RPE-1

A Non-Invasive External Compress-Release Protocol to Measure Dynamic Elasticity in an Isolated Working Pig Bladder

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Introduction: Urodynamic studies have been used to demonstrate that filling and passive emptying results in a reduction of intravesical pressure, a material property termed strain softening. Active voiding reverses strain softening representing acute dynamic elasticity. Passive bladder emptying requires an invasive catheter. This study tested the hypothesis that strain softening can be produced non-invasively using an external compress-release protocol. The aim was to determine if strain softening produced by filling-passive emptying is equivalent to strain softening produced by repeated external compress-release cycles in an isolated, working pig bladder.

Materials & Methods: A perfused ex vivo functional porcine bladder model was filled to 250 mL and allowed 5 min to reach equilibrium pressure (P0 = filling). Then, effect of filling to 500 mL and passively emptying was compared to compressing and releasing the bladder. The bladder volume was increased to 500 mL, and peak pressure (Pmax) was measured. Next, it was passively emptied to 250 mL via syringe aspiration and pressure was recorded (P2f). Active voiding was induced with potassium enriched solution to reset strain softening. The bladder was filled to 250 mL, and allowed to equilibrate, where pressure (P1c = compression) was recorded, and the bladder was isovolumetrically compressed to P3c. The external pressure was held for 15s and released for 15s for 5 cycles. The 5 min equilibrium pressure after release (P4c) was noted.

Results: Ten bladders were studied (n = 10). Strain softening occurred due to the filling-passive emptying (P2f < P1f, t-test, p < 0.05) and due to isovolumetric compression with external pressure (P2c < P1c, t-test, p < 0.05). The pressure after filling-emptying was not statistically different from test pressure after compression-release (P2c vs. P2f, t-test, p > 0.05), suggesting a similar degree of strain softening was induced by each method.

Conclusions: Bladders undergoing compression-release showed a similar decrease in intravesical pressure compared to filling-passive emptying, indicating strain softening occurs via isovolumetric compression. Increasing bladder pressure through both filling and compression results in measureable strain softening. Repeated external bladder compression represents a potential means to lower intravesical pressure by repeated external compress-release cycles in an isolated, working pig bladder.

RPE-2

Impact of a Preoperative Checklist on Peri-operative Safety: Balancing Quality with Efficiency?

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Introduction: The Joint Commission Universal Protocol aims to increase patient safety by avoiding “never-events” involving the wrong patient, surgical site, or procedure. Recently, additional preoperative requirements at Penn State Health Milton S. Hershey Medical Center were implemented including attending surgeon attestation of surgical H&P and consent attestation to consent at bedside on the morning of surgery. We evaluated whether these added safety policies had an early impact on several key institutional OR performance indicators and reported patient safety events compared to the previous year.

Materials & Methods: The key institutional OR performance indicators from the first 3 quarters (Q1-Q3) of Fiscal Years 2017 and 2018 were reviewed. These included total case volume, OR utilization, first case on-time start rate, and average turnover time. The new requirements for attending surgeon H&P and consent attestation were implemented on July 1, 2017. Available data for the Department of General Surgery as well as Division of Urology were included. All reported perioperative patient safety events were reviewed and grouped into select categories. Patient safety events unrelated to the preoperative checklist and events that were not authenticated by Risk Assessment were excluded. Two-sample t-test, Chi square, and Fisher’s exact test were performed for statistical analyses.

Results: The key institutional OR performance indicators including total case volume (p = 0.01), OR utilization (p = 0.05), first case on-time start rate (p < 0.0001), and average turnover time (p < 0.0001) were all statistically significant between Fiscal Year 2017 and 2018. There were 87 reported perioperative events in FY 2017 compared to 55 events in FY 2018 (p = 0.01), of which 58 events were considered in FY 2017 compared to 33 events in FY 2018 (p = 0.016). There was no statistically significant difference in case booking error, inadequate surgical prep, missing patient ID bands, or miscellaneous reported events between FY 2017-2018.

