influences Unprompted 30-day Encounters After Ureteroscopy and is Predicted by Patient Personality Traits

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Introduction: Up to 67% of patients undergoing ureteroscopy (URS) make unprompted postoperative provider encounters, primarily due to stent-related symptoms. Studies in several surgical cohorts have shown that patient personality influences postoperative health-related quality of life (HRQoL) and treatment outcomes. We evaluated the relationship between HRQoL outcomes post-URS and unprompted 30-day provider contacts, as well as the relationship between patient personality and HRQoL.

Materials & Methods: Patients undergoing URS with stenting were prospectively recruited. Those with history of ureteral stenting within 6 months of recruitment were excluded. Unprompted postoperative contacts (phone call for symptoms, ER visits or hospital readmission) within 30 days of URS were documented. Personality traits were assessed using the validated Ten Item Personality Inventory (TIPI), which encompasses 5 domains: extraversion, agreeableness, conscientiousness, emotional stability and openness. HRQoL post-URS was assessed using the Ureteral Stent Symptom Questionnaire (USSQ). Associations between unplanned postoperative contacts, USSQ scores and personality traits were evaluated using appropriate bivariate and multivariable (MVA) statistical tests.

Results: 79 patients were enrolled, of whom 26/79 (32.9%) had an unplanned postoperative encounter. Patients who made unprompted contact had significantly higher USSQ scores for pain, urinary bother and general health rating (higher scores reflect worse HRQoL), (Table). Openness positively correlated with pain score (p = 0.03). On MVA, agreeableness was a significant predictor of urinary bother (p = 0.049) while openness was a significant predictor of pain score (p = 0.05).

Conclusions: Pain, urinary bother and general health perception influence unplanned postoperative encounters after URS, while personality traits such as openness and agreeableness appear to influence patient-reported HRQoL outcomes post-URS. Understanding factors affecting the patient experience post-URS could help facilitate early interventions to improve outcomes.

Demographic information and USSQ scores

	Unplanned postoperative encounter	Routine postoperative encounter	p-value
N	26	53	
Median (IQR) age	47.5 (41-56)	48 (39-57)	0.99
Gender (F / M)	17/ 9	24 / 29	0.09
% white	69%	62%	0.54
% bachelor's or higher degree	50%	64%	0.23
% employed	75%	72%	0.91
% prior h/o stents	19%	28%	0.38
Median (IQR) pain score	**25.5 (24-31)**	**18(14-24)**	**<0.0001**
Median (IQR) urinary bother score	**35 (31-38)**	**26(23-33)**	**0.0005**
Median (IQR) general health rating score	**19 (17-21)**	**13 (10-16)**	**<0.0001**

MP2-12

Twitter and Academic Urology: Comprehensive Assessment of the Twitter-verse in 2019 for the Mid-Atlantic Section of the AUA

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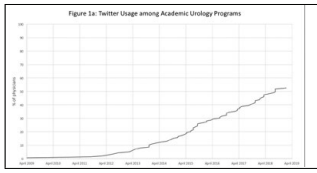
Introduction: Social Media, encompassing a broad spectrum of public use platforms, has been increasingly utilized in the academic medicine forum. We provide the first comprehensive survey of the Twitter-verse amongst academic urologists.

Materials & Methods: Using the Accreditation Council for Graduate Medical Education (ACGME) and individual program websites, all active accredited urology residency programs and their faculty were documented for demographics (program: AUA section, residents/year, fellowship status; physician: title, fellowship training, Scopus H-index and citations). Comprehensive Twitter searches were completed for all programs and physicians during March-April 2019. Trends in Twitter utilization were identified. Multivariable logistic regressions were used to identify predictors of Twitter use.

Results: 139 accredited US programs were identified. Of these, 75 (54%) had fellowship programs and 73 (53%) had associated departmental Twitter accounts. North Central, South Central and Southeastern (vs. MidAtlantic, p = 0.004, p = 0.004, p = 0.012) programs, programs with fellowships (p = 0.002) and programs with 3 or 4-5 residents/year (vs. 1 resident, p = 0.034, p = 0.015) were predictive of Twitter utilization. Eighteen (13%) programs, consisting of 266 physicians, were in the MidAtlantic region. Fellowship-trained physicians (p = 0.006), physicians with higher citations (p = 0.002) and H-indexes (p < 0.001) and assistant professors (vs. professors, p = 0.008) were more likely to own Twitter accounts.

Conclusions: The use of Twitter amongst academic urology has been increasing, serving as an important tool for collaboration, patient education, and dissemination of scientific knowledge. Future studies among individual physicians across the nation should be performed to examine the implications and benefits of Twitter in academic urology.



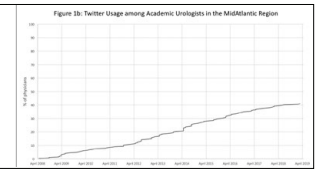


Table 1: Program and physician demographics in the MidAtlantic region

Program information					Physician information			
Programs	Fellowship program	Residents/year	Twitter account	Months on Twitter	Physician Twitter usage, N (%)	Fellowship trained, N (%)	Male physicians, N (%)	Months on Twitter, mean
Albert Einstein Healthcare Network	Yes	3	Yes (@EinsteinUrology)	22	8 (88.9)	8 (88.9)	8 (88.9)	69.4
Charleston Area Medical Center Program	No	2	Yes (@wvuro)	14	3 (30.0)	5 (50.0)	9 (90.0)	32.7
Cooper University	Yes	1	No	-	4 (66.7)	5 (83.3)	6 (100.0)	72.8
Drexel University	Yes	2	Yes (@HUHUrology)	42	5 (35.7)	5 (35.7)	11 (78.6)	83.8
Eastern Virginia Medical School	Yes	2	Yes (@EVMSuro)	24	8 (29.6)	20 (74.1)	25 (92.6)	78.8
Geisinger Health System Program	No	1	No	-	2 (16.7)	10 (83.3)	8 (66.7)	97.0
Georgetown University	Yes	3	Yes (@GUUrology)	13	10 (32.3)	23 (74.2)	25 (80.6)	66.5
George Washington University	No	2	No	-	23 (88.5)	16 (61.5)	6 (23.1)	76.0
Johns Hopkins University	Yes	3	Yes (@Brady_Urology)	71	17 (77.3)	19 (86.4)	19 (86.4)	77.4
Penn State Milton S Hershey Medical Center	No	2	Yes (@PennSUrology)	38	6 (46.2)	11 (84.6)	9 (69.2)	47.0
Temple University	No	3	Yes (@TempleUrology)	19	7 (63.6)	11 (100.0)	10 (90.9)	65.4
Thomas Jefferson University	Yes	3	Yes (@JEFFUrology)	7	6 (28.6)	16 (76.2)	15 (71.4)	45.3
University of Maryland	No	2	Yes (@MarylandUrology)	10	4 (80.0)	4 (80.0)	4 (80.0)	81.8
University of Pennsylvania	Yes	4	Yes (@PennUrology)	53	15 (60.0)	21 (84.0)	22 (88.0)	50.2
University of Virginia	Yes	2	Yes (@uvaurology)	64	4 (40.0)	10 (100.0)	8 (80.0)	57.3
Virginia Commonwealth University	No	2	Yes (@VCUUrology)	82	3 (27.3)	10 (90.9)	11 (100.0)	38.3
Walter Reed National Military Medical Center	No	2	No	-	1 (11.1)	3 (33.3)	7 (77.7)	126.0
West Virginia University	No	2	Yes (@WVU_Urology)	12	1 (11.1)	6 (66.7)	9 (100.0)	14.0

MP2-13

Tele-cystoscopy: Optimizing Technical Infrastructure with Pig Cystoscopy

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Introduction: To improve access to surveillance cystoscopy in the face of the urology workforce shortage, we have developed a tele-health solution called tele-cystoscopy. Tele-cystoscopy allows certified advanced practice providers to perform cystoscopy in rural areas with real-time interpretation and guidance by a board-certified urologist. We have previously shown the technological infrastructure for optimized video quality. With changes in availability, our objective assess the diagnostic ability of two different cystoscopes (Stortz vs. Wolf) with the new codec (DX70).

Materials & Methods: A single urologist performed flexible cystoscopy on a dissected pig bladder (Figure 1). Various combinations of cystoscope (Stortz vs. Wolf), Codec (SX20 vs. DX 70), and internet bandwidth for transmission used to create 8 distinct recordings. De-identified videos on YouTube were reviewed by 16 expert urologist reviewers via electronic survey (Qualtrics, Provo, UT). Reviewers were asked to rate quality of video and ability to make diagnosis. Logistic regression model was used to model the ability to make a diagnosis.

Results: Eight videos with varying scope, codec, and internet speed were reviewed by 16 urologist reviewers. Cystoscope and codec components are both significant in predicting diagnostic ability of the combinations considered ($p < 0.10$). The Wolf cystoscope (vs. Stortz) shows better monopredictive capabilities when combined with the new DX70 codec regardless of internet speed (Table 1), with almost 20% increase in probability.

Conclusions: With the phasing out of the SX20 codec, tele-cystoscopy will be carried forward with the Wolf cystoscope using the DX70 codec. The new infrastructure for tele-cystoscopy remains viable with changing infrastructure components.

Table 1: Model predicted probability of being able to use as a diagnostic tool (90% confidence interval)

Scope	Codec	Internet speed	Probability	Lower limit	Upper limit
Wolf	SX20	Low	0.70	0.53	0.83
Wolf	SX20	High	0.80	0.64	0.90
Wolf	DX70	Low	0.62	0.45	0.77
Wolf	DX70	High	0.73	0.57	0.85
Stortz	SX20	Low	0.92	0.76	0.97
Stortz	SX20	High	0.95	0.84	0.99
Stortz	DX70	Low	0.44	0.28	0.61
Stortz	DX70	High	0.56	0.39	0.72

MP2-14

Impact of Renal Thermal Ablation and Partial Nephrectomy on Devascularized Renal Parenchyma

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Introduction: Nephron-sparing treatment for small renal masses (SRMs) include partial nephrectomy (PN) and percutaneous thermal ablation (PTA). We examined impact of devascularized renal parenchyma (DRP) volume, of the ipsilateral treated kidney, created by PN and PTA on postoperative glomerular filtration rate (GFR) in patients with SRMs.

Materials & Methods: We performed a review of patients with clinical T1 renal masses undergoing PTA or PN from 2011 to 2018. Patients without intravenous contrasted imaging were excluded. Using 3-D imaging software, DRP was calculated by comparing preoperative and 6-month postoperative imaging studies. To reduce selection bias, inverse probability weighting (IPW) was used to analyze percentage (%) of DRP per treatment and the relationship of ipsilateral %DRP to percent change in 6-month GFR.

Results: 96 PTA and 89 PN patients met inclusion criteria. PTA patients were older, had more comorbidities, more previous nephron-sparing therapies, and more complicated SRMs (Table 1). On multivariate analysis, age ($\beta = 0.24$, $p = 0.04$), SRM volume ($\beta = 0.33$, $p < 0.001$), PN ($\beta = 11.06$, $p < 0.001$), and preprocedural renal parenchymal volume ($\beta = 0.08$, $p < 0.01$) were significant risk factors in increasing DRP. On univariate analysis, %DRP in PTA and PN was 8.3% and 15.8% respectively ($p < 0.001$). %GFR loss at 6 months in PTA and PN was -4.1% and -9.8% respectively ($p = 0.01$). Using IPW, PTA created significantly less %DRP than PN [7.06% (95% CI 3.07, 11.05%; $p < 0.001$)]. The %DRP was associated with %GFR loss at 6-months ($\beta = -0.30\%$, 95% CI -0.51, -0.09%, $p < 0.001$). On sensitivity analysis, %DRP had the greatest impact on %GFR loss at 6-months in open PN ($\beta = -0.53\%$, 95% CI -0.77, -0.30%, $p < 0.001$).

