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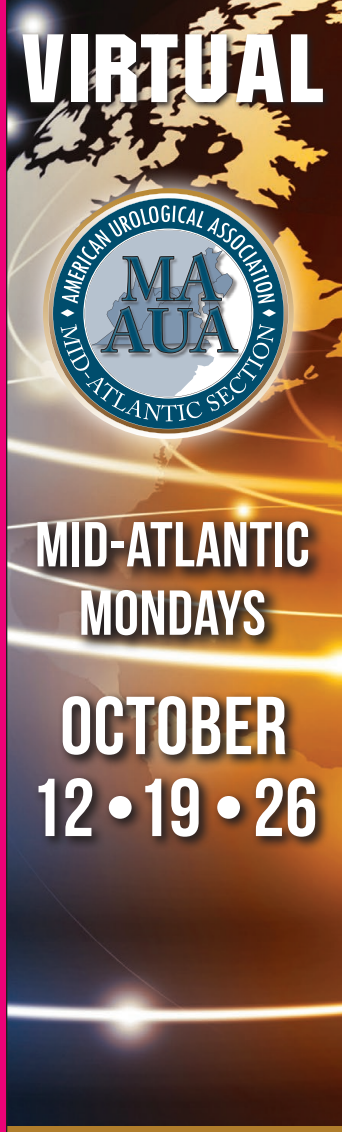

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PRESIDENT'S MESSAGE

Hello everyone!

On behalf of the Board of the Mid-Atlantic Section of the AUA, we are proud to present the following abstracts for your review. This has been a year of new and unexpected challenges, and while we are not able to come together to share research and ideas as we typically would, we are excited to showcase these works.

During the early days of the COVID-19 pandemic, the Mid-Atlantic region was particularly hard-struck by the virus. With hospital resources strained and stay-at-home orders in place, urologic care was limited by considerations of necessity and priority that were foreign to us all. Many of our residents-in-training and other members stepped in to fill gaps and reinforce the medical care for affected patients. I know of several of our colleagues that became ill with the disease during this time. This year has been remarkable for heroism, tragedy, and resilience all around us.

It is with this backdrop that much of the academic work we see in these abstracts also continued. Highlighting the work of urologists both within our section and from colleagues around the country is a critical function of our annual meeting and we honor the dedication of the authors.

On a personal note, I want to thank my family, my fellow Board members, the program committee, and our management team who have been incredibly supportive as my dreams of hosting you all in my hometown of New Orleans vanished. While the decision to shift to a virtual meeting eventually became easy, there was a lot of hard work required to make it work. Thank you all. Finally, I want to thank the CJU for the continuing relationship and support of these academic efforts.

Please enjoy, and I look forward to seeing everyone in person sometime in the future.

Sincerely,

Benjamin Lowentritt, MD, FACS
President
Mid-Atlantic Section of the AUA

RPE-01

Concordance of Confirmatory Prostate Biopsy in Active Surveillance with National Guidelines: an Analysis from the Multi-Institutional PURC Cohort

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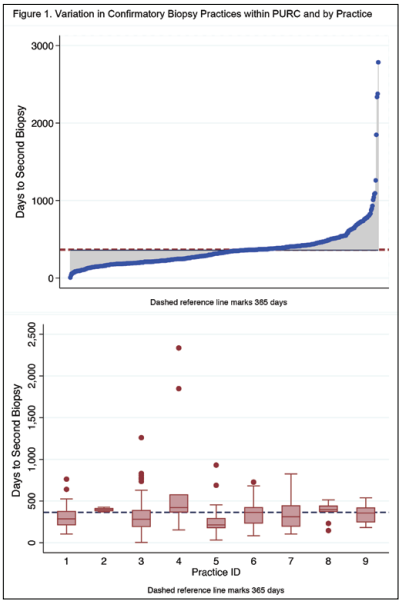
Introduction: As the federal government expands bundled payment models in oncologic care, an emphasis has been placed on guideline adherence as a proxy for healthcare quality and value. NCCN guidelines recommend confirmatory biopsy within 12 months of active surveillance (AS) enrollment. Our objective was to determine if patients on AS within practices in the Pennsylvania Urologic Regional Collaborative (PURC) receive guideline concordant confirmatory biopsies.

Materials & Methods: Within PURC, a prospective collaborative of diverse academic and community urology practices in Pennsylvania and New Jersey, we identified men enrolled in AS after their first biopsy with follow up for at least 1 year from 2015 to 2018. We analyzed time to re-biopsy and factors associated with time to re-biopsy.

Results: 1,047 patients were enrolled in AS for a minimum of 12 months after initial biopsy. Of these, 477 (45%) underwent a second biopsy at a participating PURC practice. The number of patients undergoing re-biopsy within 6 months, 6-12 months, 12-18 months and > 18 months was 71 (14%), 218 (45.7%), 134 (28%) and 54 (11%), respectively. 60.5% underwent confirmatory biopsy within 12 months. On univariable analysis, re-biopsy interval was associated with number of positive cores, perineural invasion, and practice ID (all $p < 0.05$). Multivariable Cox regression did not identify factors predictive of time to second biopsy.

Conclusions: Only 60.5% of patients who underwent a confirmatory biopsy at PURC practices did so within 12 months, per NCCN guidelines. We noted significant practice level variation; this suggests area for improvement in guideline adherence after enrollment in AS, as these variations are avoidable and may have policy level implications as a quality metric. Practices offering AS should periodically perform similar analyses to monitor their performance.



RPE-02

Systematic Endoscopic Evaluation in Predicting pT0 Bladder Cancer: a Prospective Trial

A. Asghar; D. Parker; J. O'Neill; R. Greenberg; M. Smaldone; D. Chen; R. Viterbo; R. Uzzo; E. Bloom; D. Geynisman; M. Deng; E. Ross; E. Plimack; P. Abbosh; M. Zibelman; A. Kutikov

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Introduction: Concern for discordance between endoscopic evaluation and final pathology drives current clinical management of patients deemed appropriate candidates for radical cystectomy (RC). Yet, > 30% of patients who undergo neoadjuvant chemotherapy (NAC) prior to RC do not harbor detectable malignancy at the time of extirpative surgery. Our objective was to prospectively assess the reliability of Systematic Endoscopic Evaluation (SEE) in RC candidates.

Materials & Methods: Patients undergoing RC for urothelial carcinoma (UC) were enrolled in a prospective, single-arm study to evaluate reliability of SEE in predicting pT0 UC. SEE consisted of cystoscopy with biopsy (and transurethral resection with loop after amendment) of visible tumor and/or tumor bed/scar, plus two random biopsies at the time of RC. A standardized bladder map was used to index cystoscopic findings. SEE and biopsy results were compared to RC pathology. Comparisons were considered congruent if both SEE and RC were T0, or if any level of disease seen at both SEE and RC (exception: cT0 but pTis at RC = congruence). Negative predictive value (NPV) less than 70% triggered study termination for futility.

Results: In this trial, 61 patients underwent SEE and RC. 41 patients (67%) had MIBC and 20 patients (33%) had high-risk NMIBC. 38 patients (62%) received platinum-based NAC. Based on RC final pathology, 16 patients (26%) were pT0 and 28 patients (46%) harbored residual ≥ pT2 disease. For detecting any disease, the positive predictive value was 96.7%, but the NPV was 48.4%, necessitating study closure. The sensitivity for detecting ≥ pT2 at RC was 71%.

Conclusions: To our knowledge, this was the first prospective study exploring SEE as a predictive tool for residual malignancy. The NPV was below the pre-specified threshold, triggering study closure. SEE missed ≥ pT2 UC ~30% of the time. This study definitively demonstrates that current cystoscopic techniques are inadequate to guide decisions on bladder preservation.

RPE-03

Testis-Sparing Surgery: A Single Institution Experience

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Introduction: Previous studies demonstrate small, non-palpable testis masses have high likelihood of being benign. Radical orchiectomy in these instances represents over treatment. In the setting of bilateral germ cell tumors (GCT) or tumor in solitary testis, orchiectomy results in infertility and lifelong testosterone replacement therapy. We aim to show that testis sparing surgery (TSS) is safe and effective in these populations.

Materials & Methods: The IRB-approved testicular cancer registry was reviewed for men who underwent inguinal exploration with intent for TSS (2013-2020). In patients with bilateral tumors, clinical stage was based on the radical orchiectomy specimen while size of the tumor was based on the spared, non-malignant testis. Attempted and completed TSS groups were evaluated for differences using Student's t-test for normally-distributed variables, chi-squared and Fisher's exact tests for proportions, and Wilcoxon rank-sum test for non-parametric variables.

Results: TSS was attempted in 30 patients and completed in 15. TSS was completed only if intraoperative frozen section demonstrated benign disease, except for one patient with stage I seminoma and solitary testicle. Final pathology was concordant in all cases. There were no differences in demographics between attempted vs. completed TSS cohorts. Tumor size ranged from 0.3 to 5.5 cm. Median tumor size was significantly smaller in the completed TSS cohort (1.0 cm vs. 1.7 cm, p = 0.03). In patients with unilateral masses without history of testis cancer, the testis was successfully spared in 10/24 (42%) cases. In patients with bilateral disease or GCT in solitary testis, the testis was spared in 5/6 (83%) cases. At a mean follow up of 20.5 months, all patients were alive, and 29/30 (97%) had no evidence of disease.

Conclusions: TSS is safe and effective in appropriately selected patients.

Table 1. Clinical and tumor characteristics of patients who underwent an attempted or completed testis-sparing surgery for an intratesticular mass.

Characteristic	N (%)			
	Testis-Sparing Surgery			
	Total	Attempted	Completed	p-value
Number of Patients	30	15	15	
Median Age at Orchiectomy [IQR] (years)	33 [28-40]	32 [27-35]	37 [30-45]	0.3
Race				
White	24 (80)	14 (93.3)	10 (66.7)	0.2
African American	2 (6.7)	0 (0)	2 (13.3)	
Other	4 (13.3)	1 (6.7)	3 (20)	
Personal History of Testis Cancer				
No	25 (83.3)	14 (92.3)	11 (76.9)	0.3
Yes	5 (16.7)	1 (7.7)	4 (23.1)	
History of Cryptorchidism				
No	25 (83.3)	12 (80)	13 (86.7)	0.9
Yes	5 (16.7)	3 (20)	2 (13.3)	
Presenting Symptoms				
Palpable Mass	22 (73.3)	14 (93.3)	8 (53.3)	**0.035**
Pain	9 (30)	5 (33.3)	4 (26.7)	0.9
Infertility	4 (13.3)	2 (13.3)	2 (13.3)	0.9
Other	7 (23.3)	2 (13.3)	5 (33.3)	0.4
Orchiectomy Laterality				
Right	16 (53.3)	8 (53.3)	8 (53.3)	0.5
Left	12 (40)	7 (46.7)	5 (33.3)	
Bilateral	2 (6.7)	0 (0)	2 (13.4)	
Orchiectomy Pathology				
Benign	15 (50)	3 (20)	12 (80) ^	**0.004**
Seminoma	10 (33.3)	8 (53.3)	2 (13.3) §*	
Non-seminomatous/Mixed GCT	5 (16.7)	4 (26.7)	1 (6.7) *	
Median Tumor Size [IQR] (cm)	1.4 [0.9-2.0]	1.7 [1.2-2.0]	1.0 [0.6-1.4]	**0.026**
Germ Cell Neoplasia in Situ				
Absent	19 (63.3)	5 (33.3)	14 (93.3)	**0.002**
Present	11 (36.7)	10 (66.7)	1 (6.7)	
Clinical Stage				
I	11 (73.3)	10 (83.3)	1 (33.4) §	0.2
II	3 (20)	2 (16.7)	1 (33.3) *	
III	1 (6.7)	0 (0)	1 (33.3) *	
T Stage				
pT0/pTX/pTis	3 (18.8)	1 (8.3)	2 (50) ^*	**0.027**
pT1	12 (75)	11 (91.7)	1 (25) §	
pT2	1 (6.2)	0 (0)	1 (25) *	
N Stage				
N0/NX	10 (66.7)	9 (75)	1 (33.3) §	0.2
N1-3	5 (33.3)	3 (25)	2 (66.7) *	
M Stage				
M0	14 (93.3)	12 (100)	2 (66.7) §*	0.2
M1	1 (6.7)	0 (0)	1 (33.3) *	
Chemotherapy				
No	25 (83.3)	12 (80)	13 (86.7)	0.9
Yes	5 (16.7)	3 (20)	2 (13.3) *	
Radiotherapy				
No	27 (90)	13 (86.7)	14 (93.3)	0.9
Yes	3 (10)	2 (13.3)	1 (6.7) §	
Median/Mean Follow-up [IQR] (Months)	13.5/20.5 [2.7-27.1]	18.1/27.4 [4.8-45.9]	4.5/13.6 [1.8-25.4]	0.08
Disease Status				
No Evidence of Disease	29 (96.7)	15 (100)	14 (93.3)	0.9
Alive with Disease	1 (3.3)	0 (0)	1 (6.7) *	

IQR = interquartile range; GCT = germ cell tumors
^ Includes 1 patient with germ cell neoplasia in situ on pathology
§ Represents data for 1 patient with a solitary testis
* Represents data for 2 patients with bilateral tumors and with respect to the synchronous contralateral tumor and not the tumor within the spared testis

RPE-04

Radiation Exposure in the Operating Room. A Hidden Killer?

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Introduction: Fluoroscopy is an important tool in endourology. Residents spend a significant amount of time performing fluoroscopic procedures. However, the actual amount of radiation to vulnerable parts of the body has not been well elucidated. Residents may be exposed to harmful amounts of radiation. The aim of this study is to investigate the amount of radiation exposure to different areas of the body, to evaluate the current compliance of radiation dosage guidelines and to evaluate the appropriateness of radiation standards in the Operating Room.

Materials & Methods: Radex One Quarta Geiger Dosimeters were used to measure radiation exposure to the inner chest, thyroid/eyes, backside, and groin of the primary surgeon during various fluoroscopic procedures, (Figure 1). The amount of radiation was normalized using the total radiation emitted from the C-Arm X-ray.

Results: Radiation exposure to various body parts during eighty-one endourologic procedures over a six month period was tabulated. The normalized average was then compared. The highest amount of radiation received was to the thyroid/eyes - 8.42µGy, followed by groin - 1.76µGy, backside - 1.53µGy, and inner chest - 1.07µGy per procedure as shown in table one. Protective equipment is variable and compliance is low in the OR.

Conclusions: Residents are unknowingly exposed to high amounts of radiation during fluoroscopic procedures, which can be harmful. Dose exposure varies by body region. Further investigation is warranted to improve occupational safety in the operating room, increase compliance by practitioners, and better protect body parts that are predisposed to higher radiation levels.

Body Part	Limit (µgy)	Radiation Received (µgy)	Radiation in one year (µgy)
Inner chest	Control	1.07	214
Eyes	1500	8.42	1684
Buttocks	5000	1.53	306
Groin	5000	1.76	352
Total radiation emitted	5000	12.47	2494

RPE-05

Lingual Versus Buccal Mucosal Graft for Substitution Urethroplasty: A Meta-Analysis of Urethroplasty Outcome and Patient-Reported Harvest Site Outcomes

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Introduction: Lingual mucosal graft (LMG) and buccal mucosal graft (BMG) are both used as autologous tissue graft for substitution urethroplasty. We aim to compare urethroplasty outcomes and patient-reported harvest site morbidities between LMG and BMG through meta-analysis of comparative studies.

Materials & Methods: A systematic literature search was performed in January 2019. Both non-randomized comparative studies and randomized controlled trials (RCT) were evaluated according to Cochrane Collaboration recommendations. The assessed data included urethroplasty outcomes, complications, and harvest site morbidities. Risk ratios (RR) with corresponding 95% confidence intervals (CI) were extrapolated. Effect estimates were pooled using the Mantel-Haenszel method with a random-effects model.

Results: A total of 632 patients (LMG 323, BMG 309) from 12 comparative studies (4 RCTs and 8 non-randomized) were included for meta-analysis. Overall pooled effect estimates revealed no significant difference between the groups on reported urethroplasty outcomes and operative stricture-related complications. Effect estimates for patient-reported graft harvest site morbidities such as bleeding, pain/discomfort and food intake did not show any differences between the groups at < 1-month, 1-3 months and up to 6-12 months follow-ups. However, LMG group reported a higher proportion of patients with difficulty speaking (RR 6.96) and tongue protrusion (RR 12.93) within 3-21 days post-op.

Conclusions: The evidence suggests no overall significant difference between LMG and BMG in urethroplasty outcomes during up to 12-month follow-up. However, patients undergoing LMG urethroplasty have a higher chance of experiencing difficulty of speech and tongue protrusion within 1-month post-op. The BMG group has a higher likelihood of experiencing early harvest site swelling, mouth opening difficulty in 1-month post-op, and numbness up to 3-6 months.

RPE-07

Establishment of Age Based Nomogram for Prostate Specific Antigen Vales in the Spinal Cord Injury Population

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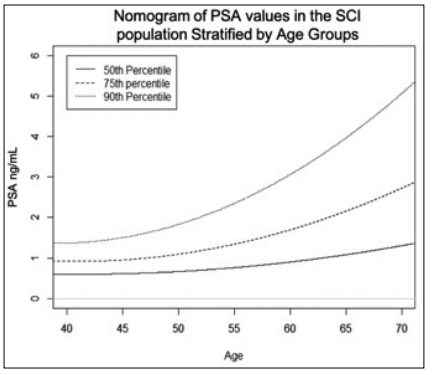
Introduction: Men with SCI often experience frequent bladder/urethral manipulations which may affect PSA. Additionally, these individuals may have altered testosterone status, which can alter PSA. Therefore, current PSA screening guidelines may not be accurate in this population. The objective of this study was to establish normative values for PSA in the SCI population.

Materials & Methods: All men with Spinal Cord Injury in the Veterans Health Administration with PSA tests performed between the years 1999 to 2017 were included, excluding patients with a prostate cancer diagnosis within 5 years. Data was obtained from the national VA database with determination of SCI based on ICD9/ICD10 codes reviewed by a specialist in physical medicine and rehabilitation with subspecialty training in SCI. A dedicated biostatistician used the data to create and validate a model to establish normative PSA values and develop a nomogram in the SCI population.

Results: A total of 32,666 male veterans with SCI were included in the analysis with a total of 174,301 PSA values. PSA values for the 50th, 75th and 95th percentiles and stratified for age group were established, establishing the nomogram for PSA values in the SCI population. (Figure 1)

Conclusions: Using a large, geographically diverse SCI population, a PSA nomogram can be created for the unique SCI population, which can help guide decision making.



RPE-06

Adverse Pathologic Features for Small Renal Cell Carcinoma (≤ 4 cm) in the National Cancer Database

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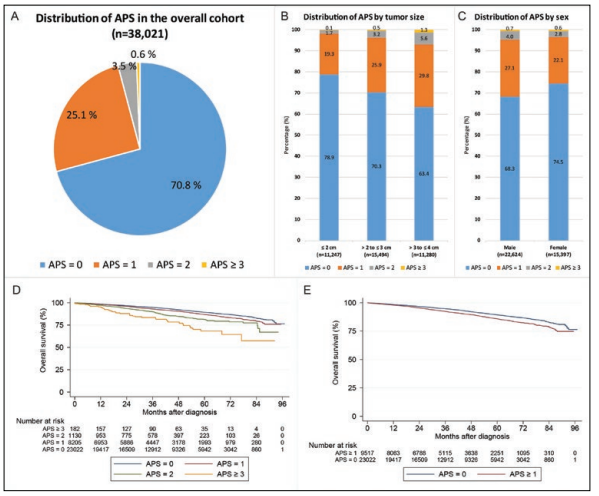
Introduction: There is always the concern of aggressive pathology when patients are on active surveillance for small renal masses. Limited data exist on the characteristics of adverse pathologic features for small renal cell carcinomas (RCCs), especially at the national level.

Materials & Methods: We identified patients with cT1aN0M0 RCCs (≤ 4 cm) diagnosed between 2010 and 2016 who underwent partial or radical nephrectomy in the National Cancer Database. We developed an adverse pathologic score (APS) and each of the following pathologic features was assigned as one point: lymphovascular invasion, perinephric fat/renal sinus invasion, vein involvement, sarcomatoid features, tumor necrosis, and Fuhrman grade 3-4. Outcomes measurements included APS ≥ 1 and overall survival (OS).

Results: A total of 38,021 patients were included and 29.2% of them had APS ≥ 1. The distribution of APS is shown in Figure (A). Specifically, ≤ 2cm, 2-3cm, and 3-4cm tumors had an estimated 21.1%, 29.7%, and 36.6% likelihood of having APS ≥ 1, respectively. Distributions of APS by tumor size and sex are shown in Figure (B) and Figure (C). Multivariable logistic regression showed that compared with tumor size ≤ 2cm, 2-3cm (odds ratio [OR] = 1.54) and 3-4 cm (OR = 2.04) tumors had a higher likelihood of having APS ≥ 1. OS stratified by APS is shown in Figure (D) and Figure (E). Multivariable Cox regression showed that compared with APS = 0, higher APS was associated with worse OS (hazard ratio [HR] = 1.16, 1.46, and 2.22 for APS = 1, APS = 2, and APS ≥ 3, respectively).

Conclusions: For small RCCs, still a significant number of patients have adverse pathologic features. Aggressive pathologic features are associated with greater size. Decision making regarding active surveillance, renal mass biopsy, versus surgical intervention for small renal mass should take tumor size and APS into consideration.



RPE-08

Quantifying Glans Width Changes With and Without Testosterone in Patients Undergoing Hypospadias Repair

S. Mittal[1]; S. Christianson[1,2]; N. Hyacinthe[1]; C. Tan[1]; D. Weiss[1]; J. Van Batavia[1]; A. Shukla[1]; T. Kolon[1]; A. Srinivasan[1]; D. Canning[1]; M. Zaontz[1]; C. Long[1]
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Introduction: Testosterone (T) use prior to hypospadias surgery remains controversial. Understanding its effects on glans size is essential to understanding its efficacy. Our hypothesis was that T preoperatively increases GW measured at surgery. Our goal was to quantify the change with and without T prior to surgery.

Materials & Methods: Our database was queried to identify patients who underwent hypospadias surgery from 2015-2019, in which data for T administration and glans measurements were available. Descriptive, nonparametric and categorical statistics were performed.

Results: 648 patients were eligible for analysis. Median age at surgery was 0.9 years (IQR 0.6-1.7). 200/648 (31.3%) patients received T. The median GW at surgery was 15 mm (IQR 13-17). When comparing patients who had T administered to those that did not, we found a significant difference in GW at surgery (16 mm vs. 14 mm, $p < 0.001$) [Table 1]. The median change in GW preoperatively to surgery was 4 mm for those receiving T vs. -1 mm for those not receiving T ($p < 0.001$). We observed a trend toward significance of increased administration of T for first- and second-stage repairs ($p = 0.062$) and concordantly a higher proportion of proximal hypospadias patients received T ($p = 0.003$). We identified a greater change in GW from preoperative to intraoperative measurements in patients who received two doses of T vs. one dose (4 mm vs. 2 mm, $p < 0.001$) [Table 2].

Conclusions: In our large, prospectively collected cohort of patients undergoing hypospadias surgery, we were able to quantitate the GW change from preoperative testosterone. Two doses of testosterone resulted in a significant increase in glans width vs. one dose.

Table 1: Comparison of patients that received testosterone vs those that did not receive testosterone

	Testosterone Given	Testosterone Not Given	p-value	Test
N	200	440		
Age at Surgery (years), median (IQR)	0.81 (0.63, 1.465)	0.88 (0.61, 1.965)	0.28	Wilcoxon rank-sum
Weight at Surgery (lbs), median (IQR)	20.94 (18.52, 24.91)	20.94 (18.17, 27.34)	0.86	Wilcoxon rank-sum
Incidence of Cryptorchidism or hernia, N (%)	28 (14.0%)	33 (7.5%)	0.009	Pearson's chi-squared
Glans width at Surgery (mm), median (IQR)	16 (15, 18)	14 (12, 16)	<0.001	Wilcoxon rank-sum
Difference in glans width at surgery and pre-operatively (mm), median (IQR)	4 (2, 5)	-1 (-2, 1)	<0.001	Wilcoxon rank-sum
Difference in glans width at 1st post-operative visit and at surgery (mm), median (IQR)	0 (-3, 1)	1 (-1, 3)	<0.001	Wilcoxon rank-sum
Hypospadias repair type, N (%)			0.062	Pearson's chi-squared
Single stage repair	117 (63.2%)	287 (69.2%)		
First Stage Repair	31 (16.8%)	53 (12.8%)		
Second Stage Repair	29 (15.7%)	43 (10.4%)		
Complication Surgery	8 (4.3%)	32 (7.7%)		
Meatal position after orthoplasty, N (%)			0.003	Pearson's chi-squared
Distal	129 (64.8%)	329 (75.6%)		
Midshaft	4 (2.0%)	15 (3.4%)		
Proximal	66 (33.2%)	91 (20.9)		

Table 2: Comparison of Glans width and number of testosterone injections given

	One dose of Testosterone given	Two doses of Testosterone given	p-value	Test
N	26	169		
Glans width Preoperatively(mm), median (IQR)	14 (12, 15)	12 (11, 14)	0.011	Wilcoxon rank-sum
Glans width at Surgery (mm), median (IQR)	16 (14, 18)	16 (15, 18)	0.23	Wilcoxon rank-sum
Difference in glans width at surgery and pre-operatively(mm), median (IQR)	2 (1, 3)	4 (2, 6)	<0.001	Wilcoxon rank-sum
Difference in glans width at 1st post-operative visit and at surgery (mm), median (IQR)	0 (-2, 1)	0 (-3, 1)	0.59	Wilcoxon rank-sum

PDA-01

Filling the Gap: The Utilization of Perfused Fresh Human Cadaver Simulation in Urologic Training

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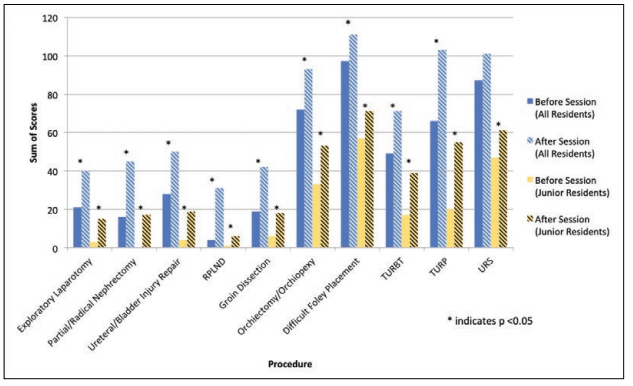
Introduction: With new surgical techniques being incorporated into the practice of urology, today's residents are tasked with learning a broader skillset than ever before. This has led to some concern that residents are not prepared for independent practice after residency. In this study, we held a surgical training session in the WVU Fresh Tissue Training Program (FTTP), which utilizes perfused fresh human cadavers (PFHCs). The goal of this study was to determine if the simulation had a positive effect on urology residents' confidence in performing open and endoscopic procedures.

Materials & Methods: Urology residents participated in a surgical training session in the WVU FTTP, which consisted of performing different urologic procedures (open and endoscopic) on perfused fresh human cadavers (PFHC). Residents were given a survey to rate their confidence in different urologic procedures before and after the session. Each procedure on the survey had 3-6 questions associated with it, with scores ranging from 0 (no confidence) to 4 (great confidence). The total scores for each procedure before and after the session were compared using a nonparametric analysis. We then compared scores for junior residents (PGY1-PGY3) only.

Results: Six residents participated in the session. There was a significant increase in the overall total score for every procedure performed after the session ($p < 0.05$), with the exception of ureteroscopy ($p = 0.113$). When comparing total scores of the junior residents, there was a significant increase in score for every procedure performed. All residents reported higher levels of confidence after the simulation.

Conclusions: PFHCs offer an excellent opportunity to teach a wide variety of urologic procedures to residents. Incorporation of PFHCs may be very useful in urologic training, and further studies on its use are warranted.



PDA-02

Evaluation of Survival Benefit of Combination of Local Treatment and Systemic Chemotherapy for Node-Positive Non-Metastatic Bladder Cancer Using a National Cancer Database

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Introduction: Though historically grouped in with true metastatic disease and treated with palliative chemo, those with clinically node-positive non-metastatic bladder cancer have been the target of several recent studies aiming to establish a standard of care for this potentially treatable population. A handful of studies have shown a significant survival benefit for various multimodal therapy approaches. Our study aims to evaluate the effect of various combinations of treatment modality on long-term survival in a large cohort of this patient population.

Materials & Methods: Data from the National Cancer Database was used to identify patients who had node-positive non-metastatic bladder cancer who received chemotherapy alone or in combination with radical cystectomy or radiotherapy. We identified 3481 eligible cases who were included in the final analysis. Baseline patient demographic data was compared using ANOVA test for continuous variables and Chi-square test for categorical variables. Kaplan-Meier test was used for survival analysis and Cox-Regression was used for multivariable analysis.

Results: Baseline demographic data is summarized in table 1. Patients who were offered radical cystectomy were significantly younger (P = 0.00). There was a significant difference between the groups regarding racial distribution, facility type, and insurance status. There was no difference in gender, Charlson\Deyo score, or financial and educational status between the groups. Combination of radical cystectomy and chemotherapy was found to be significantly superior to other options with mean survival time of 27 months, ranging from 24.7 to 29.3 months (P = 0.000). Multivariable analysis showed that final treatment, age, and facility type were significant survival predictors, while race and insurance status failed to maintain significance. There was no survival difference between the chemotherapy group and the chemo-radiotherapy group.

Conclusions: The combination of surgery and chemotherapy achieves statistically significant superior long-term survival in clinically node-positive non-metastatic bladder cancer patients. Adding radiotherapy to chemotherapy did not improve survival in this group of patients.

Variables	**Group 1** Chemotherapy only	**Group 2** Radical Cystectomy and Chemotherapy	**Group 3** Chemo-Radiotherapy	**Group 4** Radical Cystectomy and Chemo-Radiotherapy	P value
No.	1312	1316	726	127	
Patient demographics					
Age, mean (SD)	66.97 (11)	63.80 (9.68)	69.42 (11.69)	64.28 (10.21)	**0.000**
Male, n. (%)	954 (72.7%)	945 (71.8%)	508 (70%)	86 (67.7%)	0.437
White, n. (%)	1167 (88.9%)	1210 (91.9%)	635 (87.5%)	117 (92.1%)	**0.005**
Charlson\Deyo score, n. (%)					0.545
0	977 (74.5%)	978 (74.3%)	562 (77.4%)	97 (76.4%)	
1	247 (18.8%)	265 (20.1%)	124 (17.1%)	23 (18.1%)	
2	88 (6.7%)	73 (5.5%)	40 (5.5%)	7 (5.5%)	
Primary payer n. (%)					**0.000**
uninsured	60 (4.6%)	48 (3.6%)	26 (3.6%)	5 (3.9%)	
private	411 (31.3%)	560 (42.6%)	167 (23%)	40 (31.5%)	
Medicaid	104 (7.9%)	92 (7%)	54 (7.4%)	11 (8.7%)	
Medicare	724 (55.2%)	597 (45.4%)	467 (64.3%)	69 (54.3%)	
Other government	13 (1%)	19 (1.4%)	12 (1.7%)	2 (1.6%)	
Median household income, n. (%)					0.088
<38,000	235 (17.9%)	185 (14.1%)	119 (16.4%)	23 (18.1%)	
38,000-47,999	329 (25.1%)	333 (25.3%)	198 (17.3%)	37 (29.1%)	
48,000-62,999	382 (29.1%)	366 (27.8%)	197 (27.1%)	34 (26.8%)	
>63,000	366 (27.9%)	432 (32.8%)	212 (29.2%)	33 (26%)	
No high school diploma, n. (%)					0.069
≥21%	222 (16.9%)	187 (14.2%)	120 (16.5%)	17 (13.4%)	
13%-20.9%	342 (26.1%)	346 (26.3%)	204 (28.1%)	27 (21.3%)	
7%-12.9%	456 (34.8%)	455 (34.6%)	266 (36.6%)	51 (40.2%)	
<7%	292 (22.3%)	328 (24.9%)	136 (18.7%)	32 (25.2%)	
Facility characteristics					
Facility type, n. (%)					**0.000**
Community	119 (9.1%)	90 (6.8%)	83 (11.4%)	21 (16.5%)	
Comprehensive	484 (36.9%)	389 (29.6%)	354 (48.8%)	50 (39.4%)	
Academic/Research	544 (41.5%)	741 (56.3%)	216 (29.8%)	40 (31.5%)	
Integrated cancer program	165 (12.6%)	96 (7.3%)	73 (10.1%)	16 (12.6%)	

PDA-04

Renal Laceration: A 10-Year Institutional and 7-Year Protocol Review

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Introduction: Current renal laceration guidelines recommend conservative management. In 2012 we initiated an institution-wide renal laceration protocol to standardize management. This protocol involves an algorithm for initiation of deep vein thrombosis (DVT) prophylaxis, cessation of bed rest, and frequency of laboratory studies. We hypothesized that low-grade injuries (Grade I-III) could be managed without urologic consultation and our DVT prophylaxis regimen would not pose increased risk of hemorrhage requiring transfusion.

Materials & Methods: We retrospectively reviewed all renal lacerations at our institution from 2009-2019. We segregated injuries based on grade, presence of multi-trauma, and evaluated presence and type of intervention, initiation and type of DVT prophylaxis, and post-DVT prophylaxis hemorrhage requiring transfusion.

Results: We identified 296 cases of renal laceration, of which 61 were isolated injuries. There were 221 low-grade lacerations and 75 high-grade lacerations. No grade 1 or 2 lacerations required any interventions. (2/79) Grade 3 lacerations required IR embolization. (25/62) Grade 4 lacerations required intervention (5/25 nephrectomy). (7/13) Grade 5 lacerations required intervention, (5/7) being nephrectomies. In no cases of isolated renal injury did initiation of DVT prophylaxis result in delayed hemorrhage requiring transfusion.

Conclusions: Only 2/221 low-grade renal lacerations required intervention. Our data suggest that grade 1-2 renal lacerations can be managed safely without urologic consultation. Consultation is warranted for grade 3 injuries given the possibility of initial understaging and intervention rate for grade 4 injuries. Further, we believe our renal laceration protocol in our admittedly small, isolated sample size has shown our DVT prophylaxis initiation to not place patients at any increased risk.

Grade	Interventions	Nephrectomy	Ureteral Stent	Interventional Radiology Embolization
I	0/99	0/99	0/99	0/99
II	0/42	0/42	0/42	0/42
III	2/80	0/80	0/80	2/80
IV	25/62	5/62	18/62	2/62
V	7/13	5/13	0/13	2/13

Table 2. Isolated Renal Injury DVT prophylaxis

Grade	DVT Prophylaxis Received	Days until Prophylaxis Administration (average)*	Post-Prophylaxis Transfusions
I	1/18	1	0/18
II	1/8	1	0/8
III	5/19	2.4	0/19
IV	8/14	2.875	0/14
V	2/3	4	0/3

*days measured as post-injury

PDA-05

To Clamp or Not to Clamp: Foregoing Hilar Clamping During Partial Nephrectomy Does Not Change Renal Outcomes

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Introduction: Early data has shown that vascular clamping and increased ischemia time during partial nephrectomy (PN) has led to higher rates of both acute and chronic kidney disease. However, more recent studies have challenged this notion. Most contemporary series, however, do not assess if there is a benefit from forgoing vascular clamping altogether and avoiding ischemia. The purpose of our study is to assess if use of ischemia or type of ischemia utilized is associated with long-term renal outcomes.

Materials & Methods: A retrospective review of a prospectively maintained database of patients undergoing renal surgery from 2008 to 2019 was performed. Patients who underwent PN were placed into four cohorts based on the intraoperative ischemia strategy used: No ischemia, cold ischemia, warm ischemia time (WIT) ≤ 30 min, and WIT > 30 min. A majority of these patients had known or suspected hereditary kidney cancer syndromes and frequently presented with multiple tumors. Functional renal outcomes and adverse outcomes were compared amongst the cohorts.

Results: A total of 794 PN were included in this study. 504 PN were performed without ischemia, 81 with cold ischemia, 151 with WIT ≤ 30 min, and 58 with WIT > 30 min. Significant differences were noted in median number of tumors removed and preoperative creatinine. On multivariate analysis, 12-month post-operative creatinine changes were not significantly different amongst the four cohorts when controlling for the number of tumors removed, EBL, or preoperative creatinine.

Conclusions: To our knowledge, this is the largest series to date assessing off-clamp PN. This study supports that the use of ischemia or the type of ischemia utilized is not associated with long-term changes in renal function and that ischemia time likely has a smaller role than originally presumed. The use of ischemia during PN is not detrimental towards long-term renal function, especially amongst patients with multifocal renal tumors.