Conclusions: Operative checklists and procedures are essential to minimize untoward events. These results highlight a decreased total number of reported perioperative events, primarily consent-related events, after implementation of an added safety checklist attestation. Nonetheless, it is important to recognize that additional preoperative surgical safety processes can impact conventional metrics of productivity, including total case volume, OR utilization, first case on-time start rate, and average turnover time. These findings may be an early consequence of initial adoption and future study is necessary to determine if these effects persist over time.
Dramatic Reduction of Narcotics Usage in Penile Implant Recipients: a Novel Pain Management Strategy

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Introduction: Inflatable penile prosthesis (IPP) surgery is associated with significant postoperative pain that may reduce patient satisfaction. Though various pain management strategies have been proposed, most implanters manage patients with only prescription opioids. No protocol to date has been implemented and reported for outpatient pain management in IPP patients through the entire recovery process following surgery. The aim of this study is to develop a multimodal analgesic (MMA) regimen and compare postoperative pain control for MMA patients to a matched cohort of IPP patients managed with an opioid base (OB) regimen.

Materials & Methods: We retrospectively analyzed our prospectively maintained IPP database from November 2015 through January 2018. The MMA protocol was instituted for all patients beginning June 2017, and these patients were matched in a 1:2 ratio to a cohort of eligible IPP patients managed through an opioid-based (OB) protocol. Only patients receiving a three-piece IPP were included, those with a history of narcotic dependence, neuropathy, or chronic NSAID use were excluded. Postoperative pain scores (visual analog scale, VAS) and opioid usage (total morphine equivalent, TME, in mg) were compared temporally in the post-anesthesia care unit (PACU), post-operative day (POD) 0, POD 1, and following discharge.

Results: 57 patients were eligible for analysis: 19 (33%) and 38 (66%) in the MMA and OB groups, respectively. Groups were similar in demographics. MMA patients had significantly lower VAS scores in PACU, POD0, or POD1 (mean 5.05 vs. 25.1 mg TME, p = 0.0004) and POD1 (mean 5.05 vs. 25.1 mg TME, p = 0.0004). MMA patients were discharged home with fewer narcotics (mean 12.7 vs. 51.3 tabs, p = 0.001), and despite this, the MMA group needed less narcotic medication refills (11% vs. 49%, p = 0.007). Neither group experienced a medication-related postoperative adverse event.

Conclusions: In our rigorous assessment of IPP patients, implementation of a novel MMA protocol achieved equivalent and effective pain control, while resulting in substantially fewer narcotics throughout the entire post-operative period following IPP implantation.
Disparities in Healthcare: Data from the National Inpatient Sample for Radical and Partial Nephrectomy

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Penn State Milton S. Hershey Medical Center1; Penn State Health Milton S. Hershey Medical Center2

Introduction: Despite a common goal of providing excellent healthcare to people across the country regardless of race, gender, payment method, and geographic location there are still significant disparities in both access to care and outcomes.

Materials & Methods: A retrospective cross sectional analysis was performed using data from the National Inpatient Sample (NIS) from January 2001 to December 2013. Radical nephrectomy cases were identified by ICD-9 codes 55.5 for complete nephrectomy and 55.54 for bilateral nephrectomy. Partial nephrectomies were identified by the code 55.4. The ICD-9 code 174.2 was used to identify robotic-assisted laparoscopic cases; 54.21 and 54.51 were used to identify laparoscopic cases. Demographic data as well outcomes including length of hospital stay, cost, and mortality were compiled. Multivariable analyses included generalized linear models for continuous outcome measures (length of stay and total costs) and logistic regression models for binary outcomes (mortality). All statistical analyses were performed using STATA, version 12.1.