Conclusions: On IPW analysis, PN creates significantly more DRP and decreases post-procedural renal function at 6 months compared with PTA in patients with SRMs.

	Percutaneous Thermal Ablation	Partial Nephrectomy	p value
Total	96	89	
Gender			
Male	63 (65.6)	57 (64.0)	0.94
Female	33 (34.4)	32 (36.0)	
Race			
White	84 (87.5)	76 (85.4)	0.31
Black	10 (10.4)	13 (14.6)	
Asian	2 (2.1)	0 (0)	
Age (years)	64.7 ± 12.3	54.1 ± 14.0	**<0.001**
BMI (kg/m2)	29.9 ± 5.14	30.3 ± 7.44	0.48
Charlson Comorbidity Score	3.8 ± 2.0	2.7 ± 2.2	**<0.001**
Previous Ablation	19 (19.8)	0 (0)	**<0.001**
Previous Partial Nephrectomy	14 (14.6)	3 (3.4)	**0.02**
Solitary Kidney	5 (5.2)	4 (4.5)	1.00
Tumor Stage			
T1a	84 (87.5)	68 (76.4)	0.08
T1b	12 (12.5)	21 (23.6)	
Mass Diameter (cm)	3.0 ± 1.0	3.1 ± 1.4	0.87
Number of Masses Treated	1.0 ± 0.2	1.1 ± 0.7	0.62
R.E.N.A.L. Nephrometry Score			
Total	7.1 ± 1.7	6.2 ± 1.8	**<0.001**
4-6	32 (33.3)	55 (61.8)	**<0.001**
7-9	58 (60.4)	32 (36.0)	**0.001**
≥10	6 (6.3)	2 (2.2)	0.28
Hilar	1 (1.0)	6 (6.7)	0.057
Biopsy Performed	82 (85.4)	24 (27.0)	**<0.001**
Histology			
Clearcell	51 (62.2)	56 (62.9)	0.51
Papillary	16 (19.5)	20 (22.5)	
NOS	8 (9.8)	10 (11.2)	
Chromophobe	4 (4.9)	3 (3.4)	
Mixed	3 (3.7)	0 (0)	
Ischemia time (min)	NA	29.4 ± 20.9	
Ischemia technique			
Cold	NA	33 (37.1)	
Warm	NA	47 (52.8)	
Off Clamp	NA	7 (7.9)	
Surgical Type			
	Cyroablation 13 (13.5)	Open 44 (49.4)	
	Microwave 83 (86.5)	Robotic 45 (50.6)	

Table 1: Cohort Characteristics
Number (Percentage); Mean ± Standard Deviation

MP2-15

Does 24-hour Urine Collection Reduce the Risk of Recurrent Nephrolithiasis

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Introduction: High-risk kidney stone formers are routinely requested to submit a 24-hour urine collection. Our objective was to investigate whether the submission of a 24-hour urine collection is associated with a reduced risk of recurrent nephrolithiasis.

Materials & Methods: A retrospective chart review of patients treated for urolithiasis between August 2014 and August 2017 was performed. Patient demographics, medical history, stone characteristics, whether patients collected a 24-hour urine, 24-hour urine parameters, and whether patients formed recurrent stones from the time of initial 24-hour urine collection were included in our chart review. All patients included in the study required post-operative imaging to distinguish residual stone burden vs. a recurrent kidney stone.

Results: After a retrospective review, 321 patients were included in the study. We identified 71 (22%) patients with a recurrent kidney stone from time of initial 24-hour urine collection. On Bivariate analysis using Fisher's exact test, variables associated with recurrent nephrolithiasis included personal history of kidney stones (29% vs. 15%; p = 0.005) and treatment of a staghorn kidney stone (35% vs. 20%; p = 0.034). On Bivariate analysis using a two-sample t-test, patients who had recurrent kidney stones had a higher supersaturation of calcium oxalate on initial 24-hour urine. On multivariate logistic regression, personal history, family history, and male gender were all found to be associated with kidney stone recurrence. There was no association between 24-hour urine collection and recurrent nephrolithiasis on bivariate analysis or multivariate analysis.

Conclusions: Patients who submitted a 24-hour urine collection had a decreased frequency of recurrent nephrolithiasis compared to patients who did not submit a 24-hour urine collection. Although this finding was not statistically significant, comprehensive metabolic evaluation should still be encouraged in high-risk stone formers, such as those with a personal history and family history of nephrolithiasis.

MP3-01

Withdrawn

MP3-02

Management of Local Recurrences of Clinically Localized Renal Cell Carcinoma: An Institutional Experience

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Introduction: Local recurrence (LR) of clinically localized (cT1 or cT2) renal cell carcinoma (RCC) without concurrent systemic metastasis occurs rarely after surgical treatment in 1-5% of patients. It is unclear how best to manage patients when LR/RR is diagnosed. The purpose of our study was to evaluate outcomes for patients with RCC with LR and/or RR.

Materials & Methods: We retrospectively reviewed patients surgically treated for clinically localized RCC with subsequent LR and/or RR without concurrent metastasis from our institutional RCC database (2004-2018). Patient outcomes were analyzed based on recurrence management type.

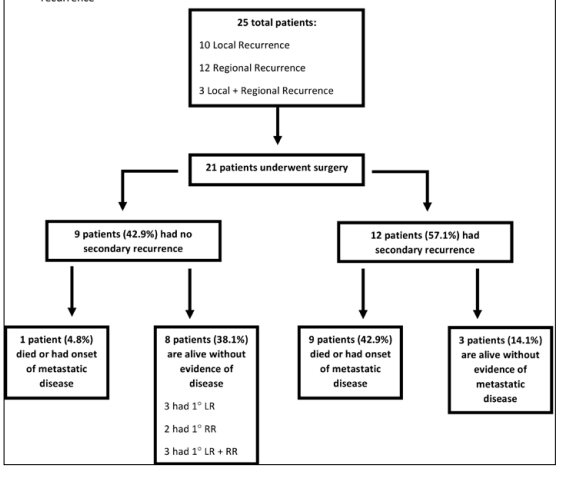
Results: Out of 2933 total patients, 1945 had clinically localized RCC, of whom 70 had confirmed recurrences in general, with 25 patients identified as having LR and/or RR without concurrent metastasis (LR: n = 10, RR: n = 12, LR+RR: n = 3). Table 1 depicts demographics, tumor pathology, and management of recurrence. Median time to recurrence was 24 months (IQR: 16-35). For the 21 patients treated surgically, 13 (52%) recurred over a median follow-up time of 26 months (IQR: 18-45) from the first recurrence's management date. The 1-year and 2-year secondary recurrence-free survival are 59% and 45% respectively. Figure 1 demonstrates outcomes for the 21 patients managed surgically (radical (n = 3 (14.3%)), nephron sparing (n =4 (19.1%)), other (n = 14(66.7%)), Figure 1 demonstrates outcomes.

Conclusions: Our results suggest surgery is appropriate in managing LR for clinically localized RCC as ~40% of patients who had surgery for their LRs were still alive and effectively had a "local cure" without any secondary recurrence. This work provides a framework onto which further research regarding surgery and LR in clinically localized RCC can be performed.

Table 1: Demographics, RCC grade, pathologic stage, histology, and management of recurrence (N=25)

	Number of patients (n)
Gender	
Male	18 (72%)
Female	7 (28%)
Race	
Black	4 (16%)
White	21 (84%)
Age at Initial Surgery	
35-44 years	6 (24%)
45-54 years	4 (16%)
55-64 years	7 (28%)
65-74 years	8 (32%)
RCC Grade	
Grade 1	1 (4%)
Grade 2	7 (28%)
Grade 3	11 (44%)
Grade 4	6 (24%)
RCC Pathologic T Stage	
T1 or T2	13 (52%)
T3	12 (48%)
RCC Histologic Subtype	
Clear Cell	18 (72%)
Chromophobe	1 (4%)
Mixed Papillary	1 (4%)
Papillary	3 (12%)
Translocation	1 (4%)
Unclassified	1 (4%)
Management of Recurrence	
Surgery	21 (84%)
Chemotherapy	2 (8%)
Radiotherapy	1 (4%)
Active Surveillance	1 (4%)

Figure 1: Outcomes of patients treated surgically for their initial local and/or regional RCC recurrence



MP3-03

An Evaluation of Monthly Maintenance Therapy Among Patients Receiving Intravesical Combination Gemcitabine/Docetaxel for Non-Muscle Invasive Bladder Cancer

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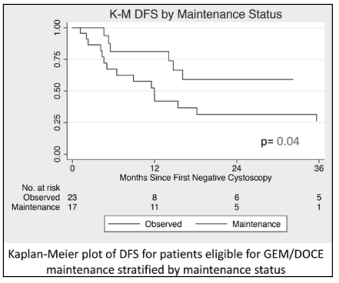
Introduction: Bacillus Calmette-Guérin (BCG) remains the standard of care for patients diagnosed with high grade non-muscle invasive bladder cancer (NMIBC), but patients may be intolerant, fail, or BCG may not be available. In cases of BCG failure, radical cystectomy is recommended. However, some patients are poor surgical candidates or prefer bladder preservation with alternative salvage intravesical therapies. We sought to report our experience with sequential maintenance intravesical gemcitabine/docetaxel (GEM/DOCE) for patients with NMIBC.

Materials & Methods: Fifty-nine patients who received full GEM/DOCE for NMIBC between 2013-2018 were identified and characterized. Patients were treated with 6 weekly instillations of GEM/DOCE and subsequent monthly maintenance installations for those with complete response at 1st surveillance. Student's t-test and $\chi 2$ test were used to compare continuous and categorical variables. Kaplan-Meier (KM) curves were created to assess disease-free survival (DFS).

Results: Across all patients, median follow-up was 24 months. DFS was 49% at 1-year and 29% at 2-years. The number of prior intravesical therapies did not affect response to GEM/DOCE (p = 0.39). There were 41 (69.5%) patients eligible for maintenance therapy. Among these patients, 24 were managed with observation and 17 with monthly maintenance. Median follow-up for observed and maintenance patients was 36 and 26 months respectfully. DFS at 1-year was 42% for observed patients and 81% for patients receiving maintenance (p = 0.04). DFS at 2-years was 32% for observed patients and 59% for patients receiving maintenance therapy (p = 0.45). Pathologic stage at recurrence was similar between observed and maintenance patients (p = 0.83). KM analyses showed greater DFS for patients receiving maintenance therapy compared to observed patients (p = 0.04).

Conclusions: Patients who demonstrate initial complete response to GEM/DOCE may benefit from maintenance GEM/DOCE.



Kaplan-Meier plot of DFS for patients eligible for GEM/DOCE maintenance stratified by maintenance status

MP3-04

Delays from Diagnosis to Radical Cystectomy are Associated with Worse Survival in Muscle-invasive Bladder Cancer

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Introduction: A delay longer than 3 months from diagnosis of muscle-invasive bladder cancer (MIBC) to radical cystectomy (RC) has been associated with decreased survival. Utilizing a large population based database, we evaluated outcomes in patients receiving timely (< 3 months, TC) vs. delayed (> 3 months, DC) cystectomy and also sought to identify factors associated with delays in RC.

Materials & Methods: 12915 patients diagnosed with Stage II-IV urothelial carcinoma of the bladder who underwent RC from 2004 to 2013 were identified from National Cancer Database. Patients were propensity-matched based on demographic and tumor factors, as well as presence or absence of neoadjuvant chemotherapy (NAC) treatment, and divided into cohorts of TC (n = 2986) and DC (n = 2986). Multivariable models and Cox regression model determined factors associated with delays in RC and their impact in overall survival.