PDA-06

Urinary Biomarker Panel to Differentiate Benign Renal Masses from Aggressive and Indolent Renal Cell Carcinoma

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Introduction: Renal masses comprise a disease spectrum with varied natural history. Radiographic evaluation persists as the strongest predictor of tumor malignancy. The pathogenesis of clear cell renal cell carcinoma (ccRCC) includes increased angiogenesis and immunogenicity. Our aim was to evaluate urine based markers targeting these pathways to differentiate between aggressive ccRCC, indolent ccRCC and benign renal tumors.

Materials & Methods: The IRB-approved renal mass registry (2005-2020) was reviewed for patients with frozen urine samples who underwent renal mass surgery. Tumors were defined as benign (oncocytoma, anygiomyolipoma, or renal cyst), indolent ccRCC (low grade I-II and stage I-II), and aggressive ccRCC (high grade III-IV or stage III-IV). Benign and indolent ccRCC were classified as non-aggressive for analysis. Urine samples were analyzed for albumin and creatinine (Randox Daytona chemistry analyzer; Randox Laboratories Ltd, UK), to assess renal function and normalize data, and for markers of inflammation and angiogenesis with the MesoScale Discovery Platform (MesoScale Diagnostics, LLC, US), using patterned arrays with electrochemiluminescence detection. Values below the limit of detection (LOD) were imputed as half LOD. Mean and median biomarker levels were obtained for each group, and comparative ratios were generated across groups.

Results: Urine samples from 76 patients were identified, including 20 benign, 22 indolent, and 34 aggressive tumors. Microalbumin was decreased and IL-1B levels were increased, strongly differentiating aggressive ccRCC from non-aggressive tumors. bFGF and VEGF levels were lower in ccRCC than benign tumors. Other discriminatory markers include IL-10, IL-9, and PIGF (FIGURE).

Conclusions: Preliminary data suggests a urine-based panel of angiogenic and inflammatory markers can discriminate among benign renal tumors, indolent ccRCC and aggressive ccRCC. Potential biomarkers include microalbumin, IL-1B, bFGF, IL-10, IL-9, and VEGF, although further exploration is required.

Urine Biomarker	Ratios Based on Mean Values				Ratios Based on Median Values			
	Agg vs. Non-agg	Agg vs. Indolent	Agg vs. Benign	Indolent vs. Benign	Agg vs. Non-agg	Agg vs. Indolent	Agg vs. Benign	Indolent vs. Benign
mAlbumin (mg/dL)	0.57	0.57	0.55	0.97	0.82	1.23	0.51	0.42
Creatinine (mg/dL)	1.03	1.13	0.93	0.82	1.01	1.19	0.97	0.81
IFN-γ (pg/mL)	1.03	1.08	0.98	0.90	0.75	0.67	0.81	1.20
IL-10 (pg/mL)	1.26	1.26	1.25	0.99	1.38	1.29	1.54	1.19
IL-12p70 (pg/mL)	0.83	1.02	0.69	0.67	1.06	1.06	1.07	1.01
IL-13 (pg/mL)	1.04	1.06	1.02	0.96	1.04	1.01	1.08	1.07
IL-1β (pg/mL)	1.86	2.42	1.48	0.61	2.09	2.30	1.83	0.79
IL-2 (pg/mL)	1.03	0.98	1.08	1.11	1.05	0.83	1.57	1.88
IL-4 (pg/mL)	0.97	1.05	0.89	0.84	1.08	1.05	1.11	1.06
IL-6 (pg/mL)	1.31	1.34	1.28	0.95	0.85	0.86	0.85	0.99
IL-8 (pg/mL)	0.85	1.15	0.66	0.57	1.33	1.60	0.95	0.59
TNF-α (pg/mL)	1.15	1.33	0.99	0.75	1.22	1.27	1.06	0.84
PlGF (pg/mL)	1.12	1.20	1.05	0.87	1.30	1.30	1.35	1.04
Tie-2 (pg/mL)	0.99	0.92	0.89	0.96	1.00	1.00	1.00	1.00
VEGF (pg/mL)	0.84	0.95	0.74	0.79	0.74	0.75	0.72	0.96
VEGF-C (pg/mL)	0.98	1.01	0.80	0.79	1.00	1.00	1.00	1.00
VEGF-D (pg/mL)	0.93	0.84	0.87	1.04	0.90	1.00	1.00	1.00
bFGF (pg/mL)	0.79	1.01	0.64	0.64	0.71	0.78	0.59	0.76
sFlT-1 (pg/mL)	0.99	1.03	0.94	0.90	0.89	0.89	0.82	0.92
IL-5 (pg/mL)	0.95	1.08	0.82	0.76	0.95	1.00	1.00	1.00
IL-9 (pg/mL)	1.31	1.37	1.24	0.90	1.27	1.06	1.34	1.26

PDA-07

Urologist-Level Utilization Patterns of Cytoreductive Surgery for Metastatic Renal Cell Carcinoma

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Introduction: Cytoreductive surgery (CS) has been integral in the multimodal management of patients with metastatic renal cell carcinoma (mRCC) in the tyrosine kinase inhibitor (TKI) era. Its role has recently been questioned with the release of data from prospective trials. Accordingly, reporting current urologist-level patterns of utilization of CS would be important to evaluate the impact of such findings on future CS implementation.

Materials & Methods: We performed a population-based study of mRCC patients from 2004-2013 using the linked Surveillance, Epidemiology, and End Results-Medicare database. Patients were assigned to a primary urologist using Medicare physician specialty codes. Multivariable mixed-effects logistic regression was used to evaluate the association between use of CS and select patient characteristics; predicted probability of using CS was then obtained for each urologist.

Results: A total of 4226 patients with 1964 primary urologists were identified. On average, each urologist saw 3 (range: 1-35) patients. Overall, 1370 (32%) patients underwent CS (radical nephrectomy (N = 1285, 94%), partial nephrectomy (N = 55, 4%), thermal ablation (N = 30, 2%)) for mRCC. Table 1 shows patient characteristics and predictors of CS. At the individual urologist level, the estimated probability of using CS varied from 26.9% to 38.7% (mean: 32.2%) (Figure 1). 1077 (55%) urologists never offered CS.

Conclusions: Significant variation exists in utilization of CS for mRCC in the TKI era, with 27-39% of patients undergoing CS and 55% of urologists never offering CS. These data serve as a benchmark to measure ongoing changes in the contemporary era, with randomized trials demonstrating little benefit to CS in patients with poor-risk mRCC.

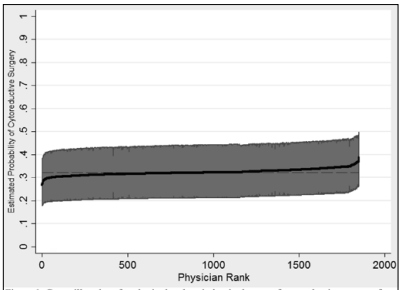

Figure 1. Caterpillar plot of urologist-level variation in the use of cytoreductive surgery for metastatic renal cell carcinoma. Physicians are ranked by their predicted probability of using cytoreductive surgery. The black solid line indicates the point estimates for predicted probabilities of using cytoreductive surgery for individual physicians; the gray area represents the 95% confidence intervals for these point estimates. The black dashed line indicates the mean predicted probability of using cytoreductive surgery.

Table 1. Baseline characteristics of the analytic cohort (N=4226) and estimators of cytoreductive surgery in the multivariable mixed-effects logistic model.

Variable	N (%)	Cytoreductive Surgery (N=1370)	
		OR (95% CI)	p-value
Age (years)			
65-69	967 (22.9)	1 [Reference]	-
70-79	1887 (44.6)	0.70 (0.58-0.85)	<0.001
≥80	1372 (32.5)	0.23 (0.18-0.29)	<0.001
Sex			
Female	1511 (35.7)	1 [Reference]	-
Male	2715 (64.3)	0.92 (0.78-1.09)	0.328
Race			
White	3686 (87.2)	1 [Reference]	-
Non-White	540 (12.8)	0.74 (0.58-0.95)	0.018
Charlson Comorbidity Index			
0	969 (22.9)	1 [Reference]	-
1-2	1395 (33.0)	0.94 (0.76-1.15)	0.532
≥3	1862 (44.1)	0.70 (0.57-0.86)	0.001
Clinical Tumor Size (cm)			
≤4	534 (12.7)	1 [Reference]	-
>4-7	1103 (26.1)	1.16 (0.88-1.53)	0.304
>7-10	1036 (24.5)	1.31 (0.94-1.82)	0.108
>10	740 (17.5)	1.47 (1.05-2.05)	0.026
Missing	813 (19.2)	-	-
Clinical T Stage			
T0/TX	1139 (26.9)	1 [Reference]	-
T1	823 (19.5)	5.86 (3.96-8.67)	<0.001
T2	524 (12.4)	7.23 (4.82-10.8)	<0.001
T3	1297 (30.7)	29.5 (20.5-42.4)	<0.001
T4	443 (10.5)	7.70 (5.16-11.5)	<0.001
Clinical N Stage			
N0/NX	3159 (74.8)	1 [Reference]	-
N1	656 (15.5)	0.45 (0.36-0.56)	<0.001
N2	411 (9.7)	0.49 (0.37-0.64)	<0.001
Year of Diagnosis			
2004	396 (9.4)	1 [Reference]	-
2005	430 (10.2)	0.82 (0.57-1.18)	0.293
2006	391 (9.3)	0.73 (0.50-1.07)	0.107
2007	458 (10.8)	1.03 (0.72-1.47)	0.868
2008	419 (9.9)	1.05 (0.73-1.51)	0.781
2009	430 (10.2)	0.71 (0.49-1.02)	0.062
2010	398 (9.4)	0.78 (0.54-1.13)	0.191
2011	432 (10.2)	0.79 (0.55-1.13)	0.195
2012	423 (10.0)	0.66 (0.46-0.95)	0.027
2013	449 (10.6)	0.69 (0.48-0.99)	0.043

OR = odds ratio; CI = confidence interval

PDA-08

Testicular Ultrasound as a Prognostic Factor for Improvement in Semen Parameters After Varicocelectomy

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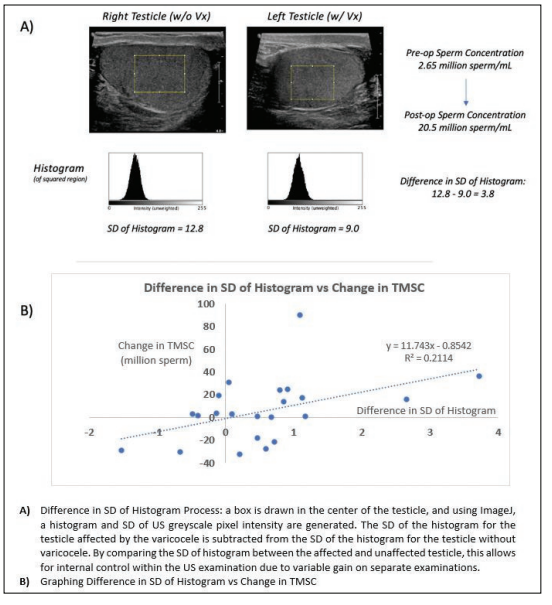
Introduction: It is difficult to identify the sub-groups of infertile men who will benefit most from varicocelectomy. We theorize that advanced processing of ultrasound images can predict testicular sperm density as posterior acoustic enhancement could result in increased echogenity and heterogeneity as ultrasound waves pass through larger seminiferous tubules. The objective of our study was to evaluate testicular ultrasound heterogeneity as a predictor for improved semen parameters after varicocelectomy.

Materials & Methods: Infertile men undergoing varicocelectomy were included if they had pre-operative testicular ultrasound plus pre- and post-operative semen analysis. Azoospermic men were excluded. Greyscale testicular ultrasound images were assessed with pixel intensity histogram. The standard deviation (SD) of the histogram was theorized to measure of heterogeneity and thus representative of testicular sperm density. The difference in histogram SDs between the testicle with the more significant varicocele and the testicle with less significant varicocele was taken to control for variable gain on separate ultrasound examinations (Figure 1). Linear regression was performed to assess the correlation between the pre-operative difference in the testicular histogram SD and the change in total motile sperm count (TMSC) following varicocelectomy.

Results: Twenty-two men were included. Median preoperative TMSC was 22.1 million sperm (IQR: 9.0-44.5). Fifteen men experienced an increase in TMSC after varicocelectomy: median increase 16.1 million sperm (IQR: 2.9-24.0). The remaining seven men experienced a decline in TMSC: median decrease 27.6 million sperm (IQR: 19.9-29.6). A greater pre-operative difference in the testicular histogram SD between the two testicles was associated with a greater improvement in TMSC following varicocelectomy ($p < 0.05$, $R2 = 0.21$).

Conclusions: This novel method to evaluate testicular heterogeneity may help predict which men will experience an improvement in semen parameters after varicocelectomy.



A) Difference in SD of Histogram Process: a box is drawn in the center of the testicle, and using ImageJ, a histogram and SD of US greyscale pixel intensity are generated. The SD of the histogram for the testicle affected by the varicocele is subtracted from the SD of the histogram for the testicle without varicocele. By comparing the SD of histogram between the affected and unaffected testicle, this allows for internal control within the US examination due to variable gain on separate examinations.
B) Graphing Difference in SD of Histogram vs Change in TMSC

PDA-09

Factors Associated with Upgrading on Re-Biopsy in Active Surveillance: Data from PURC

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Introduction: Active surveillance (AS) is increasingly utilized for management of prostate cancer (PCa) across all demographics. The ideal AS candidate has low risk PCa that remains indolent and stable, but risk factors for grade progression are still poorly understood. Herein we studied factors associated with upgrading on re-biopsy in patients enrolled in AS.

Materials & Methods: Within PURC, a prospective quality improvement collaborative of diverse academic and community urology practices in Pennsylvania & New Jersey, we identified all men enrolled in AS from 2015-2018 after first biopsy. We analyzed differences in pathologic grading between the first and second biopsy and factors associated with upgrading at the second biopsy.

Results: We identified 477 patients enrolled in AS who underwent 2 biopsies from 2015-2018. 346 (72.5%) patients who underwent re-biopsy had a second positive biopsy. Higher PSA, Gleason score, number of positive cores, and family history were associated with a positive second biopsy ($p < 0.05$). When analyzing pathology results of the positive second biopsy, 243 (70%) patients had a concordant or lower grade, and 103 (29.8%) patients were upgraded. Higher Gleason score, ISUP Grade Group, number of positive cores, and positive family history were associated with upgrading ($p < 0.05$). On regression analysis, no factors were predictive of upgrading. 113 patients had only 1 positive core on initial biopsy. These were sub classified into 2 groups, those who had < 50% or > 50% tissue involved. No differences were noted in rates of positive second biopsy or upgrading between these groups (97% vs. 92%, $p = 0.18$).

Conclusions: Of those with a second positive biopsy, 29.8% were upgraded at their confirmatory biopsy. Higher Gleason score, International Society of Urological Pathology (ISUP) Grade Group, number of positive cores, and positive family history were all significantly associated with upgrading. These associations may be taken into consideration upon shared-decision making for PCa treatment.

PDA-10

Clinical Utility of ExoDx Prostate in Men on Initial Biopsy

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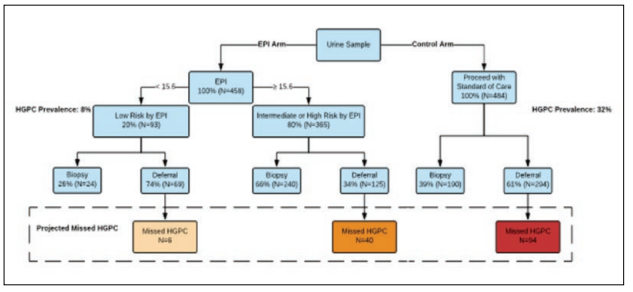
Introduction: The ExoDx Prostate (EPI) test is a non- invasive risk assessment tool for detection of high-grade prostate cancer (HGPC). We sought to assess the impact of EPI on the decision to biopsy in a real-world clinical setting.

Materials & Methods: We conducted a prospective, randomized, blinded, two-armed clinical utility study (N = 1094) with 72 urologists from 24 urology practices. Subjects were enrolled based on standard clinical criteria. All subjects had an EPI test; however, subjects were randomized into an EPI and control arm where only the EPI arm received the results for their biopsy decision.

Results: In the EPI arm (n = 458), 93 subjects received a negative EPI score of which 63% were recommended to defer biopsy by the urologist and 74% ultimately deferred. In contrast, 87% of subjects with a positive EPI score were recommended to undergo biopsy with a 72% compliance rate to the urologist's recommendation. This led to the detection of 18 more HGPC compared to the control arm. Due to the high deferral of biopsies that occurs in patients evaluated by standard of care (the blinded control arm), it is projected that 94 HGPC will be missed. In contrast, only 46 HGPC is projected to be missed among the deferred EPI arm patients (Figure). Overall, 68% of urologists reported that the EPI test influenced their biopsy decision. The primary reason not to comply with EPI results was a rising PSA.

Conclusions: To our knowledge, this is the first report on a prostate cancer biomarker utility study with a blinded control arm. The study demonstrates that the EPI test influences the overall decision to defer or proceed with a biopsy and improves patient stratification.



PDA-11

Outcomes of Primary Cryotherapy for Localized Prostate Cancer - 14-year Single Institution Experience

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Introduction: Cryoablation is recommended as an alternative treatment for localized prostate cancer (PCa) given its favorable side effect profiles on bladder and bowel function. Long term outcomes are not well characterized in the literature. We aim to report our experience with procedure at our center.

Materials & Methods: We retrospectively reviewed all men who underwent primary whole-gland cryoablation for localized prostate cancer at our institution from 2005 through 2019. Functional and oncologic outcomes were assessed. Recurrence-free survival was studied based on Kaplan-Meier results.

Results: Of the 276 patients, 80% had D'Amico high- (22.8%) or intermediate- (57.6%) risk disease. Median follow-up was 4.7 years. Majority of the patients (83%) reached prostate-specific antigen (PSA) nadir < 0.4 ng/ml. This was associated with improved disease-free survival ($p < 0.00001$). De novo incontinence (2%) and De novo ED rates (12%) were relatively low, and complications such as urethral stricture (n = 1) and rectal urethral fistula (n = 0) were extremely rare. 5 year clinical recurrence-free survival was 70% overall and 94% for low-, 86% for intermediate-, and 63% for high-risk PCa in our cohort.

Conclusions: Primary whole-gland cryoablation is a safe and durable medium-term alternative for radiation therapy and radical prostatectomy.

PDA-12

The Effect of Peritoneal Interposition Flap on Lymphocele Rates following Robotic Assisted Radical Prostatectomy with Bilateral Pelvic Lymph Node Dissection

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Introduction: During robotic assisted laparoscopic prostatectomy (RALP) with bilateral pelvic lymph node dissection (BPNLD), creation of a peritoneal interposition flap has been proposed as a technique to reduce the rate of post-operative pelvic lymphocele formation. We aimed to investigate the effect of this technique on the rate of symptomatic lymphocele formation after RALP with BPLND.

Materials & Methods: Two surgeons at our institution began performing the peritoneal interposition flap in August 2018. The flap is created after BPLND by rotating and advancing the peritoneum around the lateral surface of the bladder to the dependent portion of the pelvis and fixing it to the bladder itself. To study the effect of the peritoneal flap on development of post-operative lymphoceles, a retrospective chart review was conducted in which 191 patients who underwent RALP with BPLND prior to performance of the flap (pre-flap group) were compared to 124 patients who underwent RALP with PLND with a peritoneal flap (post-flap group).

Results: The table shows a comparison of demographic and disease-specific characteristics between the pre- and post-flap groups, as well as the rates of post-operative symptomatic lymphocele formation. More lymph nodes were removed in the post-flap compared to the pre-flap group. Significantly fewer symptomatic lymphoceles occurred in the post-flap group compared to the pre-flap group (4.03% vs. 18.3% $p < 0.01$).

Conclusions: In this single institution series, performance of a relatively simple peritoneal flap significantly decreased the rate of symptomatic lymphocele formation after RALP with PLND. The decreased lymphocele rate in the interposition flap group was observed despite more extensive lymph node dissections being performed in this group. This promising technique warrants additional study in larger multi-institutional series to confirm its potential benefits.

		Pre-Flap Group	Post-Flap Group	p-value
Age (Median)		63.0	63.4	0.61
PSA (Median)		9.59	10.92	0.32
BMI		29.0	28.0	0.10
Grade Group N (%)	1	21 (11.0%)	3 (2.4%)	0.047
	2	104 (54.5%)	72 (58.1%)	
	3	31 (16.2%)	23 (18.5%)	
	≥4	35 (18.3%)	26 (20.99%)	
Lymph Nodes Removed (Median)		14.8	17.7	<0.01
Post-Op Lymphocele N (%)	Yes	35 (18.3%)	5 (4.0%)	<0.01
	No	156 (81.7%)	119 (96.0%)	

PDB-01

A 5-Item Frailty Index Predicting Morbidity and Mortality in Radical Prostatectomy: Result from the ACS NSQIP Database

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Introduction: Frailty limits a patient's ability to recover from surgery. Current preoperative evaluation methods fail to assess difference in physiological reserves of patients with the same chronological age. We sought to assess the ability of a simple 5-item frailty index (5-IF) to predict outcomes in patients undergoing radical prostatectomy (RP).

Materials & Methods: The American College of Surgeon National Surgical Quality Improvement Program (ACS NSQIP) was queried for patients who underwent RP without concurrent procedures from 2008-2017. We calculated the 5-IF score for each patient by assigning a point for each of the following conditions: chronic obstructive pulmonary disease, congestive heart failure, dependent functional status, hypertension, and diabetes. Multivariable backward logistic regression was used for the following outcomes: Clavien-Dindo grade (CDG) ≥ 3 and ≥ 4, extended length of hospital stay (LOS > 1 day), operative time > 240 minutes, return to operating room, and early mortality. The model was adjusted for age, race, American Society of Anesthesiology (ASA) class, and whether laparoscopy/robotics were used.

Results: A total of 29,723 patients were included. Patients older than 65, non-white, and with ASA ≥ 3 were more likely to have higher 5-IF scores (≥ 2) ($p < 0.0001$). A higher 5-IF score correlated with higher CDG complications ($p < 0.0001$). A 5-IF score ≥ 2 had 1.69 (1.34-2.13) and 1.91 (1.44-2.54) times the odds of CDG ≥ 3 and ≥ 4 adverse events, respectively, as well as a 29% increased risk of extended LOS ($p < 0.0001$) and increased mortality [OR: 3.83 (1.23-11.84)]. No effect on operative time or return to the operating room was demonstrated. When the 5-IF score was ≥ 2, the tool had 89.3% specificity and 97.8% and 98.3% negative predictive value to predict CDG ≥ 3 and ≥ 4 complications, respectively.

Conclusions: Frailty, measured by a simple 5-point frailty index, is an independent predictor of adverse outcomes in patients undergoing RP. This index is a useful tool to counsel patients before surgery.

PDB-03

Tracking MRI invisible Tumors and Their Pathologic Outcomes in Prostate Cancer

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Introduction: Magnetic resonance imaging (MRI) invisible tumors are a diagnostic challenge in prostate cancer due to the lack of ability to reliably monitor these lesions radiographically or pathologically. The progression and natural history of these lesions are unknown.

Materials & Methods: Men with multiparametric MRI of the prostate and MRI/Transrectal ultrasound (TRUS) fusion guided biopsy were assessed for the presence of MRI invisible tumors (MIT). An MIT is defined as cancer detected only on extended sextant biopsy and not visible on MRI. All men first underwent an MRI/TRUS fusion biopsy with tracked extended sextant biopsy which originally detected the MIT. The original biopsy needle course sampling these MITs were tracked and set as future targets using the MRI/TRUS fusion platform. Men were followed and subsequently underwent a combined MRI/TRUS fusion biopsy, systematic extended sextant biopsy, and a Targeted Tracked biopsy of the MIT (TT-MIT) that was recorded and tracked from the original biopsy.

Results: 446 MITs were identified, 364 (82%) of which were originally Gleason grade group 1 tumors. The median time between biopsies was 17.2 months. 198 tumors were detected on rebiopsy with TT-MIT compared to 151 tumors on systematic biopsy sampling the same corresponding sextant location. TT-MIT demonstrated a 23.7% increased rate of detecting any grade of cancer ($p = 0.0003$) and a 28.4% increase in detecting GG ≥ 2 tumors ($p = .01$) compared to corresponding systematic biopsy. Of the 152 rebiopsies in which a GG ≥ 2 tumor was discovered, 23 (15.1%) were found only due to the addition of TT-MIT biopsy and would otherwise have been undetected. GG1 MITs have a 12.5% and 28.8% rate of upgrading to GG ≥ 2 after a single or subsequent rebiopsy, respectively.

Conclusions: Tracking MRI invisible tumors with TT-MIT biopsy increases cancer detection rate compared to systematic biopsy and more accurately samples these MITs, unveiling a more aggressive pathology.

PDB-05

Pediatric Epididymitis – Antibiotic Prescribing Patterns in the Outpatient Setting
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Introduction: Only a minority of pediatric patients with acute epididymitis or epididymo-orchitis have a bacterial etiology proven with a positive urine culture (approximately 4-10%)[1,2]. Boys with normal urinalysis or negative urine culture can be safely managed with supportive care only1. For children 2-14 years of age with acute epididymitis, the American Academy of Family Physicians recommends antibiotic treatment based on urinalysis or urine culture results. Similarly, the American Academy of Pediatrics recommends urine testing prior to initiating antibiotics in pediatric patients with epididymitis. The present study aims to investigate the evaluation and treatment pattern of pediatric patients diagnosed with epididymo-orchitis in the outpatient setting at a single academic institution.

Materials & Methods: We conducted a retrospective chart review of patients under the age of 18 who were diagnosed with epididymitis, orchitis, or epididymo-orchitis between 1996 and 2017 in the outpatient setting at a single institution. IRB approval was obtained.

Results: 672 patients under the age of 18 with the diagnosis of epididymitis, orchitis, or epididymo-orchitis were identified. 403 patients (60%) received antibiotics. Of the patients who received antibiotics, 303 (75%) did not have a urinalysis or urine culture performed at the time of diagnosis, and 16 (4%) had a positive urine culture or abnormal urinalysis. 269 (40%) patients did not receive antibiotics, 44 of them had a urinalysis or urine culture performed and all were negative for infection.

Conclusions: Contrary to national guidelines, most pediatric patients diagnosed with epididymo-orchitis were prescribed antibiotics inappropriately despite negative urinalysis and urine cultures. 75% of patients who received antibiotics did so without having a prior urinalysis or urine culture. Future directions to the study will include efforts to decrease inappropriate antimicrobial use for pediatric epididymitis in our institution.

PDB-06

Extended Manual Modeling: an Updated Method for Safely and Effectively Managing Curvature During Penile Prosthesis Implantation
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Introduction: Manual modeling is an effective strategy at reducing penile curvature in patients with erectile dysfunction (ED) and Peyronie's Disease (PD) who undergo inflatable penile prosthesis (IPP) insertion. Due to a lack of contemporary data and a historic 4% rate of urethral perforation, many have opted towards other surgical options for treating concomitant ED and PD. Comparison was made of outcomes in patients undergoing a variant of the original technique ('extended manual modeling,' EMM) to patients with no ancillary straightening (NAS) procedure.

Materials & Methods: All IPP cases from 2 high-volume implanters from Nov 2015 through Aug 2019 were reviewed. Patients with > 30 of residual curvature after cylinder placement who underwent EMM were compared to a matched cohort of NAS patients. Concomitant grafting and/or plication cases were excluded. EMM was performed by forcibly bending the erect penis in the direction opposite of the point of maximal curvature for 90-second intervals for as many cycles as necessary to achieve < 30 curvature.

Results: 40 (50.0%) patients underwent EMM while 40 (50.0%) were in the NAS group. The median pre-modeling curvature in the EMM group was 45.0 (IQR 36.3-60.0) while post-modeling curvature improved to 10.0 (IQR 5.0-15.0; $p < 0.001$). There was no difference between cohorts with respect to operative time (82.7 vs. 84.7 min, $p = 0.77$) or surgical approach (95.0% vs. 87.5% penoscrotal, $p = 0.43$). Both groups had similar cylinder length and reservoir volume, but the EMM cohort had a smaller mean rear-tip extender (1.3 cm vs. 1.8 cm; $p = 0.02$). No patient in either cohort experienced an intraoperative or postoperative complication at a mean follow-up of 6.0 (IQR 3.3-13.4) months.

Conclusions: Although many prosthetic urologists forego manual modeling in cases of severe penile curvature, our series shows it to be both safe and effective. EMM may preclude the need for more complex surgical procedures

PDB-07

Prevalence and Characterization of Pelvic Pain in a General Urology Clinic Population
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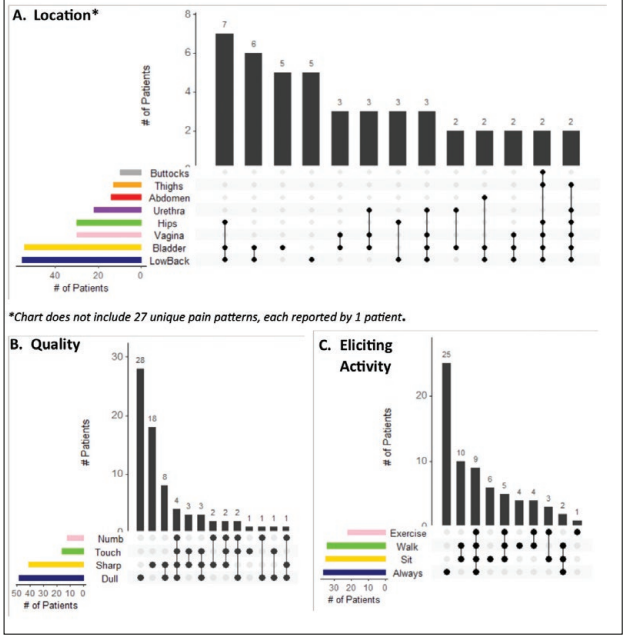
Introduction: Available data estimates pelvic pain prevalence in women to range between 6-26%. Notably, basic data elucidating pain characteristics, including quality and location, are not well reported. Such study is fundamental to a better understanding of the multifactorial nature of pelvic pain and to optimize related therapies. We assessed the prevalence and character of pelvic pain in a general urology population presenting for evaluation of unrelated non-painful complaints.

Materials & Methods: This is an IRB-approved prospective, cross-sectional survey-based study of female patients presenting to a urology clinic over a 10-month period (7/2018-5/2019). Patients completed a 32-item survey with questions pertaining to pelvic pain, focusing on pain location, quality, frequency, and severity. Detailed anatomic figures were included to aid in localization. Analysis was performed with R programming language (3.6.1).

Results: A total of 181 women completed the survey, with a mean age of 56 years. 75 (41%) women reported pelvic pain. Patients described a significant variety of pain locations and qualities (Figures 1). The most common sites of pain were lower back (73%) and bladder (72%), while "dull/aching" was the most common pain quality. Notably, a majority (84%) of patients reported multiple pain locations. Median pain severity was 7 [IQR 4, 8] on a 10-point scale. Over half (52%) also reported dyspareunia. A majority (57%) of patients reported feeling "unhappy" or "terrible" as a result of pain. 83% of patients reported that pelvic pain inhibited normal activities.

Conclusions: A significant percentage of women presenting to a general urology clinic experience pelvic pain. There was notable variety in patient-reported pain location and quality. Further study is needed to further understand patterns of pain characteristics and their relationship with underlying etiologies of pelvic pain.

Figure 1. Patterns of pain characteristics



PDB-08

Perioperative Trends and Risk Factors for Long Term Opioid Use After Endoscopic Stone Surgery

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Introduction: We examined opioid prescribing patterns following surgical management of nephrolithiasis. Our goal was to identify risk factors for long-term opioid use, defined as ongoing use 6 months after endoscopic stone surgery.

Materials & Methods: We performed a single-center retrospective review of patients undergoing ureteroscopy (URS) or Percutaneous nephrolithotomy (PCNL) from 2014-2018. Perioperative opioid prescribing trends were assessed with the Pennsylvania Prescription Drug Monitoring Program (PA-PDMP). The number of prescriptions, tablets and total morphine equivalents (TME) were quantified. Patients were excluded if using opioids within three months prior to surgery.

Results: PDMP data was available for 273 opioid naive patients. The absolute risk of long-term opioid use was 7.9% (9/113) and 2.5% (4/160) for URS and PCNL groups, respectively while the relative risk was 3.19 (95%CI 1.05-10.9). Sub-analysis performed on the URS group to identify factors associated with long-term use (Table 1). TME at discharge (mean 147.44 vs. 274.66, p = 0.003), at 0-3 months (mean 106.9 vs. 341.66 p = 0.003), and the number of narcotic refills between 0-3 months (mean 0.53 vs. 1.22 p = 0.003) were all significant risk factors for long-term opioid use. On multivariate adjusted analysis, TME prescribed at discharge was an independent predictor for long-term opioid use. Table 2 lists characteristics of patients that developed long term opioid use after ureteroscopy.

Conclusions: Patients undergoing URS had a higher absolute risk of opioid use at 6 months after surgery compared to patients undergoing PCNL. Limiting TME and number of prescriptions in first 3 months after URS may help reduce the risk of ongoing opioid use after ureteroscopy.

Table 1: Post operative narcotic prescription patterns

	Chronic Post Op Use	No Chronic Post Op Use	p-value
N	9	104	
Preoperative			
Number of prescriptions	1.22	0.625	0.12
TME prescribed	45.33	95.11	0.27
At Discharge			
Number of prescriptions	1	1	
TME prescribed	274.66	147.44	**0.003**
0-3 Months Post Op			
Number of prescriptions	1.22	0.53	**0.003**
TME prescribed	341.66	106.9	**0.002**
3-6 months Post Op			
Number of Prescriptions	1.66	0.057	**0.000**
TME prescribed	1240.82	17.16	**0.000**

Table 2. Characteristics of nine patients with long term opioid use (> 6 months) after ureteroscopy

ID	Age	Gender	Substance Abuse	Psychiatric Illness	Chronic Pain Syndromes	Refill by Urology Team	Other Providers prescribing refill	Additional Comments
1	31	Male	No	No	No	No	ER Physician	--
2	26	Female	No	No	No	No	ER Physician	POD #12: ER visit for flank pain secondary to ureteral stent
3	54	Female	No	No	No	Yes	--	--
4	39	Male	No	No	No	Yes	Primary Care Physician	--
5	28	Female	No	Depression, ADHD	No	Yes	Multiple ER Physicians, Psychiatrist	Chronic left flank pain from kidney stones
6	69	Female	No	No	Rheumatoid Arthritis	Yes	Primary Care Physician, Orthopedic Surgery	Chronic back pain
7	66	Female	No	No	Osteoarthritis	Yes	Primary Care Physician	Chronic back pain prior to URS
8	62	Female	No	No	No	No	Primary Care Physician	--
9	68	Female	No	No	Osteoporosis, Osteoarthritis	Yes	Primary Care Physician, PM&R	Chronic back pain secondary to cervical and lumbar radiculopathy

PDB-09

Dornier HM3 Has a Higher Stone Free Rate and Lower Follow up Procedure Rate than the Storz Modulith SLX-F2

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Introduction: The relative efficacy and complication rates between the first generation and latest generation lithotripters are unknown. We sought to examine the differences in stone free rate and complications between the Dornier HM3 and the Storz Modulith SLX-F2. We hypothesized that the Dornier HM3 had an superior stone free rate.

Materials & Methods: We performed a retrospective cohort analysis of nephrolithiasis patients at a single academic institution treated with the Dornier HM3 and the Modulith SLX-F2 from July 2016 to August 2019. Patients over the age of 18 with first time treatment for the stone episode were included. Patients with staghorn calculi were excluded.

Results: 61 patients were treated with the Modulith SLX-F2. 79 patients were treated with the Dornier HM3. Age, sex, BMI, and stone size showed no significant differences between the cohorts (Table 1). The Dornier HM3 had a statistically significant higher stone free rate of 73.4%, than the Modulith SLX-F2, which had a stone free rate of 49.2%. Stone free rate was defined as less than 2 mm residual targeted calculi on follow up imaging within 3 months of the procedure. Patients treated with the Dornier HM3 had a statistically significant lower follow up procedure rate than the Modulith SLX-F2 (Table 2).

Conclusions: The Dornier HM3 is more effective in treating nephrolithiasis than the Modulith SLX-F2. The Dornier HM3 had a statistically significant higher stone free rate and a statistically significant lower follow up procedure rate. The newer generation lithotripters may sacrifice treatment efficacy for portability and economics.