Results: While patients represent a larger proportion of those undergoing robotic procedures in both the nephrectomy and partial nephrectomy cohorts as compared to the total number of cases (Radical: 69.5% robotic vs. 59.6% all cases < p = 0.001, Partial: 68.2% robotic vs. 66.9% all cases p < 0.001). In both cohorts the mean age of these undergoing surgery are substantially lower in minority populations (See Tables 1 and 2). Additionally, in a logistic regression the odds ratio for mortality was 2.3 for self-pay patients as compared to commercial insurance in the radical nephrectomy cohort, and 1.9 in the partial nephrectomy cohort (< p = 0.0001 and p = 0.229 respectively).

Conclusions: Unfortunately, statistically and likely clinically significant differences exist in the access to care and the outcomes for patients of different races, and insurance types.
Rate of PSA Testing in Spinal Cord Injured Men: Analysis of National Veterans Health Administration Data
A.T. Tracey1, M. Ghatas2, L. Goetz3, B.M. Grob4, A.P. Klausner4
Virginia Commonwealth University Health System1; Virginia Commonwealth University School of Medicine2; McGuire VA Medical Center3; McGuire VA Medical Center4; Virginia Commonwealth University Health System5

Introduction: Recommendations for prostate cancer screening with PSA remain controversial due to the ongoing debate regarding over-detection and over-treatment. As the life expectancy of spinal cord injured men has improved to near that of uninjured men, the debate has grown to include this unique patient population. In this study, we sought to evaluate the national PSA testing rates before and after and spinal cord injury among men in the Veterans Health Administration system.

Materials & Methods: Utilizing the VA Informatics and Computing Infrastructure (VINCI) and Corporate Data Warehouse (CDW), we extracted PSA testing data for individuals with ICD 9/10 codes designating spinal cord injury. This data was further analyzed by annual rate of PSA testing stratified according to race and AUA guideline age groupings.

Results: A total of 41,344 patients from 129 VA Medical Centers were identified in the VINCI database with a diagnosis of spinal cord injury, and data was collected from 1999 to 2017. These men cumulatively underwent 419,140 PSA tests during the given timeframe. Following diagnosis of SCI, the rate of annual PSA testing increased 161% in the under 40 group (0.23 vs. 0.60 PSA/yr), increased 54% in the 40-54 group (0.61 vs. 0.94), and 27% in the 55-70 group (0.90 vs. 1.14), but decreased 3% following SCI diagnosis in the 70 and above group (1.03 vs. 1.00). African-American men had a significantly smaller increase in PSA testing rates following SCI diagnosis than the general population, despite increased risk of disease.

Conclusions: The rate of PSA-testing in veterans increased significantly following diagnosis of spinal cord injury in all patients injured before age 70. The increase in testing was greater for the non-African-American population. Furthermore, diagnosis of spinal cord injury in all patients injured before age 70. The increase in testing was greater for the non-African-American population. Furthermore, diagnosis of spinal cord injury in all patients injured before age 70. The increase in testing was greater for the non-African-American population.

Prostate UTIs in Boys is Highly Associated With an Intact Foreskin and Low Incidence of Anatomical Abnormalities: Is Imaging After 1st Proteus UTI necessary? C.M. Grant1, S.A. Holzman2, R. Zee3, B. Sprague4, M.S. Rana5, H.G. Rushton4
George Washington University1; Medstar Georgetown2; George Washington University3; Children's National Medical Center4; Children's National Medical Center5

Introduction: Circumcised males are 85% less likely to develop a UTI in the first year of life than uncircumcised males. Because UTIs are often the first sign of a bladder or renal anomaly, many of these boys are labeled as having upper urinary tract abnormalities (RBus) and voiding cystourethrograms (VCUG). The purpose of this study was to see if Proteus UTIs were more likely associated with an uncircumcised foreskin than other bacterial species and if the incidence of anatomical abnormalities was less in these boys.