Results: Distance to medical provider and insurance status were significantly associated with DC regardless of the use of NAC (p < 0.001). After matching for NAC, demographic factors and tumor stage, DC (OR 1.3; 95% CI 1.2-1.4) and Medicare insurance (OR 1.5; 95% CI 1.2-1.8) were significantly associated with increased mortality.

Conclusions: Regardless of the use of NAC, delays from diagnosis to RC > 3 months were associated with worse overall survival in MIBC. Our data suggests that early referral and coordination of care are essential to provide timely surgery in patients with MIBC. While population-based data should not replace or dictate changes in clinical management, further studies examining barriers to timely treatment as well as optimal timing of treatment in the setting of NAC are needed.

MP3-05

Perioperative Outcomes of Bladder Neck Sparing Robot-assisted Simple Prostatectomy

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Introduction: To present a stepwise description and outcomes of bladder neck sparing robot-assisted simple prostatectomy (RASP).

Materials & Methods: Between March 2015 and December 2018, a total of 30 consecutive non-randomized patients with BPH underwent bladder neck sparing RASP. This technique includes the following: preserving the pubo-prostatic ligament as well as dorsal venous complex, bladder neck sparing, and circumferential vesicourethral anastomosis.

Results: The median age was 66.5 (59.3-72.3) and median body mass index was 27.6 (24.5-72.3) kg/m^2. The median preoperative International Prostate Symptom Score (IPSS) was 23 (17.5-27) and median prostate size was 97 (74-148.75) ml. The mean (SD) operative time was 107.5 (22.2) minutes, and the mean (SD) estimated blood loss was 132.4 (35.4) ml. All cases were completed robotically, no intra-operative complications were encountered, continuous bladder irrigation was not needed in any patient, and all the patients were discharged with 24 hours of the procedure. All the patients were continent (0 pads per day), and able to void after catheter removal except one patient with underlying neurogenic bladder who resumed clean intermittent catheterization. No patient required additional surgical nor medical treatments were required in the follow up period. No bladder neck contractures or urethral strictures developed. The median follow-up of the cohort was 16.5 (9.5-24.8) months.

Conclusions: We demonstrate a simplified approach to bladder neck sparring RASP that is reproducible with a short learning curve, favorable perioperative outcomes, and intermediate functional outcomes. This technique obviates the need for continuous bladder irrigation as well as intraperitoneal drain.

MP3-06

Contemporary National Trends and Variations of Pelvic Lymph Node Dissection in Patients Undergoing Robot-assisted Radical Prostatectomy

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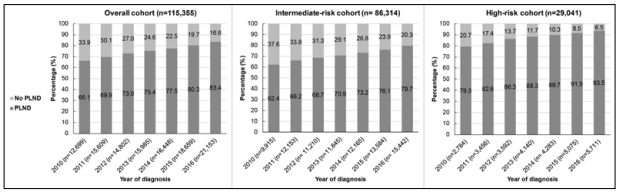
Introduction: Previous studies showed suboptimal adherence to clinical practice guidelines for pelvic lymph node dissection (PLND) at the time of radical prostatectomy (RP). Robot-assisted RP (RARP) has become the predominant surgical management for localized prostate cancer in the US but contemporary national data on PLND adherence rate during RARP is still lacking.

Materials & Methods: RARPs for clinically localized (cT1-2N0M0) intermediate-risk and high-risk prostate cancer diagnosed between 2010 and 2016 in National Cancer Database were identified. Outcome of interest was PLND rate and multivariable logistic regressions were used to identify whether patient demographics and facility characteristics were associated with the outcome.

Results: We included 115,355 patients in the final cohort (intermediate-risk = 86,314, high-risk = 29,041). From 2010 to 2016, there was an increasing trend of PLND rate in the overall, intermediate-risk, and high-risk cohorts (Figure). In 2016, PLND was performed in 79.7% of the intermediate-risk and 93.5% of the high-risk patients. Multivariable logistic regressions showed Hispanic race/ethnicity (vs. white) (odds ratio [OR] = 0.90, p = 0.010), highest socioeconomic status (vs. lowest) (OR = 1.17, p < 0.001), rural area (vs. metro area) (OR = 0.61, p < 0.001), and academic facility (vs. community) (OR = 1.79, p < 0.001) were some of the factors associated with higher or lower PLND rate. Variations of PLND rate among reporting facility's locations were also identified. Subgroup (intermediate-risk and high-risk) analyses showed findings comparable with primary analyses in the overall cohort.

Conclusions: Contemporary national data showed significantly increased PLND rate in patients who underwent RARP for intermediate-risk and high-risk prostate cancer in recent years. However, there were still some variations in PLND rate among different patient populations and facilities. Continued efforts need to be made to further increase the PLND rate and narrow or eliminate disparities we identified.



MP3-07

Impact of Site-Specific Metastatic Recurrence on Prognosis in Upper Tract Urothelial Carcinoma

J. Cheaib[1], R. Ghandour[2], L. Claus[1], M. Kates[1], N. Hahn[1], J. Hoffman-Censits[1], M. Johnson[1], T. Bivalacqua[1], P. Pierorazio[1]
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Introduction: Metastatic recurrences (MR) have been estimated to occur in 23.3% of upper tract urothelial carcinoma (UTUC) patients treated with radical nephroureterectomy (RNU). While MR suggest poor prognosis, the impact of site of MR on prognosis is not well explored in the literature.

Materials & Methods: We retrospectively analyzed 248 UTUC patients who underwent RNU at our institution from 2003 to 2018 without receiving any adjuvant or neoadjuvant chemotherapy. Data on MR, excluding those in the bladder or contralateral upper tract, were obtained. Competing-risks survival analysis evaluated cumulative incidence (CI) of MR in our cohort starting from surgery. In patients who developed recurrence, the Kaplan-Meier method and log-rank test were used to compare recurrence site-specific survival probabilities following recurrence. Cox regression was used to assess site-specific prognoses.

Results: Overall, 50 (20.2%) patients developed a MR over a median follow-up of 27.5 months (interquartile range (IQR) 7.5-60.5 months). The 1-year and 2-year CI of MR were 11.2% (7.5-15.7%) and 18.8% (13.8-24.3%), respectively. 40 (80%) of the 50 patients with MR died of UTUC over a median follow-up of 10 months (IQR 5-19 months). MR in liver, bone, and multiple sites were significantly associated with worse prognosis compared to other sites (log-rank $p < 0.001$) (Figure 1, Figure 2).

Conclusions: Hepatic and osseous recurrences of UTUC have relatively quicker onset and less favorable prognosis, while pulmonary and lymphatic recurrences have relatively slower onset and insidious prognosis. Our findings may benefit efforts to develop recurrence site-specific treatment plans or to further our understanding of the genetic associations of recurrence in UTUC.

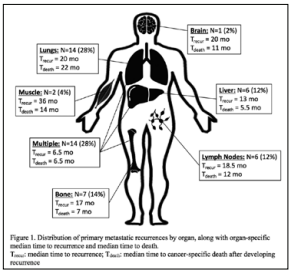

Figure 1. Distribution of primary metastatic recurrences by organ, along with organ-specific median time to recurrence and median time to death.
T_{recur}: median time to recurrence; T_{death}: median time to cancer-specific death after developing recurrence

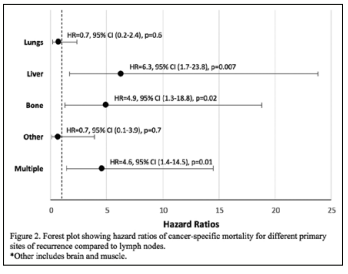

Figure 2. Forest plot showing hazard ratios of cancer-specific mortality for different primary sites of recurrence compared to lymph nodes.
*Other includes brain and muscle.

MP3-08

Bladder Recurrence in Patients with Upper Tract Urothelial Carcinoma

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Introduction: Patients with upper tract urothelial carcinoma (UTUC) undergoing radical nephroureterectomy (RNU) are at risk of disease recurrence in the bladder. Use of neoadjuvant chemotherapy (NAC) in conjunction with RNU has recently been advocated to treat high-grade (HG) UTUC. The effects of disease grade and NAC utilization on rates of bladder recurrence in UTUC have not been widely studied.

Materials & Methods: We performed a retrospective analysis of 202 UTUC patients who underwent RNU at our institution from 2003 to 2018, received no adjuvant intravesical treatment following RNU, and had documented bladder follow-up. Bladder recurrence-free survival (BRFS) estimates were obtained with the Kaplan-Meier method and compared using log-rank test. Univariable and multivariable Cox regression was performed to predict risk of bladder recurrence in HG patients by NAC utilization.

Results: Overall, there were 89 patients (44%) with urothelial disease recurrence in the bladder over a median follow-up of 12 months (interquartile range, 6-30 months). There was no significant difference in BRFS between HG and low-grade (LG) UTUC patients ($p = 0.5$). HG patients had more muscle-invasive bladder recurrences than LG patients (39% vs. 0%, $p = 0.001$). Among patients with HG disease (N = 155), 69 (45%) developed bladder recurrence. NAC was associated with significantly longer BRFS in these patients; median BRFS was 23 months in the RNU only cohort (N = 129) but was not reached yet at 39 months in the NAC cohort (N = 26) ($p = 0.02$). Patients who received NAC were significantly less likely to develop bladder recurrence compared to those who only underwent RNU (HR = 0.33, 95% CI: 0.1-0.8, $p = 0.03$). Significance persisted after adjusting for stage, lymphovascular invasion, adjuvant chemotherapy, and prior diagnostic ureteroscopy.

Conclusions: A significant proportion of patients with UTUC will recur in the bladder. Recurrence rates are independent of grade. Patients receiving NAC may have lower rates of bladder recurrence than those without perioperative chemotherapy.

MP3-09

Stage-Specific Conditional Survival in Renal Cell Carcinoma after Nephrectomy

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Introduction: Conditional survival estimates serve as better measures of survival probability compared to standard estimates as they incorporate patient survivorship. Stage-specific conditional survival has not been widely investigated in the context of renal cell carcinoma after nephrectomy.

Materials & Methods: We analyzed retrospective data on a population-based cohort of 87,225 surgically-treated renal cell carcinoma patients extracted from the Surveillance, Epidemiology, and End Results database (2004-2015) and on a similar validation cohort of 1,642 patients from our institution (1995-2015). 5-year cancer-specific conditional survival estimates stratified by stage were obtained using the Kaplan-Meier method. Multivariable Cox regression analyses were performed to evaluate the possible variation in risk of cancer-specific mortality by stage at nephrectomy and with increasing postoperative survivorship.

Results: 5-year cancer-specific survival rates at nephrectomy for stage I, II, III, and IV patients in the population-based cohort were 97.4%, 89.9%, 77.9%, and 26.7%, respectively. Improvement in 5-year conditional survival was mainly observed in surviving patients with advanced-stage disease; given 1, 2, 3, 4, and 5 years of survivorship after nephrectomy, the subsequent 5-year cancer-specific survival rates were, respectively, 79.3% (+1.8), 81.3% (+2.5), 83.3% (+2.5), 84.3% (+1.2), and 85.1% (+1.0) for stage III, and 34.6% (+29.6), 42.5% (+22.8), 49.0% (+15.3), 55.7% (+13.7), and 58.6% (+5.2) for stage IV. A similar trend was established in the validation cohort. Findings were confirmed upon multivariable analyses.

Conclusions: Conditional survival after nephrectomy for renal cell carcinoma varies dramatically by stage of disease. Gains in conditional survival over time occur primarily among patients with advanced-stage disease. Stage-specific conditional survival estimates can help urologists better plan postoperative surveillance for renal cell carcinoma patients.