Demographics of Modulith SLX-F2 and Dornier HM3 Cohorts

	Modulith SLX-F2	Dornier HM3	P Value
Male	44.3%	43.0%	1
Age	52.6	49.9	0.29
BMI	30.9	30.5	0.80
Size (mm)	12.5	10.6	0.06
Skin to Stone (cm)	11.9	10.1	0.04
Ancillary Stent Placement	32.8%	24.1%	0.32

Table 1

Outcomes Comparing Modulith SLX-F2 and Dornier HM3

	Modulith SLX-F2	Dornier HM3	P Value
Stone Free Rate	49.2%	73.4%	<0.01*
Average Shocks	2731.2	2338.9	<0.005*
Complications			
ED Visits	4.9%(3)	11.4%(9)	
Admission Totals	8.2%(5)	3.8% (3)	
Steinstrasse	4.9%(3)	2.5%(2)	
Pyelonephritits	2.3%(1)	1.3%(1)	
Pulmonary Embolism	2.3%(1)		
Follow up procedure	21.3%(13)	10%(3)	<0.01*
Ureteroscopy	9.8%(6)	3.8%(3)	
PCNL	1.6%(1)	1.3%(1)	
ESWL	4.9%(3)	1.3%(1)	

PDB-10

Accuracy of Clinical Staging in Stage I and IIA/B Testicular Nonseminomatous Germ Cell Tumors (NSGCT) and Implications on Survival

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Introduction: Clinical stage (CS) dictates treatment in men with testicular cancer and its inaccuracy may affect clinical outcome. We evaluate the clinical staging accuracy in men with CS I and CS IIA/B NSGCT and explore the survival implications of inaccurate staging.

Materials & Methods: Using the National Cancer Database (NCDB), we abstracted patients with clinical Stage I-IIB NSGCT who received a primary retroperitoneal lymph node dissection (RPLND) from 2004 to 2014. Primary RPLND was defined as RPLND performed for CS I-IIB patients without prior chemotherapy. CS was cross-tabulated with pathologic nodal staging data. Kaplan Meier estimates illustrated overall survival among those patients accurately staged (i.e. CS I patients with pN0 disease) and up-staged (i.e. CS I patients with pN+ disease).

Results: Using the National Cancer Database (NCDB), we abstracted patients with clinical Stage I-IIB NSGCT who received a primary retroperitoneal lymph node dissection (RPLND) from 2004 to 2014. Primary RPLND was defined as RPLND performed for CS I-IIB patients without prior chemotherapy. CS was cross-tabulated with pathologic nodal staging data. Kaplan Meier estimates illustrated overall survival among those patients accurately staged (i.e. CS I patients with pN0 disease) and up-staged (i.e. CS I patients with pN+ disease).

Conclusions: Nearly 25% of patients with CS I NSGCT are under-staged and are found to have pN1-3 after RPLND. Nodal disease burden is associated with survival. Novel imaging techniques and biomarkers are needed to improve the sensitivity of detecting NSGCT.

Figure 1: 10-year Overall Survival of Clinical Stage I NSGCT Patients after RPLND According to Pathologic N Stage

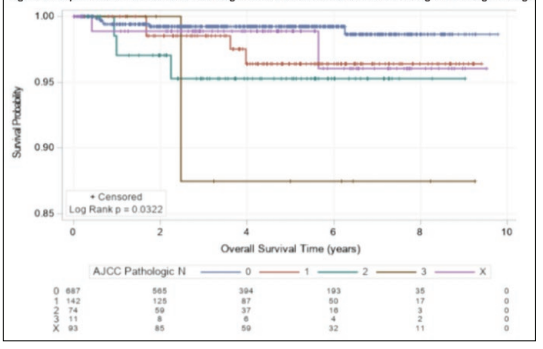

Table 1: Pathologic Nodal Stage after Primary RPLND, according to Clinical Stage

		Clinical stage					
		I (n=1096) (IA + IB)	IA (n=633)	IB (n=463)	IIA (n=299)	IIB (n=244)	Total
Pathologic N Stage, n (%)	N0	**741 (67.6)**	474 (74.9)	267 (57.6)	69 (23.1)	45 (18.4)	855
	N1	**152 (13.9)**	55 (8.7)	97 (21)	134 (44.8)	13 (5.3)	299
	N2	**88 (8)**	28 (4.4)	60 (13)	40 (13.4)	115 (47.1)	243
	N3	**12 (1.1)**	7 (1.1)	5 (1.1)	4 (1.3)	12 (4.9)	28
	NX	**103 (9.4)**	69 (10.9)	34 (7.3)	52 (17.4)	59 (24.2)	214

PDB-11

Association of Lymph Node Count and Survival After Primary Retroperitoneal Lymph Node Dissection (RPLND) for Testicular Nonseminomatous Germ Cell Tumor (NSGCT)

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Introduction: RPLND for clinical stage (CS) I & IIA/B NSGCT has both staging and therapeutic implications. Single center studies have reported on the impact of lymph node count on outcome after 1° RPLND for men with NSGCT. However, this has yet to be corroborated in a nationally representative dataset.

Materials & Methods: Using the National Cancer Database, a retrospective analysis of patients who received a primary RPLND for clinical stage I and IIA/B NSGCT was performed. This cohort was stratified according to LN count (≤ 20, > 20 LNs). Sociodemographic characteristics were compared among groups. The Kaplan-Meier method was calculated and pairwise comparison was performed among each group. Multivariate analysis was performed to identify factors associated with having > 20 LNs resected during primary RPLND.

Results: Of 1,376 men who received 1° RPLND for Stage I or IIA/B NSGCT, 35.6%, 27.4%, and 14% had ≤ 20, 21-40, and > 40 LNs resected, respectively. LN count was associated with overall survival (OS), with 95%, 97%, and 98% 8-year OS for men with ≤ 20, 21-40, and > 40 LNs, respectively. OS in men with ≤ 20 vs. 21-40 ($p = 0.018$) and > 40 LNs ($p = 0.042$) resected differed significantly whereas no significant difference was observed when 21-40 vs. > 40 LNs were resected ($p = 0.677$). Therefore, subsequent analysis compared those who had ≤ 20 and > 20 LN resected, and OS between these two groups differed significantly. Multivariate analysis demonstrated that patients with private insurance, surgery having been performed at an academic center or in the Northeast, and those with pT2 disease were more likely to have > 20 LNs resected at the time of RPLND.

Conclusions: Lymph node count after primary RPLND for NSGCT is significantly associated with overall survival, with more favorable survival seen in those who receive an RPLND with > 20 LNs resected when compared to ≤ 20 LNs.

PDB-12

Does the Timing of Preoperative Imaging Make a Difference in the Surgical Management of Advanced Renal Cell Carcinoma with Venous Extension?

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Introduction: Advanced renal cell carcinoma (RCC) can be associated with tumor thrombus formation within the renal vein, vena cava, and right atrium. Accurate preoperative assessment of the level tumor thrombus extension is important for surgical planning. The time between diagnosis and tumor thrombus progression is unclear. We sought to determine if there is an optimal window to obtain cross-sectional imaging before surgery to characterize the level of thrombus extension with the goal of minimizing unplanned intraoperative events and improving patient outcomes.

Materials & Methods: We performed a retrospective analysis of patients with stage ≥ pT3 renal cancer managed with open radical nephrectomy at a tertiary care institution from March 2010 to March 2019. We reviewed patient demographics, presenting symptoms, preoperative imaging, surgical technique, intraoperative and postoperative complications, pathology, recurrence, and mortality.

Results: Of the 392 cases, there were 23 patients with tumor thrombus invasion the renal vein and inferior vena cava. The median age at diagnosis was 65 years-old (range 51-82) with a male-to-female ratio of 4:1. All patients had preoperative CT scans of the abdomen and pelvis, while 73% had a dedicated MRI. The median time between cross-sectional abdominal imaging and surgery was 19 days (range 1-90). Imaging > 19 days prior to surgery was associated with a higher rate of intraoperative complications (22% vs. 0%, $p = 0.014$) and unplanned consultations (30% vs. 0%, 0.004). However, there were no significant differences in estimated blood loss, operative time, blood transfusions, length of stay, Clavien-Dindo grade III-IV complications, or rate of recurrence.

Conclusions: The management of advanced RCC with venous extension is associated with significant blood loss, operative time, and length of stay. Obtaining preoperative imaging within 19 days surgery may capture tumor thrombus progression, allowing for better preparation with the possibility of lessening intraoperative complications and the need for unplanned intraoperative consultations.

MP1-01

Performance Characteristics of Urinary Cytology in a Population of Patients Presenting with Hematuria to an Academic Medical Center

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Introduction: To investigate the performance characteristics of urinary cytology in a population of patients presenting with gross (GH) and microscopic (MH) hematuria undergoing urologic evaluation.

Materials & Methods: The charts of 400 patients undergoing a complete hematuria evaluation (cystoscopy with upper-tract imaging) who also had a urinary cytology performed were reviewed. The performance characteristics (PPV, NPV, sensitivity, specificity) of cytology for urothelial malignancy was determined. Subgroup analysis based on smoking history, type of hematuria, and gender was performed. For those with urothelial cancer, the predictive value of a positive cytology for high grade and high stage urothelial cancer was determined.

Results: Overall, 29 of 400 patients (7.3%) were diagnosed with urothelial carcinoma including 24 (9.2%) and 5 (3.4%) from the GH and MH populations, respectively. The performance characteristics of cytology for urothelial malignancy in the entire cohort included a sensitivity of 41%, specificity of 99%, PPV of 75%, NPV of 96%, and diagnostic accuracy of 95% (Table 1). No observed differences were noted when comparing gender (p = 0.55), type of hematuria (p = 0.37), or smoking history (p = 0.22). For those diagnosed with urothelial malignancy, a positive cytology was associated not associated with a greater likelihood of higher grade (p = 1.0) or higher stage tumors (p = 0.62).

Conclusions: In this hematuria population, urine cytology had low sensitivity and PPV for urothelial carcinoma irrespective of smoker status, hematuria type, or gender. Cytology should not be routinely used in a hematuria screening population.

Table 1: Predictive characteristics of urinary cytology for urothelial malignancy in a cohort of hematuria patients

	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Overall Cohort	41	99	75	96
Gross Hematuria	46	98	73	95
Microscopic Hematuria	20	100	100	95
Male Gender	39	100	91	94
Female Gender	67	98	40	99
Positive Smoking History	33	100	88	93
Negative Smoking History	63	99	63	99

MP1-02

Assessing the Deliverables of Template Biopsy on the Ipsilateral Side of the Target Lesion at the Time of Fusion Targeted Prostate Biopsy

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Introduction: The Actionable intelligence metric (AIM) and Reduction metric (ReM) were introduced to objectify fusion biopsy deliverables across patient cohorts. Here, we specifically assess deliverables of standard template biopsy on the ipsilateral side of the targeted lesion.

Materials & Methods: Using a prospectively maintained database, we identified men who underwent targeted fusion prostate biopsy using the UroNav System (Invivo) at our tertiary care Cancer Center who also had a full 12-core template biopsy at the same time. AIM was defined as all patients with higher Gleason score (GS) on TB (minimum GS ≥ 3+4=7) relative to SB divided by total patients with GS ≥ 3+4=7 CaP (i.e. % patients for whom TB offered actionable information over SB). ReM was defined as 1 - [all patients with higher GS on SB relative to TB ÷ total patients undergoing biopsy] (i.e. % patients who could have foregone SB).

Results: 747 fusion-targeted biopsies were performed at our institution between March 2014-July 2019 (median age: 65, median PSA 6.1). Targeted biopsies that were midline or that did not specify laterality were excluded. A standard template biopsy on the ipsilateral side of a positive target achieves an AIM of 17.73% and ReM of 69%, while template biopsy on the contralateral side of the target achieves an AIM of 21.2% and ReM of 70% when compared the overall AIM of 26% and ReM of 82%. Data are summarized in Tables 1 and 2.

Conclusions: Both fusion targeting and bilateral standard template biopsy should be performed when targetable lesion is seen on mpMRI. Standard template prostate biopsy should not be omitted either on the ipsilateral or on the contralateral side of the targeted lesions.

	p-value	OR	95% C.I.for OR	
			Lower	Upper
Age	.203	1.016	.992	1.040
PSA	.162	1.017	.993	1.042
Biopsy Status- naïve (ref)	.000			
Biopsy Status prior negative	.000	.244	.151	.395
Biopsy Status on active surveillance	.453	.862	.584	1.271
PIRADS 3 (ref)	.084			
PIRADS 4	.362	1.209	.804	1.817
PIRADS 5	.030	1.708	1.054	2.771
Prostate Volume	.000	.985	.977	.993

Table 1: Logistic regression to identify predictors of positive contralateral biopsy

	p-value	OR	95% C.I.for OR	
			Lower	Upper
Age	.002	1.040	1.014	1.067
PSA	.000	1.080	1.037	1.125
Biopsy Status- naïve (ref)	.000			
Biopsy Status prior negative	.000	.356	.221	.575
Biopsy Status on active surveillance	.093	1.443	.940	2.213
PIRADS 3 (ref)	.000			
PIRADS 4	.023	1.572	1.065	2.321
PIRADS 5	.000	4.834	2.852	8.191
Prostate Volume	.000	.973	.966	.981

Table 2: Logistic regression to identify predictors of positive ipsilateral biopsy

MP1-03

Cognitive MRI Transperineal Prostate Biopsy Diagnostic Rates Do Not Differ From MRI-Fusion Transrectal Biopsy Diagnostic Rates

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Introduction: Transperineal biopsy (TPB) offers an alternative to transrectal ultrasound prostate biopsy (TRUS) with lower infection risk. However, MRI-fusion software with TPB is not as widely available and requires upgrades to become TPB compatible. TPB templates allow for more complete sampling of the prostate. We hypothesize that cognitive MRI TPB prostate cancer detection rates are similar to those of MRI-TRUS fusion biopsies (TRUS-FB).

Materials & Methods: Data was collected in a prospective IRB-approved database and analyzed retrospectively. Men undergoing TRUS-FB and TPB were identified. Prostate cancer diagnosis and diagnosis by Gleason group (GG) and PIRADS score were compared in men undergoing standard TPB, cognitive TPB, and TRUS-FB. Differences between groups were analyzed with Wilcoxon rank-sum test with statistical significance of $p < 0.05$.

Results: From 2013-2020, 214 TPB and 228 TRUS-FB were performed. Among TPB, 136 were cognitive with prior suspicious MRI. Prior MRI vs. no MRI did not change prostate cancer detection for TPB (72.6% vs. 73.1%, p=0.873). Detection rates remained similar among GGs. When comparing TRUS-FB vs. cognitive TPB, there were no differences in prostate cancer detection (71.9% vs. 72.6%, p = 0.978) with similar mean GGs detected between groups, and no differences in prostate cancer detection when broken down by PIRADS score.

Conclusions: TPB has a high prostate cancer diagnosis rate with or without prior MRI. Prostate cancer detection rates for cognitive TPB are the same as TRUS-FB with no difference in GGs. While MRI is an invaluable tool for prostate cancer diagnosis and treatment, fusion software may not be necessary for accurate diagnosis when performing TPB.

Table 1. Transperineal Biopsy results with and without MRI

	No MRI N=78	MRI N=136	P-VALUE
Age	62.7	65.8	0.005
Median PSA	7.3	7.3	0.194
% Positive	73.1	72.6	0.873
GG1	58.2	59.1	0.910
GG2	38.6	50.6	0.161
GG3	21.8	24.4	0.724
GG4	9.3	16.5	0.231
GG5	11.1	7.2	0.436

Table 2. Comparison of TRUS/MRI Fusion Biopsy vs. TP/MRI Cognitive Biopsy

	TRUS/MRI Fusion N=228	TP/MRI Cognitive N=136	P-VALUE
Age	66.7	65.8	0.228
Median PSA	6.9	7.3	0.232
Mean PIRADS	3.9	4.0	0.074
% POSITIVE	71.9	72.6	0.978
PIRADS 3	36.9	56.7	0.061
PIRADS 4	62.4	72.4	0.171
PIRADS 5	84.3	86.7	0.777
Mean GG	2.2	2.3	0.361
PIRADS 3	1.8	1.8	0.868
PIRADS 4	2.0	2.1	0.430
PIRADS 5	2.8	3.0	0.618

MP1-04

Should PI-RADS 2 Lesions Be Biopsied or Watched?

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Introduction: Prostate Imaging and Reporting Data Systems (PI-RADS) allows clinicians to assess the risk of clinically significant cancer prior to biopsy. Based on current recommendations, many urologists choose to only biopsy PI-RADS 3 lesions or greater. However, there is very limited biopsy data on PI-RADS 2 lesions. In this study we report our experience of biopsies for PI-RADS 2 lesions.

Materials & Methods: Our institutional database was queried for all patients who received an MRI/Transrectal Ultrasound (TRUS) fusion-guided prostate biopsy (Fbx) from 2014-2017. All patients with PI-RADS 2 lesions were identified. MRI data as well as pathology results from biopsy were recorded on a per lesion basis.

Results: A total of 963 patients underwent Fbx from 2014-2017 at our institution. 272 patients were identified as having at least one PI-RADS 2 lesion on mpMRI, resulting in a total of 372 biopsied PI-RADS 2 lesions. The median diameter of each lesion on mpMRI was 9 mm (IQR 6-11). Overall, 79/372 lesions (27.0%) had a result of Gleason Grade group (GG) 1 or higher on biopsy. Of these lesions, 51/79 (64.6%) had GG1 disease, 20/79 (25.3%) had GG2 disease, and 8/79 (10.1%) had ≥ GG3 disease. Overall, clinically significant cancer (defined as GG2 or greater) was detected in 28/372 (7.5%) lesions using a targeted biopsy approach. Further, when the PI-RADS 2 lesion was identified as the index lesion, clinically significant cancer was detected by systematic biopsy in 10/109 (9.2%) patients.

Conclusions: The results from our study support that PI-RADS 2 lesions carry a low likelihood of detecting clinically significant cancer on prostate biopsy. As biopsy data on PI-RADS 2 lesions is sparse, further study is need to answer this important clinical question.

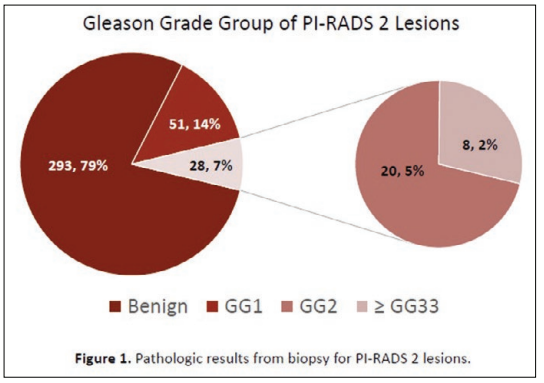

Figure 1. Pathologic results from biopsy for PI-RADS 2 lesions.

MP1-06

Sexual Health Disparities in Appalachian Urologic Oncology Patients
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Introduction: Erectile dysfunction (ED) affects up to 30 million men in the United States, with the Appalachian population experiencing the highest national rates of contributing factors of ED. Urological malignancy (UM) and management can also affect these factors and directly impact sexual health. Further investigation is necessary to elucidate the extent of ED in patients with UM and the prevalence of comorbidities in Appalachia.

Materials & Methods: An anonymous, voluntary survey with prior informed consented was administered to all male patients at a university based urology clinic. The survey included the Sexual Health Inventory for Men (SHIM), diagnosis of prostate, bladder, and/or kidney cancer, comorbid ED medical conditions, and demographic information. Analysis was performed between patients with or without UM diagnosis using JMP.14.1.0 software. Mann- Whitney U tests were used to compare means for continuous variables and chi-squared tests were used for categorical variable comparison.

Results: A total of 762 patients completed the survey, with 214 (28.1%) patients reporting a history of UM. The mean SHIM scores for patients with history of UM and without UM is 15.478 +/- 7.823 and 17.598 +/- 7.574, respectively. The lower SHIM score for patients with UM is statistically significant ($p < 0.05$). Other than hypertension, no statistical significant difference was found in the reported comorbidities between those with and without history of UM. Of the patients with UM history, only 2.8% self-reported current use of some form of treatment for ED, with 64% self-reported being interested in learning about treatment options for ED.

Conclusions: The study reveals that patients with diagnosis of UM suffer from ED significantly more than patients without diagnosis of UM. Seven of the eight comorbid conditions for ED screened were not found to be statistically significant, indicating similiar prevalence of comorbid conditions between the two populations. The study indicates a need for increased screening and management of ED in patients with diagnosis of UM.

Table 1. Comorbidities of Erectile Dysfunction by History of Urologic Cancer

Comorbities		No Cancer	Cancer	P Value No Cancer Vs All Cancers
BPH	N	119/508	64/214	0.068
	%	23.4%	29.9%	
Tobacco Use Disorder	N	121/508	59/214	0.29
	%	23.8%	27.6%	
Alcohol Consumption	N	229/509	80/214	0.056
	%	45.1%	37.4%	
Diabetes	N	93/508	52/214	0.066
	%	18.3%	24.3%	
Depression	N	94/508	34/214	0.40
	%	18.5%	15.9%	
Hypertension	N	128/508	75/214	0.007
	%	25.2%	35%	
High Cholesterol	N	142/508	67/214	0.36
	%	28%	31.30%	

MP1-07

A Simple Povidone-Iodine Gel Prep for Transrectal Ultrasound Prostate Needle Biopsy
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Introduction: Previous studies have strongly supported the use of pre-transrectal ultrasound prostate needle biopsy (TRPNB) bowel prep of povidone-iodine (topical, enema or suppository) to reduce post TRPNB infections. This study uses a commercially available 10% povidone-iodine gel at the time of prostate biopsy as a lubricant and topical antiseptic. This study primarily assessed the incidence of post procedural infections including hospitalization for treatment of sepsis.

Materials & Methods: A 6 year, 3 month review from January 1, 2014 through March 31, 2020 of consecutive TRPNB procedures performed by 2 urologists in a community office and ambulatory surgery center (ASC) setting. A total of 727 procedures were performed. For the office procedure, patient's prep included a bisacodyl enema, oral quinolone antibiotic 2 hours before the procedure as well as a standard periprostatic nerve block (PPNB). ASC patients had the same oral and mechanical prep, total intravenous anesthesia and cefazolin 1 gm IV pre procedure and no PPNB. In the left lateral decubitus position, patients had a DRE prostate using the 10% povidone-iodine gel to reassess the prostate and "paint" the anterior rectal wall. This was followed by a generous application of the 10% povidone-iodine gel to the transducer prior to anal insertion. A standard TRPNB was performed in the usual fashion securing 12-14 cores as appropriate.

Results: A total of 727 consecutive TRPNB procedures were reviewed, 518 performed in the office and 209 in the ASC. One patient required hospital admission for treatment of sepsis for an incidence of 0.138%. Three other patients were treated for suspected urinary tract infection with antibiotics as outpatients (0.413%).

Conclusions: By using an inexpensive, commercially available 10% povidone-iodine gel at the time of TRPNB we had one patient with sepsis requiring hospitalization out of 727 procedures for an incidence of 0.138%. Three other patients had outpatient antibiotic treatment for UTI (0.413%).

MP1-08

High Intensity Focused Ultrasound Treatment of Prostate Cancer: Early Assessment of a New Platform for Focal Ablation of Targeted Lesions
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Introduction: To report our initial experience and preliminary functional outcomes in men undergoing primary focal treatment of prostate cancer with a new generation of high-intensity focused ultrasound system.

Materials & Methods: Since March 2019, patients with localized PCa were treated with an updated HIFU technology (Focal One by Edap), participating in an IRB-approved prospective registry at two academic institutions. Complications, short-term functional outcomes, and effect on PSA levels were evaluated.

Results: Forty-four patients, mean age of 70 (± 8), underwent focal PCa ablation. One patient had Gleason score (GS) of 3+3 (2%), 21 (48%) had GS 3+4, 14 (32%) GS 4+3, 5 (11%) GS 4+4, and 3 (7%) GS 4+5. MRI revealed a lesion abutting the capsule in ten patients (23%), and extracapsular extension in three (7%). Overall average ablation volume was 13 cm^3 (± 6), 38% of the whole prostate. Treatment volume of 40% or more was defined as hemi-ablation, performed in 20 patients (45%). Eight patients (18%) had nerve sparing. In 39 patients (89%) the Foley was removed after 6 days (± 2.4) with micturition resumption. Three patients (6%) failed a voiding trial and were re-catheterized for an average of 8 (± 1.5) additional days. Acute urinary retention after a period of normal voiding, on average 22 days post-HIFU, occurred in 3 (6%) patients and resolved 24 days after re-catheterization. Complications included 5 patients with hematuria (11%), 2 urinary infections (5%), and 2 pelvic pain (5%). At an average 4-month follow up, PSA dropped 78%. No significant difference was found between pre- and post-operative IPSS scores .No significant difference between pre- and post-operative SHIM scores. Oncologic outcomes will be evaluated with MRI and biopsy between 6- and 12-month follow-up.

Conclusions: Preliminary data suggest that PCa treatment with HIFU-Focal One may preserve patient's quality of life with an acceptable complications. However, cancer control is yet to be determined.

MP1-09

Urine Exosome Gene Expression Biomarker in 1212 Men Undergoing Prostate Biopsy – Performance Analysis Within USPSTF Age and NCCN PSA Guidelines

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Introduction: ExoDx Prostate (IntelliScore) (EPI) is a validated non-invasive urine gene expression assay that informs initial prostate biopsy decision-making in men with PSA levels in the "gray zone' of 2-10 ng/mL and age >/= 50 years. It provides an individualized risk assessment for likelihood of having >/= GG2 on prostate biopsy. Performance analysis of pooled data from 1212 men including subgroups from the 2018 USPTF age and 2019 NCCN PSA Early Detection Guidelines was performed.

Materials & Methods: Pooled data (2 validation studies, control arm of clinical utility trial) was analyzed by (a) age 55-69 per USPSTF recommendation and (b) PSA level greater than 3 ng/mL per NCCN guidelines. Diagnostic needle biopsy outcomes were compared by EPI score, PSA and PCPT 2.0 risk calculator. Performance is reported using the area under the receiver operating characteristic curve (AUC), negative predictive value (NPV), and sensitivity for discriminating clinically significant ≥ GG2 from GG1 and benign disease. Number of clinically significant GG3 PCa < 15.6 cut-point was also assessed.

Results: In the pooled cohort of 1212 men, EPI showed an AUC of 0.7 vs. PSA AUC 0.56, PCPT2.0 AUC 0.62. Using a cut-point of 15.6 yielded an NPV 90.1%, and sensitivity 92.3% (p-values < 0.001) for discriminating ≥ GG2 PCa from benign/GG1. Comparable results were identified when both the USPSTF age limits were applied (n = 833, AUC 0.69, PSA AUC 0.57, PCPT2.0 AUC 0.61; NPV 91.5% and Sensitivity 93.3) and NCCN PSA > 3 (n = 1097, AUC 0.7, PSA AUC 0.56, PCPT2.0 AUC 0.61; NPV 89.1 and Sensitivity 91.4%). The % of false negative >/= GG3 (Gleason 4+3) was < 5% across all three groups.

Conclusions: EPI, a non-invasive urine exosome gene expression assay, provides discriminant risk stratification for clinically significant GG2 and higher prostate cancer from GG1 and benign disease across multiple patient profiles and subgroups from the USPSTF and NCCN Guidelines.

MP1-10

African American Men: A Critical Examination of the Dynamics Involving Their Decision to Pursue or Not Pursue Screening for Prostate Cancer

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Introduction: African American men have a high mortality rate related to prostate cancer. There is much debate in academic groups related to issues that contribute to the death rate, with the leading factor being the lack of early screening. The literature discusses that some of the obstacles to screening for African American men also exist for those belonging to other racial groups. Objective: The purpose of this study is to understand the role of risk assessment by African American men in pursuing (or not) prostate cancer screening. The interpretation of risk assessment could be a key component that influences health behaviors among African American men.

Methods & Materials: The research design I used in the study applied qualitative methods with a thematic approach. The research participant population consisted of African American men between 40 years of age and older. The expected size of the participant population in the study consisted of 10–16 participants. The recruitment of research participants was made within networks of community, social organizations, and community-gathering areas (i.e., church, barbershops, and community centers). Each participant was expected to be available for a face-to-face or phone interview not exceeding 60 minutes. Sessions with each participant would be recorded and transcribed.

Results: What is evident is there are influential factors that determine the decision of African American men related to prostate cancer screens. Those who pursued prostate cancer screening suggested they took protective measures against the risk of prostate cancer. The participants who choose not to have prostate cancer screens seem to be satisfied with their decision and feel that their risk is minimum.

Conclusions: The contribution to research was the evolution of the established theme of Mistrust, Education, Masculinity, Family, Peer, and Community. Each of the themes plays an important role with risk assessment by African American men.

MP1-11

Pathologic Upgrading of Biopsy Grade Group 1 Prostate Cancers following Radical Prostatectomy

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Introduction: In prostate cancer patients, accuracy of biopsy is particularly essential for patients with Grade Group (GG) 1 disease considering active surveillance (AS). We conducted an analysis of our GG1 prostate cancer population to understand the regional treatment pattern and factors that may affect biopsy accuracy.

Materials & Methods: Within the Pennsylvania Urologic Regional Collaborative (PURC) database, we identified patients with GG1 biopsies and assessed treatment decisions. We then identified patients who underwent radical prostatectomy and compared patients who were upgraded versus not upgraded following prostatectomy based on race, family history, previous biopsy, biopsy type, number of positive cores, and practice site. We performed univariate regression for each variable and then included any significant variables in a multivariate model assessing upgrading.

Results: There were 1,095 GG1 biopsies from 2015-2018. The three most common treatments for this group were radical prostatectomy (n = 553; 50.5%), external beam radiation therapy (n = 199; 18.2%), and active surveillance (n = 188; 17.2%). Of the 553 patients who underwent radical prostatectomy, only 10.1% had GG1 disease at prostatectomy. Table 1 shows the distribution of variables between the upgraded versus not-upgraded groups. In a multivariate regression to evaluate association with upgrading, only the presence of prior biopsy remained significant (OR 0.38, p = 0.008, 95%CI: 0.86-0.78).

Conclusions: Our data indicate a regional pattern wherein about half of GG1 biopsies lead to prostatectomy, and 90% are upgraded after prostatectomy. This may indicate that providers in this region are using additional variables, such as imaging or PSA, to create favorable selection bias; further analysis to elucidate this is forthcoming. In this study, we found that history of prior biopsy was the only factor associated with decreased odds of upgrading at prostatectomy.

Table 1. Differences between upgraded vs non-upgraded at prostatectomy groups with Gleason Grade Group 1 disease on biopsy. Variables with significant differences bolded

	Equivalent or Lower Gleason Score (%) N = 52 (10.1%)	**Upgraded Gleason Score (%) N = 463 (89.9%)**	**Total**	**P value***
Race				0.78
Caucasian	31 (11.2%)	246 (88.8%)	277	
African American	11 (26.2%)	103 (28.6%)	114	
Other	3 (7.1%)	39 (92.9%)	42	
Family History				0.44
No	22 (9.3%)	214 (90.7%)	236	
Yes	13 (12.6%)	90 (87.4%)	103	
Previous Biopsies				**0.009**
0	27 (8.0%)	309 (92.0%)	336	
1+	14 (18.9%)	60 (81.1%)	74	
Biopsy Type				**0.026**
TRUS	40 (8.9%)	410 (91.1%)	450	
MRI Fusion	12 (18.5%)	53 (81.5%)	65	
Positive Cores				0.99
1	21 (9.7%)	195 (90.3%)	216	
2	14 (10.8%)	115 (89.2%)	129	
3-6	13 (10.1%)	116 (89.9%)	129	
7+	4 (9.8%)	37 (90.2%)	41	
Practice ID				0.28
1	1 (16.7%)	5 (83.3%)	6	
2	10 (7.8%)	118 (92.2%)	128	
3	0 (0.0%)	5 (100.0%)	5	
4	13 (17.8%)	60 (82.2%)	73	
5	5 (13.2%)	33 (86.8%)	38	
6	5 (7.0%)	66 (93.0%)	71	
7	9 (7.3%)	114 (92.7%)	123	
8	8 (12.7%)	55 (87.3%)	63	
9	1 (12.5%)	7 (87.5%)	8	

*P values derived from Fisher's Exact Test to identify nonrandom associations between categorical variables with potentially small cell values

MP1-13

Clinical Characteristics and Germline Genetic Testing Outcomes in a Recently Recommended Prostate Cancer Population

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Introduction: Emerging research suggests that men with prostate cancer (PCa) have germline mutation rates of 15% regardless of stage and 12% with metastatic PCa. Genetic mutations bestow variable risk for prostate cancer aggressiveness and targeted therapy may be used in patients identified to have pathogenic variants (PVs) in certain genes. Updated NCCN guidelines recommend germline genetic testing (GT) in men with high or very high risk, regional and metastatic PCa. This study evaluates GT results and clinical characteristics identified in this population.

Materials & Methods: A retrospective chart review was conducted for patients who had a diagnosis of high or very high risk, regional and metastatic PCa who received multi-gene GT. Clinical characteristics and germline GT were analyzed.

Results: Between January 1, 2019 and March 1, 2020, 42 men with prostate cancer had evaluable genetic testing results. Overall, 3 pathological variants were identified in 3 men (7.1%). PVs were distributed among BRCA2 (n = 1, 2.3%) and HOXB13 (n = 2, 4.8%). Men with PVs showed no difference in grade group and were distributed across multiple NCCN risk groups. Family history of prostate cancer was not statistically associated with genetic test results (PV: 67%, no PV: 39.0% p = 0.55). 13 variants of uncertain significance (VUS) were identified in 12 patients (31.0%). VUS were distributed among MSH6 (n = 3, 7.1%), MSHS2 (n = 2, 4.7%), PSMS2 (n = 2, 4.7%), ATM (n = 2, 4.7%), BRCA1 (n = 1, 2.4%), BRCA2 (n = 1 , 2.4%), CHEK2 (n = 1, 2.4%), and EPCAM (n = 1 , 2.4%).

Conclusions: Utilization of GT in this community setting identified a prevalence of PVs in BRCA2 and HOXB13 comparable to previous research. Further research is needed to determine how VUS affect prostate cancer aggressiveness. Inclusion of GT in clinical management of these patients may help identify PV and potentially lead to targeted therapy.

MP1-14

Litigation Patterns in Oncologic Nephrectomies

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Introduction: The litigious environment encompassing the medical-legal domain is an increasing concern for surgical fields, with urology being no exception. The objective of our study was to systematically review, evaluate, and summarize the factors associated with oncologic nephrectomy litigation to determine factors contributing to verdicts or settlements.

Materials & Methods: Publicly available verdict reports were retrieved using the Westlaw® legal database (Reuters). Cases were identified using the search term "nephrectomy" with dates ranging from January 1, 1990 to July 01, 2019. Each case was evaluated by two independent reviewers for defendant specialty, alleged breach in treatment, resulting complications, verdict outcomes, and indemnity payment. Complications were determined to be preoperative, perioperative and postoperative. Data was analyzed using SPSS software to produce the descriptive statistics.

Results: After accounting for duplicates and irrelevant cases, a total of 101 cases were analyzed with over three-fourths being radical nephrectomies (78%). The most common claim was preoperative negligence (48%); however, negligence in peri-operative care received the highest average monetary payment of $5,493,151 (Table 1). 41% of cases were perioperative with the majority being attributed to vascular injury (46%). The type of perioperative negligence claims and its' average payment were found to be statistically significant (p = 0.042). Overall, 57% of plaintiff claims were denied, while 28% were awarded.

Conclusions: Nephrectomies can leave urologists vulnerable to litigation risks associated with negligence involving patient care. Our data show that while the highest number of cases were due to preoperative negligence, perioperative negligence accounts for the highest settlement awards. Providers should be aware of factors contributing to oncologic nephrectomy malpractice to minimize surgical complications and improve patient outcomes.

Table 1. Characteristics of nephrectomy litigation claims and outcomes.

Claimed negligence	Percentage
Preoperative care	48%
Perioperative care	41%
Postoperative care	11%
Payment per breach of duty	Average amount
Preoperative care	$1,505,059
Perioperative care	$5,493,151
Postoperative care	$375,000
Perioperative care claims	Percentage
Surrounding Organ Injury	30%
Vascular Injury	46%
Room and procedure setup	20%
Tumor Seeding	2%
Hernia	2%
Outcomes of cases	Percentage
Plaintiff denied	57%
Plaintiff awarded	28%
Defendant awarded	3%
Pending or unknown verdicts	12%

MP1-15

Variable Clinically Significant Prostate Cancer Detection Rates on Magnetic Resonance Imaging Fusion Prostate Biopsy - Experience from the Pennsylvania Urologic Regional Collaborative

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Introduction: Magnetic resonance imaging (MRI) fusion biopsy has been shown to outperform systematic biopsy in detecting clinically significant prostate cancer (csPCa). We examined practice variability in detecting csPCa in a large regional quality collaborative.