Materials & Methods: We retrospectively reviewed a cohort of male patients under 18 years of age who presented with 1st Proteus UTI at our hospital, from 2011-2015. Males under 18 years of age with > 50,000 CFU/mL Staphylococcus, Streptococcus, Proteus or Escherichia UTIs on clean catch or catheterized specimens were included. Both febrile and atypical UTIs were included. Patients on intermittent catheterization or with augmented bladders were excluded. Ultrasound and cystogram images were reviewed on patients when available. Circumcision status was determined from the chart. Chi squared and Fisher’s exact tests were performed using Stata software, version 14.0 SE (Stata Corporation, College Station, Texas, USA).

Results: A total of 703 males with urine culture results from the ED were evaluated and 357 met inclusion criteria. Median age was 7.7 months (2.5-46.8 months IQR). Forty-two Proteus, 16 Staphylococcus, 7 Streptococcus and 292 Escherichia UTIs were included. Patients who present with a Proteus infection are far less likely to be circumcised (1/37 or 2.7%) than Escherichia (37/226 or 16.4%) or a gram positive organism (15/20 or 75%) (Fisher’s exact test p = 0.001). Proteus UTIs were associated with a lower percentage of abnormal ultrasounds (3/19 or 13.6%) than when compared to Staphylococcus (6/11 or 54.6%). Strep (3/6 or 50%) or Escherichia (6/21 or 30.0%) respectively (Fisher’s Exact test p = 0.05). 19.55% of all patients (26/133) who had a cystogram done had any abnormalities. Among those, Proteus had the lowest rate (2/15 or 13.8%) compared to Staphylococcus (5/7 or 71.4%) and Streptococcus (1/2 or 50%) however only one (18/111 or 16.22%) although this did not reach statistical significance. None of the Proteus UTIs were associated with VUR.

Conclusions: Boys presenting with a urine culture positive for Proteus are almost exclusively uncircumcised and are less likely to have associated urinary tract abnormalities on imaging when compared to other uropathogens. Imaging after the 1st Proteus UTI in boys may not be necessary.

George Washington University1; Medstar Georgetown2; Children's National Medical Center3; Children's National Medical Center4

Introduction: The 2011 AAP Guideline recommends against VCU in the second febrile urinary tract infection (UTI). We hypothesized that UTI speciation might be predictive of abnormal findings on ultrasound and/or VCUG. We sought to identify if Staphylococcal and Streptococcal UTIs were more likely than those with other bacterial species to be associated with anatomic abnormalities in males diagnosed with UTI. We also present findings to the emergency department.

Materials & Methods: We retrospectively reviewed a cohort of male patients under 18 years of age who presented to our emergency department and had positive urine cultures from 2011-2015. Males under 18 years of age with > 50,000 CFU/mL Staphylococcal, Streptococcal, Proteus or Escherichia UTIs on clean catch or catheterized specimens were included. Both febrile and atypical UTIs were included. Patients on intermittent catheterization or with augmented bladders were excluded. Ultrasound and cystogram images were reviewed when available. Abdominal cystogram was defined as the presence of any grade VUR and bladder diverticulum. Circumcision status was determined from emergency department and urology notes when available. Chi squared and Fisher’s exact tests were performed using Stata software, version 14.0 SE (Stata Corporation, College Station, Texas, USA).

Results: A total of 703 males with urine culture results from the ED were evaluated and 357 met inclusion criteria. Median age was 7.7 months (2.5-46.8 months IQR). Forty-two Proteus, 16 Staphylococcus, 7 Streptococcus and 292 Escherichia UTIs were included. When documented, the incidence of circumcision was significantly higher in Staphylococcus (78.57%, 11/14) and Streptococcus (66.67%, 4/6) infections when compared with Escherichia (16.37%, 37/226) and Proteus (2.70%, 1/36) infections (Fisher’s Exact test p < 0.001). Of the patients who underwent cystogram, 71% (5/7) of Staphylococcus patients had abnormal cystograms compared to 10% (2/20) of Streptococcal infections, 36% (16/45) of Escherichia and 15% (2/13) of Proteus (Fisher’s Exact test 0.004). High grade hydronephrosis (SFU grades 3 and 4) was seen in 27% of Staphylococcus compared to 17% of Streptococcal, 4% Escherichia and 0% of Proteus UTIs (Fisher’s Exact test p < 0.012).