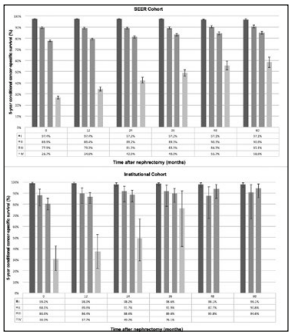

Table 1. Proportional hazard ratios in multivariable* Cox regression analyses for prediction of conditional cancer-specific mortality over time: Surveillance, Epidemiology, and End Results (SEER) cohort.

Pathologic TNM stage	Hazard Ratio (95% CI), p-value: Time elapsed since nephrectomy					
	Baseline	1 year	2 years	3 years	4 years	5 years
I	Ref	Ref	Ref	Ref	Ref	Ref
II	1.7 (1.5-1.9) p<0.001	1.8 (1.6-2.0) p<0.001	1.7 (1.5-2.0) p<0.001	1.6 (1.4-1.9) p<0.001	1.5 (1.2-1.8) p<0.001	1.5 (1.2-1.8) p=0.001
III	4.0 (3.7-4.3) p<0.001	3.8 (3.5-4.2) p<0.001	3.4 (3.1-3.7) p<0.001	2.9 (2.6-3.3) p<0.001	2.7 (2.4-3.1) p<0.001	2.6 (2.2-3.1) p<0.001
IV	16.8 (15.6-18.2) p<0.001	14.2 (12.9-15.6) p<0.001	11.8 (10.6-13.2) p<0.001	9.8 (8.6-11.3) p<0.001	8.2 (6.9-9.7) p<0.001	7.5 (6.1-9.2) p<0.001

CI: confidence interval, Ref: reference
*Adjustment was made for tumor (grade, size, and histologic subtype) and patient (age, sex, and race) characteristics.

MP3-10

Do Mixed Nonseminomatous Germ Cell Tumors Behave the Same with or without a Seminomatous Component?

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[1]*The James Buchanan Brady Urological Institute, Johns Hopkins Medical Institutions, Baltimore, MD, USA;* [2]*University of Texas - Southwestern, Dallas, TX, USA;* [3]*Parkland Health and Hospital System, Dallas, TX, USA;* [4]*University of Chicago Medicine, Chicago, IL, USA*

Introduction: Nonseminomatous germ cell tumors (NSGCT) can be pure or mixed histology; when mixed, a seminomatous component (SC) may be present. While seminomas are less aggressive and have a better prognosis than NSGCT, mixed NSGCT are classified as such regardless of the presence of SC. We examine the effect of presence and extent of SC on clinicopathologic outcomes in mixed NSGCT.

Materials & Methods: We created a multi-institutional database of patients who received radical orchiectomy for testicular cancer between 2010-2018 and had mixed NSGCT. Stratification was performed according to presence of any SC in the mixed pathology, and clinicopathological variables were compared between the groups. For patients with a SC, a sub-stratification was performed according to the extent of SC (≤ 10% versus > 10%). We defined non-localized disease as any evidence of extratesticular disease according to N, M, and S stages.

Results: Overall, 134 patients were identified with mixed NSGCT, stratified into 67 without SC and 67 with SC. Of note, age at presentation was significantly lower in the no SC group (27.5 vs. 31.6 years, $p = 0.01$). Using a multivariable model that included SC histology in mixed NSGCT, LVI and pStage, SC was associated with less non-organ confined disease (OR = 0.41, 95% CI: 0.18-0.92, $p = 0.03$) while pStage > pT1 was associated with more non-organ confined disease (OR = 5.19, 95% CI: 1.17-23.0, $p = 0.03$). Upon sub-stratification of the SC group, 34 patients had 10% or less SC while 33 had more than 10% SC. Clinicopathological variables were comparable between the two groups. No significant association was observed between SC extent and non-organ confined disease on multivariate analysis.

Conclusions: In this small cohort with mixed NSGCT, patients without SC appear to present earlier, and have a higher chance of non-localized disease. While this is a small cohort, examination of a larger sample size can answer this question with possible implications on management and treatment.

MP3-11

Factors Predicting Receipt of Partial Nephrectomy or Minimally Invasive Surgery for patients with Clinical T1a and T1b Renal Masses

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Introduction: The AUA guideline on the management of renal cell carcinoma (RCC) recommends prioritizing partial nephrectomy (PN) for the treatment of clinical T1a (cT1a) tumors, using PN for clinical T1b (cT1b) tumors when feasible, and performing minimally invasive surgery (MIS) when possible. The aim of our study was to examine factors associated with receipt of PN and MIS using the National Cancer Database (NCDB).

Materials & Methods: We queried the NCDB from 2010-2014 for patients treated surgically for cT1a-bN0M0 RCC. Patient socio-demographics, clinical characteristics, and treatment parameters were examined in cT1a and cT1b patients. Logistic regression was used to identify factors associated with receiving MIS or PN.

Results: Our cohort included 69,694 patients (44,043 cT1a; 25,651 cT1b). For cT1a tumors, 70% of patients received PN and 65% underwent MIS. For cT1b tumors, 32% of patients received PN and 62% underwent MIS. cT1a and cT1b patients with lower household income (< $62,000), without private insurance, and those treated outside academic centers were less likely to receive MIS or PN. African Americans (AA) were less likely to undergo MIS. AA with cT1a disease were less likely to receive a PN (OR: 0.77, 95% CI 0.72-0.83). cT1a patients who traveled > 31 miles were more likely to undergo MIS. For both cT1a/b, the farther a patient traveled to a treatment center the more likely a PN was performed.

Conclusions: There is an opportunity for increased utilization of PN in cT1b patients and MIS in both cT1a and cT1b patients. cT1a and cT1b patients with lower household income, without private insurance, and those treated outside academic centers were less likely to receive MIS or PN. Patients who traveled farther for treatment were more likely to receive PN. Based on these findings, additional research is needed into the impact of regionalization of RCC surgery on the utilization of PN and MIS.

MP3-12

Intravesical Gemcitabine and Docetaxel in Heavily Pre-Treated Patients with Non-Muscle Invasive Bladder Cancer (NMIBC)

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Introduction: Therapeutic options are limited for BCG resistant/refractory NMIBC patients who are unfit or refuse radical cystectomy. Combination chemotherapy is not regularly employed due to additive toxicity. The non-desiccant properties of Gemcitabine allow for combined therapy not previously employed. Docetaxel as a single agent demonstrates significant activity with acceptable toxicity. The objective was to evaluate combination intravesical chemotherapy for its initial response and therapeutic durability in patients heavily pre-treated with BCG.

Materials & Methods: Patients who had failed or were intolerant to BCG were offered combination intravesical therapy per the following regimen of Gemcitabine 1000mg in 100 ml/NSS instilled for 2 hours followed by bladder emptying and reinstallation of Docetaxel 37.5mg in 50 ml/NSS, weekly for 6 weeks. At 12 weeks, patients underwent cystoscopy with bladder mapping/cytology. Cystoscopy/cytology was performed every 3 months for one year, 3 or 6 months thereafter. Further biopsies/resection performed for positive cytology, distinct recurrent tumor or suspicious areas on cystoscopy. Failure defined as positive cytology, tumor recurrence or distant failure.

Results: Between 12/2015 and 4/2019, 21 patients were recruited. Twenty eligible for evaluation, 17 men and 4 women with a mean age of 77 (range 68-94). Seventeen of 20 demonstrated an initial negative evaluation consisting of negative cystoscopy, cold cup biopsy mapping and cytology. Fifteen of 20 patients recurred with a mean disease-free interval of 12.2 months (3-34 months). Five patients are CR for a mean of 15.4 months (8-33 months). Of the 15 failures, 8/15 local, 4/15 cytology only, 2/15 prostatic urethra, and 1/15 pelvic lymph node progression. One death in 15 months. The regimen was well-tolerated.

Conclusions: Sequential, combination Gemcitabine/Docetaxel intravesical chemotherapy is an active regimen in BCG pretreated patients unfit or unwilling to undergo cystectomy. A near universal initial response with complete response maintained for over one year in responders supports continued study of this intravesical regimen.

MP3-13

Enzalutamide in Men With Chemotherapy-Naive Metastatic Castration-Resistant Prostate Cancer (mCRPC): Long-term Overall Survival (OS) and Safety Analyses of the Phase 3 PREVAIL Study

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Introduction: PREVAIL was a phase 3 trial of enzalutamide vs. placebo in asymptomatic or mildly symptomatic chemotherapy-naive men with mCRPC. We report OS and safety after > 5 years of follow-up.

Materials & Methods: Men with chemotherapy-naive mCRPC were randomized 1:1 to enzalutamide 160 mg/day or placebo. OS and radiographic progression-free survival were coprimary endpoints. PREVAIL was halted after a preplanned OS interim analysis revealed enzalutamide superiority. Eligible placebo patients could crossover to enzalutamide (n = 234) in an open-label extension and were included in the placebo group for the final OS analysis.

Results: 1717 men were randomized between September 2010 and September 2012. At the 5-year OS analysis (data cutoff September 30, 2017) there were 1382 deaths (enzalutamide, 689; placebo, 693). Survival probabilities at 2, 3, and 5 years favored enzalutamide (Table). Enzalutamide reduced the risk of death by 17% (P = .0008). Median OS was 35.5 months with enzalutamide vs. 31.4 months with placebo (median follow-up = 69 months). The treatment effect was consistent across subgroups. 70% of enzalutamide-treated patients and 80% of placebo-treated patients received ≥ 1 postbaseline antineoplastic therapy (most common were docetaxel and abiraterone acetate). Treatment-emergent adverse events (TEAEs) were the primary reason for discontinuation in 9.1% of patients treated with enzalutamide and 6.0% treated with placebo; 6.9% and 3.8%, respectively, had a TEAE that led to death. Fatigue and back pain were the most common AEs in the enzalutamide arm.

Conclusions: After the > 5-year follow-up, enzalutamide continued to demonstrate OS benefit vs. placebo in men with asymptomatic or mildly symptomatic mCRPC, despite crossover and multiple subsequent therapies. The safety profile was consistent with that reported previously.

	Enzalutamide 160 mg (n = 872)	Placebo (n = 845)
2-year survival rate (95% CI), %	71 (68-74)	62 (58-65)
3-year survival rate (95% CI), %	49 (46-53)	44 (40-47)
5-year survival rate (95% CI), %	26 (23-29)	21 (18-24)

MP3-14

Minimally Invasive vs. Open Inguinal Lymph Node Dissection (ILND) for Penile Cancer: A Tumor Stage-Specific Outcome Analysis from the National Cancer Database (NCDB)

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Introduction: Inguinal lymph node (LN) involvement in penile cancer is an important predictor of survival. Current NCCN guidelines recommend ILND for any ≥ pT1b tumors. Our objective was to measure survival outcomes for patients who received minimally invasive (robotic (R) or laparoscopic (L)) or open (O) ILND following clinical tumor staging (cT1-4).

Materials & Methods: NCDB was queried (2010-2014) to identify cT1-4 penile cancer patients who received ILND. The following outcomes were analyzed: positive clinical LN (+cLN) vs. positive pathologic LN (+pLN), LN yield, and LN density across surgery types (R/L/O ILND). 5-year overall survival (OS) was compared using Kaplan-Meier (K-M) curves (logrank method) for patients who received ILND either ≤ or > 30-days following diagnosis across tumor stages (cT1-4).