Materials & Methods: The Pennsylvania Urologic Regional Collaborative is a physician-led quality improvement collaborative comprised of 11 urology practices across Pennsylvania and New Jersey. We analyzed 857 first-time MRI fusion biopsy procedures performed at 5 practices between January 2015 and June 2019. Analysis was restricted to practices with a minimum of 30 biopsies. Chi-square and multilevel logistic regression analyzed the association between patient characteristics and csPCa detection (defined as Gleason ≥ 4+3 tumor) and the variability in odds of csPCa detection by practice.

Results: Detection rates for csPCa ranged from 14% to 28% across practices (p = 0.02); (Table 1). Patient age, family history, race, digital rectal examination findings, prostate specific antigen, prostate volume and Prostate Imaging-Reporting and Data System (PI-RADS) score varied significantly by practice and were all, except family history and race, significantly associated with csPCa (Table 2). PI-RADS score of ≥ 4 was associated with increased likelihood of detecting csPCa (OR 2.67, 95% CI 1.48, 4.83, p = 0.01). After controlling for patient characteristics, the odds of csPCa detection did not vary significantly by practice (intercept variance = 0.042, p = 0.26).

Conclusions: Practice variability in csPCa detection rates was predominantly attributable to variability in patient characteristics. This suggests significant differences in practice patterns and patient selection for fusion biopsy. Furthermore, results highlight the importance of pre-biopsy MRI in the diagnosis of csPCa.

Table 1: Clinically significant prostate cancer detection rates and patient characteristics by practice

No. patients (%)	Overall	Site A	Site B	Site C	Site D	Site E	p value
	N = 857	N = 42	N = 250	N = 233	N = 119	N = 213	
Clinically significant prostate cancer (csPCa)							
Yes	199 (23.2)	6 (14.3)	64 (25.6)	66 (28.3)	29 (24.4)	34 (16)	0.01
No	658 (76.8)	36 (85.7)	186 (74.4)	167 (71.7)	90 (75.6)	176 (84)	
Age group (years)							
59 or younger	123 (14.4)	8 (19.1)	44 (17.6)	26 (11.2)	19 (16)	26 (11)	0.01
60 – 69	389 (45.4)	16 (38.1)	126 (50.4)	100 (42.9)	61 (51.3)	86 (40.4)	
70 or older	345 (40.3)	18 (42.9)	80 (32)	107 (45.9)	40 (33)	101 (47.4)	
Family History							
No	565 (65.9)	22 (52.4)	150 (60)	166 (71.2)	82 (68.9)	145 (68.1)	0.04
Yes	243 (28.4)	18 (42.9)	83 (33.2)	59 (25.3)	32 (26.9)	51 (23.9)	
Unknown	49 (5.7)	2 (4.8)	17 (6.8)	8 (3.4)	5 (4.2)	17 (8)	
Race							
White	678 (79.1)	33 (78.6)	220 (88)	171 (73.4)	101 (84.9)	153 (71.8)	<0.0001
Black	117 (13.7)	9 (21.4)	25 (10)	44 (18.9)	4 (3.4)	35 (16.4)	
Other*	62 (7.2)	-	5 (2)	18 (7.7)	14 (11.8)	25 (11.7)	
DRE							
Negative	573 (66.9)	35 (83.3)	115 (46)	175 (75.1)	86 (72.3)	162 (76.1)	<0.0001
Positive	109 (12.7)	7 (16.7)	14 (5.6)	39 (16.7)	30 (25.2)	19 (8.9)	
Unknown	175 (20.4)	-	121 (48.4)	19 (8.2)	3 (2.5)	32 (15)	
PSA (ng/ml)							
Less than 4	119 (13.9)	3 (7.1)	43 (17.2)	34 (14.6)	15 (12.6)	24 (11.3)	0.01
4 – 10	532 (62.1)	23 (54.8)	166 (66.4)	141 (60.5)	66 (55.5)	136 (63.9)	
Greater than 10	206 (24)	16 (38.1)	41 (16.4)	58 (24.9)	38 (31.9)	53 (24.9)	
Prostate volume (cc)							
Less than 30	125 (14.6)	2 (4.8)	58 (23.2)	30 (12.9)	13 (10.9)	22 (10.3)	<0.0001
30 – 60	435 (50.8)	21 (50)	138 (55.2)	115 (49.4)	63 (52.9)	98 (46)	
Greater than 60	297 (34.7)	19 (45.2)	54 (21.6)	88 (37.8)	43 (36.1)	93 (43.7)	
PI-RADS ≥ 4							
Yes	542 (63.2)	20 (47.6)	165 (66)	163 (70)	90 (75.6)	104 (48.8)	<0.0001
No	315 (36.8)	22 (52.4)	85 (34)	70 (30)	29 (24.4)	109 (51.2)	

* Includes Hispanic/Asian/Native American/Unknown

Table 2: Association of patient characteristics with clinically significant prostate cancer detection

Risk factor	Crude OR (95% CI)		p value	Adjusted OR (95% CI)		p value†
Age group (years)						
59 or younger	1			1		
60 – 69	1.97	(1.07, 3.61)	0.03	2.15	(0.98, 4.72)	0.05
70 or older	3.53	(1.94, 6.43)	<0.0001	4.02	(1.82, 8.88)	0.004
Family History						
No	1			1		
Yes	1.0	(0.71, 1.42)	0.96	1.19	(0.74, 1.91)	0.43
Unknown	0.57	(0.26, 1.23)	0.15	0.68	(0.24, 1.91)	0.41
Race						
White	1			1		
Black	1.4	(0.90, 2.14)	0.14	1.31	(0.71, 2.40)	0.33
Other*	0.9	(0.46, 1.63)	0.65	0.82	(0.33, 2.00)	0.61
DRE						
Negative	1			1		
Positive	2.40	(1.56, 3.69)	<0.0001	2.68	(1.46, 4.90)	0.006
Unknown	1.14	(0.76, 1.70)	0.53	0.99	(0.55, 1.76)	0.95
PSA (ng/ml)						
Less than 4	1			1		
4 – 10	1.97	(1.09, 3.57)	0.03	2.42	(1.14, 5.12)	0.03
Greater than 10	4.51	(2.42, 8.41)	<0.0001	6.98	(3.09, 15.78)	0.0006
Prostate volume (cc)						
Greater than 60	1			1		
30 – 60	2.30	(1.54, 3.44)	<0.0001	3.15	(1.86, 5.34)	0.001
Less than 30	4.60	(2.81, 7.53)	<0.0001	7.93	(4.02, 15.64)	0.0001
PI-RADS ≥ 4						
No	1			1		
Yes	3.00	(2.05, 4.40)	<0.0001	2.67	(1.48, 4.83)	0.01

* Includes Hispanic/Asian/Native American/Unknown
† Practice variance = 0.042, standard error = 0.064, p = 0.26

MP2-01

Post-Operative Recovery After Opioid-Free Ureteroscopy for Nephrolithiasis: Assessing Pain Intensity and Interference

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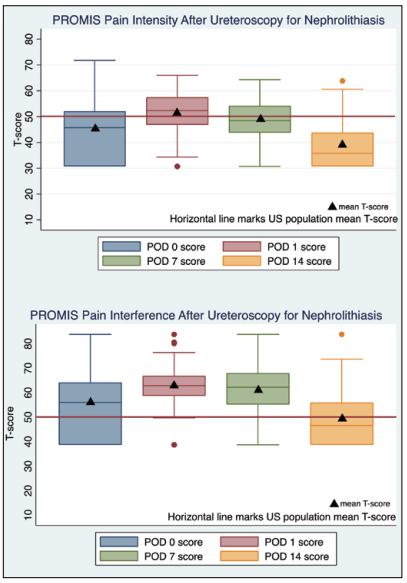
Introduction: Recovery following ureteroscopy is not well described, particularly when opioid-free, making patient counseling a challenge. Pain is the most common post-operative complaint. Therefore, we prospectively assessed patient-reported post-operative pain in patients undergoing opioid-free ureteroscopy.

Materials & Methods: Adults undergoing ureteroscopy for renal/ureteral stones were eligible for inclusion (11/2018-1/2020). Exclusion criteria included vulnerable populations, inability to speak English or to receive email. All received a standing non-opioid postoperative pain regimen. Patients prospectively completed PROMIS-Pain Intensity and Interference instruments pre-op on POD 0 and via email on POD 1, 7 and 14. Scores are reported as T-scores (normalized to US pop., mean = 50) with a change of 5 (0.5 SD) considered clinically significant. Regression modeling was performed to assess demographic and operative characteristics.

Results: 126 patients enrolled at POD 0 (POD 1 = 74, POD 7 = 61, POD 14 = 47). Compared to US means, intensity and interference were clinically and statistically significantly different at all post-op time comparisons (Wilcoxon rank test; all $p < 0.001$) except intensity at POD 7 and interference at POD 14. For both intensity and interference, there was a significant difference at each time comparison (repeated measures ANOVA; all $p < 0.05$) (Figure 1). On unadjusted regression analysis, increasing age was predictive of lower intensity (CI: -0.31– -0.04; $p = 0.012$) and interference (CI: -0.36 – -0.06; $p = 0.01$) at POD 1; post-op stent was predictive of higher intensity (CI: 0.68—10.81; p=0.03) and interference (CI: 0.61—12.96; p=0.03) at POD 7. On multivariable regression, only age remained significant at POD 1 (CI: -0.46 – -0.01; $p = 0.03$).

Conclusions: Pain intensity and interference are elevated immediately, but intensity returns to normal after POD 1, while interference is persistently elevated until POD 14. Age and ureteral stent influence both pain intensity and interference.



MP2-03

Early Recovery and Patient Experience After Minimally Invasive Surgical Treatment (MIST) With Prostatic Urethral Lift or Steam Injection

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Introduction: As an alternative to medical therapy and invasive surgery, MISTs should offer not only effective and durable symptom relief, but also rapid recovery with low morbidity. Here we elucidate the early patient experience following mechanical disobstruction with UroLift prostatic urethral lift (PUL) or tissue ablation with steam injection (Rezum).

Materials & Methods: 38 non-urinary retention subjects (from 2 US sites) completed a patient experience questionnaire within 2 months after treatment with PUL (n = 22) or Rezum (n = 16). Questions focused on recovery, satisfaction, postoperative catheterization, daily interference, BPH medication and symptom response. Outcomes were compared between arms.

Results: Subjects completed the questionnaire a mean 32 d post-treatment (Table 1) and were 69 ± 8.6 y.o. with prostates 56 ± 30.0 g. No differences in age or prostate volume were found between groups. After treatment, absolute IPSS and QoL scores were significantly better for PUL (IPSS 8.9 ± 5.1) compared to Rezum (IPSS 15.6 ± 9.2; $p = 0.002$). 87% of Rezum subjects were catheterized following treatment (vs. 57% for PUL) for a mean duration of 6.0d ± 3.3 Rezum vs. 2.2d ± 2.3 PUL ($p =< 0.001$). Rates of BPH medication use following treatment was significantly higher for Rezum subjects (87% vs. 34% PUL). 97% of PUL subjects (vs. 70% for Rezum) were satisfied with their treatment. 42% of Rezum subjects (vs. 8% for PUL) reported interference with entertainment-related activities and 40% (vs. 12% for PUL) reported interference with community-related activities.

Conclusions: Preliminary data suggests PUL provides a superior patient experience with higher patient satisfaction compared to steam injection.

Table 1: Summary of patient reported outcomes following treatment with UroLift PUL or Rezum steam injection

Patient reported outcomes	UroLift PUL	Rezum steam	p-value
IPSS follow up (mean, SD, n)	8.9, 5.1 (30)	15.6., 9.2 (23)	0.002
QoL follow up (mean, SD, n)	1.4, 1.2 (30)	2.6, 1.9 (23)	0.02
UTI diagnosis % (n/n)	7% (2/30)	13% (3/23)	0.6
BPH medication use during follow up % (n/n)	34% (10/30)	87% (20/23)	0.02
Feeling better % (n/n)	97% (29/30)	70% (16/23)	0.02
Satisfied with treatment % (n/n)	83% (25/30)	65% (15/23)	0.07
Symptom caused daily interference - Entertainment % (n/n)	8% (2/25)	42% (8/19)	0.01
Symptom caused daily interference - Community % (n/n)	12% (3/25)	40% (8/20)	0.04
Catheterized post-treatment (n/n)	57% (17/30)	87% (20/23)	0.03
Catheter duration (mean, SD, n)	2.2, 2.3 (16)	6.0, 3.3 (20)	<0.001
Days post-treatment (mean, SD, n)	34.3, 12.5 (30)	30.3, 9.9 (23)	0.2

MP2-02

Pulling the Foley: Can the Prostatic Urethral Lift be used in Men with Catheter Dependent Urinary Retention?

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Introduction: The purpose of our study was to evaluate the efficacy of Prostatic Urethral Lift (PUL) as a surgical treatment option in men with catheter dependent urinary retention (UR). Specifically, we analyzed International Prostatic Symptom Scores (IPPS), Quality of Life (QOL) scores, post void residual (PVR) measurements, and success defined by catheter free rates.

Materials & Methods: This was a retrospective chart review of 30 patients with catheter dependent UR who underwent in office PUL between 2016-2019 by one single surgeon. Of note, men were not excluded if they had prior prostatic surgical intervention. IPSS, QOL, and PVRs were recorded pre-operatively and at subsequent post-operative office visits. Catheter free rates were observed. A paired-sample T-test was used to compare pre-and post-treatment values.

Results: Descriptive statistics included: the average prostate volume was 52.7g, the mean number of implants used for each PUL was 5.8, and the average time from procedure to catheter removal was 2.9 days. The catheter free rate significantly improved following intervention. 25 (83.3%) men remained catheter free at a mean follow up time of 7.1 6.5 months. 5 out of 30 (16.7%) men required a catheter to be replaced at a mean follow up time of 2.8 3.9 months. IPSS, QOL, and PVR values improved from 14.8 to 5.8, 3.0 to 1.2, and 744.1 to 332.3, respectively. All three values demonstrated statistical significance.

Conclusions: Our study demonstrates significant improvement in catheter free rate, IPSS, QOL, and PVR suggesting PUL is an effective treatment option. Further research is necessary to identify the durability of PUL in men with UR.

MP2-05

Utility of Second Opinion Pathologic Review in the Surgical Treatment of Prostate Cancer: a Quality Improvement Analysis at a Major Tertiary Care Center

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Introduction: Inter-institutional re-review of prostate needle biopsy (PNBx) material is required at our institution before surgery, but is resource-intensive and often cumbersome. In patients considering prostatectomy, these results may not translate to changes in clinical management. We aim to determine the utility of PNBx re-review.

Materials & Methods: From 2017-2019, 388 prostate specimens from outside institutions were re-reviewed at our center. Clinicopathologic characteristics from initial and secondary review were analyzed. Major treatment change was determined by re-diagnosis of non-malignant tissue or change in candidacy for active surveillance (AS) versus definitive treatment. Thus, the following were considered treatment changes: downgrading to non-malignant tissue, or ISUP Grade Group (GG) any to GG1, and upgrading GG1 to GG2 or greater. Any change between GG2 to GG5 were not considered major, as surgery would proceed.

Results: Overall, 10% (39/388) of patients had potential for major treatment changes based on secondary review. Initial pathologic GG (iGG), number of positive cores, and highest core percent were associated and predictive of with major treatment changes (Table 1). Upon both univariable and multivariable regression analysis, these were also predictive of treatment change (all $p < 0.05$). Table 2 demonstrates the change in pathologic grading by iGG; no patients with iGG > 2 had a clinically relevant change in management.

Conclusions: Second review may be helpful in patients with GG1 and few patients with GG2 prostate cancer, i.e. those considering AS, but may be unnecessary in iGG3+ patients planning to undergo prostatectomy. This may allow for redirection of hospital resources without compromising quality of care.

Table 1: Association of Major Treatment Change by Clinicopathological Features

Major Treatment Change *Defined by GG1-->0, GG 1-->2+, GG 2+-->1*	No N=349	Yes N=39	p-value	Test
Race, n (%)			0.58	Fisher's exact
White	277 (79.4%)	28 (71.8%)		
Asian	8 (2.3%)	1 (2.6%)		
Black/African American	51 (14.6%)	8 (20.5%)		
Hawaiian/Pacific Islander	1 (0.3%)	0 (0.0%)		
Unknown	12 (3.4%)	2 (5.1%)		
Age, median (IQR)	65 (60-71)	65 (58-68)	0.29	Wilcoxon rank-sum
PSA, median (IQR)	5.8 (4.5-8.3)	5.35 (4.6-9.9)	0.89	Wilcoxon rank-sum
ISUP Grade, n (%)			**<0.001**	**Fisher's exact**
HGPIN/ASAP/Other	8 (2.3%)	0 (0.0%)		
1	66 (18.9%)	36 (92.3%)		
2	111 (31.8%)	3 (7.7%)		
3	77 (22.1%)	0 (0.0%)		
4	46 (13.2%)	0 (0.0%)		
5	41 (11.7%)	0 (0.0%)		
Positive Cores, median (IQR)	4 (2-6)	3 (2-5)	**0.031**	**Wilcoxon rank-sum**
Highest Core %, median (IQR)	60 (30-80)	33 (14-52)	**<0.001**	**Wilcoxon rank-sum**
Perineural Invasion, n (%)			0.19	Pearson's chi-squared
No	204 (58.5%)	27 (69.2%)		
Yes	145 (41.5%)	12 (30.8%)		
Time from Clinic Visit to 2nd Read, median (IQR)	15 (6-31)	7 (1-39)	0.38	Wilcoxon rank-sum

Table 2: Initial Pathologic Grading versus Secondary Pathologic Grading after Re-read (clinically significant treatment change in **bold***)

	No Cancer	Re-read GG 1	Re-read GG 2	Re-read GG 3	Re-read GG 4	Re-read GG 5
No Cancer	8	0	0	0	0	0
Initial GG 1	**4***	66	**31***	**1***	0	0
Initial GG 2	0	**3***	97	11	3	0
Initial GG 3	0	0	14	47	6	10
Initial GG 4	0	0	3	8	21	14
Initial GG 5	0	0	0	1	1	39

MP2-06

Preventing and Identifying Ureteral Injury Through the Use of Prophylactic Ureteral Catheterization During Colorectal Surgery

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Introduction: Iatrogenic ureteral injury is a rare complication of abdominal and pelvic surgery reportedly occurring in 0.5% - 10% of non-urologic cases. Prophylactic ureteral catheterization (PUC) has been suggested to increase intraoperative recognition of ureteral injury, but not their prevention. Here we present what is to our knowledge the largest published cohort of patients to receive PUC for colorectal surgery (CRS). Our primary outcome was to determine if PUC reduced the risk of ureteral injury. Secondary outcomes included whether or not PUC reduced the risk of an undetected intraoperative ureteral injury and determining which patients may benefit most from PUC.

Materials & Methods: A retrospective review of 1,328 adult patients who underwent CRS between January 2007 and March 2019 within Geisinger Health System was performed. Patients were divided into those whom received PUC (n = 431) and those whom did not (n = 897). CRS cases were identified using the appropriate CPT codes. Primary and secondary outcomes were measured using multivariate statistical analyses controlled for age, sex, body mass index and indication for surgery as appropriate.

Results: In the PUC group the rate of ureteral injury was 1/431 (0.2%) versus 16/897 (1.8%) in the non-PUC group ($p = 0.02$). In the PUC group the rate of intraoperative recognition of ureteral injury was 1/1 (100%) versus 13/16 (81%) in the non-PUC group.

Conclusions: The data derived from this largest published cohort reveals that PUC prior to colorectal surgery significantly reduced the incidence of iatrogenic ureteral injury. Furthermore, this data shows that 19% of ureteral injuries in patients undergoing CRS without PUC were not recognized intraoperatively and suggests that PUC may reduce the risk of an undetected intraoperative ureteral injury in patients undergoing CRS. Characteristics found to be associated with ureteral injury included surgical indications of colon cancer or diverticulitis and patients undergoing sigmoidectomy or low anterior resection.

MP2-07

Mixing it Up: Are Patients With Mixed Urine Cultures at Higher Risk of Postoperative Sepsis After Ureteroscopy?

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Introduction: Several studies have been performed to determine risk factors for sepsis after ureteroscopy. These include female gender, prolonged stent time > 1 month, and patients with sepsis at the time of initial stenting. Achieving a negative urine culture prior to ureteroscopy can sometimes be difficult. Often the specimen is reported as "probable contamination", "mixed skin flora", and "mixed gram positive and gram negative". This study aims to determine if preoperative mixed urine cultures, have a higher rate of postoperative sepsis than negative cultures for uncomplicated outpatient ureteroscopy with laser lithotripsy.

Materials & Methods: Retrospective multi-institutional chart review of all procedure codes including ureteroscopy with lithotripsy from April 2018 to December 2019. T-test was used to compare variables between mixed and negative urine cultures. Exclusion criteria included grossly positive urine culture, preoperative antibiotics, inpatients, and indwelling nephrostomy tube placement.

Results: 143 patients were included in the study. Overall sepsis rate was 1.63% with a negative culture and 5% with a mixed which was not statistically significant. Statistically significantly longer indwelling stent time for septic patients (17 vs. 51 days). Stone size was not significantly different with 0.82 cm for non-septic vs. 0.75 cm for sepsis group. Composition was significantly different only in carbonate apatite between mixed and negative culture groups.

Conclusions: There is no statistically significant difference in postoperative sepsis rates between preoperative mixed and negative urine cultures for ureteroscopy with laser lithotripsy. Increased indwelling stent time correlated with increased sepsis risk. There was a statistically significant difference in carbonate apatite in mixed urine cultures compared to negative cultures which is of unclear significance.

T test comparing Stone Charcteristics Between Mixed and Negative Culture patients

	Size (CM)		Oxalate Monohydrate (%)		Oxalate Dihydrate (%)		Carbonate Apatite (%)		Uric Acid (%)	
	Mixed	Negative	Mixed	Negative	Mixed	Negative	Mixed	Negative	Mixed	Negative
Mean	1.032	0.784	41.5	48.1	19	22.38	33.5	11.54	4.25	7.77
P value	0.078		0.43		0.558		0.00069		0.519	

Figure 4: T-Test comparing stone characteristics between patients with preoperatively mixed and negative urine cultures. Yellow background indicates significant P value.

MP2-08

Outcomes of Adjunct Bipolar Cautery During 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. In our experience, hemostasis prior to morcellation is a crucial step for efficient and safe completion, particularly for challenging cases. We sought to examine our experience with bipolar cautery following enucleation on operative and peri-operative outcomes.

Materials & Methods: We retrospectively reviewed an IRB-approved database of patients who underwent HoLEP by a single surgeon from 2015-2019. 213 patients were identified. The first 50 cases were excluded to account for learning curve. Patients with complete operative and peri-operative outcomes were included for analysis and grouped into those that did and did not receive intra-operative bipolar cautery. Primary outcomes were operative times, complications (including patient phone calls), and patient report symptoms.

Results: A total of 61 patients met inclusion criteria. Nineteen patients had bipolar used prior to morcellation and 42 did not. The average age and percentage of tissue resected were comparable between the two groups (table 1). The group where bipolar was used had a larger average gland size (141 g vs. 105 g) and longer operative times. Patients in both groups had similar improvements in IPSS and complications. The bipolar group had lower rates of post-op phone calls, fewer catheter days, and shorter length of stay.

Conclusions: Bipolar cautery led to significant improvement in intra-operative and post-operative outcome measures. There was a significant reduction in overall operative and laser time when adjusted for size. Additionally, these patients were more likely to leave the hospital on the first post-operative day without the catheter, and less likely to have post-operative concerns at home. Bipolar cautery in select HoLEP patients can save time and add clinical benefit.

	Bipolar	Laser Only	p
N	19	42	-
Age	71	69.5	P=0.47
Race			
White	13	20	
AA	5	13	
Hispanic	0	4	
Asian	0	4	
Other	1	1	
Gland size (average)	140.9	104.8	P=0.04
Weight of resected tissue (grams)	89.7	66.6	P=0.03
Resected tissue %	63.7%	62.2%	P=0.9
Operative time (minutes)	153.9	123.1	P=0.09
Laser	94.5	90.6	P=0.7
Bipolar	18.4	-	-
Morcellation	41.05	32.5	P=0.3
Proficiency **(minute/gram)**	1.8	2.1	P = 0.05
Laser	1.13	1.6	P <0.001
Bipolar	0.22	-	-
Morcellation	0.44	0.48	P=0.29
Pre-op Hemoglobin (g/dL)	13.5	14.2	P=0.5
Post-op Hemoglobin (g/dL)	11.8	12.1	P=0.6
Post-operative Transfusions (units) %	0	7, 16.7%	P=0.06
Days in hospital (LOS)	1.15	1.8	P<0.01
Home with catheter	6	8	P<0.01
Catheter days	2	2	P=0.57
Post-op Phone calls (calls/patient as %)	4 (21.1%)	25 (60%)	P=0.02
Adverse Events, n (%)	6 (32%)	10 (24%)	P=0.54
UTI	4 (21%)	5 (12%)	-
Clot retention	2 (10.5%)	3 (7.1%)	-
Other	0	2 (4.7%)	-
Pre-op IPSS	18.5	21.6	P=0.23
Pre-op IPSS Bother	3.94	4.365	P=0.36
Post-op IPSS	11.7	11.4	P=0.44
Post-op IPSS bother	3.2	2.85	P=0.24
Pre-op Peak flow (mL/s)	7.9	10.9	P=0.15
Post-op Peak flow (mL/s)	12.1	11.3	P=0.4
Pre-op PVR (mL)	140.9	109.5	P=0.68
Post-op PVR (mL)	22.2	17	P=0.34

MP2-09

Factors Associated with Urinary Tract Infection and Urosepsis after Renal Transplant: A Single Center Experience

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Introduction: In renal transplant patients, urinary tract infection (UTI) and urosepsis are common complications that cause significant morbidity and mortality. While antibiotic prophylaxis and immunosuppression adjustment have reduced the incidence of UTI after renal transplant, the complication rate remains high. Our objective is to evaluate factors associated with UTI and urosepsis in renal transplant patients to identify patients at risk.

Materials & Methods: A retrospective chart review was conducted examining 651 consecutive patients undergoing renal transplant between 2016 and 2019 at a tertiary care academic center. Patient demographics, medical history, surgical history, type and time on dialysis, urinary status collected. Primary outcomes were the occurrence of UTI and of urosepsis that required hospitalization post-transplant. Variables were compared using Pearson's chi-squared test and the duration of dialysis was evaluated using a two-sample t-test in Stata.

Results: Of the 651 patients undergoing renal transplant, 84 (13%) developed a UTI within 1 year of transplant. Compared to patients who did not have a UTI, those who developed a UTI post-transplant were more likely to have Diabetes Mellitus (Type 1 or 2) (56% vs. 44%, p = 0.033) and anuria (< 100 mL of urine/day, 37% vs. 26%, p = 0.039) prior to their transplant. A similar trend was seen in patients who had to be hospitalized for urosepsis. They tended to be anuric (38% vs. 27%, p = 0.065) and were on dialysis longer (1599 vs. 1244 days, p = 0.0555) than patients who did not have to be hospitalized for urosepsis (Table 1).

Conclusions: UTI and urosepsis develop after renal transplantation in a small subset of patients. These factors may help identify patients that may require adjustment in their immunosuppression regimen and antibiotic prophylaxis.

	Total n=651	No Postoperative UTI n=567	Occurrence of Postoperative UTI n=84	p-value	No Postoperative Urosepsis Hospitalization n=599	Occurrence of Postoperative Urosepsis Hospitalization n=52	p-value
	n (%)	n (%)	n (%)		n (%)	n (%)	
Past Medical History							
Diabetes Mellitus (DM)	294 (45)	**247 (44)**	**47 (56)**	**0.033**	267 (45)	27 (52)	0.307
DM with end-organ complications	112 (17)	98 (17)	14 (17)	0.919	104 (17)	8 (15)	0.895
Benign Prostatic Hyperplasia	30 (5)	23 (4)	7 (8)	0.081	27 (5)	3 (6)	0.677
Prostate Cancer	27 (4)	21 (4)	6 (7)	0.14	23 (4)	4 (8)	0.181
Obstructive Sleep Apnea	69 (11)	61 (11)	8 (10)	0.732	66 (11)	3 (6)	0.238
Kidney Stones	58 (9)	53 (9)	5 (6)	0.308	57 (10)	1 (2)	0.065
Recurrent UTI	81 (12)	68 (12)	13 (15)	0.367	72 (12)	9 (17)	0.268
Past Surgical History							
Hysterectomy	55 (8)	47 (8)	8 (10)	0.704	51 (9)	4 (8)	0.838
Spinal Surgery	31 (5)	25 (4)	6 (7)	0.272	28 (5)	3 (6)	0.722
Prostate Surgery	19 (3)	15 (3)	4 (5)	0.282	17 (3)	2 (4)	0.679
Other Urologic Surgery	99 (15)	81 (14)	18 (21)	0.089	88 (15)	11 (210	0.213
Prior Renal Transplant	68 (10)	62 (11)	6(7)	0.289	63 (11)	5 (10)	0.838
ESRD-Specific Factors							
Oliguria	352 (54	302 (53)	50(60)	0.283	319 (53)	33 (63)	0.157
Anuria	179 (28)	**148 (26)**	**31 (37)**	**0.039**	159 (27)	20 (38)	0.065
Duration of Dialysis							
No Dialysis	96 (15)	88 (16)	8 (10)	0.374	91 (15)	5 (10)	0.72
Dialysis <1 year	100 (15)	89 (16)	11 (13)		92 (15)	8 (15)	
Dialysis 1-5 years	268 (41)	228 (40)	40 (48)		246 (41)	22 (42)	
Dialysis >5 years	187 (29)	162 (29)	25 (30)		170 (28)	17 (33)	
Type and Time on Dialysis							
History of Peritoneal Dialysis	110 (17)	92 (16)	18 (21)	0.235	97 (16)	13 (25)	0.104
History of Hemodialysis	456 (70)	395 (70)	61 (72)	0.581	420 (70)	36 (69)	0.894
Never on Dialysis	96 (15)	88 (16)	8 (10)	0.148	91 (15)	5 (10)	0.277
Mean Duration Dialysis (days)	1330	1257	1384	0.4112	**1243**	**1612**	**0.0555**

Table 1: Factors Associated with UTI and Urosepsis after Renal Transplant

MP2-10

Cost-Analysis of Mini-Percutaneous Nephrolithotomy (PCNL) and Standard Tract PCNL for Stone Burden Greater/Less Than 20 mm in an Ambulatory Setting

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Introduction: Mini-Percutaneous Nephrolithotomy (PCNL) (MIP, Karl Storz, Tuttlingen, Germany) has become a viable option for stones between 10-20 mm and has also demonstrated efficacy in stones > 20 mm. MIP has been touted to have significant cost savings in direct-items costs due to reusable dilator and sheath sets. The cost analysis of MIP in comparison to standard tract PCNL (sPCNL) has not previously been elucidated for various stone sizes.

Materials & Methods: All PCNL procedures (33 MIP and 61 sPCNL) performed at a single ambulatory surgery center from April 2019-September 2019 were reviewed. All MIP tracts were MIP-medium (16.5/17.5 French). sPCNL ranged from 24/28-30/34 French. Patient and stone characteristics such as age, sex, BMI, skin-to-stone distance, Hounsfield Units (HU) and operative characteristics such as operating room (OR) time, fluoroscopy time, intracorporeal (IC) time and total treatment (TT) time were compared between groups. Cost in US Dollars (USD) were separated into two categories, < 20 mm and > 20 mm, based on the surgical CPT codes 50080 vs. 50081 and compared between the MIP and sPCNL groups.

Results: Patients having MIP tended to be younger (50.4 vs. 59.1, p = 0.0045) and have lower overall stone burden (17.73 mm vs. 33.38 mm) compared to sPCNL procedures. There were no differences between groups in regard to operative time characteristics. The direct-items cost to patient was greater in sPCNL compared to MIP regardless of whether the stone treated was < 20 mm ($1805.20 vs. $1382.42, p = 0.0087) or > 20 mm ($1774.22 vs. $1293.31, p < 0.0001).

Conclusions: The reusable MIP-medium single dilator and sheath combination has significant direct-items cost savings to the patient compared to patients having sPCNL. The cost savings remain even if stone burden is greater than 20 mm.

Table 1: MIP vs sPCNL Characteristics and Cost Analysis

	MIP n=33 [*range*]	sPCNL n=61 [*range*]	p-value
Age	**50.42±14.88 [*23-71*]**	**59.1±12.72 [*27-81*]**	**0.0045**
Sex (M:F)	13:20	25:34	0.0780
BMI	28.27±5.17 [*17-36*]	29.81±6.98 [*20-48*]	0.2750
Skin-to-stone (cm)	10.23±2.76 [*4-16*]	10.53±2.64 [*5.5-19*]	0.9166
Stone burden (SB) (mm)	**17.73±7.52 [*8-40*]**	**33.38±22.22 [*8-130*]**	**0.0002**
Hounsfield Units (HU)	959±312 [*450-1500*]	878±327 [*300-1500*]	0.2511
OR time (min)	85.36±15.71 [*55-126*]	90.38±20.52 [*53-134*]	0.2290
Fluoroscopy time (sec)	86.18±30.09 [*50-166*]	83.80±39.28 [*36-209*]	0.7650
Intracorporeal time (min)	37±9.57 [*12-60*]	41.22±18.96 [*12-103*]	0.2390
Treatment time (min)	12.22±9.20 [*3-68*]	14.86±15.90 [*1-68*]	0.3918
	MIP [*range*] (n=19 <20mm, n=14 >20mm)	**sPCNL [*range*]** (n=10 <20mm, n=51 >20mm)	**p-value**
$USD (stone<20 mm)	**1382.42±261.72 [*837-1696*]**	**1805.20±254.74 [*1439-2794*]**	**0.0087**
$USD (stone>20 mm)	**1293.31±340.32 [*1005-1647*]**	**1774.22±336.83 [*1316-2530*]**	**<0.0001**

PCNL: Percutaneous Nephrolithotomy; BMI: Body Mass Index; OR: Operating Room; USD: US Dollar

MP2-11

Durable Efficacy of UroLIFT™

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Introduction: UroLIFT is a minimally invasive option for the management of BPH that can be performed in the office setting. We describe our single-surgeon experience with a standardized UroLIFT technique. We hypothesize UroLIFT will reduce or eliminate use of BPH medications at least one year following procedure.

Materials & Methods: We retrospectively reviewed data from an IRB-approved database of patients who underwent UroLIFT by a single surgeon from 2015-2019. Patients with a minimum of 12-month follow-up who had complete International Prostate Symptom Score (IPSS), Post Void Residual (PVR), and medication use data were included.

Results: A total of 53 patients met all inclusion criteria. The average age was 65 years old, and the average gland size was 39.4 g (table 1). Average IPSS decreased significantly from 19.36 to 9.88 at 3 months and 12 at one year (table 2). Overall PVR was similar across all time points. Patients tolerated the procedure well with no adverse events captured (Grade II or higher), and only three patients required post-operative catheter for failed void trail. Medication use in all categories decreased with average per patient medication decreasing from 1.5 to 0.5 at 3 months with further decrease to 0.40 at 1 year.

Conclusions: UroLIFT remains an effective treatment with minimal risk of complications. UroLIFT results in a significant reduction in IPSS and decreased need for medications. Interestingly, there was no change in average PVR and some rebound of IPSS at one year, but patients achieved excellent improvement in symptoms at one year following UroLIFT.