Conclusions: Staphylococcal and Streptococcal UTIs are more commonly seen in circumcised boys and are associated with higher rates of abnormal imaging findings. Pediatric-age males who present with first UTI with gram-positive organisms should be considered for additional imaging prior to developing a second UTI.
### National Trends and Disparities of Minimally Invasive Surgery for Localized Renal Cancer, 2010 to 2015

L. Xia1, R. Talwar2, B.L. Taylor3, M.H. Shin4, J.B. Berger3, C.D. Speerling5, R.R. Chelluri1,1, A. Zambrano6, J.D. Raman7, T.J. Guzzo8

University of Pennsylvania1; Weill Cornell Medicine2; University of Pennsylvania Perelman School of Medicine3; Cooper Medical School of Rowan University4; Penn State Health - Milton S. Hershey Medical Center5; University of Pennsylvania6

**Introduction:** Minimally invasive (robotic and laparoscopic) and open surgery for localized renal cancer offer comparable oncologic outcomes. However, the evolving trends in utilization of minimally invasive surgery at the national level as well as the barriers preventing access to minimally invasive surgery among specific patient populations are poorly understood.

**Materials & Methods:** A retrospective cohort study was conducted using the National Cancer Database to identify patients undergoing partial nephrectomy (PN) or radical nephrectomy (RN) for cT1N0M0 renal cancer diagnosed between 2010 and 2015. Main outcomes of interest were the utilization of minimally invasive surgery (robotic and laparoscopic) PN and RN.

**Results:** A total of 46,346 and 37,712 subjects who underwent PN and RN, respectively, were analyzed. PN and RN surgical approach distributions by year of diagnosis are shown in the Figure. During the study interval, robotic PN increased from 35.2% to 63.2% and robotic RN increased from 10.3% to 26.3%. In the PN cohort, multivariable logistic regression showed non-Hispanic black (odds ratio [OR] = 0.90 [95%CI, 0.84-0.96]) and Hispanic (OR = 0.91 [0.84-0.99]) subjects were associated with less utilization of minimally invasive surgery (vs. non-Hispanic white) Medicare (OR = 0.77 [0.70-0.86]), Medicaid (OR = 0.80 [0.74-0.87]), and uninsured (OR = 0.55 [0.49-0.62]) were also associated with less utilization of minimally invasive surgery (vs. private insurance). Compared with low socioeconomic status, upper middle (OR = 1.14 [1.07-1.21]) and high (OR = 1.24 [1.16-1.33]) socioeconomic status were associated with higher utilization of minimally invasive surgery. Similar demographic, insurance, and socioeconomic status related disparities were identified in the RN cohort.

**Conclusions:** Utilization of minimally invasive surgery for localized renal cancer has increased significantly and was mainly attributed to increased usage of robotic surgery. Racial/ethnic, insurance, and socioeconomic status related disparities in minimally invasive surgery utilization were identified. Our findings demonstrate a targetable subgroup of patients who do not have the same access to advances in surgical technology.

#### Distribution of Housfeld Unit Measurements for Four Phases of CT Imaging of Papillary RCC Tumors

<table>
<thead>
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<th>Phase</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Median</th>
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<td>0</td>
<td>-200</td>
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<tr>
<td>Corticomedullary</td>
<td>21-100</td>
<td>80-100</td>
<td>40-50</td>
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<tr>
<td>Nephrographic</td>
<td>200-1000</td>
<td>500-1000</td>
<td>300-800</td>
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<td>Pyelographic</td>
<td>10-50</td>
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### Computed Tomography Imaging Characteristics of Histologically Confirmed Papillary Renal Cell Carcinoma: Implications for Ancillary Imaging