Results: LN data were stratified by tumor stage and surgical approach for 1,315 identified patients: 0.30%(4) received RILND (cT1:2, cT2:1, cT4:1); 1.83%(24) received LILND (cT1:11, cT2:12, cT3:1); and 97.87%(1,287) received OILND (cT1:559, cT2:613, cT3:18, cT4:94). Among patients with +cLN (70/1280 examined cLNs), the PPV for +pLN (60/554 examined pLNs) was 85.7%. Overall LN yield (median): 15.0 (IQR:16.0). LN yield by stage (median): cT1:14.0, cT2:14.5, cT3:13.0, cT4:18.0 (p = 0.08; Krustal-Wallis test) and approach (mean): RLND:28.0, LLND:10.8, OLND:16.8. Overall LN density (median): 0.18 (IQR:0.31). LN density by stage (median): cT1:0.087, cT2:0.143, cT3:0.200, cT4:0.222 (p = 0.32; Krustal-Wallis test), and approach (mean): RLND:0.35, LLND:0.14, OLND:0.27. K-M curves assessing the impact of time from diagnosis to surgery on 5-year OS across tumor stages (cT1-T4) showed 45.6% OS (95% CI: 36.9%-53.8%) for patients receiving ILND ≤ 30 days from diagnosis (p < 0.01; logrank method).

Conclusions: Minimally invasive ILNDs were rarely performed during the study period. Clinical staging had a PPV of 85.7%. More data is needed to examine the differences in LN yield and LN density between open and minimally invasive ILNDs (laparoscopic and robotic approaches). Receiving ILND within 30-days of diagnosis significantly improved 5-year OS.

MP4-01

Phosphodiesterase Type-5 Inhibitor Therapy – The New Magic Bullet CP/CPPS Therapy

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Introduction: Chronic prostatitis/chronic pelvic pain syndrome type III (CP/CPPS) is a chronic pain disorder associated with pelvic pain, sexual dysfunction and irritative voiding symptoms. Sustained CP/CPPS symptom relief has proven difficult with established alpha blockers, antibiotics, and NSAIDS. Phosphodiesterase type-5 inhibitors (PDE5i) have the potential to alleviate bladder urgency, to relax the pelvic floor, and to correct underlying erectile dysfunction, targeting multiple facets of CP/CPPS; however, few studies have investigated the application of this drug family in the treatment of CP/CPPS. The purpose of this study was to assess the effect of long-term PDE5 inhibitor treatment on symptoms and quality of life among patients with diagnosed CP/CPPS.

Materials & Methods: A retrospective review was performed on all patients diagnosed with CP/CPPS presenting to a single institution from 2009 to 2018 older than 18 years that had been prescribed off-label daily PDE5 inhibitor treatment for symptoms. From chart review, the National Institute of Health chronic prostatitis symptom index (CPSI) questionnaire total CPSI, pain, urinary symptom and quality of life scores before PDE5 inhibitor treatment initiation and after at least four weeks of continued treatment were recorded and utilized to assess impact on CP/CPPS symptoms.

Results: A total of 25 patients (mean age 44.4 ± 12.9 years) met inclusion criteria. The mean duration of PDE5 inhibitor treatment was 1.3 ± 1.6 years. Continued use of daily PDE5 inhibitors was associated with significant decreases in total CPSI, pain, urinary symptom and quality of life scores (total CPSI: -12.8, SD 9.5; pain: -6.1, SD 4.1; urinary symptoms: -2.4, SD 2.1; quality of life: -4.5, SD 3.9; $p < 0.001$).

Conclusions: These data suggest that PDE5 inhibitor treatment is associated with durable decreases in CP/CPPS symptoms. To our knowledge, this is the first published report assessing the effects of extended PDE5 inhibitor treatment for CP/CPPS.

MP4-02

Opioid Prescription Use in Patients with Interstitial Cystitis

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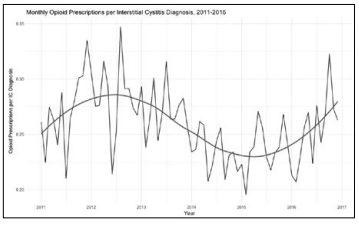
Introduction: The opioid epidemic has been the recent focus of significant national initiatives to reduce misuse of opioids and related addiction. Interstitial cystitis (IC) is a chronic pain state at risk for narcotics use. We sought to perform a population-based analysis of opioid use in IC patients.

Materials & Methods: Data were accessed from the Virginia All Payers Claims Database (VAPCD), which includes claims from public and private insurers. We identified female patients with diagnosis of IC from 2011-2016 using International Classification of Disease (ICD) codes 595.1 (ICD9) or N30.10 (ICD10). A patient identifier was used to link diagnosis claims with outpatient prescription claims for opioids using generic product identifiers. We then analyzed opioid prescriptions within 30 days of IC diagnoses.

Results: A total of 6,884 patients with IC were identified and were associated with 31,518 IC claims, with a median of 2 claims per patient at a mean age of 47.8. 26% of IC patients had ≥ 1 opioid prescription, with 1.19 per IC patient. 185 (9.5%) had ≥ 10 opioid prescriptions, with a maximum of 129. The most common prescriptions were hydrocodone (n = 2641, 32.3%), oxycodone (n = 2545, 31.2%), and tramadol (n =1195, 14.6%). Prescriptions for methadone (n = 101, 1.2%) and buprenorphine (n = 96, 1.2%) were also associated with IC. Opioid prescriptions per month declined, but the rate of narcotics per IC diagnosis remained stable.

Conclusions: A significant number of IC patients receive opioids, with a subset receiving a large number of prescriptions. While the overall number of opioid prescriptions associated with IC appears to be declining, the prescription rate per IC claim has remained stable. As part of the national initiative to reduce narcotics use, our data suggest that IC treatment strategies should be examined.



MP4-03

Outcomes of Using Tissue-sparing Mohs' Surgery for Scrotal Carcinoma and Premalignant Lesions

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Introduction: Squamous cell carcinoma (SCC) of the scrotum is a rare condition with limited evidence to guide management. Wide local excision of localized lesions has been the standard of care, but tissue-sparing techniques could limit patients' need for reconstruction with flaps or grafts. We hypothesized that the Mohs' technique would yield good oncologic control with limited need for reconstruction.

Materials & Methods: A retrospective review was conducted of all patients with biopsy-proven SCC or carcinoma in situ (CIS) of the scrotum. Demographics, procedure details, staging, need for adjuvant surgery, complications, and disease recurrence/progression were reviewed.

Results: There were 15 patients who underwent resection of 16 scrotal lesions, including 9 invasive carcinomas and 6 cases of CIS. Median age was 61.5 years (IQR 54.8-70.0), 12 were Caucasian and 3 were African American. Ten patients were smokers (2 current, 8 former); 2 patients were HPV positive. One fourth of patients with CIS on biopsy were upgraded to invasive SCC at Mohs', and one patient had CIS recurrence after remote prior treatment of an invasive SCC. Median lesion size pre-op was 5.7 cm & 2 (1.7-17.8) but a median 20.2 cm^2 (7.7-30.5) of resection was required to obtain negative margins. Eighty percent of patients were able to undergo primary closure with the remainder requiring reconstruction (3 flaps, 2 skin grafts). At a median 2.4 years (0.4-6.6) of follow-up, no patients demonstrated evidence of recurrent or progressive disease, with two patients subsequently dying of unrelated causes. One patient required incision & drainage of a scrotal abscess, with no other complications identified.

Conclusions: This is the first reported case series utilizing Mohs' for management of malignant and premalignant scrotal lesions. This technique achieved complete cure without the need for more aggressive resection, and most patients were able to be closed primarily. Mohs' surgery is a promising technique for the management of scrotal malignancies.

MP4-04

An Exploratory Review of Mohs' Surgery in Extramammary Paget's Disease of the Male Genitalia and Perineum

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Introduction: Extramammary Paget's Disease (EMPD) is an exceedingly rare malignancy characterized by extensive microscopic tumor extension, requiring wide local excision and repeat resections to achieve local control. There are no series to date examining the use of Mohs' surgery for resection of EMPD. We hypothesized that this technique would yield a high negative margin rate and durable local disease control.

Materials & Methods: A retrospective review was conducted of all patients who underwent genitourinary (GU) Mohs' resection for biopsy-proven EMPD from 2005-2018 at a single academic center. Demographics, procedure details, pathology, need for adjuvant surgeries, complications, and disease recurrence/progression were reviewed.

Results: Over a 13-year period, 11 cases of GU EMPD were treated. The scrotum was involved in 9, the penile shaft in 3, and the perineum in 2. Median preoperative lesion size was 50.6 cm^2 (IQR 12.8-86.3), median resection area required to achieve negative margins was 120.0 cm^2 (56.7-145.3). Negative margins were achieved in all but 1 case (90.9%), where EMPD was present at a deep margin requiring formal excision by a surgeon. With a median follow-up of 4.8 years (2.1-6.2), there was one local recurrence (patient salvaged with repeat Mohs'), and no cases of disease progression. Most cases (8/11) required reconstruction with either a tissue flap (n = 3), skin graft (1), or both (4). One case was identified to have an underlying malignancy (high risk prostate cancer).

Conclusions: This is the first case series reporting on EMPD management with Mohs'. This technique's real-time pathologic analysis may afford a high rate of cure for this historically challenging disease. Most patients will require formal reconstruction even after Mohs' due to large excision defects, but this technique could spare patients the need for a second oncologic operation to clear margins. With disease clearance in a single procedure, Mohs' may also shorten the delay to definitive reconstruction.

MP4-05

Analyzing the Readability of Pelvic Organ Prolapse Questionnaires
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Introduction: The National Institutes of Health and Center for Disease Control recommend the readability of self-administered patient questionnaires to be written at or below a sixth to eight grade reading level. The aim of this study is to evaluate the readability of commonly used questionnaires for pelvic organ prolapse.

Materials & Methods: Five commonly used validated questionnaires were analyzed using four readability assessment tools. Flesch-Kincaid grade level, Gunning Fog index, and the simple measure of gobbledygook (SMOG) index are readability tools designed to evaluate running narratives by number and length of sentences. These formulas were accessed via (online-utility.org). A mean grade level was calculated using these three readability tools for each questionnaire. A reading level was also calculated using Forecast formula, a readability tool specifically designed to evaluate multiple-choice questionnaires.

Results: The readability scores for the questionnaires are summarized in Table 1. Four out of five pelvic organ prolapse questionnaires assessed with narrative tools resulted in a higher mean reading level than recommended sixth to eighth grade level. PFIQ-7 resulted with the highest grade level, with a mean readability score of 11.4. Only ICIQ-VS questionnaire had an average reading grade level consistent with guidelines. With Forecast, all five questionnaires were significantly above recommendations.

Conclusions: The majority of commonly used pelvic organ prolapse questionnaires do not comply with recommended reading levels. Overall, the data suggests that these questionnaires are written at a level too advanced for a large proportion of the population to comprehend, therefore limiting their effectiveness in identifying and evaluating symptom severity of pelvic organ prolapse.

MP4-06

The Utility of Sperm Cryopreservation at the Time of Vasectomy Reversal
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Introduction: To evaluate the utility of cryopreserving sperm at the time of vasectomy reversal

Materials & Methods: From April 2016 through December 2018, 26 men underwent vasectomy reversal. Sperm cryopreservation is routinely offered at the time of vasectomy reversal at our institution. We sought to assess utilization of cryopreserved sperm by those men with early or late failure.

Results: Of 26 patients presenting for vasectomy reversal, 22 elected to cryopreserve sperm (85%); sperm were obtained for freezing from the vasal fluid (N = 3), epididymal fluid (N = 7), or via testicular biopsy (N = 12). Three patients were lost to follow-up post-operatively. Of the 23 who presented for post-procedure follow-up, 19 either had semen analyses (SAs) with motile sperm or a live birth (83% success rate). There were 2 early failures and 4 late failures; all failures had elected to cryopreserve sperm at the time of initial reversal. Two of the six individuals with vasectomy reversal failure elected to use cryopreserved sperm for IVF-ICSI, both resulting in ongoing clinical intrauterine pregnancies.