Table 1. Patient Demographics

	N = 53
Age (mean, years)	64.7
Race	
White	24
AA	18
Hispanic	2
Asian	3
Other	6
Gland size (mean, g)	39.4
# of implants (mean)	5.2
Patients with prior BPH Surgery	3
Prior Retention	2
Catheter Dependence at time of operation	0

Table 2. Patient Outcomes

	Pre-op	Post-op (3m)	Post-op (12m)	P: ΔPreop/ Post-op (3m)	P: ΔPre-op/ Post-op (12m)	P: ΔPost-op (3m)/Post-op (12m)
IPSS total	19.90	9.74	12.04	p < 0.001	p < 0.001	p = 0.988
IPSS bother	4.1	1.74	2.04	p < 0.001	p < 0.001	p = 0.948
PVR (mL)	48.72	48.13	45.75	p = 0.479	p = .395	p = 0.385
Total # of medications/patient (average)	1.45	.49	.40	p < 0.001	p < 0.001	p = 0.151
On alpha-blocker	39	8	8	p < 0.001	p < 0.001	p = 1
On anti-cholinergic/mirabegron	25	10	8	p = 0.002	p < 0.001	p = 0.605
On 5-alphareductase inhibitor	17	1	1	p < 0.001	p < 0.001	p = 1
On Cialis	10	7	4	p = 0.427	p = .085	p = 0.339

MP2-12

Satisfaction With the Screen: A Single Institutional Experience With Telemedicine Visits in Female Urology Patients

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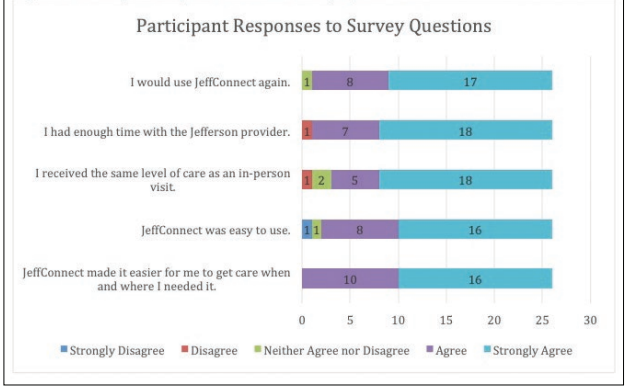
Introduction: Telemedicine (TME) is a convenient and efficacious system that maintains quality patient care. Here, we provide our institutional experience with female patient TME visits.

Materials & Methods: We retrospectively analyzed post-encounter satisfaction surveys from female TME visits conducted from March 2017 to December 2019. The survey included 13 items, ranging from satisfaction with medical and technical aspects of the visit, to time saved and social media use as a proxy measure of comfort with new technologies. Responses were scaled on a 1-5 Likert scale with 5 representing the highest level of satisfaction. Visits were stratified by primary diagnosis, and an ANOVA test was performed to elucidate differences in satisfaction with TME by diagnosis.

Results: 1,658 unique TME visits were conducted using the EPICTM EMR system, 366 of which were with female patients. Post-encounter data was collected from 173 of these patients, and 26 (15%) responded to the satisfaction survey. The mean age of patients seen was 66 years and the mean distance from the patient's home was 47 miles. All areas of female urologic diagnoses were evenly represented in the respondent data. All respondents reported having saved ≥one hour compared to a traditional visit. Mean overall satisfaction was 4.5 of 5; patients were satisfied or highly satisfied with aspects of their visit (Figure 1). There was no significant difference in overall satisfaction among diagnoses (p = 0.38), and first-time TME use or social media use was not significantly associated with satisfaction (p = 0.22 and 0.84, respectively).

Conclusions: Female patients are satisfied with TME visits, independent of their urologic condition, social media use or previous telemedicine experience. Future efforts should assess provider satisfaction and quantify the role of TME in reducing patient/provider costs.

Figure 1: Participant Responses to Likert Survey Questions



MP2-13

Unmet Needs in Post-Operative Communication after Urolithiasis Surgery

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Introduction: Patient-centered communication can enhance satisfaction with care and facilitate shared decision making. To identify opportunities to improve patient-centered communication after urolithiasis surgery, we performed a communication needs assessment.

Materials & Methods: A survey about the content and quality of post-urolithiasis surgery communication was administered to patients in five clinics from October 2019 to March 2020 who had had undergone shockwave lithotripsy (SWL), ureteroscopy with holmium laser (URS), or percutaneous nephrolithotomy (PCNL) in the past two years.

Results: Among the 48 respondents (response rate 91%), 34 (71%) had URS, 11 (23%) had PCNL, and 3 (6%) had SWL. The majority indicated they received a "good" amount of information after surgery. Among the 7 respondents (15%) who indicated they received "inadequate" or "little to no" information, suggestions included more information on stent symptoms and pain management (4, 57%) and information on how their surgery went (2, 29%). Among all respondents, patients were most interested in knowing how their surgery went (38, 79%) and diet and recovery recommendations (30, 63%). Among the 34 patients (71%) who had stents, 19 (56%) were most interested in stent symptoms, however 10 (29%) did not recall receiving this information. Although post-operative paperwork (21, 46%) was the second most referenced resource after surgery, only 4 patients (8%) stated that paperwork was the most helpful resource (Figure 1).

Conclusions: After surgery, urolithiasis patients are most interested in how their surgery went, diet and recovery, and stent symptoms. Although some of these topics are addressed in post-operative paperwork, existing written communication may not be formatted to effectively convey this information. These findings support opportunities for quality improvement in the delivery of effective, patient-centered communication.

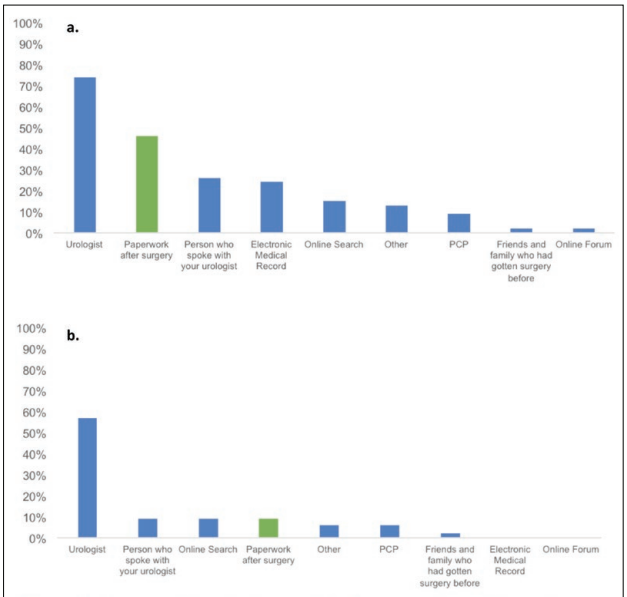

Figure 1. Resources that patients consulted after surgery (a.) and the single most helpful resources (b.)

MP2-14

Management of Urologic Conditions at a Regional Referral Center for Bloodless Medicine and Surgery

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Introduction: Bloodless Medicine & Surgery is an organized program to provide effective care while respecting patient values. In this study, we reviewed the management of elective and urgent Urologic conditions at a regional referral center for Bloodless Medicine and Surgery.

Materials & Methods: We performed a retrospective review of Bloodless Medicine & Surgery patients admitted to the Urology service between 2013 and 2019. Cases were categorized as elective procedures or unplanned emergent admissions and the procedural interventions and bloodless strategies were examined. Hemoglobin values, estimated blood loss, critical care stay, total length of stay and complications were recorded.

Results: There were a total of 44 admissions to the Urology service. Median age was 65 and included 28 (64%) males and 16 (36%) females. 23 had elective surgeries including 14 laparoscopic procedures, 6 endoscopies and 3 open surgeries. Mean EBL was 61.9 ml. Complications were observed in 5 patients including one death from a perforated duodenal ulcer. 21 patients were admitted urgently, including 15 with symptomatic bleeding and 10 transfers from other hospitals. Mean hemoglobin on admission was 8.9 (range 2.9-13.4). The Bloodless Medicine team was consulted in all cases of acute bleeding. 9 patients received iron supplementation and 8 were treated with darbopoeitin. 16 patients had a procedure including 4 nephrostomy diversion, 2 angioembolization and 5 endoscopic fulguration. Mean LOS was 5.2 days. Mean Discharge hemoglobin was 7.4 (range 3.4 to 13.3).

Conclusions: Bloodless Medicine & Surgery is feasible for both elective and urgent Urologic conditions. A multidisciplinary approach incorporating a dedicated 'on call' team and judicious procedural interventions provides safe patient care while respecting patient values.

Bloodless Urology Admissions: Clinical Characteristics

Category	Elective Admissions		Emergent Admissions	
	Number/mean	%/range	Number/mean	%/range
Patients	23/44	52%	21/44	48%
Age (years)	65.5	11-86	64.9	34-93
Sex (male)	14	60.9%	14	66.7%
Transfer from OSH	0	0%	10	47.6%
GU bleeding on Admission	0	0%	15	71.4%
Surgical Procedure	23	100%	10	47.6%
- Endoscopic	6	26.1%	7	33.3%
- Robotic Laparoscopic	9	39.1%	0	0%
- Laparoscopic	5	21.7%	1	4.8%
- Open Surgery	3	13.0%	2	9.5%
IR procedure	0	0%	7	33.3%
EBL (mL)	61.9	5-300	54.5	Neg-100
Complication rate	5 (2 major)	21.7%	--	--
ICU admission	0	0%	4	19.0%
LOS (days)	1.96	0-9	5.24	xx
Preop/Initial Hgb (g/dL)	13.2	9.8-14.6	8.9	2.9-13.4
Final Hgb (g/dL)	--	--	7.4	3.4-13.3
Darbopoetin Injection	0	0%	11	52.4%
Iron Supplementation	0	0%	12	57.1%

Table 2. Ethnicity Based Differences in Clinical Factors

	AA	Hispanic	Other	p-value	Test
	N=41	N=40	N=570		
Time to Surgery	55 (36-108)	24 (7.5-43.5)	35 (16-65)	**<0.001**	Kruskal-Wallis
Age				**0.003**	Fischer's exact
<65	28 (87.5%)	27 (93.1%)	343 (70.7%)		
>65	4 (12.5%)	2 (6.9%)	142 (29.3%)		
Insurance Status				**0.031**	Fischer's exact
Uninsured	1 (2.5%)	4 (10.3%)	17 (3.0%)		
Medicaid/care	22 (55.0%)	20 (51.3%)	237 (41.9%)		
Private	17 (42.5%)	15 (38.5%)	311 (55.0%)		
Stented from ED?				**0.050**	Pearson's chi-squared
No	21 (51.2%)	29 (74.4%)	375 (68.2%)		
Yes	20 (48.8%)	10 (25.6%)	175 (31.8%)		
ED Type Visit				0.43	Fischer's exact
Admission	16 (39.0%)	17 (42.5%)	218 (38.4%)		
Discharge	18 (43.9%)	21 (52.5%)	297 (52.3%)		
Observation	7 (17.1%)	2 (5.0%)	53 (9.3%)		

MP2-15

Disparities in Time to Definitive Stone Surgery at a Major, Urban, Academic Healthcare System

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Introduction: Disparities in nephrolithiasis care based on gender and ethnicity have been described. Fewer studies have examined insurance status. Recent data suggests longer surgical wait times for patients without private insurance. We conducted a self-audit to assess effects of ethnicity and insurance on time to kidney stone surgery.

Materials & Methods: We retrospectively assessed patients with evaluation of nephrolithiasis in the emergency room (ED), followed by definitive surgery (ureteroscopy/percutaneous nephrolithotomy/ESWL) at our major academic health system consisting of 3 hospitals in a major city, collecting information regarding insurance status and various demographic/clinical factors.

Results: In total, 601 patients underwent ED evaluation followed by surgery from 2017-2020. Overall, 3.5% (n = 23) were uninsured, 4.3% (n = 282) were enrolled in federal healthcare (Medicare/Medicaid), and 54% (n=355) had private healthcare. Table 1 illustrates cohort characteristics. Median time to surgery overall was 36 days. Uninsured patients had a shorter time to surgery (median 20 days, p = 0.023). Private insurance was associated with lower rates of UTI (p = 0.035) and sepsis (p = 0.036). Patients with private insurance were more likely to be discharged from the ER (p = 0.031). African American ethnicity was associated with longer time to surgery (Table 2, p < 0.001), as well as stent placement upon ER presentation (p = 0.05).

Conclusions: In our study, privately insured patients have lower acuity presentations without concurrent UTI/sepsis, requiring fewer urgent interventions and/or admissions. Higher acuity/delayed presentations may explain shorter times to surgery for uninsured patients and higher rates of ED stenting for African Americans. Differential access to care may explain time to surgery disparities based on ethnicity vs. insurance status.

Table 1. Demographic and Clinical Characteristics Overall and Based on Insurance Status

	Total	Uninsured	Medicaid/care	Private	p-value	Test
	N=660	N=23	N=282	N=355		
Time to Surgery	36 (16.5-67)	20 (7-37)	39 (18-71)	32 (16-64)	**0.023**	Kruskal-Wallis
# of ED Visits	1 (1-2)	1 (1-2)	1 (1-2)	1 (1-2)	0.60	Kruskal-Wallis
Age					**<0.001**	Pearson's chi-squared
<65	395 (72.6%)	16 (80.0%)	137 (57.1%)	242 (85.2%)		
>65	149 (27.4%)	4 (20.0%)	103 (42.9%)	42 (14.8%)		
Ethnicity					**0.031**	Pearson's chi-squared
AA	40 (6.2%)	1 (4.5%)	22 (7.9%)	17 (5.0%)		
Hispanic	39 (6.1%)	4 (18.2%)	20 (7.2%)	15 (4.4%)		
Other	565 (87.7%)	17 (77.3%)	237 (84.9%)	311 (90.7%)		
Creatinine Elevation					0.19	Pearson's chi-squared
None	394 (63.5%)	17 (77.3%)	150 (57.7%)	227 (67.2%)		
> .2 above baseline	108 (17.4%)	2 (9.1%)	46 (17.7%)	60 (17.8%)		
> .5 above baseline	76 (12.3%)	3 (13.6%)	39 (15.0%)	34 (10.1%)		
> 1 above baseline	20 (3.2%)	0 (0.0%)	12 (4.6%)	8 (2.4%)		
>2 above baseline	10 (1.6%)	0 (0.0%)	7 (2.7%)	3 (0.9%)		
>3 above baseline	12 (1.9%)	0 (0.0%)	6 (2.3%)	6 (1.8%)		
Nausea/Emesis					0.17	Pearson's chi-squared
No	414 (62.7%)	15 (65.2%)	188 (66.7%)	211 (59.4%)		
Yes	246 (37.3%)	8 (34.8%)	94 (33.3%)	144 (40.6%)		
UTI					**0.035**	Pearson's chi-squared
No	566 (85.8%)	19 (82.6%)	231 (81.9%)	316 (89.0%)		
Yes	94 (14.2%)	4 (17.4%)	51 (18.1%)	39 (11.0%)		
Hydronephrosis					0.30	Pearson's chi-squared
No	509 (77.1%)	20 (87.0%)	211 (74.8%)	278 (78.3%)		
Yes	151 (22.9%)	3 (13.0%)	71 (25.2%)	77 (21.7%)		
Sepsis					**0.036**	Pearson's chi-squared
No	604 (91.5%)	22 (95.7%)	249 (88.3%)	333 (93.8%)		
Yes	56 (8.5%)	1 (4.3%)	33 (11.7%)	22 (6.2%)		
Stone Size	7 (5-10)	7 (6-9)	7 (5-10)	7 (5-9)	0.10	Kruskal-Wallis
Stented from ED?					0.071	Pearson's chi-squared
No	430 (67.4%)	15 (65.2%)	171 (62.6%)	244 (71.3%)		
Yes	208 (32.6%)	8 (34.8%)	102 (37.4%)	98 (28.7%)		
ED Type Visit					**0.031**	Pearson's chi-squared
Admission	256 (38.9%)	11 (47.8%)	125 (44.6%)	120 (33.8%)		
Discharge	337 (51.2%)	9 (39.1%)	126 (45.0%)	202 (56.9%)		
Observation	65 (9.9%)	3 (13.0%)	29 (10.4%)	33 (9.3%)		

MP3-01

Vasectomy Outcomes in a Veteran Population at a Single Veterans Affairs Medical Center Over a 5 Year Time Period

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Introduction: Over 500,000 vasectomies are performed yearly with low failure rates (0.05%), but compliance with post-vasectomy semen analysis (PVSA) is poor. The 2012 AUA guideline outlines vasectomy technique and recommends that patients obtain a PVSA at 8-16 weeks. As part of a quality assurance assessment, we aimed to evaluate vasectomy outcomes at our institution.

Materials & Methods: A retrospective chart review was performed of vasectomies conducted at the Hunter Holmes McGuire VA in Richmond, VA, between 2015 and 2020. Compliance with PVSA, time from surgery to first PVSA, and vasectomy failure rates were reviewed.

Results: 201 vasectomies were performed. 40% of patients never underwent PVSA (n = 80), though 22.7% of these men (n = 18) were seen for a post-procedure visit. Mean time to first PVSA was 3 months (± 2 months, range 1-14 months). Of the 120 patients who underwent PVSA, sperm were seen in 33.3% (n = 40). PVSA was performed prior to 8 weeks in 50% of cases with positive results (n = 20). 70% of patients with sperm seen on initial PVSA underwent repeat PVSA (n = 28), with 54% of these patients showing persistent sperm on repeat testing (n = 15).

Conclusions: Patients showed poor compliance with PVSA, consistent with reported rates. Importantly, our results highlight challenges faced at our institution. Semen analyses performed at our institution are reported as sperm "seen" or "not seen," making it impossible to diagnose true vasectomy failures. Additional work needs to be done to improve patient compliance with PVSA, provider compliance with AUA guidelines, and follow up with patients with a positive PVSA.

MP3-03

Does Targeted Education (TE) on The American Urological Association (AUA) Cryptorchidism Guidelines Have an Impact on The Referral Pattern in a Rural State?

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Introduction: There are known discrepancies between the observed referral patterns/work up and the 2014 AUA guideline recommendations on cryptorchidism, which may be attributed to the lack of familiarity by the referring physicians with these guidelines. The purpose of this study is to assess the impact of Targeted Education (TE) on the AUA guidelines to referring providers in a rural state, in particular the time of referring/surgery and US imaging.

Materials & Methods: TE started on December 2014 and refers to series of 8 lectures that were presented over a one-year period to pediatricians, family medicine practitioners, pediatric surgeons and general urologists at major tertiary centers, community hospitals and major private groups in the state. We retrospectively reviewed all patients who underwent surgical exploration for cryptorchidism between December 2012 and December 2016 at West Virginia University (WVU), which is the biggest health system and the only pediatric urology center in the state. Patients with cryptorchidism and complex urologic issues (VUR, hypospadias, etc.) were excluded. 268 patients met the inclusion criteria. Patients were divided into 2 groups, group 1 (100 pts.) represents the pre TE period (prior to December 2014) and group 2 (168 pts.) represents the post TE period (after December 2014).

Results: 39% of patients underwent surgical exploration within the recommended period of 6-18 months of age (corrected for gestational age) in group 1 compared to 37% in group 2. No statistically significance was found between the two groups regarding age at the time of referral, age at the time of surgery, time between referral and surgical exploration, and scrotal Ultrasound imaging.

Conclusions: In rural states, such as WV, Targeted Education did not change the adherence to the best practice on the management of cryptorchidism. This can be attributed to factors other than familiarity with guidelines by referring providers, like lack of access or others.

MP3-02

Risky Business: Penile Prosthesis in the High Risk Population

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Introduction: Device infection is a devastating complication of penile prosthesis. Some, including diabetics and immunocompromised patients, may be at higher risk for infection. However, the data on this patient population is unclear and in places, contradictory. We review our experience in high-risk patients at a major urban tertiary-care center.

Materials & Methods: We retrospectively reviewed patients undergoing penile prosthesis insertion at MedStar Washington Hospital Center. We recorded peri-operative HbA1c, mean and maximum blood glucose (BG), and patient outcomes including superficial and device infections.

Results: From December 2012 to November 2019, 152 prostheses were implanted in 139 patients. 35 surgeries performed were revision surgeries using a mini-salvage washout technique. 61 patients were diabetic, 6 solid organ transplant, 2 HIV, 1 ESRD. Mean patient age was 61 years (33-76). Mean follow up was 12.6 months. Perioperative HbA1c, mean and max BG values were higher among diabetics ($p < 0.01$). No adverse events were significantly greater among diabetics or immunosuppressed patients, or associated with perioperative BG control (Tables 1 & 2). Re-do prosthesis insertions did not have significantly higher superficial (13.5% vs. 11.4% $p = 0.74$) or device infections (3.8% vs. 11.4% $p = 0.099$) compared to primary implantations.

Conclusions: Our results suggest that diabetic and immunocompromised patients do not appear at higher risk for adverse outcomes in penile prosthesis implantation. Immediate perioperative hyperglycemia does not seem to portend a higher risk of complication.

Table 1. Frequency of infections overall and among diabetics

	Total (n=139)	Diabetics (n=61)	Non-diabetics (n=78)	P-value
Superficial infection	18 (12.9%)	8 (13%)	10 (12.8%)	0.98
Device Infection/Erosion	8 (5.8%)	5 (8.2%)	3 (3.8%)	0.41

Table 2. Association of perioperative BG control and outcomes (P Values)

	Average BG	Maximum BG	HbA1c >8.5
Superficial infection	0.23	0.35	0.25
Device Infection/Erosion	0.26	0.43	0.14

MP3-04

A Pilot Study Evaluating the Utility of Next Generation DNA Sequencing in Detecting Microorganisms in Explanted Urologic Prosthetics

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Introduction: Device infection is a serious complication of urologic implants. Device cultures unfortunately return as negative or nonspecific growth in 30-81% of cases. Next-generation DNA sequencing (NGS) is an emerging technology with the ability to evaluate entire genomes and potential to improve organism detection. We hypothesize that NGS may improve detection of microorganisms compared to conventional culture in penile prostheses and artificial urinary sphincters explanted for device malfunction and infection.

Materials & Methods: A retrospective review of patients who underwent device explant for device malfunction (device leak, urethral atrophy, cylinder resizing) or infection (gross infection, urethral erosion, cylinder extrusion) with or without device replacement from June 2018 to September 2019 was performed. At explant, devices were swabbed and sent for NGS testing (MicroGen Diagnostics, Lubbock, TX, USA). Devices were sent for conventional microbiology culture. Patient demographics, surgical course, and outcome were evaluated.

Results: Thirty-four patients underwent 35 device explants (14 penile prostheses, 21 artificial urinary sphincters) with 26 simultaneous device replacements. Reasons for explant included mechanical failure (n = 25) and infection (n = 10). NGS and standard culture demonstrated presence of microorganisms in 17 (49%) and 27 (77%) devices, respectively (p = 0.03). NGS was more effective in detecting microorganisms in devices explanted for infection (n = 8, 80%) compared to mechanical failure (n = 9, 36%) (p = 0.05). NGS detected additional microorganisms not detected on standard culture in 15 (43%) devices. One patient developed a de novo infection after device replacement; however, initial device explant culture was negative and did not affect the clinical course.

Conclusions: NGS detected organisms less frequently than device culture and may best be further evaluated in patients who undergo device explant due to infection rather than mechanical failure. NGS may also help to further characterize the microbiome of urologic devices. Further study is warranted to evaluate optimal clinical use of this emerging technology.

MP3-06

Quantitative Stone Analysis Software's Utility in Analyzing Kidney Stone Characteristics and Predicting Outcomes Following Extracorporeal Shockwave Lithotripsy

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Introduction: Quantitative stone analysis software (qSAS) is a novel program that uses computed tomography (CT) images to analyze the three-dimensional characteristics of kidney stones in a reproducible and standardized manner. The information provided by the software may be clinically relevant for determining effectiveness of intervention. It may be especially relevant when considering extracorporeal shock wave lithotripsy (ESWL), which has known limitations for treating large, complex stones. The primary objective of this study is to determine if enhanced stone characterization using the qSAS is associated with potentially adverse clinical outcomes following ESWL.

Materials & Methods: We performed a retrospective review of 154 patients with nephrolithiasis who underwent ESWL at a single institution. The qSAS was used to analyze stone characteristics based on preoperative CT imaging. Patient electronic medical records were surveyed for complications, including the need for further surgical intervention, occurring within sixty-days postoperatively. Wilcoxon Rank Sum and Chi Square tests were applied to determine statistical significance.

Results: Per patient, mean stone density was 473.4 Hounsfield units (HU) (IQR = 198.8 HU), and mean stone volume was 518.9 mm3 (IQR = 256 mm3). As calculated by the qSAS, patients with greater mean stone density were significantly more likely to develop acute kidney injury (668 HU v. 469.5 HU; p = 0.01), steintrasse formation (528.9 HU v. 465.1 HU; p = 0.04), and need further surgical intervention (580.6 HU v. 459.2 HU; p = 0.001). Notably, patient's with greater stone volume were more likely to require further surgical intervention (mean volume 1,130.5 mm^3 v. 437.9 mm^3; p = 0.004).

Conclusions: Greater qSAS-calculated mean stone density and stone volume are positively correlated with development of complications and need for further surgical intervention following ESWL. Further prospective studies should investigate the utility of the qSAS for improved patient selection and surgical planning for nephrolithiasis.

MP3-05

A Multi-institutional Experience with Robotic Vesicovaginal and Ureterovaginal Fistula Repair After Iatrogenic Injury

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Introduction: We describe our multi-institutional experience with robotic vesicovaginal fistula (VVF) and ureterovaginal fistula (UVF) repair after iatrogenic injury.

Materials & Methods: We retrospectively reviewed our multi-institutional database to identify patients who underwent robotic VVF and UVF repair after iatrogenic injury between 01/2010 and 05/2019. All patients who underwent UVF failed conservative management with nephroureteral stenting. Use of tissue interposition between the reconstructed genitourinary and gynecologic systems was determined based on clinical history and intraoperative findings. Postoperatively, patients were assessed for clinical success (absence of urinary leakage).

Results: Robotic VVF and UVF repairs were performed in 22/30 (73.3%) and 8/30 (26.7%) patients, respectively. Median time from diagnosis to repair was 48 days (IQR 22-105). During VVF repair, omentum, peritoneum, and sigmoid mesentery/epiploic appendage was interposed between the bladder and vagina in 14/22 (63.6%), 3/22 (13.6%), and 3/22, (13.6%) cases, respectively. During UVF repair, the ureter was reconstructed via ureteroureterostomy in 2/8 (25.0%) patients and ureteral reimplantation in 6/8 (75.0%) patients; 5/6 (83.3%) ureteral reimplantations required a psoas hitch. Omentum was interposed between the ureter and vagina in 2/8 (25.0%) cases. Overall median operative time was 173 minutes (IQR 131-214), estimated blood loss was 50 milliliters (IQR 50-94), and length of stay was 1 day (IQR 1-2). There was 1/30 (3.3%) postoperative complication (Clavien > 2) in a patient who required intensive care management after exacerbation of chronic lung disease. At a median follow-up of 5 months (IQR 2-13), 28/30 (93.3%) cases were clinically successful. Both failures occurred after VVF repair with omental interposition within 6 months of surgery. One patient underwent successful repeat robotic repair and the other underwent successful transvaginal repair.

Conclusions: Robotic VVF and UVF repair secondary to iatrogenic injury may be performed with high success rates. Although surgical failures may occur after fistula closure and tissue interposition, they may be managed with repeat surgery.

MP3-08

Investigating Fluid Intake in an Underserved Community: What Factors are Associated with Low Urine Volume on 24-hour Urine Collections

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Introduction: Stone prevention is dependent on high fluid intake, with evidence that low urine volume (LUV) can promote nephrolithiasis in the absence of other metabolic abnormalities. Herein, we investigate patient-related factors associated with LUV on initial 24-hour urine collection in an underserved population.

Materials & Methods: A retrospective review was performed of patients treated for nephrolithiasis at our institution from August 2014-January 2019. Patients who submitted 24-hour urine samples were divided into two groups based on whether their initial collection was greater than two liters or not. Factors associated with 24-hour urine volume were analyzed using bivariate and multivariate analyses. As a secondary outcome, we investigated factors associated with corrected 24-hour urine volume on repeat 24-hour urine collection.

Results: 45.1% (208/461) submitted 24-hour urine collections. 63.9% (133/208) of these patients had a LUV on the initial collection. LUV was more common in females (77.1% vs. 49.5%; p = 0.001), and patients with no insurance and Medicaid (no insurance (100%) vs. Medicaid (74.1%) vs. Medicare/private (58.6%); p = 0.02). Female gender and insurance status were independent predictors of LUV on multivariable analysis. 39.5% (17/43) of patients with LUV who provided a subsequent collection were able to correct their urine volume. Patients who successfully improved their LUV were older (58.5 vs. 45.9 years, p = 0.0149), and more likely to have undergone surgery (94.1% vs. 53.8%, p = 0.006). In our multivariable analysis, undergoing surgery was associated with correcting urine volume.

Conclusions: Female patients and those with no insurance or Medicaid were more likely to have LUV on an initial 24-hour urine collection. Further research into barriers to fluid intake is important for these two groups, along with directed patient education on strategies for increasing fluid intake.

Table 1. Patient demographics and baseline stone history categorized by urine volume on initial 24-hour urine collection

	Urine Volume < 2000mL/day	Urine Volume ≥ 2000mL/day	p-value[1]
No. Patients	133	75	
Age (mean +/- SD)	50.0 (+/- 15.9)	52.5 (+/- 13.4)	0.2396
Gender			
Male, n (%)	49 (49.5%)	50 (50.5%)	
Female, n (%)	84 (77.1%)	25 (22.9%)	<0.001
Weight kg (mean +/-SD)	85.1 (+/- 21.7)	94.0 (+/- 33.2)	0.0219
Insurance			
None, n (%)	5 (100%)	0 (0%)	
Medicaid, n (%)	43 (74.1%)	15 (25.9%)	
Medicare/Private, n (%)	85 (58.6%)	60 (41.4%)	0.027
Race			
AA, n (%)	42 (75.0%)	14 (25.0%)	
White, n (%)	51 (56.0%)	40 (44.0%)	
Hispanic, n (%)	29 (69.1%)	13 (31.0%)	
Other, n (%)	10 (49.0%)	8 (51.0%)	0.148
Family history, n (%)	36 (60.0%)	24 (40.0%)	0.527
Personal history, n (%)	66 (58.9%)	46 (41.1%)	0.147
Previous surgery			
ESWL, n (%)	6 (31.6%)	13 (68.4%)	0.004
URS, n (%)	32 (55.2%)	26 (44.8%)	0.107
PCNL, n (%)	11 (57.9%)	8 (42.11%)	0.618

p-value[1] Value is calculated across categories "Urine Volume < 2000ml/day" vs "Urine Volume ≥ 2000mL/day" in regard to patient demographics and stone history using two sampled t-test or Fisher's exact test for continuous and categorical variables, respectively.

AA = African American; Other = Asian/Pacific, Indian, Middle Eastern; ESWL = Extracorporeal shockwave lithotripsy; URS = Ureteroscopy; PCNL = Percutaneous nephrolithotomy

MP3-09

Predictors of Pelvic Pain in a General Urology Clinic Population

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Introduction: Generalized pelvic pain is estimated to afflict between 6-26% of women and is often multifactorial in etiology. A paucity of data exists to characterize pelvic pain patterns and to understand related predictors. We assessed the prevalence of pelvic pain in a general urology population presenting for evaluation of unrelated non-painful complaints. Specific focus was placed on assessing for clinical predictors of pelvic pain.

Materials & Methods: This is an IRB-approved prospective, cross-sectional survey-based study of female patients presenting to a general urology clinic over a 10-month period (7/2018-5/2019). Patients presenting specifically for a painful complaint were excluded (i.e. flank pain, interstitial cystitis). Patients completed a 32-item survey with questions pertaining to demographics, comorbidities and pelvic pain characteristics. Chart review was performed. Comparison tests (chi-squared, fisher's exact) and stepwise multivariable logistic modeling were performed for analysis.

Results: A total of 181 women completed the survey, with a mean age of 56 years. Presenting chief complaint varied (Table 1). Overall, 75 (41%) women reported pelvic pain. Those with pelvic pain were younger compared to those without (52 vs 59 years, p=0.001), but there were no differences in chief complaint, race, education, income, or activity level (p>0.05). Univariable logistic regression analysis identified BMI, depression, fibromyalgia, overactive bladder, and any bowel symptoms as possible positive predictors of pelvic pain (Table 2). Final best-fit multivariable model found overactive bladder, fibromyalgia, and presence of bowel symptoms as independent positive predictors of pelvic pain.

Conclusions: Female pelvic pain is prevalent in a general urology population. Our study identified significant associations with overactive bladder, fibromyalgia, and bowel symptoms. Further research is needed to better understand the etiologies of pelvic pain and the possible relationship with identified clinical predictors.

Table 1A.

Chief Complaint	No pain (n=106)	Pelvic Pain (n=75)
Hematuria	9 (8.6%)	3 (4.1%)
Stones	20 (19%)	15 (20%)
Retention	4 (3.8%)	1 (1.4%)
UI	16 (15%)	24 (32%)
rUTI	9 (8.6%)	11 (15%)
POP	2 (1.9%)	2 (2.7%)
UCC	10 (15%)	5 (5.4%)
RCC	15 (14%)	4 (5.4%)
Other	20 (19%)	10 (14%)

UI, urinary incontinence; rUTI, recurrent urinary tract infections; POP, pelvic organ prolapse; UCC, urothelial carcinoma; RCC, renal cell carcinoma

Table 1B.

Predictors of Pelvic Pain			
Univariable logistic regression modeling			
	OR	**p**	
Age (yr)	0.97	0.001	**
BMI (kg/m²)	1.05	0.01	*
Smoker	1.51	0.32	
Diabetes	0.91	0.78	
Depression	2.83	0.001	**
Fibromyalgia	5.80	0.001	**
Overactive bladder	2.51	0.003	**
Endometriosis	1.72	0.35	
OB complication	0.99	0.97	
Pregnancies	1.15	0.19	
Surgical history			
Abdominal	1.01	0.97	
Pelvic	0.80	0.49	
IBS	2.73	0.01	*
GI symptoms (any)	4.30	<0.001	***
Bloating	2.69	0.003	**
Constipation	2.69	0.002	**
Diarrhea	2.41	0.007	**
Bowel pain	6.38	<0.001	***
Final multivariable logistic regression model			
	OR	**p**	
Age (yr)	0.98	0.03	*
Fibromyalgia	4.16	0.02	*
Overactive bladder	2.65	0.005	**
Bowel symptoms	3.46	<0.001	***

* p<0.05, ** p<0.01, *** p<0.001

MP3-10

Urologic Surgery During COVID-19: An Examination of Triage Guidance Documents

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Introduction: The COVID-19 pandemic placed urologic surgeons in an unprecedented situation. Providers and healthcare systems were forced to rapidly create triage schemas in order to preserve resources and reduce potential viral transmission while continuing to care for patients. We reviewed US and international triage proposals from professional societies, peer-reviewed publications, and publicly available institutional guidelines to identify common themes and critical differences.

Materials & Methods: A critical analysis of all proposals available as of 4/1/2020 was performed. Recommendations were dichotomized into oncology and non-oncology operations and implementation factors were examined.

Results: Prior to the COVID-19 outbreak, no guidelines existed on urologic surgery triage. Eight proposals were reviewed, with considerable heterogeneity observed in their reporting of priority levels and recommendations. Specific urologic oncology cases were examined in six of these proposals. Only radical surgery for muscle-invasive urothelial carcinoma and ≥ cT3 kidney cancer was considered highest priority across all resources in which they were examined. High-risk prostate cancer was high priority in two guidelines and intermediate priority, or able to be delayed, in four. Testis cancer was commented on in four proposals, while only two evaluated adrenal and penile carcinomas. Two resources accounted for length of time patients had the disease and one offered alternate therapies to consider. Non-oncologic conditions were examined in four proposals. Obstructed kidneys in the setting of infection and testicular torsion were listed as emergent cases throughout.

Conclusions: To date, there are varying levels of agreement on the optimal triaging of urologic cases. As the need to preserve resources grows, prioritizing only high priority surgical cases is paramount. In the oncologic setting, evidence-based approaches should be employed to decide which cases can be delayed without compromising survival outcomes. While these decisions will often be made on a case-by-case basis, further consensus guidelines are needed for the future.

MP3-12

A Qualitative Study of the Transgender Patient Experience in the Urology Setting

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Introduction: Transgender patients face significant barriers to care which include fear of stigma, misgendering and not being understood. Urologists may be apprehensive to provide care to this patient population due to a lack of familiarity with their specific health needs. The aim of this study is to describe perspectives and experiences of transgender women (TGW) related to urology care-seeking.

Materials & Methods: This HIPAA-compliant study was IRB approved. Through semi-structured interviews, researchers explored the perspectives and experiences of TGW seeking and obtaining urological care. Open-ended questions were designed to elicit responses rather than quantifiable data. Two research assistants independently coded all de-identified transcripts. Analysis of intercoder reliability confirmed near perfect agreement (k = 0.94). Codes pertaining to patient experiences of TGW were assessed and described in this study.

Results: Interviews were conducted with 25 TGW. Participants reported an array of factors that informed and inhibited care-seeking, factors that framed individual urologic care experiences and their overall impression of the healthcare system's ability to effectively and respectfully serve TGW. Specifically, participants reported that prior negative healthcare experiences dissuaded them from seeking care, this included feeling discriminated against and having a lack of trust in providers. Participants reported feeling a need and responsibility to "educate" providers on both their medical needs and psychosocial experiences. Participants were also unclear about what symptoms merited urological care and how best to identify "trans-friendly" urologists, including finding providers who are culturally competent and have appropriate medical knowledge. Other barriers to appropriate urological care included costs of care, fear of discrimination, misgendering and challenges related to gender and name discrepancies in medical and insurance records.