J.B. Walker1, A. Birk1, J.D. Raman2

Penn State Health Milton S. Hershey Medical Center1; Penn State Health - Milton S. Hershey Medical Center2

**Introduction:** Renal cysts and masses are common incidental findings on computed tomography (CT). It is often proposed that a cutoff of 20 Hounsfield units (HU) be used for renal cystic lesions to undergo further workup. It has been recognized that the papillary subtype of renal cell carcinoma (RCC) often presents as a low attenuation tumor on noncontrast CT. The objectives of this study are to describe the CT characteristics of papillary RCC, to compare differences between type 1 and type 2 papillary RCC, and to determine the frequency with which papillary RCC is demonstrated as a low attenuation tumor on CT.

**Materials & Methods:** Data was reviewed on all partial and radical nephrectomies performed between July 2007 and July 2017 with pathology confirmed diagnosis of papillary RCC. Tumors with multiple RCC types were excluded. Preoperative CT scans were reviewed. The largest dimension of each tumor was recorded in millimeters. Each tumor had some combination of the four principle phases used to study renal pathology - noncontrast, corticomediullary (30 seconds), nephrographic (100 seconds), and pyelographic (10 minutes). Density was recorded for each phase, when available, as the average of 6 evenly spaced axial regions.

**Results:** A total of 124 pathologic specimens were identified to contain papillary RCC, 84 of which had CT imaging available for review. Mean age was 61 years (range 21 to 94). Median largest dimension was 39.5 mm (range 1.8 to 170). 27 of these were reported to be type 1; 17 were type 2; and 40 were unspecified. Noncontrast CT was available for 73 tumors of which 16 (22%) had HU measuring fewer than 20. 12 of these 16 low density tumors (75%) were clinical stage T1 or T2. 5 were papillary type 1; 4 were papillary type 2; and 7 were unspecified. Attenuation varied within each CT phase. (Table) Mean attenuation at 100 seconds was 44.5 for type 1 papillary tumors and 48.8 for type 2.

**Conclusions:** Pathologically proven papillary RCC is a heterogeneous entity in terms of size and density on preoperative CT imaging. A noncontrast CT scan with HU fewer than 20 may not be adequate evaluation for incidental renal masses, as over 1 in 5 papillary RCCs measure at lower attenuation than this cutoff. Further study is needed to identify the appropriate role of ancillary imaging in the workup of benign-appearing renal cysts.

### Does the Cost Justify the Means? A Comparison of Cost in Open, Laparoscopic, and Robotic Radical Nephrectomy and Partial Nephrectomy Using Data from the National Inpatient Sample

J. Riney1, A. Schilling2, C. Hollenbeak1, S. MacDonald1

Penn State Health Milton S. Hershey Medical Center1; Penn State Health - Milton S. Hershey Medical Center2

**Introduction:** Minimally invasive surgery utilization were identified. Our findings demonstrate a targetable subgroup of patients who do not have the same access to advances in surgical technology.

**Materials & Methods:** The National Inpatient Sample was queried from January 1, 2010 to December 31, 2015 to identify patients undergoing partial nephrectomy (PN) or radical nephrectomy (RN) for cT1N0M0 renal cancer diagnosed between 2010 and 2015. Main outcomes of interest were the utilization of minimally invasive surgery (robotic and laparoscopic) PN and RN.