Conclusions: Of those patients who experienced vasectomy reversal failure, 1/3 elected to use cryopreserved sperm that had been procured at the time of initial reversal. Cryopreservation of sperm at the time of vasectomy reversal should be routinely offered given potential for early or late failure as a means of avoiding added expense and potential morbidity of future surgical sperm retrieval.

MP4-07

High Risk Clinical and Urodynamic Features Associated with Risk of Upper Tract Deterioration in an Adult Neurogenic and Non-Neurogenic Patient Population
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Introduction: Urodynamics (UDS) is important in guiding symptomatic management of patients with acquired neurogenic bladder (NGB), but also for assessment of risk of upper tract deterioration (UTD). "High risk" features on urodynamics based largely on congenital NGB findings may not predict UTD in acquired NGB. We sought to determine the frequency of high risk UDS features in an acquired NGB and non-NGB population and assess for a link between these features and UTD.

Materials & Methods: Adult patients undergoing UDS between September 2017 and July 2018 were included. The frequency of high risk UDS findings, defined as compliance < 30 mL/cmH_2O, max filling detrusor pressure > 40 cmH_2O, and UTD with radiographic evidence of hydronephrosis or renal scarring, were compared in neurogenic lower urinary tract dysfunction (NLUTD) and non-NLUTD patients. The association between high risk features and UTD was also closely analyzed.

Results: 153 patients, inclusive of 63 (41%) with NLUTD and 90 (59%) with non-NLUTD, comprised the study population (Table 1). The frequency of one or more high risk UDS findings was 79% and 48% in NLUTD and non-NLUTD, respectively. One or both defining features of UTD was identified in 19% of NLUTD and 16% of non-NLUTD. Among patients with UTD, 57% and 32% with NLUTD and non-NLUTD, respectively, exhibited one or more high risk UDS findings.

Conclusions: Traditional high-risk UDS findings are frequently identified in acquired NLUTD and non-NLUTD patients. However, high risk UDS findings are inconsistently associated with evidence of UTD, absent in 2 in 5 NLUTD patients and 2 in 3 with non-NLUTD. Though UDS may guide symptomatic management and diagnosis, its utility in predicting UTD remains uncertain.

MP4-08

Challenges Defining "Normal" in Healthy Volunteers Undergoing Multi-Channel Urodynamics
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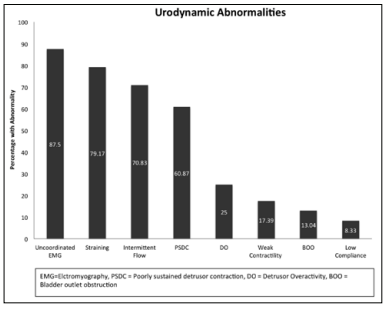
Introduction: Multi-channel urodynamics is the gold-standard in diagnosis of lower urinary tract dysfunction. The study is invasive, non-physiologic, and prone to artifacts, which results in challenges in interpretation and clinical utility, even when following strict practice guidelines. Therefore, the purpose of this investigation was to examine urodynamics in normal, healthy volunteers in order to better define normal.

Materials & Methods: Healthy volunteers were recruited to undergo standard urodyamic testing as part of a comparison group in a study evaluating novel urodynamic techniques. To be eligible, participants had to score ≤ 1 on all symptom questions of the ICIq-OAB survey and have no medical conditions or be on any medications that affect bladder function. Urodynamics was completed according to ICS standards. All tracings were evaluated twice by an expert neuro-urologist. Data were analyzed categorically for the presence or absence of: low compliance (< 30ml/cmH_2O), detrusor overactivity, bladder outlet obstruction (BOOI < 40), weak contractility (BCI < 100), straining to void, poorly sustained detrusor contraction, uncoordinated EMG activity, and intermittent flow.

Results: A total of 24 participants completed the study; 10 men/14 women. All participants had at least 1 urodynamic abnormality (Figure 1) with an average of 4.43 ± 1.28 abnormalities/participant. The most common abnormalities were uncoordinated EMG activity (87.50%), straining to void (79.17%), and intermittent flow (70.83%). There were no significant differences for sex, age, or BMI.

Conclusions: This study demonstrated that normal, healthy volunteers have high rates of abnormal urodynamic findings. All participants were completely asymptomatic, suggesting that artifacts and the non-physiologic nature of urodynamic testing present serious challenges in diagnostic interpretation and clinical utility. This data highlights the need to develop less-invasive, more physiologic techniques to more accurately evaluate bladder function.



MP4-09

Quantification of Acute Dynamic Elasticity in an Isolated Porcine Bladder Model

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Introduction: The viscoelastic properties of the bladder are adjusted through repeated filling and passive emptying, demonstrated as Strain Softening. Furthermore, strain softening is reversed though active voiding, which has been termed "Dynamic Elasticity." The aim of this study was to quantify this biomechanical property in an isolated porcine bladder model.

Materials & Methods: After the pig bladders were harvested, superior vesical arteries were cannulated and perfused. The urethra was catheterized to allow infusion and monitor intravesical pressure. Bladders underwent a repeat fill urodynamics protocol involving an initial fill and then 3 comparative fills (1-3) to 250 mL, during which the pressure data was continually recorded. These fills were followed by either a passive void through syringe aspiration or an active void through potassium induced contractions. Thus, the protocol compared averaged intravesical pressures during an initial fill (pre-strain softening), a second fill (post-strain softening), and a third fill (reversal). To quantify dynamic elasticity, the average pressure throughout each fill was calculated and the change in average pressure between fills was divided by the change in percent capacity throughout filling.

Results: Five male pig bladders demonstrated dynamic elasticity with decreased pressure from 17.6 ± 2.9 to 12.2 ± 3.2 (pre-strain softening vs. post-strain softening, $p < 0.05$). Reversal of stain softening was also identified after active voiding (18.2 ± 2.8 vs. 12.2 ± 3.2: reversal vs. post-strain softening, $p < 0.05$). (Figure 1).

Conclusions: Dynamic elasticity was identified in the porcine bladder. Use of this model may enable improved mechanistic understanding of factors that can acutely regulate bladder compliance and may ultimately identify novel targets for the treatment of voiding dysfunction.

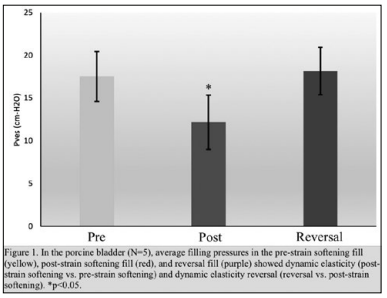

Figure 1. In the porcine bladder (N=5), average filling pressures in the pre-strain softening fill (yellow), post-strain softening fill (red), and reversal fill (purple) showed dynamic elasticity (post-strain softening vs. pre-strain softening) and dynamic elasticity reversal (reversal vs. post-strain softening). *p<0.05.

MP4-11

Publication Bias Within the General and Female Urology Literature

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Introduction: Publication bias is a well-established phenomenon in scientific literature and may influence the over-estimation of treatment effect. Accordingly, national efforts are being taken to decrease the non-publication rate of negative studies. We sought to assess the rates of positive versus negative studies within recently published urologic literature.

Materials & Methods: All clinical studies published in the Journal of Urology (JU) and Neurourology and Urodynamics (NU) in 2017 were reviewed. A study was considered positive if there was a statistically significant difference between the groups examined or if the clinical hypothesis was supported. Studies that were considered not appropriate for analysis (e.g. descriptive studies) were excluded. Number of citations per study and article subspecialty focus were collected. Studies were also categorized into treatment (e.g. surgical intervention) versus non-treatment (e.g. predictive investigation) subtypes. Chi-square and ANOVA were used for analysis.

Results: We reviewed 558 studies published in 2017, with 398 meeting inclusion criteria (JU, 228; NU, 169). Overall, 345 (86.7%) studies were positive and 53 (13.3%) were negative. There was no significant difference in the proportion of positive studies between journals (JU, 86.5%; NU 87.0%) ($p = 0.10$). Furthermore, there was no significant difference in number of times positive and negative studies were cited (3.02 ± 3.91 vs. 2.94 ± 3.61, $p = 0.89$). Finally, there was no difference in study findings based on subspecialty topic ($p = 0.91$) (Table 1). Compared to treatment studies, non-treatment studies were significantly more likely to be positive (89.7% vs. 80.2%, $p = 0.01$).

Conclusions: A vast majority of studies published within the urologic literature are positive. Further research is needed to understand the impact of this publication trend and to support efforts to promote dissemination of both positive and negative study findings.

Table 1: Overview of Study Findings in Clinical Trials

	Positive n (%)	Negative n (%)	Total n	P value
Total	345 (86.7)	53 (13.3)	398	
Journal				
JU	198 (86.5)	31 (13.5)	229	0.10
NU	147 (87.0)	22 (13.0)	169	
Subspecialty				
Endourology	14 (82.4)	3 (17.6)	17	
FVPI	174 (87.4)	25 (12.6)	199	
General	19 (90.5)	2 (9.5)	21	
Infertility	10 (83.3)	2 (16.7)	12	0.91
Oncology	90 (87.5)	14 (13.5)	104	
Pediatrics	24 (80.0)	6 (20.0)	30	
Reconstructive	10 (90.9)	1 (9.1)	11	

Journal of Urology, JU; Neurourology and Urodynamics, NU Female/Voiding dysfunction/Prolapse/Incontinence, FVPI

MP4-10

Developing an Enhanced Recovery Pathway for the Perioperative Management of Abdominal Sacrocolpopexy

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Introduction: Enhanced recovery pathways after surgery (ERAS) have been shown to reduce surgical morbidity and length of stay across various procedures. Our objective was to provide a framework for standardized perioperative management for women undergoing abdominal sacrocolpopexy (ASC) for pelvic organ prolapse.

Materials & Methods: Following the PRISMA statement, a systematic review of the literature was conducted using Pubmed, Embase, and Cochrane Library. Search terms included: Sacrocolpopexy or pelvic organ prolapse surgery and 22 ERAS elements. Eligible articles contained ERAS components and postoperative outcomes of ASC published in English since 1997.

Results: Of 8577 abstracts identified, 33 full-text papers were included for final review. (Figure 1) ERAS items with available data specific to ASC were: patient education, medical comorbidities, preoperative bowel preparation, minimally-invasive approach (MIS), prophylactic antibiotics, epidural analgesia, postoperative: urinary drainage, ileus, analgesia and early mobilization. (Table 1) No data existed on the following elements: preanesthesia medications, venous thromboembolism, skin preparation, standard anesthetic protocol, perioperative fluid management, and prevention of postoperative nausea/vomiting. Key principles appear to be appropriate preoperative counseling with a focus on patient literacy, no benefit with preoperative bowel preparation or prophylactic antibiotic use, improved outcomes with MIS and addition of spinal anesthesia. Limiting opioid use postoperatively and early mobilization appear to be beneficial but with little supporting evidence. Early urethral catheter removal benefit is unclear.

Conclusions: There exists limited data regarding ERAS principles in perioperative care of patients undergoing ASC. Additional prospective studies with implementation of these principles are needed to assess impact on postoperative care of these patients.