Conclusions: Transgender patients are at an increased risk for care avoidance. TGW shared important insights into the urological care experience. Their perspectives highlight important opportunities to improve services and to inform training for urologists and their staff.

MP3-11

Should Men Presenting With Depression be Screened for Low Testosterone?

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Introduction: The non-specific symptoms of low testosterone are largely indistinguishable from those of mood disorders treated in outpatient psychiatric settings. Current hypogonadism guidelines recommend assessing for decreased energy and lack of sexual interest; however, routine screening for low testosterone is not performed in psychiatric clinics. Many of the treatments for mood disorders can lower testosterone and cause sexual dysfunction. We sought to determine the prevalence of hypogonadism in men presenting for depressive symptoms to a tertiary-care outpatient psychiatry clinic.

Materials & Methods: Adult men with a chief complaint of depressive symptoms were screened at an outpatient psychiatric clinic for study enrollment. Study participants completed the Patient Health Questionnaire-9 (PHQ-9) and Androgen Deficiency in the Aging Male (ADAM) questionnaire in addition to a baseline medical history. Serum free and total testosterone levels were obtained. Descriptive statistics were calculated.

Results: Twenty-two men were enrolled with a mean age of 44.2 +/- 17.3 years. The majority had moderately severe depression with a median PHQ-9 score of 17 (n = 21). Ninety-one percent were at risk for hypogonadism with a median ADAM score of 7 (n = 11). Of the 16 men who completed laboratory testing, only 1 patient met criteria for hypogonadism (T < 300 ng/dL). The mean total testosterone was 488 ng/dL (range 86-832 ng/dL) and mean free testosterone was 91.7 ng/dL (range 15.7-203.9 ng/dL). No patient was started on testosterone therapy.

Conclusions: Ninety-one percent of men presenting with depressive symptoms met criteria for hypogonadism based on ADAM questionnaire testing; however, only one patient had a serum testosterone < 300 ng/dL. This study reinforces current hypogonadism guidelines which recommend against using the ADAM questionnaire for screening. While underpowered, the prevalence of 6.25% in this study is noteworthy, as nearly 6 million men in the United States suffer from depression every year. Further study is warranted.

MP4-01

Differences in Testosterone Suppression for In Situ Gel vs. Microsphere Delivered Leuprolide Acetate – An Analysis of US Clinical Data

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Introduction: Suppressing testosterone (T) to the levels attained with surgical castration is the cornerstone of androgen deprivation therapy (ADT) for advanced prostate cancer (PCa). However, T may rise above castrate level (50ng/dL) between injections, especially if a subsequent dose is delayed. Delivery systems should be considered, as ADT therapies are not necessarily interchangeable. Two FDA approved forms of leuprolide acetate (LA) use different extended release systems: an in situ gel technology (Gel-LA, subcutaneous) and microsphere technology (Msphere-LA, intramuscular). This study evaluated the prevalence of late dosing and the comparative impact of late dosing on T suppression for Gel-LA and Msphere-LA.

Materials & Methods: A retrospective analysis of US oncology and urology electronic medical records (1/1/07-6/30/16) of PCa patients who received Gel-LA or Msphere-LA injections evaluated the frequency of late dosing (defined as occurring after day 32, 97, 128, 194 for 1-, 3-, 4-, 6-month formulations, respectively), mean T and rate of T tests > 50 ng/dL with late dosing.

Results: 2,038 patients received Gel-LA and 8,360 received Msphere-LA. 27% of injections for both drugs were late. When dosing was late, mean T was 48 ng/dL (Gel-LA) vs. 76 ng/dL (Msphere-LA). 18% (Gel-LA) vs. 25% (Msphere-LA) of T values were > 50 ng/dL. Both of these analyses were statistically significant ($p < 0.05$).

Conclusions: Overall, more than a quarter of injections were administered late. With late dosing, Gel-LA was more effective than Msphere-LA at maintaining T suppression, as demonstrated by lower mean T and lower rates of T breakthrough > 50 ng/dL. Although modifying clinical practice procedures to increase adherence to dosing schedules is recommended, late injections are ubiquitous in real world practice. As higher T levels, including T escapes, have potential to adversely impact disease progression and survival, clinicians should reassess their dosing schedule compliance policies and utilize an ADT which optimizes the goal of effective castrate levels of T suppression.

MP4-02

Comparison of Oncologic Outcomes for Robotic vs. Open Radical Cystectomy Among Clinically Node-Positive Patients: An Analysis of the National Cancer Database (NCDB)

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Introduction: Given the putative mechanism of peritoneal immunomodulation and tumor cell intravasation induced by pneumoperitoneum, the increased risk of atypical nodal recurrence after robotic-assisted radical cystectomy (RARC) may be more significant for those with node-positive muscle invasive bladder cancer (MIBC). This study aims to understand differences in mortality and post-operative outcomes of RARC compared to more conventional, open radical cystectomy (ORC) in this population.

Materials & Methods: A retrospective cohort analysis of cT2-4N1-3M0 patients who underwent RARC or ORC was performed using the NCDB from 2010-2016. Populations were further sub-stratified based on receipt of neoadjuvant chemotherapy (NAC). Appropriate univariate and multivariable analysis was performed comparing respective cohorts. Proportion of RARC by year was analyzed for treatment trends.

Results: 657 ORC and 163 RARC cases met inclusion criteria. There was no difference in overall survival between cohorts (Figure, Table). RARC was more common in recent years (Spearman's $\rho = 0.09$; $P = 0.01$) and was associated with significantly increased lymph node yield relative to ORC (nodes examined > 14, 58% vs. 45%; $P = 0.03$). RARC was significantly associated with shorter inpatient stay in the overall population (Table) and in those who received NAC (median 7 vs. 8 days; $P = 0.02$). Among patients who did not receive NAC, RARC was associated with decreased odds of positive margin status (adjusted odds ratio=0.49; $P = 0.05$).

Conclusions: The utilization of RARC has continued to increase from 2010 to 2016 and is no less safe compared to ORC in node-positive MIBC. RARC demonstrated similar outcomes to ORC for several endpoints regardless of NAC administration and may confer surgical and perioperative benefits.

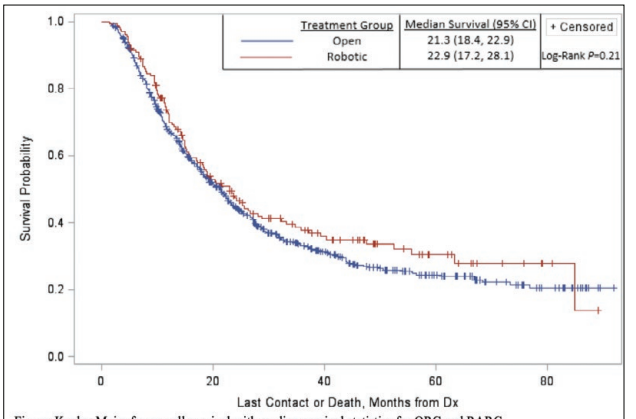

Figure. Kaplan Meier for overall survival with median survival statistics for ORC and RARC

Table. Multivariate Analysis for overall mortality and oncologic/surgical outcomes

Outcome	Open n=657	Robotic n=163	Adjusted Hazard Ratio (95% CI)	Adjusted *P*
Overall Mortality	434 (66.1)	101 (62.0)	1.09 (0.87 – 1.36)	0.4668
			Adjusted Odds Ratio (95% CI)	
30 Day Mortality	16 (2.5)	4 (2.5)	1.02 (0.33 – 3.18)	0.9755
90 Day Mortality	71 (11.1)	16 (9.9)	1.06 (0.58 – 1.92)	0.8607
30 Day Unplanned Readmission	50 (7.6)	11 (6.8)	0.95 (0.48 – 1.88)	0.8777
Positive Margin Status	152 (23.8)	23 (14.5)	0.60 (0.34 – 1.03)	0.0656
Adjuvant Radiation	45 (7.0)	6 (3.7)	0.60 (0.24 – 1.50)	0.2725
Adjuvant Chemotherapy	237 (37.3)	56 (35.0)	0.89 (0.62 – 1.28)	0.5368
			Adjusted ln [β (SE)]	
Surgical Inpatient Stay (days)	8 (6, 11)	7 (5, 9)	-0.2081 (0.0764)	0.0065*

*=statistically significant, P <0.05; CI=confidence interval; ln=natural logarithm; β=parameter estimate; SE=standard error;
Note: For all comparisons, reference group = ORC.

MP4-03

The Use of Postoperative Loopogram in Predicting 90-day Readmission for Ureteroenteric Stricture

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Introduction: Ureteroenteric stricture incidence has been reported as high as 20% after urinary diversion. There is no consensus for management of urinary diversion postoperatively. Loopogram is an inexpensive modality to evaluate ureteroenteric anastomoses in urinary diversion. We hypothesized that failure to reflux is associated with clinically meaningful stricture. Readmission diagnoses including pyelonephritis, acute kidney injury, and hydronephrosis were considered related to ureteroenteric stricture.

Materials & Methods: IRB approved cystectomy database was utilized to identify ureteroenteric strictures from 201 patients who underwent urinary diversion at a single academic center between 2016 and 2020. 35 underwent urinary diversion for benign pathology and 166 for malignancy (182 ileal conduit, 7 neobladder, 12 Indiana pouch), all with refluxing anastomoses. We categorized patients postoperatively with or without loopogram and loopogram findings of no, unilateral, or bilateral reflux. Postoperative imaging was determined by provider preference. To identify patients with strictures, related readmission diagnoses were queried: pyelonephritis, AKI, and hydronephrosis within 90 days. Further chart review was conducted to determine the presence of confirmed stricture in these patients, defined as endoscopic diagnosis or definitive imaging findings.

Results: Overall readmission rate was 41% (83/201), potential stricture-related readmission was 24% (49/201). Loopogram was performed at a median of 31 days postoperatively. Stricture and readmission results are shown in Table 1. Higher stricture rates were associated with unilateral and no reflux (not statistically significant). PPV and NPV of loopogram to identify ureteroenteric stricture were 22.8% and 93%, respectively.

Conclusions: Our study suggests degree of reflux does not reliably predict postoperative readmission or ureteroenteric stricture. Lack of reflux is not specific for ipsilateral ureteroenteric stricture. Increased stricture rate in loopogram cohort may be due to providers performing loopogram in high risk patients.

Table 1:

	Stricture Incidence	90 day readmission for stricture related complication	90 day readmission, total
No loopogram	8/126 (6.3%)	34/126 (26.9%)	58/126 (46%)
Loopogram	10/64 (15.6%)	15/64 (23.4%)	26/64 (40.6%)
Bilateral Reflux	2/29 (6.8%)	4/29 (13.7%)	10/29 (34%)
Unilateral Reflux	6/29 (20.6%)	9/29 (31%)	13/29 (44.8%)
Absent Reflux	2/6 (33%)	2/6 (33%)	3/6 (50%)

MP4-04

Association Between Preoperative Internal Medicine Optimization and 30-Day Outcomes Following Transurethral Resection of Bladder Tumors in Older Adults

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Introduction: Preoperative optimization reduces complications following major surgery; however, data suggest no benefit for low-risk procedures. Transurethral resection of bladder tumor (TURBT) is a low-risk procedure performed under general anesthesia in older adults who may benefit from optimization. Our objective was to evaluate the association between preoperative optimization and 30-day outcomes following TURBT in older adults.

Materials & Methods: We identified 686 patients (≥ 60 years) who underwent TURBT from 2005-2017. A preoperative optimization clinic was established in July 2014. Group 1 (n = 197) included TURBT patients before July 2014. Group 2 (n = 154) included patients who received optimization after July 2014. Group 3 (n = 335) included those who did not undergo optimization after July 2014. Primary outcomes were 30-day emergency room (ER) visits and readmissions. Groups 1 and 2 were matched on age, sex, and Charlson comorbidity index (CCI). Matched logistic regression was used to model the association between preoperative optimization and 30-day outcomes, while adjusting for variables significant on univariate analysis.

Results: Patients receiving optimization were older (mean 76.7 years), had higher CCI, and longer surgery time (59 minutes). Groups 1, 2, and 3 each had 35, 48, and 29 ER visits (p = 0.57). Groups 1, 2, and 3 had 7, 31, and 16 readmissions within 30 days (p = 0.01). In matched multivariable logistic regression, we found no difference in the odds of 30-day ER visits (adjusted OR 1.03, 95% CI 0.53-2.01) and readmissions (adjusted OR 2.60, 95%CI 0.87-7.79).

Conclusions: In this study of older adults undergoing TURBT, we found no difference in 30-day outcomes when comparing those who did and did not receive preoperative optimization. This retrospective study was not designed with power to detect differences; however, these data may inform future studies to design preoperative care that optimizes outcomes for older adults undergoing low risk surgery.

MP4-05

Increased Healthcare Utilization in the Year Following Non-Muscle Invasive Bladder Cancer Diagnosis Among Older Adults with Multiple Chronic Conditions

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Introduction: Two-thirds of older adults with cancer have multiple chronic conditions (MCC). Non-muscle invasive bladder cancer (NMIBC) is a burdensome chronic condition in older adults, requiring frequent outpatient visits and surgery. Frequent healthcare visits may not align with the goals of medically complex older cancer patients, but little is known about how NMIBC diagnosis impacts healthcare utilization. The objective was to describe healthcare utilization following NMIBC diagnosis by MCC status.

Materials & Methods: We included older NMIBC patients (age ≥ 60, stage < II) from 2003-2015. Healthcare utilization included outpatient, inpatient, and emergency department visits. Multiple visits on the same day counted as one contact day. AHRQ Clinical Classifications Software and Chronic Condition Indicator were applied to diagnosis codes to identify chronic conditions. MCC was defined as two or more chronic conditions. We estimated the difference in healthcare utilization pre- and post-NMIBC diagnosis using a multivariable linear regression model adjusted for age and prior cancer.

Results: Of 317 NMIBC patients, 263 (83%) had MCC. MCC patients were older (74 years versus 68.6 years), had prior cancers (29.7% versus 14.8%), and had more prescribed medications (7 versus 2). Patients with both NMIBC and MCC had higher utilization before diagnosis (14 days versus 2 days). Patients without MCC had a larger change in utilization after NMIBC diagnosis compared to those with MCC (13.9 days versus 7.5 days). In multivariable analysis, patients without MCC had 6.23 more contact days than those with MCC (95% CI 1.34-11.12, p = 0.01).

Conclusions: Older adults without MCC had larger increases in healthcare utilization following NMIBC diagnosis than those without MCC. Adding a new chronic condition like NMIBC compounds healthcare utilization in older adults. These data may serve as a baseline for future studies to reduce burdens related to NMIBC diagnosis and treatment in medically complex older adults.

MP4-07

Active Surveillance and Delayed Intervention for Small Renal Masses in Young Patients

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Introduction: The incidence of renal cell carcinoma has increased over the past several decades, along with a stage migration. An accompanying paradigm shift in the management of small renal masses (SRMs) has increased utilization of active surveillance (AS). However, questions remain regarding the safety and durability in younger patients.

Materials & Methods: Patients 60 years old or younger at diagnosis were identified from the Delayed Intervention and Surveillance for Small Renal Masses (DISSRM) registry, a prospective, multi-institutional study comparing AS to primary intervention (PI). The PI, AS, and delayed intervention (DI) groups were evaluated using ANOVA with Bonferroni correction, $\chi 2$ and Fisher's exact tests, and Kruskal-Wallis and Wilcoxon signed-rank tests. Survival outcomes were calculated using the Kaplan-Meier method and compared with the log-rank test.

Results: Of 224 patients aged 60 years or less with follow up available, 156 (69.6%) chose PI and 68 (30.4%) chose AS, with median follow up of 4.9 years. A total of 20 patients (29.4%) experienced a progression event, and 13 (19.1%) underwent DI. Among patients with initial tumor size ≤ 2 cm, 15.1% crossed over to DI, compared to 33.3% with initial tumor size 2-4 cm. Overall survival was similar in patients undergoing PI as compared to AS up to 7 years (94.0% vs. 90.8%, log-rank P = 0.2). There were no significant differences between PI and DI with respect to minimally invasive or nephron-sparing interventions or pathological findings. Recurrence-free survival after intervention at 5 years was 96.0% and 100% for PI and DI, respectively (log-rank P = 0.6).

Conclusions: AS is a safe initial strategy in younger patients and can avoid unnecessary intervention in the subset with benign biology for whom AS is durable. Crucially, an initial period of active surveillance did not limit treatment options for DI in those whose tumors grew or who opted for elective intervention, and oncologic outcomes weren't compromised

MP4-08

Urologist-Level Variation in the Management of Small Renal Masses

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Introduction: Various approaches exist for managing small renal masses (SRM). Reporting urologist-level rates of each may be valuable to characterize unwarranted variation in the care of patients with SRM. Such data can also have significant implications for patient and payer stakeholder groups.

Materials & Methods: We performed a population-based study of patients with SRM (cT1a tumors) from 2004-2013 using the linked Surveillance, Epidemiology, and End Results (SEER)-Medicare database. Management approach was defined in SEER as nonsurgical management (NSM), thermal ablation (TA), partial nephrectomy (PN), or radical nephrectomy (RN). Patients were assigned to a primary urologist using Medicare physician specialty codes. Multivariable mixed-effects logistic models were fit to evaluate associations between management approaches and select patient characteristics; predicted probabilities of using each approach were then obtained for each urologist.

Results: A total of 12738 patients with 2791 primary urologists were identified. Table 1 shows patient characteristics and predictors of each management approach. Likelihoods of undergoing NSM and PN were significantly associated with being diagnosed in 2009 and increased thereafter. At the individual urologist level, the estimated probability of NSM, TA, PN, and RN varied markedly: NSM (mean, 12.8%; range, 5.3-40.1%); TA (mean, 12.2%; range, 2.1-63.7%); PN (mean, 31.3%; range, 9.9-72.0%); RN (mean, 38.9%; range, 14.6-74.6%) (Figure 1).

Conclusions: Considerable urologist-level variation exists in the management of SRM. An increase in NSM and PN was noted since the release of the first AUA guideline on clinical stage I renal mass in 2009. Our study establishes a framework for developing quality-improvement measures to improve the delivery of guideline-based care.

Table 1. Baseline characteristics of the analytic cohort (N=12,738) and estimators of nonsurgical management, thermal ablation, partial nephrectomy, and radical nephrectomy in the multivariable mixed-effects logistic models.

Variable	N (%)	NSM (N=1775)		TA (N=1830)		PN (N=4119)		RN (N=5014)	
		OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Age (years)									
65-69	3802 (29.9)	1 [Reference]	-	1 [Reference]	-	1 [Reference]	-	1 [Reference]	-
70-79	6281 (49.3)	2.0 (1.7-2.4)	<0.001	1.5 (1.3-1.7)	<0.001	0.7 (0.6-0.8)	<0.001	0.9 (0.8-1.1)	0.213
≥80	2655 (20.8)	9.4 (7.9-11.2)	<0.001	2.0 (1.7-2.4)	<0.001	0.2 (0.2-0.3)	<0.001	0.6 (0.5-0.7)	<0.001
Sex									
Female	5377 (42.2)	1 [Reference]	-	1 [Reference]	-	1 [Reference]	-	1 [Reference]	-
Male	7361 (57.8)	1.1 (1.0-1.3)	0.026	1.2 (1.1-1.4)	0.001	1.1 (1.0-1.2)	0.009	0.8 (0.7-0.8)	<0.001
Race									
White	10870 (85.3)	1 [Reference]	-	1 [Reference]	-	1 [Reference]	-	1 [Reference]	-
Non-White	1868 (14.7)	1.4 (1.2-1.7)	<0.001	0.9 (0.7-1.0)	0.077	0.9 (0.8-1.0)	0.016	1.1 (0.9-1.2)	0.372
Charlson Comorbidity Index									
0	2024 (15.9)	1 [Reference]	-	1 [Reference]	-	1 [Reference]	-	1 [Reference]	-
1-2	4092 (32.1)	1.1 (0.9-1.3)	0.446	1.0 (0.8-1.2)	0.974	1.0 (0.9-1.2)	0.731	0.9 (0.8-1.1)	0.607
≥3	6622 (52.0)	1.3 (1.1-1.6)	0.002	1.2 (1.0-1.4)	0.025	0.8 (0.7-0.9)	0.007	0.9 (0.8-1.0)	0.278
Clinical Tumor Size (cm)									
≤2	3334 (26.2)	1 [Reference]	-	1 [Reference]	-	1 [Reference]	-	1 [Reference]	-
>2	9404 (73.8)	0.6 (0.5-0.7)	<0.001	0.8 (0.7-0.9)	0.007	0.6 (0.5-0.7)	<0.001	2.3 (2.1-2.6)	<0.001
Year of Diagnosis									
2004	1015 (8.0)	1 [Reference]	-	1 [Reference]	-	1 [Reference]	-	1 [Reference]	-
2005	1084 (8.5)	1.2 (0.9-1.7)	0.197	1.3 (0.9-1.8)	0.121	0.9 (0.8-1.2)	0.744	0.9 (0.7-1.0)	0.118
2006	1234 (9.7)	1.1 (0.8-1.4)	0.643	1.9 (1.4-2.6)	<0.001	1.1 (0.9-1.4)	0.394	0.7 (0.6-0.9)	<0.001
2007	1308 (10.3)	1.2 (0.9-1.6)	0.265	1.8 (1.3-2.5)	<0.001	1.1 (0.9-1.4)	0.261	0.7 (0.6-0.8)	<0.001
2008	1312 (10.3)	1.3 (0.9-1.7)	0.129	2.5 (1.8-3.4)	<0.001	1.1 (0.9-1.3)	0.487	0.6 (0.5-0.7)	<0.001
2009	1394 (10.9)	1.4 (1.1-1.8)	0.024	2.7 (2.0-3.7)	<0.001	1.3 (1.1-1.6)	0.005	0.4 (0.4-0.5)	<0.001
2010	1302 (10.2)	1.7 (1.3-2.3)	<0.001	2.6 (1.9-3.5)	<0.001	1.5 (1.2-1.8)	<0.001	0.4 (0.3-0.4)	<0.001
2011	1324 (10.4)	1.9 (1.4-2.5)	<0.001	2.5 (1.8-3.4)	<0.001	1.8 (1.5-2.2)	<0.001	0.3 (0.2-0.4)	<0.001
2012	1361 (10.7)	2.2 (1.7-2.9)	<0.001	2.3 (1.7-3.1)	<0.001	2.0 (1.7-2.5)	<0.001	0.2 (0.2-0.3)	<0.001
2013	1404 (11.0)	2.3 (1.8-3.1)	<0.001	2.0 (1.5-2.8)	<0.001	2.0 (1.6-2.5)	<0.001	0.3 (0.2-0.3)	<0.001

NSM = nonsurgical management; TA = thermal ablation; PN = partial nephrectomy; RN = radical nephrectomy; OR = odds ratio; CI = confidence interval

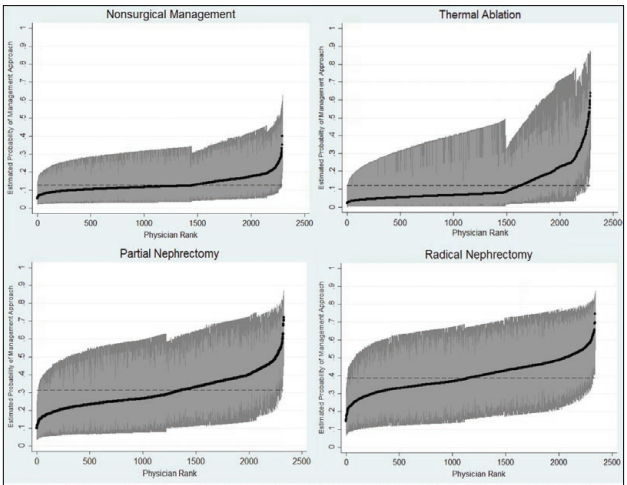

Figure 1. Caterpillar plots of urologist-level variation in the use of nonsurgical management, thermal ablation, partial nephrectomy, and radical nephrectomy for small renal masses. Physicians are ranked by their predicted probability of using each management approach. The black solid line indicates the point estimates for predicted probabilities of using the management approach for individual physicians; the gray area represents the 95% confidence intervals for these point estimates. The black dashed line indicates the mean predicted probability of using each management approach.

MP4-09

Nephrology Referral Practices Surrounding Renal Cancer Surgery

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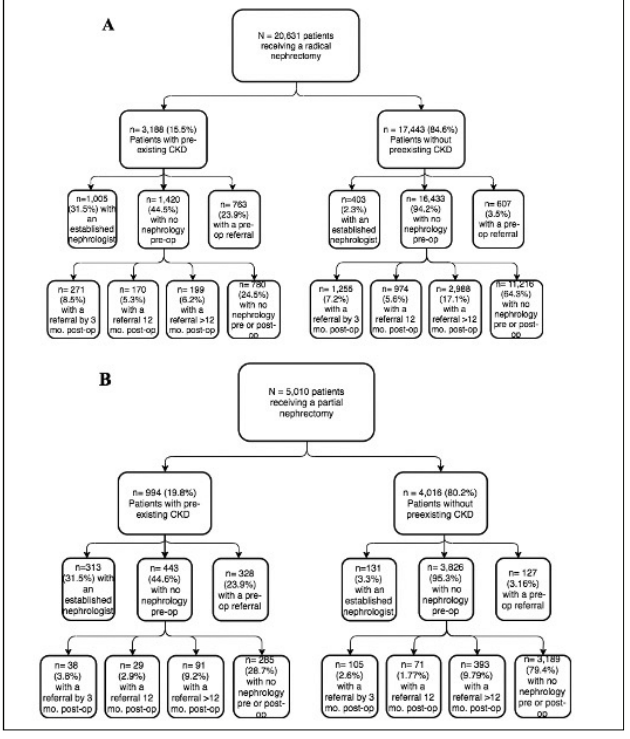
Introduction: Data are limited describing nephrology referral for patients at-risk for CKD per 2017 American Urologic Association guidelines. We examined nephrology referral rates amongst renal cancer nephrectomy patients to assess referral predictors and study associations of nephrology referral and survival.

Materials & Methods: We obtained data from the SEER-Medicare database for patients ≥66 years old who received nephrectomies for malignancy from 1999-2014. Referral data were based on nephrology claims. We identified if and when patients were referred by CKD disease status and surgery type, used logistic regression to identify associated patient factors and used a Cox proportional hazard regression model to assess associations with survival. Logistic regression and survival analyses were conducted for cases from 2004-2014 with available comorbidity data.

Results: There were a total of 25,641 subjects who met criteria for analysis; 20,641 of them receiving radical nephrectomy and 5,010 patients receiving partial nephrectomy (PN). Median follow-up time for patients receiving radical and partial nephrectomy was 26.1 and 40.4 months respectively. Data on referral patterns are for radical nephrectomy patients are shown in Figure 1. Data on predictors of referral are shown in Table 1.

Conclusions: Few renal cancer patients at risk for CKD progression or development present with an established nephrologist or receive pre-operative referral, suggesting missed opportunities to refer high risk patients. Pre-operative referral does not appear to improve survival; however, referred patients may represent a higher risk subset, and other patients who may benefit appear under-referred.

Patients with Nephrology Referral by Surgery and CKD Status



Predictors of Nephrology Referral

Referral Type	Pre-Operative CKD: Present	Pre-Operative CKD: Absent
Pre-Operative	• *2,362 patients who fit analytic criteria were identified* • **Dementia** (OR: 0.35, P=0.026) • **DM with Complications** (OR: 1.34, P=0.021) • **Urban Area Residence** (OR: 1.65, P=0.009, REF: Big Metro Area) • **Stage 3-5 CKD** (OR: 5.60, P <0.001, REF: Stage 1-2 CKD) • **Tumor size, age, sex and surgery type were not predictive on adjusted analysis**	• *12,272 patients who fit analytic criteria were identified* • **CHF** (OR: 1.51, P<0.001) • **CVED** (OR: 1.48, P=0.001) • **PUD** (OR: 1.90, P=0.003) • **DM with Complications** (OR: 1.73, P=0.001) • **Black Race** (OR: 1.57, P=0.005, REF: White Race) • **Metro Area Residence** (OR: 0.72, P=0.005, REF: Big Metro Area) • **Tumor size, age, sex and surgery type were not predictive on adjusted analysis**
3-Month Post-Operative	• *1,497 patients who fit analytic criteria were identified* • **CVED** (OR: 1.47, P=0.035) • **Less Urban Area Residence** (OR: 2.18, P=0.002, REF: Big Metro Area) • **Female Sex** (OR: 0.53, P<0.001) • **Radical Nephrectomy** (OR: 2.39, P<0.001) • **Stage 3-5 CKD Post-Operatively** (OR: 9.92, P<0.001)	• *11,684 patients who fit analytic criteria were identified* • **COPD** (OR: 1.24 , P=0.020) • **PUD** (1.53, P=0.042) • **DM** (1.23 (P=0.022) • **DM with Complications** (OR: 1.34, P=0.021) • **Moderate to Severe Liver Disease** (OR: 3.16, P=0.011) • **Age** (OR: 1.02, P=0.002) • **Radical Nephrectomy** (OR: 2.43, P<0.001) • **Stage 3-5 CKD Post-op** (OR: 37.6, P <0.001, REF: Stage 0-2 CKD) • **Tumor size and sex were not predictive on adjusted analysis**
12-Month Post-Operative	• *1,265 patients who fit analytic criteria were identified* • **PUD** (OR: 2.18, P=0.032) • **DM** (OR: 1.76, P=0.004) • **Radical Nephrectomy** (OR: 2.13, P<0.002) • **Stage 3-5 CKD Post-op** (OR: 15.8, P <0.001, REF: Stage 0-2 CKD) • **Tumor size, age and sex were not predictive on adjusted analysis**	• *10,909 patients who fit analytic criteria were identified* • **DM** (OR: 1.57, P<0.001) • **Radical Nephrectomy** (OR: 2.51, P<0.001) • **Stage 3-5 CKD Post-op** (OR: 35.6, P <0.001, REF: Stage 0-2 CKD) • **Tumor size, age and sex were not predictive on adjusted analysis**

MP4-10

Multiparametric MRI Findings Predictive of Adverse Pathology and Biochemical Recurrence After Radical Prostatectomy

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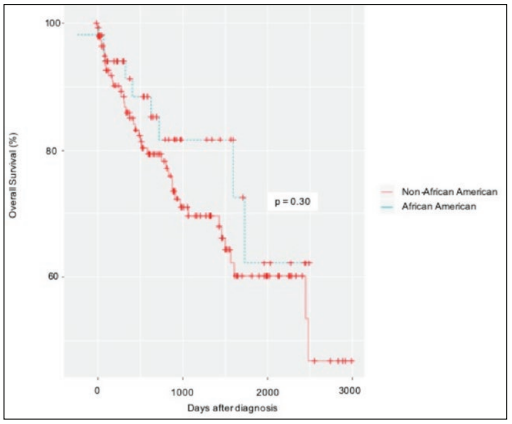
Introduction: Multiparametric magnetic resonance imaging (mpMRI) has emerged as a valuable tool to improve the risk stratification of patients with clinically localized prostate cancer. To better stratify patients who may harbor more aggressive disease, this study identifies preoperative mpMRI findings associated with adverse surgical pathology (ASP) or biochemical recurrence (BCR).

Materials & Methods: Retrospective chart review of all patients who underwent mpMRI prior to radical prostatectomy from 2014 to 2017 was performed. Logistic regression was utilized to analyze associations. ASP was defined as Grade Group (GG) ≥ 3 disease, seminal vesicle invasion (SVI), and/or positive pelvic lymph nodes (+LN). Separately, we evaluated mpMRI characteristics predictive of ASP in patients with GG2 disease on biopsy to better risk stratify men with NCCN intermediate-risk disease.

Results: There were 411 patients with a median PSA of 6.4 ng/mL, of whom 65 (15.8%) had no significant mpMRI findings, 258 (62.7%) had a PI-RADS lesion ≥ 4, and 96 (23.3%) had mpMRI positive for extraprostatic extension (EPE). On preoperative biopsy, GG1, GG2, and GG ≥ 3 disease was identified in 131 (31.9%), 150 (36.4%), and 130 (31.6%) men, respectively. On postoperative surgical pathology, GG ≥ 3 disease, SVI, and +LN were present in 132 (32.1%), 39 (9.4%), and 23 (5.5%) men, respectively. Multivariable regression controlling for PSA, PI-RADS score, and lesion diameter demonstrated that EPE on mpMRI was significantly associated with ASP (OR 3.18, P < 0.001). Among men with GG2 disease on biopsy, EPE remained significantly associated ASP (OR 4.62, P = 0.001). BCR was associated with EPE (OR 3.86, P < 0.001), PI-RADS 5 lesions (OR 5.0, P = 0.03), and increased mpMRI lesion diameter (OR 1.78 per cm, P = 0.002) on univariable analysis.

Conclusions: Findings on mpMRI, particularly EPE, are strongly associated with adverse pathological characteristics and BCR. This information may be useful to risk stratify patients prior to radical prostatectomy as well as better select more suitable candidates for active surveillance.



MP4-12

Impact of African American Race on Upstaging at Time of Cystectomy and Overall Survival in Bladder Cancer

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Introduction: Bladder cancer is less common in African-American (AA) than Caucasian patients. Population studies demonstrate that AA have worse overall survival, presumably associated with presentation at later stages and inferior quality of care. It remains unknown if biological differences exist in AA bladder tumors that contribute to worse overall survival. We aim to analyze racial disparities in quality of care as it relates to differences in outcomes in AA vs. non-AA.

Materials & Methods: Demographics, pathology, treatment modalities, cancer recurrence and overall survival were collected prospectively in radical cystectomy (RC) patients at MedStar Georgetown University Hospital (2012-2019) and MedStar Washington Hospital Center (2010-2019). Categorical variables were evaluated using chi-squared and Fisher exact test. Overall survival (OS) analysis was performed using Kaplan–Meier method and log-rank statistic.

Results: Among 194 RC patients, 52 were AA (Table 1). There were no differences in tumor stage, nodal stage, or tumor grade at diagnosis between AA and non-AA. Rates of neoadjuvant chemotherapy, time from diagnosis to RC, rates of tumor recurrence and overall survival were not significantly different (Figure 1). However, AA were more likely to be upstaged at RC (p = 0.03).

Conclusions: At our institution, AA receive equal quality of care. In this setting, AA and non-AA have equivalent overall survival. However, AA are more likely to be upstaged at RC despite similar tumor stage at diagnosis, suggesting tumors in this population may be biologically different.

	Non-African American (n =143)	African American (n = 52)	P
Age, mean (SD)	70.46 (9.22)	69.19 (9.76)	0.404
Sex, No (%)			
Male	128 (89.5)	32 (61.5)	
Female	14 (9.8)	20 (38.5)	<0.001
Unknown	1 (0.7)	0	
Smoking, No (%)			
Never smoker	45 (36)	11 (25.6)	
Current smoker	25 (20)	7 (16.3)	0.27
Former smoker	55 (44)	25 (58.1)	
Current Alcohol Use, No (%)	13 (19.7)	8 (30.8)	0.388
Neoadjuvant chemotherapy, No (%)	50 (36.2)	19 (43.2)	0.516
T stage at TURBT, No (%)			
pTis/a	17 (12.4)	1 (2.2)	
pT1	30 (21.9)	11 (23.9)	0.224
pT2	90 (65.7)	34 (73.9)	
Tumor grade at TURBT, No (%)			
CIS	7 (5.5)	0	
Low	7 (5.5)	3 (7.1)	0.285
High	113 (89)	39 (92.9)	
Histology at TUBRT, No (%)			
Urothelial	127 (94.8)	42 (93.3)	
Squamous	4 (3)	3 (6.7)	0.535
Other	3 (2.2)	0	
cN0 at TURBT, No (%).	104 (100)	40 (97.6)	0.628
Time from diagnosis to Cystectomy (days), mean(SD)	111 (157)	116(66)	0.834
Tumor Stage at RC, No (%)			
pT0	20 (14)	5 (9.6)	
pTa/is	30 (21)	2 (3.8)	
pT1	16 (11.2)	9 (17.3)	0.03
pT2	21 (14.7)	10 (19.3)	
pT3	39 (27.3)	19 (36.6)	
pT4	17 (11.9)	7 (13.4)	
Node Stage at RC, No (%)			
pN0	114 (82)	42 (84)	
pN1	8 (5.8)	3 (6)	0.977
pN2	13 (9.4)	4 (8)	
pN3	4 (2.9)	1 (2)	
Histology at RC, No (%)			
No evidence of residual tumor	18 (12.6)	5 (9.6)	
Urothelial carcinoma	117 (81.8)	43 (82.7)	0.725
Squamous	5 (3.5)	4 (7.7)	
Other	3 (2.1)	0	
Tumor Recurrence, No (%)	40 (28.4)	13 (25.5)	0.833

MP5-01

Next Generation DNA Sequencing May Detect Microorganisms More Promptly than Conventional Culture in Infected Urologic Prosthetics

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Introduction: Next-generation DNA sequencing (NGS) is an emerging technology allowing evaluation of entire genomes and improved organism detection. Preliminary data suggest optimal NGS utilization may be in patients undergoing device removal for infection rather than malfunction. We hypothesize that NGS may provide a prompter evaluation of microorganisms compared to conventional culture in patients with device infection.