**Results:** A total of 46,346 and 37,712 subjects who underwent PN and RN, respectively, were analyzed. PN and RN surgical approach distributions by year of diagnosis are shown in the Figure. During the study interval, robotic PN increased from 35.2% to 63.2% and robotic RN increased from 10.3% to 26.3%. In the PN cohort, multivariable logistic regression showed non-Hispanic black (odds ratio [OR] = 0.90 [95%CI, 0.84-0.96]) and Hispanic (OR = 0.91 [0.84-0.99]) subjects were associated with less utilization of minimally invasive surgery (vs. non-Hispanic white) Medicare (OR = 0.77 [0.70-0.86]), Medicaid (OR = 0.80 [0.74-0.87]), and uninsured (OR = 0.55 [0.49-0.62]) were also associated with less utilization of minimally invasive surgery (vs. private insurance). Compared with low socioeconomic status, upper middle (OR = 1.14 [1.07-1.21]) and high (OR = 1.24 [1.16-1.33]) socioeconomic status were associated with higher utilization of minimally invasive surgery. Similar demographic, insurance, and socioeconomic status related disparities were identified in the RN cohort.

**Conclusions:** Utilization of minimally invasive surgery for localized renal cancer has increased significantly and was mainly attributed to increased usage of robotic surgery. Racial/ethnic, insurance, and socioeconomic status related disparities in minimally invasive surgery utilization were identified. Our findings demonstrate a targetable subgroup of patients who do not have the same access to advances in surgical technology.

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**Conclusions:** Pathologically proven papillary RCC is a heterogeneous entity in terms of size and density on preoperative CT imaging. A noncontrast CT scan with HU fewer than 20 may not be adequate evaluation for incidental renal masses, as over 1 in 5 papillary RCCs measure at lower attenuation than this cutoff. Further study is needed to identify the appropriate role of ancillary imaging in the workup of benign-appearing renal cysts.
Moderated Poster Session 1: Oncology - Bladder, Testis, Renal

**MP1-04**

**Robot-Assisted Radical Cystectomy Does Not Offer Lower Incisional Hernia Rates When Compared to Open Radical Cystectomy**

D.C. Edwards, D.B. Cahn, M. Reddy, D. Kivlin, A. Malhotra, T. Li, D.Y. Chen, R. Virebo, B. Uzzo, R. Greenberg, M.C. Smaldone, P. Cincello, A. Kutikov, Hahnemann University Hospital/Drexel University College of Medicine; The Urology Centers of Southern California; Hospital of the University of Pennsylvania; Fox Chase Cancer Center-Temple Health; Fox Chase Cancer Center

**Introduction:** Postoperative incisional hernias (PIH) are well-established complications of abdominal surgery; however, contemporary rates after radical cystectomy (RC) are not well-established, especially since the introduction of robot-assisted techniques. Moreover, risk factors that may predict PIH have not been described. Herein, we assess and compare rates of PIH after robotic assisted radical cystectomy (RARC) and open radical cystectomy (ORC), and identify factors that may predict PIH in these cohorts.

**Materials & Methods:** Patients with > 1 year follow up and available pre- and post-operative cross-sectional imaging who had undergone ORC from 2000-2015 (n = 361) and RARC from 2007-2015 (n = 58) at our tertiary referral cancer center were included in this study. Infra-umbilical midline incision was performed during ORC and a peri-umbilical incision during RARC with extracorporeal urinary diversion. Patients undergoing a type of urinary diversion and presence of pre-existing, or umbilical hernia were evaluated. Skin-to-fascia depth (SFD) as well as rectus diastasis width (RDW) were captured from pre-operative imaging. Post-operative imaging was examined for presence of PIH.

**Results:** Of the 469 patients that met inclusion criteria, the incidence of PIH in our cohort was 14.3%. Analysis revealed no statistically significant differences in PIH rates between open and robotic cohorts (15.8% vs. 25.4%, p = 0.144). Age, gender, smoking status, receipt of chemotherapy, and race did not correlate with PIH on multivariate analysis (all p > 0.05). Increasing BMI was associated with a slightly increased risk of PIH (OR 1.07, 95%CI 1.01-1.13, p = 0.02). Stratified by surgical approach, receipt of an ideal conduit compared to continent diversion was associated with a deceased risk of PIH in only the open cohort (OR 0.37, 95% CI 0.15-0.89, p = 0.025). In the RARC cohort, preoperative umbilical hernia significantly increased the risk of PIH on multivariate analysis (OR 0.73, 95% CI 0.30-1.82, p = 0.03). After adjustment, increased supraumbilical RDW was a risk factor for PIH on multivariate analysis in patients who had an ORC (OR 1.9, 95%CI 1.15-3.17, p = 0.013). Conversely, patients undergoing RARC had no increased risk of PIH based on supraumbilical (p = 0.436) or infraumbilical (p = 0.347) RDW. SFD did not correlate with hernia rates in any of our patient cohorts (all p values > 0.05).