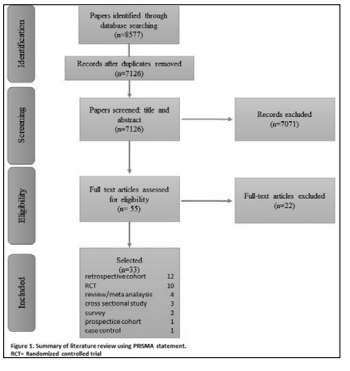

Figure 1. Summary of literature review using PRISMA statement. RCT= Randomized controlled trial

Table 1: Outcomes of ERAS Items for ASC

ERAS Item:	Findings:
Patient Education	Experts believe improves outcomes. Focus on appropriate counseling & health literacy
Preoperative medical optimization	Poor functional status, more so than age & medical comorbidities, is predictive of poor outcomes. Obesity associated with increased intraoperative complications
Preoperative bowel preparation	No benefit for surgical field quality, associated with postoperative discomfort
Minimally invasive approach	Reduces postoperative complications, LOS & hospital readmissions while maintaining anatomic outcomes
Prophylactic Antibiotics	Preoperatively: No difference with single-dose or multi-dose prophylaxis in postoperative infection/UTI Postoperatively: daily prophylaxis showed no change in UTI
Epidural analgesia	Intraoperative general + spinal improved pain/analgesia compared to general alone
Urinary drainage	Conflicting data: Same day voiding trials feasible, but early catheter removal may increase rate of incomplete bladder emptying, recatheterization, UTI
Postoperative Ileus	Reduced with use of senna and docusate compared to placebo
Postoperative analgesia	Outside of PACU, consider non-opioid pain control with NSAIDs
Early mobilization	Liberal postoperative activity shows similar level of patient satisfaction compared to conservative activity

LOS = length of stay, UTI= urinary tract infection, PACU= postanesthesia care unit, NSAIDs=nonsteroidal anti-inflammatory drugs

MP4-12

Adherence to the 1997 Female Stress Urinary Incontinence Clinical Guidelines Panel Standards for Clinical Trials

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Introduction: In 1997, the Female Stress Urinary Incontinence (SUI) Clinical Guidelines Panel published suggested research standards to be used to in SUI trials to better assess outcomes. In 2008, analysis of studies published subsequent to these guidelines demonstrated suboptimal adherence with these standards. We sought to perform an updated literature review to assess compliance with research guidelines.

Materials & Methods: We reviewed all articles published in 2017 in 3 urologic journals: Journal of Urology (JU), Neurourology and Urodynamics (NU), and Urology (UR). We identified trials of all urinary incontinence (UI) therapies and assessed for guideline compliance. They were subcategorized into 3 groups: methodology, pre-treatment and post-treatment assessment. One point was given for compliance with each recommendation. Chi square and Kruskal tests were used to assess compliance.

Results: Of 294 articles reviewed, 78 articles met inclusion criteria for analysis (JU, n = 13; NU, n = 48; UR, n = 17). There were demonstrated differences in compliance between journals in select methodological and pre-treatment standards (Table 1). There was no difference between journals in post-treatment standards compliance. JU had the highest percentage of methodology compliance at 72% (± 22.4), compared to 48% (± 23.6) and 41% (± 27.8) of NU and UR articles, respectively ($p < 0.01$). There was 58% (± 15.2), 55% (± 20.7), and 45% (± 27.9) compliance with pre-treatment standards of JU, NU, and UR respectively ($p = 0.32$). Similarly, there was 60% (± 16.0), 48% (± 18.3), and 51% (± 20.8) compliance with post-treatment standards of JU, NU, and UR respectively ($p = 0.24$).

Conclusions: Our review demonstrates that a significant percentage of UI trials fail to meet suggested standards for clinical research. While there were no differences in adherence among journals for pre- or post-treatment standards, UI studies in JU had higher compliance with methodology standards.

Table 1. Journal Compliance with Standards

Standards	JU (%) n=13	NU (%) n=48	UR (%) n=17	p value
Total Complicance	63 ± 13.5	50 ± 15.4	46 ± 19.6	**<0.01**
Methodology	72 ± 22.4	48 ± 23.6	41 ± 27.8	**<0.01**
Follow up ≥48 months	38	40	29	0.75
Account loss to follow up	85	65	29	**<0.01***
Prospective design	92	69	65	0.19
Randomized	69	29	35	**0.03****
Controlled	77	35	47	**0.02****
Pre-treatment	58 ± 15.2	55 ± 20.7	45 ± 27.9	0.32
Diary	31	48	24	0.17
Pad test	23	17	24	0.77
Symptom Questionnaire	85	63	59	0.29
QOL Questionnaire	100	79	59	**0.02*****
Urodynamics	54	71	59	0.42
Post-treatment	60 ± 16.0	48 ± 18.3	51 ± 20.8	0.24
Diary	31	40	29	0.75
Pad test	23	15	24	0.53
Symptom Questionnaire	85	63	65	0.36
QOL Questionnaire	100	79	65	0.05
Post void residual urine	46	21	35	0.15
Complications/morbidity	77	73	88	0.55

Data presented as % ± SD for overall guideline sub-category compliance and % for individual standard compliance
* JU vs. UR & NU vs. UR
**JU vs. NU
***JU vs. UR
JU, Journal of Urology; NU, Neurourology and Urodynamics; UR, Urology; QOL, Quality of Life

MP4-14

Assessing the Utility of Contrast-enhanced Ultrasound for the Evaluation of Urethral Stricture Disease: A Pilot Study

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Introduction: Urethral strictures are narrowings within the urethra that may lead to bothersome, obstructive urinary symptoms. The diagnosis is most commonly confirmed with cystoscopy or retrograde urethrography (RUG) which are invasive or expose patients to radiation. In this pilot study, we examined the utility of contrast-enhanced ultrasound (CEUS) for the evaluation of urethral stricture lengths.

Materials & Methods: Patients with a single, bulbar urethral stricture diagnosed on preoperative cystoscopy and RUG who elected to undergo surgical repair were recruited to this ongoing, IRB-approved study from October 2018 to March 2019. CEUS urethrography was performed under anesthesia prior to open surgical repair using 1 mL of Lumason (Bracco Imaging, Monroe Township, NJ) contrast diluted with 200 mL normal saline, which was injected transurethrally. CEUS imaging was performed using an Aplio i800 scanner with an i18LX5 transducer (Canon Medical Systems, Tustin, CA). Stricture lengths based on RUG, 2D grayscale ultrasound (US) and CEUS were measured by a blinded observer and correlated to excised surgical specimens.

Results: To date, six men (mean age 65.3 ± 18.8 years and BMI 32.2 ± 6.0 kg/m^2) have been enrolled. Mean urethral stricture length when measured on RUG, 2D US, CEUS and pathology analysis was 0.94 ± 0.44 cm, 1.14 ± 0.77 cm, 1.30 ± 0.66 cm and 1.49 ± 0.74 cm, respectively. When compared to RUG ($R = 0.53$, $p = 0.47$) or 2D US ($R = 0.31$, $p = 0.61$), CEUS ($R = 0.86$ $p = 0.065$) showed the best correlation of measured stricture length to the excised specimen, although this was not statistically significant.

Conclusions: Our pilot study demonstrates the ability of CEUS to accurately characterize urethral stricture lengths when compared to current standards. Further studies assessing the utility of CEUS and optimizing the protocol should be performed in larger cohorts.

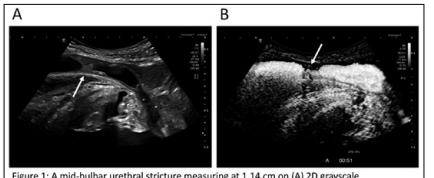

Figure 1: A mid-bulbar urethral stricture measuring at 1.14 cm on (A) 2D grayscale ultrasonography and 1.23 cm on (B) contrast-enhanced ultrasound. Final excised pathology specimen measured the stricture at 1.30 cm.

MP4-13

Comparing Provider-Reported Sexual Health Counseling of Male and Female Radical Cystectomy Patients

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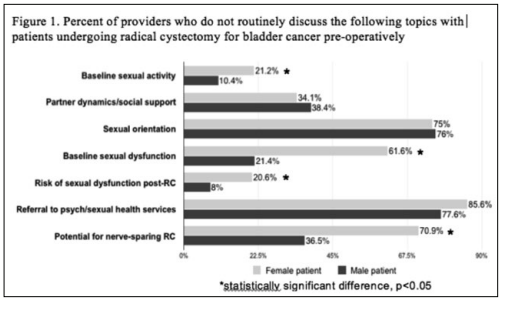
Introduction: Radical cystectomy (RC) for bladder cancer can significantly impact sexual health and function. We sought to characterize provider practice regarding sexual health counseling of RC patients and whether practice differs between male and female patients.

Materials & Methods: We conducted a survey of members of the Society of Urologic Oncology to assess topics included in sexual health counseling and identify barriers to counseling female patients about sexual health. For each topic, we compared the frequency of not routinely counseling female versus male patients using Chi-squared tests.

Results: Overall, 168 of 723 members responded. The mean age was 44.5 + 10.9 years, 91.0% were male, 67.9% were in academic practice, and 80.1% had completed an oncology fellowship. Median years in practice was 9 [interquartile range (IQR): 4-17], 98.6% had previously performed a female RC, and 23.2% had performed at least 10 female RC's in the past year. Providers were significantly more likely to not routinely ask female patients if they were sexually active pre-RC compared to males (21.2% vs. 10.4%, respectively, $p = 0.04$), to not routinely ask females about baseline sexual dysfunction (61.6% vs. 21.4%, respectively, $p < 0.001$), to not routinely discuss the risk of sexual dysfunction post-RC with females (20.6% vs. 8.0%, respectively, $p = 0.01$), and to not routinely discuss the potential for nerve-sparing RC with females (70.9% vs. 36.5%, respectively, $p = 0.002$) (Figure 1). Regarding barriers to discussing sexual health, 66.9% listed older patient age, 62.3% said there was not enough time, and 49.1% listed uncertainty about patients' baseline sexual function.

Conclusions: There were significant disparities in the counseling women received regarding sexual health and function related to RC. It is critical to address barriers to counseling women about these issues.



MP4-15

Oral Outcomes of Urologist Obtained Buccal Grafts with Primary Closure

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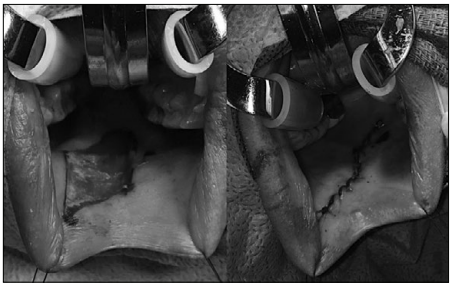
Introduction: Urethral stricture disease is estimated as high as 0.6% in the U.S. with urethroplasty remaining the gold standard treatment. When performing augmented repairs, oral mucosal grafts remain a mainstay of the reconstructive urologist's armamentarium. Despite decades of use, debate remains regarding closure or nonclosure of the oral donor site. The current retrospective review presents the donor site outcomes of urologist obtained buccal graft with closure.

Materials & Methods: Retrospective review of a prospectively maintained database of patients between 2015 and 2019 who underwent buccal graft urethroplasty by a single fellowship trained reconstructive Urologist. All cheek buccal graft were obtained as a standard parallelogram configuration and sites were closed primarily in a "lightning bolt" configuration (figure 1). Lingual graft were obtained as an elliptical shape with linear closure.

Results: A total of 80 patients underwent buccal graft urethroplasty at 3 institutions as an outpatient procedure. A total of 84 separate grafts were obtained. No complications, Clavien grade ≥ 2, occurred. Stricture recurrence requiring intervention occurred in 8% of patients, necessitating revision urethroplasty in three and DVIU in three. With regards to donor the sites, 3 patients (4%) reported a mild sensation of tightness with one stating a decreased ability to whistle (Table 1).

Conclusions: Buccal graft harvest with primary closure can have a very low morbidity. Primary closure facilitates outpatient surgery and patient comfort without compromising long-term functional outcomes.