Materials & Methods: A retrospective review of patients who underwent device removal for infection with or without device replacement from June 2018 to September 2019 was performed. Infected inflatable penile prosthesis (IPP) and artificial urinary sphincters (AUS) were swabbed on removal and sent for NGS (MicroGen Diagnostics, Lubbock, TX, USA) and quantitative PCR using extracted DNA. PCR functioned as a rapid screening test, identifying 25 common bacteria and eight resistance genes. NGS compared sequenced DNA against a database of 25,000 known microbes.

Results: Nine patients underwent 10 device explants (6 IPP, 4 AUS) for infection. Infection was defined as urethral erosion (n = 6), gross infection (n = 3) or exposed tubing (n = 1). Rapid sequence PCR, NGS and conventional culture were congruent only in the 3 patients with gross infection (Pseudomonas, E. coli and Proteus mirabilis). NGS identified additional bacteria that were not previously seen on conventional culture for 4 other devices. Rapid sequence PCR was processed at an average of 2.5 hours. NGS resulted at a mean of 5.0 days compared to 6.9 days for conventional culture (p = 0.07).

Conclusions: PCR and NGS detected microorganisms more promptly than conventional culture and may be most applicable in patients with gross device infection. Early targeted antimicrobial therapy may help to increase salvage rates and decrease patient morbidity. PCR and NGS may also play a key role in further characterizing device microbiome. Further evaluation of PCR and NGS in patients with device infection is warranted.

MP5-02

Characteristics and Outcomes of Consultations for Urethral Catheter Placement

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Introduction: Assistance placing a urethral catheter or complications arising following catheter placement are common reasons for inpatient urologic consultation. There is limited published data to understand the incidence, characteristics, and outcomes of urethral catheter placements in the setting of urologic consultation. The present study represents a quality initiative to understand these characteristics in a tertiary care setting.

Materials & Methods: We performed a retrospective review of prospectively collected data related to consults on adult patients for urethral catheter placement at a single tertiary care center. Clinical and patient characteristics were collected including catheter attempts prior to consultation, associated trauma, and the need for procedural or surgical intervention.

Results: From January to December 2019, a total of 137 consults on 113 patients were performed. The median patient age was 67 years and 89% were men. Urology placement of catheter was required in 122 (89%) consults, with the remaining consultations related to issues following catheter placement (e.g. hematuria). Of 137 consults, 112 (82%) had an attempted catheter placement prior to urologic consultation. In these cases, an average of 1.5 [0-5] catheters were attempted prior to consultation. Fifty-eight (42%) catheter placements were traumatic (presence of blood at meatus, known inflation of balloon in urethra, or false passage on cystoscopy). The development of hematuria and urinary tract infection was associated with 45 (33%) and 23 (17%) of consults. Twelve (9%), thirty-four (25%), and four (3%) consults required continuous bladder irrigation, cystoscopic-guided catheter placement, and suprapubic tube placement, respectively. Four (3%) consults required operative management of hematuria. Eighty-three (62%) consults were discharged with a catheter.

Conclusions: Urologic consults related to urethral catheterization are common and often associated with significant related morbidity. Further studies are needed to evaluate predictors and outcomes of traumatic urethral catheter placement and related cost.

MP5-04

Zero Tolerance – Mitigating the Opioid Epidemic Among Minimally Invasive Urologic Patients

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Introduction: Opioids are routinely prescribed following minimally invasive surgery. Thus, reducing narcotics after MIS is a critical step towards mitigating the opioid epidemic. The goal of this study was to evaluate the impact of an "opt-in" non-narcotic post-operative pain regimen on post-operative narcotic utilization and patient-reported pain scores.

Materials & Methods: An interventional trial was conducted at Thomas Jefferson University Hospital. Patients undergoing urologic MIS in June and July without a history of chronic opiate use were eligible. Patients in the pre-intervention (PrI) group received the established opiate-based pain protocol. Patients in the post-intervention (PoI) group received a new pain protocol prioritizing non-narcotic medications, an "opt-in" requirement for narcotic prescription, and patient education on pain expectations. Primary study measurements included amount of opioids received (in Morphine Equivalent Doses [MED]) and reported pain on Postoperative Day 1, discharge and follow-up.

Results: Twenty-one patients participated in the PrI group; thirty in the PoI group. At discharge, 70% fewer patients were prescribed any opioids, and the amount prescribed was reduced by 95% (Table 1). Mean MED used following discharge also decreased by 76% (Table 1). Mean pain score at postoperative day 1, discharge and follow-up visit for PrI and PoI groups were 4.0, 3.6 and 1.5, and 4.5, 4.1 and 1.6, respectively. There was no significant difference in pain between groups. Subgroup analysis of the radical prostatectomy cohort showed similar reductions in MED and differences in pain.

Conclusions: Standardized pain protocols with an "opt-in" requirement for prescription of opiates, emphasis on non-narcotic medications, and patient education, resulted in a significant decrease in opioid use. Simple frame-shifts in approach to pain management can yield significant gains in the fight against the opioid epidemic.

Table 1: Mean Morphine Equivalent Doses and Numerical Rating Pain Scores in Pre- and Post- Intervention Groups

	PrI (n=21)	PoI (n=30)	p-value [a]
Post-operative			
Patients receiving narcotics, n (%)	15 (71.4%)	23 (76. 7%)	0.673
MED (mg, mean [b] [95% CI [b]])	15.2 [6.4, 36.1]	16.9 [8.5, 33.6]	0.845
MED (mg, median (Q1-Q3))	32.5 (0-56)	26.3 (7.5-67.5)	
NRS pain score, mean (SD), [95% CI]	4.0 (2.8), [2.8, 5.3]	4.5 (3.0), [3.3, 5.6]	0.752
Discharge			
Patients discharged on narcotics, n (%)	21 (100.0%)	9 (30.0%)	<0.001
MED (mg, mean [b] [95% CI [b]])	69.3 [60.0, 80.2]	3.5 [1.7, 7.4]	<0.001
MED (mg, median (Q1-Q3))	75 (60-75)	0 (0-37.5)	
NRS pain score, mean (SD), [95% CI]	3.6 (2.6), [2.4, 4.7]	4.1 (2.6) , [3.1, 5.1]	0.597
Follow-up			
Patients receiving additional narcotics, n (%)	2 (9.5%)	3 (10.3%)	0.924
MED (mg, mean [b] [95% CI [b]])	14.7 [5.9, 36.7]	3.5 [1.7, 7.0]	0.011
MED (mg, median (Q1-Q3))	37.5 (0-60)	0 (0-30)	
NRS pain score, mean (SD), [95% CI]	1.5 (2.1), [0.5, 2.4]	1.6 (2.6) , [0.6, 2.6]	0.759
MED over entire surgical course			
Prescribed (mg, mean [b] [95% CI [b]])	103.0 [79.9, 132.7]	23.3 [10.9, 49.8]	0.002
Used (mg, mean [b] [95% CI [b]])	35.8 [15.1, 84.9]	20.9 [10.1, 43.1]	0.327

[a] *P*-value corresponds to t-test of logged data for MED variables, Mann-Whitney test for continuous variables (NRS pain scores), and χ^2 test for categorical variables
[b] Geometric mean and its 95% confidence interval
MED: morphine equivalent doses; SD: standard deviation; CI: confidence interval; Q1: lower quartile; Q3: upper quartile; NRS: numerical rating scale

MP5-05

Assessing Readability of Patient Education Materials on Bladder Cancer in the Urologic Patient Population

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Introduction: Understanding of health-related materials, termed health literacy, affects decision makings and outcomes in the treatment of bladder cancer. The National Institutes of Health recommend writing education materials at a sixth-seventh grade reading level.[1] The goal of this study is to assess readability of bladder cancer materials available online.

Materials & Methods: Materials on bladder cancer were collected from the AUA's Urology Care Foundation and compared to top 10 websites ranked by search engine results. Resources were assessed for readability using validated readability assessment scales: Coleman-Liau Index, SMOG Readability Formula, Gunning Fog Index, and Flesch-Kincaid Grade Level.

Results: The mean readability scores of resources on the AUA website include a Coleman-Liau Index of 9.37 (standard deviation [SD] 0.69, 9th grade), SMOG Readability of 7.57 (SD 0.49, 7th-8th grade), Gunning Fog Index of 8.875 (SD 1.09, 8th-9th grade), and Flesch-Kincaid of 8.05 (SD 0.71, 8th grade). The average readability of AUA by the four assessment tools was 8.46 (8th-9th grade reading level). For the top 10 websites, scores included a Coleman-Liau of 11.7 (SD 1.61, 11-12th grade), SMOG Readability of 10.16 (SD 1.71, 10th grade), Gunning Fox Index of 13.51 (SD 2.39, 13-14th grade), and Flesch-Kincaid of 11.81 (SD 2.11, 11-12th grade). The average readability of these websites by the four assessment tools was 11.795 (11-12th grade reading level).

Conclusions: Most health information provided by the AUA on bladder cancer is written at a reading ability that aligns with most US adults, with top websites for search engine results exceeding the average reading level by several grade levels. By focusing on health literacy and improving patient understanding, urologists may contribute lowering barriers to health literacy, improving health care expenditure and perioperative complications.

References

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MP5-07

Use of sipIT Intervention to Reduce Common Perceived Barriers to Increasing Fluid Intake Among Adult Patients with Kidney Stones

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Introduction: Compliance with increasing fluid intake to produce at least 2.5L of urine daily for stone prevention is commonly below 50%. We previously demonstrated that wrist-worn sensors can detect drinking behavior and provide automated lapse detection in fluid intake in the lab setting. From these studies we developed the sipIT intervention which is a context-sensitive behavior change system that incorporates a wrist-worn sensor (Fitbit Versa watch), connected water bottle (H20Pal) and self-monitoring through mobile apps. The purpose of this study was to determine the feasibility and acceptability of sipIT intervention in the clinical setting. In addition, the changes in perceived barriers to increasing fluid intake were evaluated.

Materials & Methods: Patients with kidney stones were recruited to participate in a 3-month feasibility trial. Patients were given a Fitbit Versa watch with the sipIT app installed and an H20Pal connected water bottle. They completed a questionnaire to determine perceived barriers to increasing fluid intake at baseline, 1 and 3 months.

Results: 31 patients with a history of kidney stones were enrolled to participate (58% female, age = 40.0 ± 14.3 years). Findings are based on n = 27 who completed the entire 3-month intervention. At the end of the intervention, patients reported that forgetting to drink and lack of thirst were less of a barrier to meeting fluid intake goals, 27% and 48% reduction respectively. Most participants perceived that the sipIT intervention helped them to achieve their fluid intake goals and would recommend it to other patients with a history of kidney stones (83%).

Conclusions: The sipIT intervention may be used to detect drinking behavior and provide automated lapse detection in fluid intake in the clinical setting. The system was acceptable to patients and there was reduction in common perceived barriers to fluid intake. Combining digital tools with behavioral science may improve adherence to fluid intake recommendations.

MP5-08

The Financial Burden of Applying to Urology Residency in 2020

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Introduction: Applying to urology residency involves many costly components including research, away rotations, applications, and interviews. We aimed to calculate the contemporary cost for applying to urology residency.

Materials & Methods: An electronic survey was emailed to all applicants who applied to Rutgers Robert Wood Johnson Medical School for a urology residency position for the 2019-2020 American Urological Association (AUA) Match cycle after Match results were released. We collected information on applicant, application, and interview demographics as well as estimated educational debt and costs incurred applying to residency.

Results: Of 245 applicants, 242 emails were sent and 3 bounced. 52 applicants responded (21.5%) representing all eight AUA sections, international schools, and schools without urology programs. The majority of respondents were male (60.4%), single (75.5%), and attended public medical school (52.8%). Most students (40.9%) used loans to pay for the interview trail, while the rest used family donations (30.7%), previous income (17%), and scholarships (8%). Students completed a median of 2 away rotations, applied to 80 programs, and attended 16 interviews. Total estimated median cost per applicant for the 2019-2020 Match was $9,921 (IQR $6,524-13,628). This estimate included application fees [$1,739 (IQR $1,401-2,025)], away rotations [$2,750 (IQR $1,275-4,375)], interview trail travel [$2500 (IQR $1,625-5,000)], interview trail lodging [$1,000 (IQR $712.50-2,225)], urology research [$50 (IQR $0-500)], interview attire [$300 (IQR $150-400)], and professional photos [$20 (IQR $0-50)]. Only one student attended a second look, spending $500. Applicants who attended public medical school were more likely to have a total cost above the average ($12,333.90 vs. 7.764.58; p = 0.037).

Conclusions: The mean estimated cost of applying to urology residency for the 2019-2020 Match was $9,921. Between 2013 and 2019, the number of applicants to the AUA Match declined, while number of applications increased; taken together, these statistics may imply that applying to urology residency may be cost-prohibitive to some students.

MP5-09

In-Hospital Predictors of Post-Discharge Opioid Use: Individualizing Prescribing After Radical Prostatectomy Based on the ORIOLES Initiative

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Introduction: Judicious opioid stewardship is imperative, and ideally matches each patient's prescription to their medical necessity. However, minimal objective data exist to guide prescribers in fulfilling this mission. We evaluated in-hospital parameters as predictors of post-discharge opioid utilization in a large cohort of patients undergoing radical prostatectomy (RP), to provide objective evidence-based guidance for individualized prescribing.

Materials & Methods: A prospective cohort of 443 patients who underwent open or robotic RP between 2017 and 2018 were followed in the IRB-approved Opioid Reduction Intervention for Open, Laparoscopic, and Endoscopic Surgery (ORIOLES) initiative. Baseline demographics, clinical variables, patient-reported pain scores (scale 0-10), and inpatient and post-discharge pain medication utilization were tabulated from electronic medical records and planned 30-day follow-up physician telephone calls. All opioid medications were converted to oral morphine equivalents (OMEQ). Predictive factors for post-discharge opioid utilization were analyzed by univariate and multivariate linear regression.

Results: Of 443 patients (102 open and 341 robotic RP), 374 (84%) were discharged on post-operative day 1. On univariable analysis, the factors most strongly associated with post-discharge opioid utilization included inpatient opioid utilization (overall, average per day, and in the 12 hours prior to discharge; Pearson's correlation coefficients r = 0.34-0.38, p < 0.001), maximum patient-reported pain scores (24 hours, 12 hours, and final score prior to discharge; r = 0.26-0.32, p < 0.001), and history of prior opioid use. On multivariable analysis, inpatient opioid use (+0.7 post-discharge OMEQ per 1 inpatient OMEQ) and maximum pain score (+5.5 post-discharge OMEQ per 1 point) in the final 12 hours prior to discharge remained significantly correlated with post-discharge utilization. A final predictive model to guide post-discharge prescribing was constructed.

Conclusions: Following RP, inpatient opioid use, patient-reported pain scores, and prior opioid use are strongly correlated with post-discharge opioid utilization. These data can help guide individualized opioid prescribing at hospital discharge to more reliably meet individual needs while minimizing risks of overprescribing.

MP5-10

Prostatic Urethral Lift (PUL) Demonstrates Real World Effectiveness in Subjects With Obstructive Median Lobes

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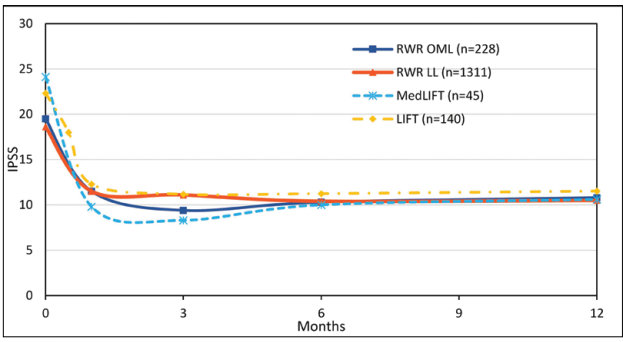
Introduction: The MedLift study revealed obstructive median lobe (OML) protrusion can be treated safely and effectively with the minimally invasive PUL. Utilizing the real-world retrospective (RWR) PUL study, we assess outcomes in OML subjects, compared to subjects with obstructive lateral lobes (LL) only and MedLift results.

Materials & Methods: 2090 patients across 18 international sites who underwent PUL after market clearance were included in the RWR database. Baseline demographics were compared between RWR OML (n = 228) vs. RWR LL (n = 1311) and MedLift subjects (n = 45). RWR OML symptom outcomes and adverse events were evaluated through 12 months post-PUL and compared to RWR LL subjects. Absolute IPSS scores between RWR OML and MedLift subjects were compared.

Results: RWR OML subjects were 69.8 y.o. with larger prostates (53.3 cc ± 21.3) than RWR LL (45.4 cc ± 19.6) and MedLift (44.2 ± 11.2) subjects, and lower baseline IPSS (19.5 ± 6.9) than MedLift subjects (24.2 ± 4.9). RWR OML Qmax was also lower than RWR LL and MedLift patients. Post-PUL, absolute IPSS and QoL scores were similar between RWR OML and RWR LL subjects throughout follow-up; both groups improved significantly across all timepoints (Figure 1). QoL, Qmax, and PVR in RWR OML subjects were similar to or better than RWR LL subjects. Post-procedure catheterization was similar in RWR OML (7.9%) and RWR LL subjects (5.8%). AE rates were similar between RWR OML and LL subjects. Despite differences in IPSS at baseline between RWR OML and MedLift subjects, follow-up absolute IPSS scores were equivalent at follow-up between both groups.

Conclusions: The large multicenter RWR of PUL reveals OML subjects exhibit similar symptom response and safety profile compared with LL patients, confirming results from the controlled MedLift study.



MP5-11

Evaluation of Mobile Health Applications for Pelvic Organ Prolapse and Stress Urinary Incontinence

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Introduction: As technology becomes integrated into healthcare, it becomes important to evaluate mobile health applications (apps). We aim to evaluate apps for Pelvic Organ Prolapse and Stress Urinary Incontinence using Xcertia guidelines for medical app quality.

Materials & Methods: Mobile medical apps were found on the Apple App Store with keywords "pelvic organ prolapse," "incontinence," or "bladder." Exclusion criteria included 1) not free, 2) not updated in past year. Apps were evaluated along the Xcertia Guidelines. Categories included Operability, Privacy, Security, Content, and Usability. Ratings and sentiment of reviews were assessed.

Results: Of 27 found apps, 8 were included. Review sentiment analysis (Table 1) showed 5 apps with majority positive sentiment: Easy Kegel (96% of 225 reviews), Kegel Nation (80% of 5 reviews), Kegel Trainer PFM Exercises (96% of 741 review), PRIVY-US Urinary Health (100% of 1 review), and Tät: Pelvic Floor Muscle Exercises (100% of 1 review). Squeeze Time had mostly negative reviews (75% of 4 reviews), Vesica had mostly neutral reviews (50% of 16 reviews), and Kegel Trainer had equal positive, negative, and neutral reviews (of 6). Based on Xcertia Guidelines, all apps had simple and problem-free launch and usability, and none required identifying information (Table 2). Regarding content, 62.5% of apps incorporated an informational component and 37.5% delineated sources.

Conclusions: Most apps were functional and well received by users, however quality of app content varied. Only some apps had an informational component, and even less had sources listed. Providers recommending health apps should consider those that meet Xcertia guidelines and have reliable information.

App	Use	Ratings		Reviews			
		Number of Ratings	Score	Number	Positive (%)	Negative (%)	Neutral (%)
Easy Kegel	Pelvic Floor Exercises	462	4.8	225	217 (96.44)	4 (1.78)	4 (1.78)
Kegel Nation	Pelvic Floor Exercises	9	3.9	5	4 (80)	1 (20)	0 (0)
Kegel Trainer	Pelvic Floor Exercises	121	4.5	6	2 (33.3)	2 (33.3)	2 (33.3)
Kegel Trainer PFM Exercises	Pelvic Floor Exercises	1700+	4.6	741	715 (96.5)	10 (1.35)	16 (2.16)
PRIVY US – Urinary Health	Incontinence	8	4.5	1	1 (100)	0 (0)	0 (0)
Squeeze Time	Pelvic Floor Exercises	79	4.7	4	1 (25)	3 (75)	0 (0)
Tät: Pelvic Floor Exercises	Pelvic Floor Exercises	1	5	1	1 (100)	0 (0)	0 (0)
Vesica	Voiding Diary	190	4.4	16	7 (43.75)	1 (6.25)	8 (50)

App	Operability		Privacy	Security	Content			Usability	
	App Launch	Contact Developer/ Feedback	Personal Data Protection	Protect from External Threats, Guard Identity	Informational Component	Credible Information Sources Provided	Information Up to Date	Visually Clear, Text Readable	Easy to Use/Navigate
Easy Kegel	problem-free	available method	yes	yes	yes	no	within 6 months	yes	yes
Kegel Nation	problem-free	no available method	yes	yes	yes	yes	within 6 months	yes	yes
Kegel Trainer	problem-free	available method	yes	yes	no	no	within 6 months	yes	yes
Kegel Trainer PFM Exercises	problem-free	available method	yes	yes	no	no	within 6 months	yes	yes
PRIVY US – Urinary Health	problem-free	available method	yes	yes	yes	yes	within 1 year	yes	yes
Squeeze Time	problem-free	available method	yes	yes	yes	no	within 6 months	yes	yes
Tät: Pelvic Floor Exercises	problem-free	no available method	yes	yes	yes	no	within 6 months	yes	yes
Vesica	problem-free	no available method	yes	yes	no	yes	within 1 year	yes	yes

MP5-12

HPG Axis Reset in Men with Hypergonadotrophic Hypogonadism

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Introduction: Among men with hypergonadotrophic, hypogonadal non-obstructive azoospermic (NOA), excess gonadotropin exposure carries the potential for desensitizing Leydig and Sertoli cells. The therapeutic dilemma with these men is the limited number of options to improve the intratesticular testosterone prior to sperm extraction operations, combined with the potential for a detrimental effect of gonadotropins on Sertoli and Leydig cells. We aim to explore and develop a novel protocol for hypothalamic-pituitary-gonadotropin (HPG) axis reset as a means to hormonally optimize hypergonadotrophic, hypogonadal men prior to microsurgical testicular sperm extraction (mTESE) surgery.

Materials & Methods: From May 2012 to December 2019, a total of 43 men with hypergonadotrophic, hypogonadal NOA electing mTESE underwent mTESE after either receiving HPG axis rest or standard medical therapy. mTESE was performed by two academic infertility specialists. Men who underwent HPG axis reset received intramuscular testosterone therapy weekly and hCG injections 3 times per week. Men in the control arm received selective estrogen receptor modulators, aromatase inhibitors or observation. Testicular biopsy was assessed for the presence of sperm in all patients after surgery. Baseline demographic, operative and postoperative data were collected by retrospective chart review. Comparative testing was utilized with significance set at $\chi = 0.05$.

Results: The median age of the patients in the study was 36 years, with no significant difference between the groups (p=0.09). A total of 7 men received HPG axis reset prior to mTESE while 36 men received standard of care. Men who received HPG axis reset were significantly more likely to have sperm on testicular biopsy (86%) compared to men who received standard of care (44%) (6 vs. 16, P = 0.04).

Conclusions: Our preliminary data suggests that sperm identification rates are improved by normalizing the LH and FSH levels prior to mTESE, including in men who have previously undergone failed mTESE.

MP5-13

Post-Operative Opioid Prescribing Trends in Uro-Oncologic Surgery: A Single Institution Investigation

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Introduction: Opioid abuse continues to be a public health threat in the United States. Post-operative opioid prescribing has been identified as a major risk factor for developing long-term opioid abuse. We aim to characterize opioid prescribing following common urologic procedures and determine specialties providing refills for these patients.

Materials & Methods: We reviewed cases performed between May 2017-April 2018 including endoscopic cases, and those involving kidney, ureter, bladder, and prostate cancer. Data were collected on patient demographics, comorbidities, peri-procedural details, and post-operative narcotic prescribed. A statewide narcotics registry was queried for postoperative opioid prescription data and refilling patterns. Logistic regression analyses were conducted to identify potential risk factors for obtaining post-operative opioid refills.

Results: Our analysis included 666 cases performed at our institution. Cohort demographics and refilling patterns can be seen in tables 1 and 2. For endoscopic and kidney cases, non-urologic providers prescribed more total morphine equivalents (TME) than urologists. Patients undergoing prostate surgery received higher TME from urologists. On multivariate analysis, alcohol use (OR 3.3; 95% CI 1.3 – 8.2; $p < 0.05$), tobacco use (OR, 2.5; 95% CI 1.1-5.6; $p < 0.05$), and a previous opioid prescription (OR 2.6; 95% CI 1.7-4.1; $p < 0.01$) were associated with increased likelihood of obtaining a post-operative refill of opioid medication.

Conclusions: Both urologists and non-urologists contribute to the overall post-operative burden of opioid refills for patients undergoing urologic surgery. More studies are needed to definitively assess patterns and risk factors for obtaining post-operative opioid refills to curb opioid use.

	Cases	Cases without Refill	Cases with Refill	p-value
Age, mean (SD)	67.6 (11.3)	67.8 (11.4)	65.6 (9.8)	0.19
Diabetic, n (%)	134 (20.1)	124 (20.2)	10 (19.6)	0.9
Peripheral Neuropathy, n (%)	36 (5.4)	30 (4.9)	6 (11.8)	< 0.05
Chronic Pain, n (%)	110 (16.6)	94 (15.4)	16 (31.4)	< 0.01
Liver Disease, n (%)	22 (3.3)	21 (3.4)	1 (2.0)	0.6
Chronic Kidney Disease, n (%)	60 (9.0)	56 (9.1)	4 (7.8)	0.8
Peripheral Vascular Disease, n (%)	19 (2.9)	19 (3.1)	0	0.2
Tobacco Use, n (%)	383 (57.5)	349 (56.8)	34 (66.7)	0.2
Alcohol Use, n (%)	395 (59.3)	358 (58.2)	37 (72.6)	0.04
Drug Use, n (%)	12 (1.8)	10 (1.6)	2 (3.9)	0.2
Narcotic Prescription within 6 months, n (%)	83 (12.9)	60 (9.7)	23 (45.1)	< 0.01
Length of Stay, mean (SD)	2.8 (3.4)	2.7 (3.2)	4.5 (4.9)	< 0.01
Total	666	615	51	

Table 1: Baseline characteristics of cohort.

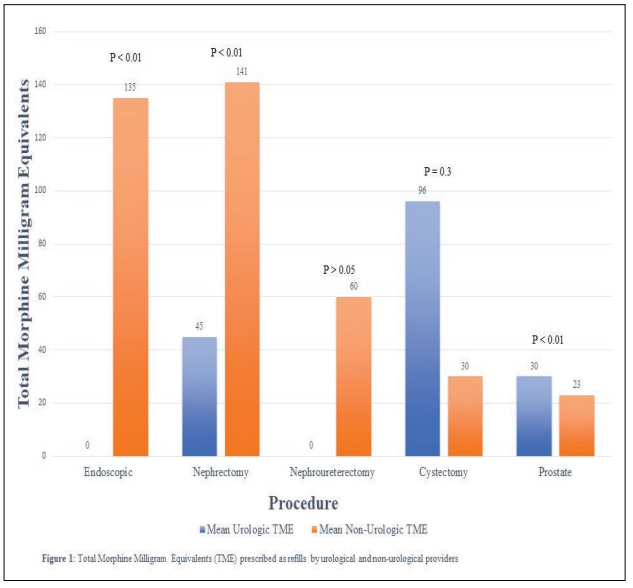

Figure 1: Total Morphine Milligram Equivalents (TME) prescribed as refills by urological and non-urological providers

MP5-14

A Multi-Institutional Experience Comparing Outcomes of Patients Undergoing Revisional Robotic Pyeloplasty Versus Primary Robotic Pyeloplasty

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Introduction: We describe a multi-institutional experience comparing perioperative outcomes in patients undergoing revisional robotic pyeloplasty (RRP) versus primary robotic pyeloplasty (PRP).

Materials & Methods: We retrospectively reviewed our multi-institutional, Collaborative of Reconstructive Robotic Ureteral Surgery (CORRUS) database to identify all consecutive patients who underwent robotic pyeloplasty for ureteropelvic junction obstruction (UPJO) between 04/2012 and 09/2019. Patients were grouped by those who underwent PRP versus those who underwent RRP after prior failed pyeloplasty. Our primary outcome was surgical success, defined as the absence of flank pain and absence of ureteral obstruction on radiographic imaging. Continuous and categorical variables were compared using nonparametric, independent sample median and chi-square tests, respectively; $p < 0.05$ was considered significant.

Results: Of 154 patients, 126 (81.8%) underwent PRP, 27 (17.5%) underwent RRP, and 1 (0.6%) underwent an RRP attempt with conversion to nephrectomy. Ten/27 (37.0%) patients underwent ≥1 failed endoscopic procedures prior to RRP. Median time between prior failed pyeloplasty and RRP was 8 months. Of PRP patients, 124/126 (98.4%) underwent dismembered pyeloplasty and 2/126 (1.6%) underwent Y-V pyeloplasty. Of RRP patients, 9/27 (33.3%) underwent buccal mucosa graft pyeloplasty, 5/27 (18.5%) underwent RRP with a renal pelvis flap, and 13/27 (48.1%) underwent traditional dismembered RRP without a renal pelvis flap. RRP patients experienced higher median intraoperative blood losses (100 versus 50 milliliters, respectively; $p =< 0.001$) and longer median operative times (197 versus 138 minutes, respectively; $p = 0.031$) compared to PRP patients. There was no difference in length of hospital stay ($p = 0.166$), major (Clavien > 2) complications ($p=0.656$), and success rates (88.9% versus 92.0%, respectively; $p = 0.828$) between RRP and PRP patients.

Conclusions: RRP can be effective for management of recurrent UPJO after prior failed pyeloplasty. RRP patients may experience higher intraoperative blood losses and longer operative times versus PRP patients. During RRP attempts, there is a small risk of conversion to nephrectomy in patients with poor ureteral tissue quality.

Table 1: Comparison of the Appalachian TTI cohort to eight year NTDB ®data by Grigorian et al

Characteristics	NTDB® (n = 8,030)	Appalachian Cohort (n = 23)
Total trauma patients n	3,489,850	34,000
Age (years, median)	31.0	20
Penetrating Mechanism n (%):	4,054 (50.5)	1 (4.3%)*
- Firearm	3,073 (75.8)	1 (100%)
Blunt Mechanism n (%):	3,579 (44.6)	21 (91.3)
- MCC/MVC/ motorcycle	2,140 (59.8)	6/23 (26.1)
- Sport/ bicycle/ pedestrian	Bike = 100 Pedestrian = 567 Total = 667 (18.6)	6/23 (26.1)
Genitourinary Injury n (%):		
- Isolated scrotal	5,986 (74.5)	NA
- Penile	1,300 (16.2)	3/21 (14.3)
- Bladder or urethra	750 (9.3)	3/21 (14.3)
- Kidney	222 (2.8)	1/21 (4.8)
- Ureter	53 (0.7)	1/21 (4.8)
Surgical Outcomes n (%):		
- Scrotal exploration (%)	3,882 (48.3)	19/21** (90.4)
- Unilateral orchiectomy(%)	- (23.4)	11/21 (52.4)
- Contralateral orchiopexy(%)	- (-)	5/21 (23.8)
- Penile operation(%)	716 (8.9)	0/21 (0)
LOS, days median	3	1
Mortality(%)	609 (7.6)	NA

* 1 patient in our study was neither blunt nor penetrating (awoke with scrotal pain)

** 2 patients were not included for surgical considerations because they died from concurrent

MP5-15

Traumatic Testicular Injuries in Appalachia: A Ten-Year Review from a Level 1 Trauma Center and Comparison to the National Trauma Data Bank®

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Introduction: To characterize traumatic testicular injuries in Appalachia and compare this data to the National Trauma Data Bank®.

Materials & Methods: A retrospective study was performed on patients presenting with traumatic testicular injuries (TTI) over the past 10 years at our rural tertiary care facility. Results were compared to an 8-year review of 8,030 TTI from the National Trauma Data Bank (NTDB®).

Results: Of over 34,000 trauma patients reviewed, 23 (0.07%) had TTI which concurs with the NTDB® value of 0.2%. Blunt trauma accounted for 91.3% of TTI which contrasts with NTDB® data suggesting 50.5% were attributed to penetrating mechanisms. Firearm related injuries comprised 4.3% of TTI whereas MVC/MCC (26.0%), sports (26.0%), work (21.7%), and straddle (13.0%) mechanisms were more common. The NTDB® data suggest 38.3% of TTI are firearm related, while motor vehicle collision (MVC) related trauma had similar incidence to Appalachia at 26.6%. Median length of stay (LOS) was 1 day for the Appalachia cohort with 90.4% of patients undergoing scrotal exploration and 52.4% requiring orchiectomy. NTDB® data suggest a median LOS of 3 days with a 48.3% scrotal exploration rate and 23.4% orchiectomy rate.

Conclusions: TTI carry a high risk of organ loss. When compared to the NTDB® TTI data, Appalachia has a higher incidence of blunt mechanism, scrotal exploration rate, and testicular loss possibly due to long transfer times. Based on these findings, increased provider awareness and prompt initiation of transfer to a tertiary care center may improve testicular salvage rates and decrease morbidity.

MP6-01

Analysis of Exosome Genomic Results within the PSA Gray Zone (2-10 ng/mL)

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Introduction: Over-diagnosis of indolent prostate cancer (PCa), supports the need for non-invasive tools that predict low-grade (Gleason score 6, GS 6) from high-grade (≥ GS 7). We examined the ExoDx™ Prostate (IntelliScore) (EPI) distribution and potential impact on decision-making in men aged 60-70 years old with PSA levels in the gray zone (2-10 ng/mL) as well as artificially binned PSA subgroups within the gray zone in a de-identified dataset from commercial testing.

Materials & Methods: First catch urine samples from men presenting for initial or repeat biopsies were submitted to Exosome Diagnostic Laboratory (Waltham, MA, USA). All men were ≥ 50 years with PSAs in the gray zone. Samples were filtered through a 0.8-µm syringe filter and exosomes were isolated and EPI analysis was conducted as previously described. During the period 2016-2019, PSA measurements as well as de-identified EPI scores were available for 2,892 cases. PSAs in the gray zone were segmented into four groups (2-4, 4-6, 6-8 and 8-10 ng/mL) and EPI distribution was examined in each PSA group.

Results: Of the EPI results generated, 2,892 cases had corresponding PSAs and were from men 60-70 years. The EPI score distribution ranged from 0.59 to 99.87 and the PSA distribution ranged from 1.89 to 10.43 (mean 5.80). In the four PSA groups, EPI distribution was remarkably consistent with EPI low risk ranging from 31% to 34% regardless of PSA subgroup.

Conclusions: This data demonstrates that Epi risk distribution aligns with prior validation studies and reinforces the lack of association between PSA and EPI risk assignment. Also, in the prior validation studies (N = 1,022), the risk of HGPCa did not appreciably change regardless of binning PSA (2-10 ng/mL) into discrete groups supporting this analysis which demonstrates that patients with PSA in the gray zone appear clinically similar and that EPI analysis provides superior discrimination for high-grade disease pre-biopsy.

MP6-02

Racial Differences in Preoperative Predictors of Pathologic T3a Upstaging in Clinical T1 Renal Cell Carcinoma

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Introduction: Some renal cell carcinomas (RCC) appear clinical T1 (cT1) only to be upstaged on final pathology, which affects postoperative management and disease prognosis. Studies to date examining this phenomenon have been conducted with a cohort of mostly Caucasian patients. This study aims to determine rates and preoperative clinical predictive factors of pathologic tumor upstaging among racial minorities with cT1 RCC.

Materials & Methods: We queried the National Cancer Data Base to identify patients diagnosed with AJCC cT1N0M0 RCC who underwent partial nephrectomy or radical nephrectomy between 2010 and 2015. Patients included in the analysis identified as African-American, Hispanic, Asian Pacific Islander (API) or other minority patient population. Pathologic tumor upstaging was analyzed as T3a-specific upstaging (pT3a). Multivariable logistic regressions were utilized to identify independent predictors of tumor upstaging. Sub-group analyses were performed for each racial group.