		N (%)
Patient		**80**
	Age (years)	46.6 ±19
	Smoking History	24 (30%)
	Prior Urethroplasty	13 (16%)
Stricture (s)		**81**
	Location	
	- Penile	15 (19%)
	- Bulbar	52 (64%)
	- Both	14 (17%)
	Length (cm)	5.35 ±3.4
	Etiology	
	- Idiopathic	48 (59%)
	- Traumatic	6 (7%)
	- Iatrogenic	3 (4%)
	- Lichen Sclerosis	11 (14%)
	- Hypospadias	7 (9%)
	- Infectious	1 (1%)
	- Radiation	1 (1%)
Buccal Graft		**84**
	Location	
	- Left Cheek	71 (85%)
	: Area (cm^2)	12.5 ±3.5
	- Right Cheek	9 (11%)
	: Area (cm^2)	14.1 ±4
	- Lingual	4 (5%)
	: Area (cm^2)	2.5 ±0.8
Outcomes		
	Urethra	
	- Recurrence	6 (8%)
	: Johansson	3
	: DVIU	3
	Cheek	
	- Sensory Deficit	3 (4%)
	- Motor Deficit	1 (1%)

DP-01

Prolaris Score Prediction of Adverse Pathology Following Radical Prostatectomy

S. Azari, M. Su, B. Croll, J. Feliciano, A. Baccala
Lehigh Valley Health Network, Allentown, PA, USA

DP-02

Infrequent Use of Clinical Trials Registries in Published Systematic Reviews in Urology

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DP-03

Initial Experience Using a Novel Technique of Precise and Surgeon-Controlled Robotic Stapling During Intracorporeal Ileal Conduit Creation

C. Polotti, S. Elsamra
Rutgers Robert Wood Johnson Medical School, New Brunswick, NJ, USA

DP-04

Learning Curve for Magnetic Resonance Imaging/Ultrasound Fusion Biopsy in Detecting Prostate Cancer using CUSUM Analysis

L. Xu[1], N. Ye[1], A. Lee[1], J. Chopra[2], M. Naslund[2], J. Wong-You-Cheong[2], A. Wnorowski[2], M. Siddiqui[2]
[1]*University of Maryland School of Medicine, Baltimore, MD, USA;* [2]*University of Maryland Medical Center, Baltimore, MD, USA*

DP-05

Examining the Temporal Impact of the CMS Sunshine Act on the Industry-Physician Relationship: An Updated Analysis

J.Y. Leong, K. Shelley, A. Kee, V. Maio, T. Chandrasekar
Thomas Jefferson University, Philadelphia, PA, USA

DP-06

HOLEP vs. Bipolar TURP as Same Day Surgery: Analysis of Length of Stay and Costs

M. Su, S. Azari, J. Rust, A. Brown, C. Georges, J. Johannes
Lehigh Valley Health Network, Allentown, PA, USA

DP-07

Rapid, Efficient Crowdsourcing on Social Media for the Surgical Management of Stone Disease

K. Koo, T. Aro, B. Matlaga
Johns Hopkins University School of Medicine, Baltimore, MD, USA

DP-08

Robot-assisted Versus Laparoscopic Radical Nephrectomy for Clinical Stage T1b and T2 Renal Cancers: Trends and Outcomes from the National Cancer Database

L. Xia, R. Chelluri, R. Talwar, D. Lee, T. Guzzo
University of Pennsylvania Perelman School of Medicine, Philadelphia, PA, USA

Display Posters

DP-09

Does Size Matter? – Stratifying UroLift® Outcomes Based on Prostate Size & Number of Implants

C. Pellegrino[1], N. Shaw[2], G. Bandi[2]
[1]Georgetown University School of Medicine, Washington, DC, USA; [2]Georgetown Department of Urology, Washington, DC, USA

DP-10

Pelvic Organ Prolapse on Youtube: Evaluation of Consumer Information

A. Herbert[1], A. Nemirovsky[1], D. Hess[2], N. Abraham[3], S. Loeb[4], R. Malik[1]
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DP-11

In Vitro Evaluation of a Novel Pediatric Flexible Cystoscope

H. Truong[1], J. Hagerty[1,2], J. Rosado[2], S. Hubosky[1], D. Bagley[1]
[1]Thomas Jefferson University, Philadelphia, PA, USA; [2]Alfred I. duPont Hospital for Children, Wilmington, DE, USA

DP-12

Can Blue Light Cystoscopy Improve the Quality of TURBT? Results from a Single Institution Experience with this Enhanced Cystoscopic Technique

F. Carvalho[1,2], N. Shaw[1,2], J. Egan[1,2], K. Kowalczyk[2], R. Krasnow[1], J. Hwang[1], L. Stamatakis[1]
[1]MedStar Washington Hospital Center, Washington, DC, USA; [2]MedStar Georgetown University Hospital, Washington, DC, USA

DP-13

Withdrawn

DP-14

Use of MP-MRI for Detection of Local Prostate Cancer Recurrence in Patients with Post-Radiation Treatment Biochemical Recurrence

A. Lee[1], A. Wnorowski[1], N. Ye[1], L. Xu[1], M. Naslund[1,2], M. Siddiqui[1,2]
[1]University of Maryland - Baltimore, Baltimore, MD, USA; [2]Baltimore VA Medical Center, Baltimore, MD, USA

DP-15

Getting Men off BPH Medications: Efficacy of HoLEP and UroLift®

C. Pellegrino[1], N. Shaw[2], G. Bandi[2]
[1]Georgetown Department of Urology, Washington, DC, USA; [2]Georgetown University School of Medicine, Washington, DC, USA

DP-16

Prolonged Freedom from Androgen Deprivation Therapy and Metastasis after Induction ADT (iADT) for Radical Prostatectomy Recurrent Prostate Cancer: An Institutional Analysis

D. Edwards[1], J. Piraino[1], G. James[2], W. Ji[2], K. Atwood[2], K. Guru[2], E. Kauffman[2], J. Mohler[2]
[1]Hahnemann University Hospital/Drexel University College of Medicine Department of Surgery, Division of Urology, Philadelphia, PA, Philadelphia, PA, USA; [2]Roswell Park Comprehensive Cancer Center, Buffalo, NY, USA

DP-17

Associations of Pre-Orchiectomy Hormone Levels and Testicular Cancer Tumor Pathology, Clinical Stage, and Size

K. Pineault, J. Cheaib, P. Pierorazio
The Brady Urological Institute at Johns Hopkins, Baltimore, MD, USA

DP-18

Recommendations for Opioid Prescribing after Endourological Surgery: An Expert Panel Consensus

K. Koo, F. Faisal, N. Gupta, A. Meyer, H. Patel, P. Pierorazio, B. Matlaga
Johns Hopkins University School of Medicine, Baltimore, MD, USA

DP-19

Differing Patterns of Bladder Sensation during Oral Hydration in Participants With and Without Overactive Bladder

B. Sebastian[1], N. Swavely[2], D. Sethi[1], A. Nagle[3], D. Thapa[1], N. Vinod[1], Z. Cullingsworth[3], A. Balthazar[2], A. Klausner[2], J. Speich[3]
[1]Virginia Commonwealth University School of Medicine, Richmond, VA, USA; [2]Virginia Commonwealth University Health Systems, Richmond, VA, USA; [3]Virginia Commonwealth University - College of Engineering, Richmond, VA, USA

DP-20

Diagnostic Yield of Hematuria Evaluations Performed at a Tertiary Care Academic Urologic Clinic

D. Patel, L. De Souza, J. Raman
Pennsylvania State University College of Medicine, Hershey, PA, USA

DP-21

A Scale to Evaluate The Traditional Operating Room Teaching Compared to Video Based Learning in Urology
D. Ambinder, R. Malik
University of Maryland School of Medicine, Baltimore, MD, USA

DP-22

Shockwave Update: Dornier HM3 Has Higher Stone Free Rate than the Modulith SLX-F2
J. Farhi, M. Sultan, N. Schenkman
University of Virginia - Charlottesville, Charlottesville, VA, USA

DP-23

Evaluating Prostate Cancer Support Group Use in the Treatment of Men from an Underserved Community
S. Hager[1,2], N. Dilenno[1,2], D. Edwards[1,2], B. Mcgreen[1,2], N. May[1], L. Belkoff[2]
[1]Mercy Fitzgerald Hospital, Darby, PA, USA; [2]Hahnemann University Hospital, Philadelphia, PA, USA

DP-24

Assessing Factors Contributing to Pain from Hydronephrosis From Obstructing ureteral calculi
A. Lee1, K. Shete[2], B. Frailey[3], E. Ghiraldi[1], J. Friedlander[1]
[1]Einstein Medical Center, Philadelphia, PA, USA; [2]Kansas City University of Medicine and Biosciences Home, Kansas City, KS, USA; [3]Philadelphia College of Osteopathic Medicine, Philadelphia, PA, USA

DP-25

Urology Acute Care Service: Three Years' Experience
J. Tierney, D. Olsen
Charleston Area Medical Center, Charleston, WV, USA

DP-26

Urological Manifestation of Children With Mitochondrial Diseases
H. Truong[1], C. Raab[2], J. Hagerty[1,2]
[1]Thomas Jefferson University, Philadelphia, PA, USA; [2]Nemours/Alfred I. duPont Hospital for Children, Wilmington, DE, USA

DP-27

Identification of Bladder Shape Differences Between Individuals with Healthy and Overactive Bladders Using Non-Invasive Ultrasound During Oral Hydration
D. Sethi[1], N. Swavely[2], B. Sebastian[1], D. Thapa[1], N. Vinod[1], Z. Cullingsworth[3], A. Balthazar[2], A. Nagle[3], L. Carucci[2], J. Speich[3], A. Klausner[2]
[1]Virginia Commonwealth University School of Medicine, Richmond, VA, USA; [2]Virginia Commonwealth University Health System, Richmond, VA, USA; [3]Virginia Commonwealth University College of Engineering, Richmond, VA, USA

DP-28

Perioperative Chemotherapy in Lymph Node-Positive Upper Tract Urothelial Carcinoma
R. Liao[1], J. Cheaib[1], M. Gupta[1], M. Kates[1], M. Johnson[1], N. Hahn[1], J. Hoffman-Censits[1], T. Bivalacqua[1], P. Pierorazio[1]
[1]The James Buchanan Brady Urological Institute, Johns Hopkins Medical Institutions, Baltimore, MD, USA

DP-29

Analysis of a Learning Curve for Robotic prostatectomy
D. Ambinder, M. Siddiqui, S. Wang
University of Maryland School of Medicine, Baltimore, MD, USA

DP-30

Disparities in Appalachia? A Comparison of Penile Cancer Severity and Outcomes in Urban versus Rural Populations in Southern West Virginia
D. Zekan[1], B. Wiseman[1], N. Hale[2]
[1]West Virginia University School of Medicine - Charleston, Charleston, WV, USA; [2]Charleston Area Medical Center, Charleston, WV, USA

DP-31

Relapse of Seminoma in an African American Patient
I. Jones, A. Jain, A. Metwalli, P. Coleman
Howard University Hospital, Washington, DC, USA

DP-32

Understanding and Improving 18F-Fluciclovine PET/CT Imaging Reports: A Guide For Physicians Treating Patients with Suspected Biochemical Recurrence of Prostate Cancer
B. Lowentritt[1], M. Kipper[2]
[1]Chesapeake Urology Associates, Towson, MD, USA; [2]Genesis Healthcare, San Diego, CA, USA

DP-33

Pyoderma Gangrenosum of the Penis: Case Report and Review of the Literature
J. Loloi[1], S. MacDonald[2]
[1]The Pennsylvania State University, College of Medicine, Hershey, PA, USA; [2]Penn State Milton S. Hershey Medical Center, Hershey, PA, USA