Results: Overall, there were 19,363 patients analyzed and T3a-specific upstaging was observed in 733 (3.8%) patients. Sub group analysis of upstaged patients observed 314 (3.0%), 290 (4.5%), 87 (4.9%) and 42 (6.0%) for African American, Hispanic, API and other patient groups, respectively. Clinical predictors of pathological T3a (pT3a) upstaging were older age, tumor histology and Fuhrman grades 3-4 for African American patients only.

Conclusions: Our study supports the findings of pT3a tumor upstaging in small renal mass RCC while also demonstrating inter-racial variability in upstaging rates and preoperative clinical predictors. Furthermore, racial minorities appear to be at lower risk of pathologic tumor upstaging compared to Caucasians, with African Americans at lowest risk.

MP6-03

Risk of Harboring Clinically Significant Prostate Cancer after a Negative Fusion Biopsy for PIRADS 4-5 Lesions: a Tertiary Cancer Center Experience

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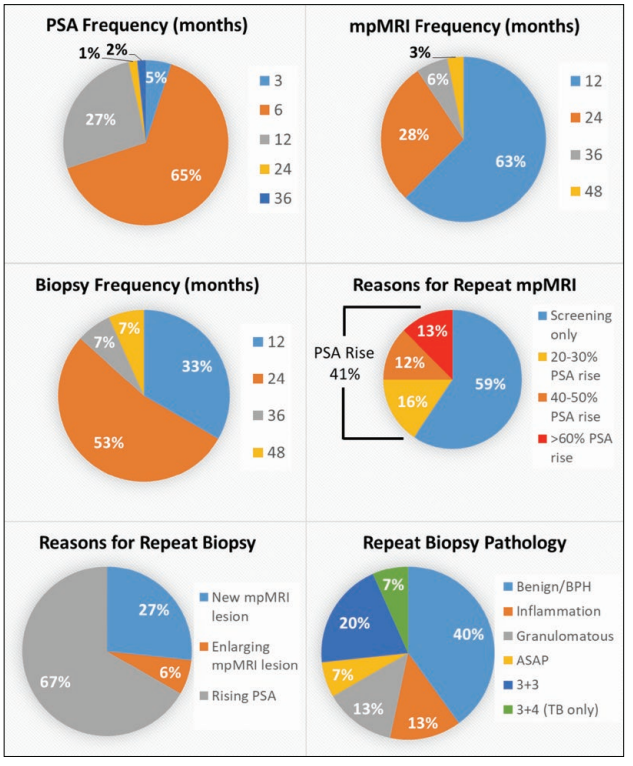
Introduction: Multiparametric MRI (mpMRI) fusion biopsy has revolutionized prostate cancer diagnosis and screening. Little is published on follow-up strategies and outcomes for men who have initial negative fusion biopsies in the setting of PIRADS 4-5 lesions. Herein we describe our experience with this cohort at a tertiary cancer center.

Materials & Methods: We reviewed our prospective database of patients who underwent fusion biopsy (n = 804) and identified men with PIRADS 4-5 lesions (73%, n = 585). Of those men, 149 (25%) had a negative initial fusion biopsy. Men who were referred only for biopsy and those lost to follow-up were excluded. We then reviewed follow-up regimens, noting frequency of PSA, mpMRI, and biopsy.

Results: Sixty men from July 2014 to March 2019 were included. PSA testing occurred every 6 months in 65% of patients, with another 27% tested yearly. Repeat mpMRI was performed in 32 men (53%) within 1 year, of which 40% were triggered for rising PSA and 60% for screening only. Fifteen repeated biopsy, of which 12 were fusion. Only 1 was found to have clinically significant prostate cancer (Gleason Group 2) on targeted biopsy and underwent prostatectomy. An additional 3 had Gleason Group 1 found on standard 12-core biopsy and remained on active surveillance. The negative predictive value for clinically significant prostate cancer (≥ Gleason Group 2) in men with PIRADS 4-5 lesions with an initially negative fusion biopsy on subsequent workup was 92%.

Conclusions: Within our cohort, very few men (1.67%) who had high risk mpMRI (PIRADS 4-5) but negative fusion biopsy were then found to have a clinically significant prostate cancer. Longer follow up is needed to understand the risk profile for harboring aggressive disease.



MP6-04

Contrast-Enhanced 4D Ultrasonography for the Evaluation of Complex Renal Cysts

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Introduction: Management of complex renal cysts, historically dependent on the Bosniak classification system, is evolving. This pilot study used novel contrast-enhanced ultrasound (CEUS) technology to evaluate enhancing/solid components of complex renal cysts and correlate to final surgical pathology.

Materials & Methods: 7 patients with Bosniak 2F-4 lesions participated in this IRB-approved study (accrual ongoing). Ultrasound imaging was performed immediately pre-operatively using Logiq scanner with multiple probes. Patients underwent baseline imaging of the mass in B-mode and power Doppler. Lumason ultrasound contrast was subsequently injected while imaging in 2D with dual B-mode and nonlinear harmonic imaging. After washout, the process was repeated using volumetric contrast-enhanced ultrasound. Following surgery, pathologist evaluation included pathologic stage and estimation of the solid proportion of the lesion. RadiAnt DICOM Viewer and 4D View programs were used to select matching slices through the renal lesion. An internal MATLAB program selected regions of interest (ROI), defined on the B-mode images to include the entire lesion, while ROI on CEUS images included non-enhancing areas (cystic avascular regions). % enhancing volume was calculated: Fractional Tumor Vascularity = 1 – (Total Non-enhancing area/Total lesion area) The primary endpoint was correlation of 3D-derived fractional vascularity with pathological estimation and tumor staging on explant.

Results: Figure 1 demonstrates the selection of ROI on B-mode and CEUS for Patient 2. The fractional vascularity, pathologic estimation of the solid component, and final stage and grade are shown in Table 1.

Conclusions: Preliminary results show CEUS may be a useful and accurate way to evaluate the malignancy potential of complex renal masses.

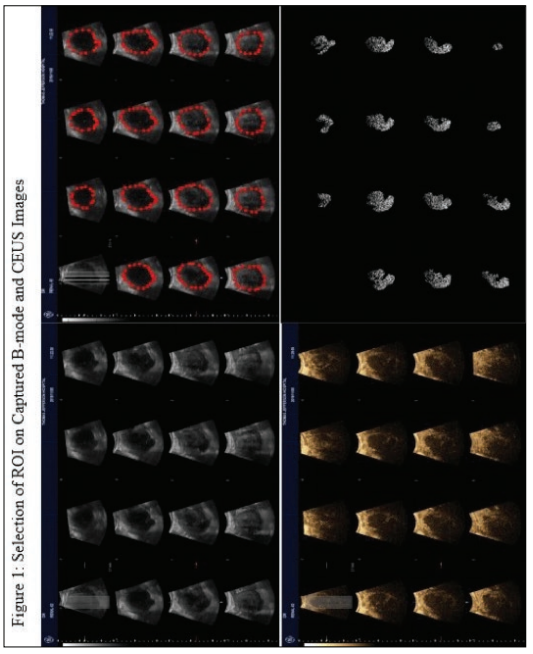

Figure 1: Selection of ROI on Captured B-mode and CEUS Images

Table 1: Subjects' Calculated Fractional Vascularity and Final Pathology Sorted by Increasing Pathologic Stage

Fractional Vascularity (%)	Pathologic Evaluation of Solid Component (%)	Pathologic Stage	Pathologic Grade	Histology
23.59	0	--	--	Cystic Nephroma
99.70	85	--	--	Oncocytoma
55.06	10	pT1a	G2	Clear Cell Papillary RCC
64.64	40	pT1a	G2	Clear Cell RCC
99.98	40	pT1a	G2	Clear Cell RCC
84.40	75	pT3a	G3	Clear Cell RCC
86.14	20	pT3a	G2	Clear Cell RCC

MP6-05

Evaluating the Competing Risk of Mortality after Grade Reclassification in Men on Prostate Cancer Active Surveillance

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Introduction: The risk of death from prostate cancer (PCa) and other causes is frequently changing for men on active surveillance (AS), particularly at the time of disease progression. To better inform which patients are more suitable for intervention versus watchful waiting, this study describes the 10-year competing risk of death at the time of grade reclassification (GR) for men on AS.

Materials & Methods: Patients enrolled in our PCa AS program were reviewed to identify men who experienced GR between 2004 and 2018. All patients in our program have NCCN very-low-risk or low-risk disease; by definition, all have Grade Group (GG) 1 disease. GR was defined as upgrading to GG≥2 on surveillance biopsy. The 10-year mortality from untreated PCa and from other causes were calculated both at the time of AS enrollment and at GR using a validated nomogram based on patient comorbidities and PCa disease characteristics.

Results: There were 292 patients with a median age of 67 years. At enrollment, the median 10-year PCa and non-PCa mortality was 2% and 27%, respectively. Patients were enrolled in AS for a median 2.0 years prior to GR, at which time the median 10-year PCa and non-PCa mortality increased significantly to 7% and 34%, respectively ($P < 0.001$). The relative risk of non-PCa mortality compared to PCa mortality was higher with increased age, greater comorbidities, or upgrading to a less aggressive GG [Table].

Conclusions: Patients who were younger, healthier, or upgraded to more aggressive disease demonstrated a greater relative risk of death from PCa than from other causes and could stand to benefit from intervention. Interestingly, patients with more comorbidities had both an increased risk of non-PCa mortality and a lower risk of PCa mortality.

Table: 10-year Prostate Cancer (PCa) and Non-PCa Mortality Risk at Grade Reclassification Based on Age, Grade Group (GG), and Charlson Comorbidity Index (CCI)

	n	10-year PCa Mortality (%)	10-year non-PCa Mortality (%)	Non-PCa:PCa Mortality Risk Ratio
Age				
< 60	13	7	12	1.7
60-69	112	8	23.5	3.0
70-79	134	7	43	5.8
≥ 80+	23	4	77	17.8
		P = 0.09	**P < 0.001**	**P < 0.001**
GG				
GG2	197	7	32	5
GG3	64	10	37	3.7
≥ GG4	31	17	40	2
		P < 0.001	**P = 0.04**	**P < 0.001**
CCI				
≤4	111	8	22	3
5	112	7	37	5
6	47	5	61	11
≥ 7	22	3	75	21
		P = 0.02	**P < 0.001**	**P = 0.004**

MP6-06

Revisits After Ambulatory TURBT: Facility and Provider Characteristics

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Introduction: Previous studies using national data suggest transurethral resection of bladder tumor (TURBT) has a readmission rate ranging from 3-11%. However these papers are limited in their granularity, in particular with regard to facility or provider characteristics, which have been shown to impact revisit rates following other urologic procedures.

Materials & Methods: We identified index TURBT cases from the Healthcare Cost and Utilization Project's (HCUP) State Ambulatory Surgery and Services Database (SASD), a state-wide, all-payor, event-level database. We filtered for primary CPT codes 52234, 52235, or 52240 from 2010-2014 in two states, New York (NY) and Florida (FL). Revisit rate was calculated as return to either emergency department (ED) or inpatient (IP) within 30 days. Revisits were analyzed by facility ownership (hospital owned vs. freestanding), facility volume, and provider volume. Facility and provider volume were analyzed by quartiles based on procedure volume.

Results: The overall revisit rate for ambulatory TURBT was 6.6%. Table 1 shows the revisit rates broken down by revisit type and facility ownership. In multivariate regression adjusting for age, sex, race, chronic conditions, income, insurance status, and urban-rural location, freestanding status remained a significant predictor of lower odds of revisit (OR 0.83, $p < 0.01$, 95%CI: 0.76-0.90). Table 2 shows revisit rates stratified by provider and facility volume quartiles.

Conclusions: Ambulatory TURBTs performed in freestanding facilities have lower odds of revisit after adjusting for patient demographics. Increased provider volume, but not facility volume, may decrease revisit rates.

Table 1. 30 Day revisit rates for procedures performed in hospital-owned facilities versus freestanding facilities

	Hospital-Owned	Freestanding	% Difference	P value*
No Revisit	127,914 (93.1%%)	29,756 (94.7%)	1.6%	< 0.01
Any Revisit	9,530 (6.9%)	1,680 (5.3%)	1.6%	< 0.01
ED Revisit	5,359 (3.9%)	947 (3.0%)	0.9%	< 0.01
IP Revisit	4,171 (3.0%)	733 (2.3%)	0.7%	< 0.01
Total	137,444	31,436		

*p value calculated using a two-sided z test of proportions

Table 2. 30 Day revisit rates by provider and facility volume

Provider Volume Quartile (range)	Average Provider # of Procedures	Average Provider Revisit Rate	Facility Volume Quartile (range)	Average Facility # of Procedures	Average Facility Revisit Rate
1 (2-4)	2.1	8.3%	1 (2-51)	19.3	5.5%
2 (4-52)	19.0	7.9%	2 (52-181)	103.5	6.7%
3 (52-153)	100.4	7.1%	3 (181-425)	277.4	6.8%
4 (154-1089)	268.7	6.5%*	4 (429-4200)	922.3	6.7%

*Two-sided z test of proportions yields p<0.01 for this revisit rate when compared to every other provider volume quartile

MP6-07

Risk Factors for Intravesical Recurrence of Non-Muscle Invasive Bladder Cancer in an Untreated Cohort

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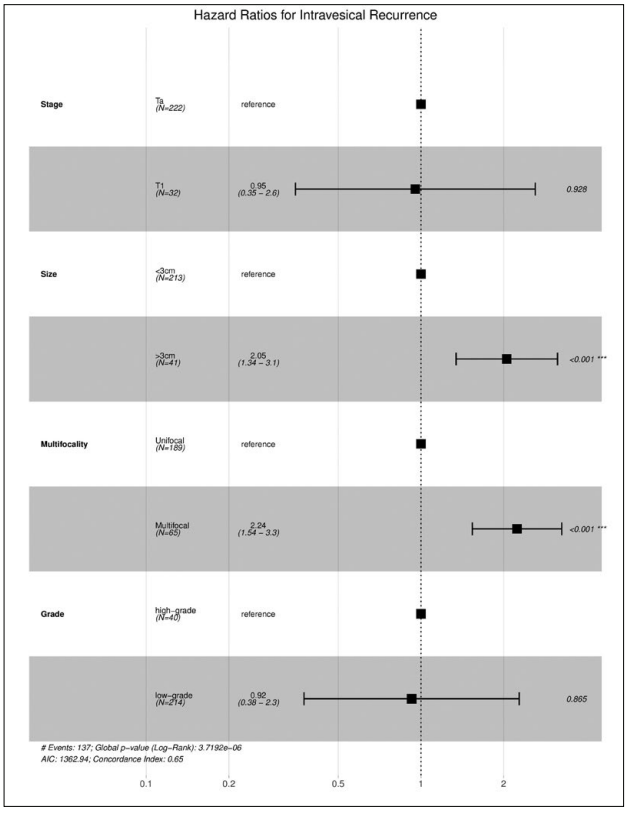
Introduction: Identifying risk-factors associated with increased risk of recurrence is important for risk-stratifying patients with non-muscle invasive bladder cancer (NMIBC). Previous studies have identified variables such as tumor diameter, grade, and multifocal disease as being associated with increased risk of recurrence, however these studies included both treated and untreated patients. We aimed to identify risk-factors for recurrence in an untreated cohort of patients in order to improve risk-stratification of patients with NMIBC.

Materials & Methods: Our population consisted of NMIBC patients in Stockholm County diagnosed between 1995-96. We excluded participants who received intravesical therapy, chemotherapy, or radiation after initial TURBT. We identified 254 patients who met inclusion criteria. We performed a multivariate Cox regression analysis using four common recurrence predictors.

Results: The median age of the cohort at diagnosis was 73 years. 173 (68%) were men, 222 (87%) had pathologic Ta disease, and 68 (26%) of primary tumors were high-grade. 137 (54%) patients had an intravesical recurrence during the median follow-up period of 10.3 years. Median time to first recurrence was 10 months. Both tumor diameter > 3 cm (HR 2.1, 95% CI 1.3 – 3.2) and multifocal disease (HR 2.2, 95% CI 1.5 – 3.3) were associated with greater risk of intravesical recurrence. Stage T1 (HR 1.0, 95% CI .55 – 1.9) and high-grade disease (HR 1.0, 95% CI .63 – 1.6) were not significantly associated with increased risk of recurrence in our cohort.

Conclusions: Of four variables commonly cited as predictors for recurrence, only tumor diameter greater than 3 centimeters and multifocal disease were associated with greater hazard for recurrence in an untreated cohort. Unlike in previous studies, higher grade and stage were not associated with increased risk of recurrence.



MP6-08

Active Surveillance for Small Renal Masses is Safe and Non-Inferior: 10-Year Update from the Delayed Intervention and Surveillance for Small Renal Masses Registry

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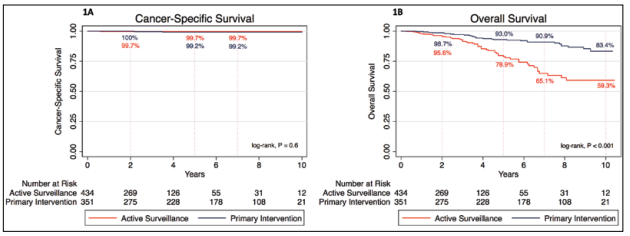
Introduction: Active surveillance (AS) is an alternative to primary intervention (PI) aimed at reducing over-treatment of small renal masses (SRM), defined as solid renal masses ≤ 4.0 cm (cT1a), suspicious for renal cell carcinoma (RCC). We sought to describe the 10-year outcomes for patients with SRM enrolled in a multi-institutional, prospective study.

Materials & Methods: Since 2009, the Delayed Intervention and Surveillance for Small Renal Masses (DISSRM) registry prospectively enrolled patients with SRM who chose to undergo PI or AS. Primary outcomes were cancer-specific survival (CSS) and overall survival (OS); secondary outcomes included progression-free survival (PFS). Progression was strictly defined as growth rate > 0.5 cm/year, greatest tumor diameter > 4.0 cm, metastatic disease, or elective crossover. The Kaplan-Meier method and log-rank test were used to evaluate outcomes.

Results: Of 785 enrolled patients, 351 (44.7%) chose PI and 434 (55.3%) chose AS. From the AS cohort, 71 (16.4%) underwent delayed intervention. Median follow-up was 3.3 years, with 292 (37.2%) patients followed for 5 years or more. At baseline, patients who chose AS were older (P < 0.001) and had higher comorbidity status (P < 0.001) than those who chose PI. There was no difference in CSS at 10 years between PI and AS [Figure 1A]; however, OS was higher in PI patients when compared to AS [Figure 1B]. In the AS cohort, 113 (26%) developed progression: 81 due to growth rate > 0.5 cm/year, 27 due to elective crossover, 4 due to tumor diameter > 4.0 cm, and 1 due to metastatic disease. 10-year PFS was 62%.

Conclusions: In a large multi-institutional registry with 10 years of experience, AS appears to be safe and non-inferior to PI for carefully selected patients with SRM suspicious for RCC.



MP6-09

Effects of Myristoylated Protein Kinase C Beta II Peptide Inhibitor on Severe Bilateral Warm Renal Ischemia-Reperfusion Injury in Mice

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Introduction: Delayed graft function (DGF), premature renal failure within one week of transplantation, occurs in approximately 30% of renal allografts. DGF is associated with reactive oxygen species (ROS)-induced ischemia-reperfusion (I/R) injury, for which there are currently no effective therapeutics. We propose to prophylactically mitigate ROS-induced renal I/R injury with cell-permeable myristoylated protein kinase C beta II peptide inhibitor (N-myr-SLNPEWNET; myr-PKCχII-). Myr-PKCχII- inhibits isolated rat leukocyte superoxide release and restores cardiac function with reduced infarct size when administered upon reperfusion in rat myocardial I/R models. We hypothesized that myr-PKCχII- would attenuate injury in a murine model of severe bilateral warm renal I/R (20 min/96h) quantified by serum creatinine (Cr) reduction compared to a scrambled peptide control for myristoylation (N-myr-WNPESLNTE; myr-PKCχII-scram).

Materials & Methods: Renal pedicles of anesthetized male C57BL/6J mice (25-30 g) were clamped bilaterally for 20 min. One minute before unclamping, 2.0 mg/kg (20 μM serum concentration) myr-PKCχII- (n=9) or myr-PKCχII-scram (n = 9) was infused by tail vein. Serum Cr (mg/dL) was measured at baseline and 24h, 72h, and 96h post-injury. Data were evaluated by unpaired Student's t-test.

Results: Myr-PKCχII- significantly reduced serum Cr vs. myr-PKCχII-scram controls at 24h (1.36 ± 0.11; n = 9 vs. 1.59 ± 0.06; n = 8; *p = .041) and 72h (0.73 ± 0.15; n = 9 vs. 1.28 ± 0.25; n = 8; *p = .040) post-injury. Serum Cr reduction continued 96h post-injury (0.51 ± 0.09; n = 8 vs. 0.72 ± 0.15; n = 6; p = .107) but was not statistically significant.

Conclusions: Mice treated with myr-PKCχII- exhibited marked reduction of serum Cr in the first 72h compared to myr-PKCχII-scram controls. Results suggest that a single dose of myr-PKCχII- accelerates renal recovery following severe I/R injury. Future studies will investigate optimal dosing to achieve more rapid return to baseline compared to non-treated and scrambled peptide controls as a strategy for mitigating ROS-induced DGF.

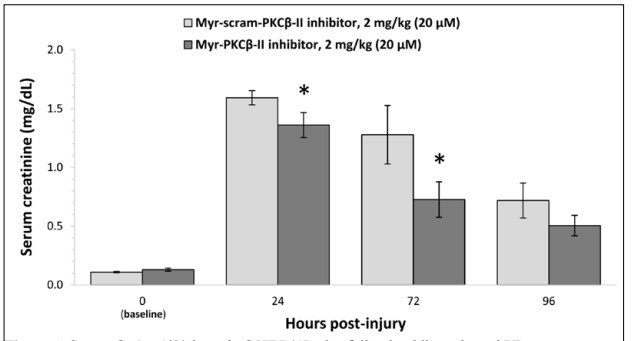

Figure 1. Serum Cr (mg/dL) in male C57BL/6J mice following bilateral renal I/R.

MP6-10

Demographic and Clinical Characteristics Affecting Utilization of 18F-Fluciclovine Positron Emission Tomography in Biochemical Recurrence of Prostate Cancer

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Introduction: 18F-fluciclovine Positron Emission Tomography/Computed Tomography (PET/CT) has emerged as a tool to detect recurrent sites in men with biochemically recurrent (BCR) prostate cancer (PCa). However, the extent to which 18F-fluciclovine PET/CT has been implemented in this population in clinical practice has not been established. Therefore, we sought to characterize clinical and demographic factors associated with the use of 18F-fluciclovine PET/CT.

Materials & Methods: A retrospective chart review was conducted on patients who developed BCR after curative intent primary therapy for PCa between December 2017 and February 2019. We classified men into two diagnostic groups: patients who received standard of care imaging and patients who received both standard of care imaging and a 18F-fluciclovine PET/CT scan. We then examined clinical and demographic factors associated with the receipt of a 18F-fluciclovine PET/CT.

Results: We identified 218 men with BCR PCa. Of these, 171 (78%) did not receive a 18F-fluciclovine PET/CT and 47 (22%) received a 18F-fluciclovine PET/CT. Patients who received a 18F-fluciclovine PET/CT were older and on average had a lower comorbidity burden than those who only received conventional imaging (both $p < 0.05$). Provider variability in utilizing 18F-fluciclovine PET/CT was found to be significant (M 5.9, [95% CI 4.5 to 7.2]; $p < 0.05$). Of the 11 total urologists, 4 were urologic oncologists and ordered 49% of the total 18F-fluciclovine PET/CT scans. There was also significant variance among urologic oncologists with one urologic oncologist who obtained a 18F-fluciclovine PET/CT in 10% of men with BCR and another who obtained one in 55% of men with BCR ($p < 0.05$). Race and type of insurance was not associated with greater use of 18F-fluciclovine PET/CT.

Conclusions: Receipt of 18F-fluciclovine PET/CT among men with BCR PCa varied significantly across age, comorbidity burden and physician utilization. Further studies should investigate causes for provider variability and evaluate strategies for equitable, cost-efficient distribution of 18F-fluciclovine PET/CT.

MP6-11

The Use of Neoadjuvant Chemotherapy Before Radical Cystectomy in Patients with High-Grade Clinical T1 Bladder Cancer

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Introduction: Neoadjuvant chemotherapy (NAC) can provide pathological down-staging and survival benefit for muscle-invasive bladder cancer. It has been reported that in patients with high grade T1 bladder cancer (T1HGBC) who undergo RC, 30-48% will pathologically upgrade and up to 20% will have lymph-node metastasis. These findings suggest that a portion of T1HGBC patients might benefit from NAC. In this study, we aim to investigate the trend of NAC use among T1HGBC and its effects.

Materials & Methods: The National Cancer Data Base was searched for patients diagnosed with high grade cT1N0M0 bladder cancer. The propensity of received NAC before RC and factors contributing to pathological down-staging were investigated using logistic regression. Kaplan-Meier curves were applied to compare the overall survival (OS) and Cox regression models were built to investigate the association of NAC delivery and OS.

Results: 2,242 patients were diagnosed as high-grade cT1N0M0 and received RC, among which 283 (12.6%) received NAC prior to cystectomy. The use of NAC increased over time, from 4.9% in 2005 to 18.6% in 2014 ($p = 0.001$). In multivariate logistic regression, no variates were found as the predictors for the delivery of NAC. 1,599 patients were further identified eligible for the survival analysis. Patients received NAC achieved more down-staging (15.8% vs. 8.4%, $p = 0.002$) at the time of RC. The 5-year OS was 68.9% (131/190) in patients with NAC vs. 68.6% (967/1409) without NAC ($p = 0.934$). Multivariate Cox regression analysis revealed that NAC was not independently associated with improved OS (HR 1.188, 95%CI 0.881-1.601, $p = 0.258$), while down-staging significantly improved the OS(HR 0.276, 95%CI 0.164-0.463, $p < 0.001$).

Conclusions: There was an increasing use of NAC for clinical T1HG bladder cancer before cystectomy and could bring in tumor down-staging. However, no predictors of NAC delivery were identified.

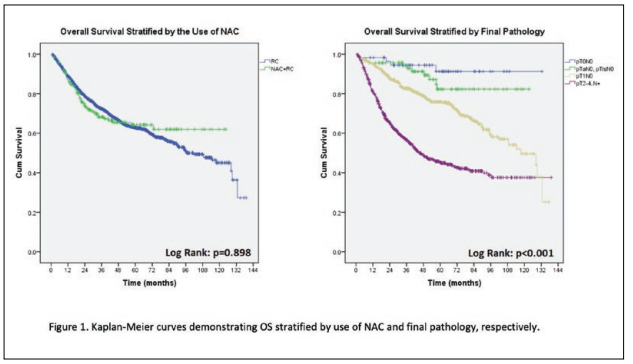

Figure 1. Kaplan-Meier curves demonstrating OS stratified by use of NAC and final pathology, respectively.

MP6-12

Microwave Ablation of the T1a Small Renal Mass: Expanding Beyond 3 cm

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Introduction: AUA guidelines support thermal ablation (TA) for small renal masses (SRM) 3 cm or less in a select patient population. While TA success rates decline with increasing size, studies support TA for SRMs up to 4 cm with acceptable oncologic outcomes. The advantages of microwave ablation (MWA) over older ablation modalities may improve success rates in larger T1a SRMs.

Materials & Methods: An institutional review board approved SRM database included retrospective data from 2009 but prospective data after April 2015 concordant with the inception of a multidisciplinary conference to determine treatment consensus. Options included partial nephrectomy (PN), ablation, or active surveillance. Local recurrence events were defined as residual mass or enhancement. Kaplan-Meier plot and pairwise log-rank tests assessed outcomes.

Results: Of 190 treated renal tumors, 155 were stage T1a and 71 had tumor size of 3 to 4 cm. Of this 3-4 cm cohort, 39 underwent MWA, 29 underwent PN, and 3 were lost to follow-up. Median postoperative follow-up was 673 days. Each treatment group experienced two local recurrences, with no difference in recurrence rate (p = 0.97). Clavien-Dindo complications > 3 were 5% and 27.5 % for MWA and PN, respectively. Recurrence in the 3-4 cm cohort was not significantly different from patients with tumors < 3 cm (p = 0.79).

Conclusions: While longer follow-up is needed, this data suggest that in select patients MWA does not appear inferior in treating 3-4 cm masses relative to < 3 cm masses. If larger studies confirm these findings, the indication for ablative therapies may warrant expansion.

Figure 1: Kaplan Meier Plot

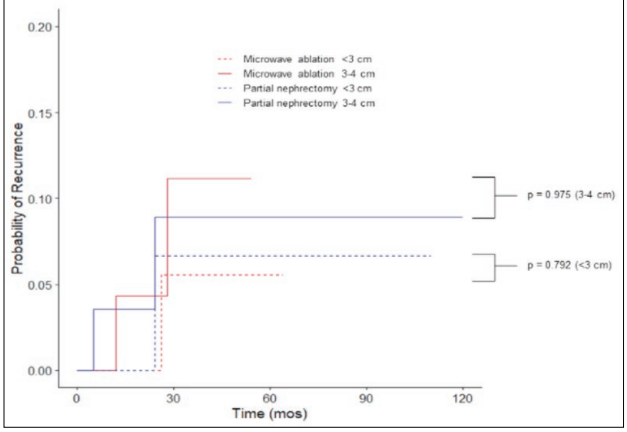

Table 1: Demographics

Variable	Small renal masses between 3-4 cm		Small renal mass less than 3 cm	
	Ablation (n=39)	Partial Nephrectomy (n=29)	Ablation (n=46)	Partial Nephrectomy (N=32)
Age at Diagnosis (years)	66 [59, 70]	55 [44, 64]	62 [55,68]	53 [44,59]
Sex				
Male	66.67% (26)	72.41% (21)	68.7% (28)	68.75 % (22)
Female	33.33% (14)	27.59% (8)	39.13% (18)	31.25% (10)
Time to Follow up (days)	463 [200, 1044]	942 [401, 1196]	700 [239, 1026]	487 [197, 1010]
Tumor Size (cm)	3.4 [3.1, 3.7]	3.5 [3.2, 3.7]	2.2 [1.8, 2.5]	2.2 [1.5,2.5]
Complications (Clavien - Dindo Grade)				
1	0	6.90% (2)	0	3.13% (1)
2	0	3.45% (1)	0	3.13% (1)
3a	2.56% (1)	3.45% (1)	4.35% (2)	0
3b	0	3.45% (1)	4.35% (2)	3.13% (1)
4	2.56% (1)	6.90% (2)	2.17% 1)	0
5	0	3.45% (1)	0	0
Recurrences	5.13% (2)	6.89% (2)	2.17% (1)	3.13% (1)

Data presented as median (IQR), all such values; % (n), all such values

MP6-13

A Comparative Analysis of Cosmetic Preferences Based on Operative Approach to Radical Prostatectomy

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Introduction: Recent developments in minimally invasive approaches to radical prostatectomy (RP) may improve cosmesis. Our aim was to evaluate surgical scar appearance based on operative approach to RP.

Materials & Methods: Men between the ages of 45 to 80 were surveyed on a crowdsourcing platform. Well-healed surgical scars after open, multiport (MP) robotic (transperitoneal and extraperitoneal), and single-port (SP) robotic RP were digitally rendered by a medical illustrator on stock photos (Figure 1). Respondents evaluated images using items from the SCAR-Q, a validated patient reported outcome instrument assessing appearance and perceived psychosocial impact on a scale of 0 (worst) to 100 (best). Additionally, different RP scars were ranked. Responses were compared using appropriate statistical tests.

Results: After excluding respondents who had undergone RP or incorrectly completed the survey, 234 men were included for analysis. The median age was 54 (IQR: 49-61) and 35% (85/234) had previous abdominal surgery, of which 45% (38/85) was performed laparoscopically or robotically. SP scars had higher SCAR-Q scores for appearance (87 vs. 58 and 45 out of 100) and psychosocial impact (100 vs. 69 and 58 out of 100) compared to MP and open, respectively (both p < 0.001) (Figure 2). SP had a median ranking of 1 (IQR: 1-1) and was consistently ranked higher than MP (2, IQR: 2-3) and open (3, IQR: 3-4) (p < 0.001).

Conclusions: SP scars scored higher on validated psychosocial and appearance instruments than MP and open RP scars, and were consistently ranked higher in appearance. These findings may be informative for optimizing cosmetic outcomes for patients undergoing RP.

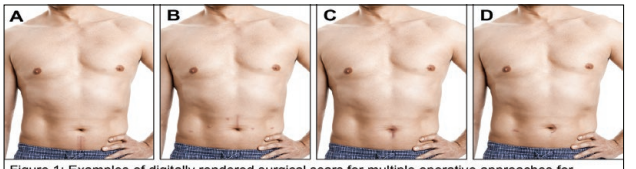
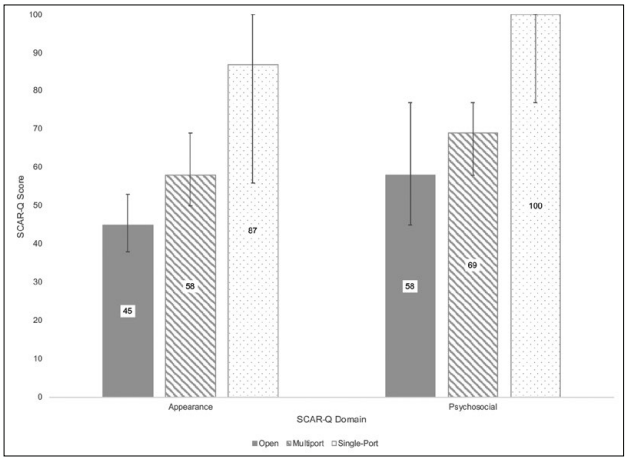


Figure 1: Examples of digitally rendered surgical scars for multiple operative approaches for radical prostatectomy including open with staples (A), multi-port intraperitoneal (B), pure single-port (C), and single port with assistant port (D). Other examples (not pictured) included open without staples and multi-port extraperitoneal port placement.



MP6-15

Prolaris Score Prediction of Adverse Pathology Following Radical Prostatectomy: A Risk Stratified Analysis

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Introduction: The association between Cell Cycle Progression (CCP) score, or the Prolaris score, and adverse pathology after radical prostatectomy has not been fully evaluated. Our initial findings demonstrating that CCP score was positively associated with adverse pathology were presented at the 2019 MAAUA. We present here our findings of the relationship between CCP score and adverse pathology after risk stratifying patients based on their Cancer of the Prostate Risk Assessment (CAPRA) scores.

Materials & Methods: A retrospective review of patients who had received CCP testing and underwent radical prostatectomy from November 1, 2015 to December 31, 2018 was performed. Adverse pathology was defined as a post-operative Gleason score of 8 or greater, positive lymph nodes, extracapsular extension (stage pT3a), or seminal vesicle invasion (stage pT3b). CAPRA scores were then calculated for each patient. To assess the relationship between CCP score and adverse pathology, a logistic regression analysis was performed while adjusting for CAPRA score.

Results: Of the 173 patients that met inclusion criteria, 53 demonstrated adverse pathology (Table 1). Patients from most American Urologic Association risk categories were represented. CCP was positively associated with adverse pathology, with an odds ratio per 1 CCP units of 3.246 ($p < 0.001$). After adjusting for CAPRA score, CCP remained positively associated with adverse pathology, with an odds ratio per 1 CCP units of 2.920 ($p < 0.001$). The distribution of CAPRA scores is shown in Figure 1.

Conclusions: After adjusting for CAPRA score, CCP scores are still positively associated with adverse pathology after radical prostatectomy.

Figure 1: CAPRA Score Distribution

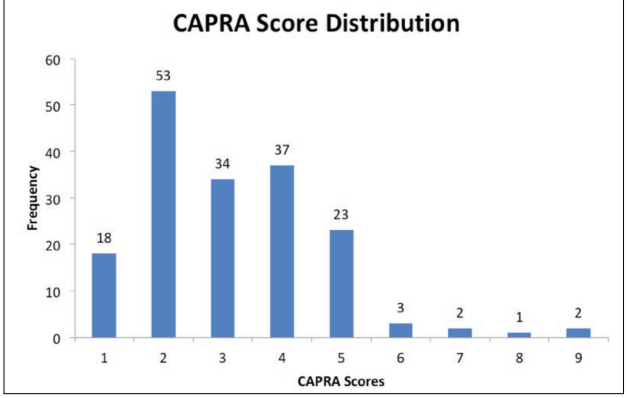

Table 1: Patients with adverse pathology

Positive lymph nodes	1	0.58%
Gleason stage of 8 or greater	13	7.51%
Extracapsular extension	32	18.39%
Seminal vesicle invasion	14	8.05%