**Conclusions:** Patients undergoing RC are at significant risk of PIH regardless of surgical approach. Anthropomorphic factors and urinary diversion type appear to be associated with PIH risk. Further research is needed to understand how risks of PIH can be reduced in patients undergoing cystectomy.

**MP1-05**

**Nephroureterectomy Versus Nephron-Sparing Management of Clinically Localized Urethelial Carcinoma of the Uter:**

D.C. Edwards, A. Belkoff, K. Carcassi, S. Hager, B. McGreen, S. Tarry, M. Amster, Hahnemann University Hospital/Drexel University College of Medicine; Lake Erie College of Osteopathic Medicine

**Introduction:** Nephroureterectomy (NU) is the gold standard for upper-tract urothelial carcinoma (UTUC) of the ureter, but segmental ureterectomy (SU) and endoscopic management (EM) are attractive nephron-sparing approaches in appropriate patients. We sought to determine treatment patterns and outcomes associated with these modalities for ureteral tumors alone.

**Materials & Methods:** The National Cancer Database (NCDB) was queried for patients with histologically verified UTUC (< cT2aN0M0) undergoing either NU, SU, or EM from 2004-2015. Patients were excluded with previous cancer diagnoses, non-urothelial histology or incomplete data. Treatment trends and survival outcomes were assessed for the cohorts utilizing multivariable logistic regression and Cox Proportional Hazards Regression.

**Results:** 712 patients were included in the analysis (NU: n = 4121; SU: n = 1658; EM: n = 1342). On multivariable logistic regression with respect to EM, increasing tumor size (OR 1.04, CI 1.03-1.05) and high grade histology (OR 4.23, CI 3.26-5.38) were associated with increased likelihood of NU. No specific trend was noted with age, sex, race, payer status, CDC score, facility designation, or increasing facility volume and treatment with EM or NU (all p > 0.05). With respect to SU, increasing tumor size (OR 1.01, CI 1.01-1.02) and female gender (OR 1.27, CI 1.04-1.54) were associated with increased likelihood of NU. Facility volume in the 1st (OR 1.32, CI 0.95-1.84) and 3rd (OR 0.63, CI 0.16-2.83) quartiles were associated with increased likelihood of NU compared to facilities in the top 25% quartile of treatment volume. No specific trend was noted with age, race, payer status, CDC score, histology, or facility designation and treatment with SU or NU (all p > 0.15). On Cox Regression when accounting for age and comorbidities, there was no difference in OS between NU and SU (p = 0.281) or EM (p = 0.605). Facility volume in the 1st (HR 1.36, CI 1.08-1.79), 2nd (HR 1.39, CI 1.06-1.81) and 3rd (HR 1.53, CI 1.01-2.30) quartiles were associated with increased mortality compared to those in the 4th and 5th. Positive margins increased the risk of mortality by 7.8% (HR 1.07, CI 1.46-2.20).

**Conclusions:** Increasing tumor size, high grade histology and lower volume centers were associated with increased likelihood of NU compared to nephron-sparing management. When accounting for competing risks, no differences in OS were seen between treatment modalities, but lower volume centers may have worse outcomes. Prospective studies that validate the efficacy of nephron sparing management in appropriately selected patients can encourage adoption of these practices.

**MP1-06**

**Predicting Mortality in Renal Cell Carcinoma Patients Using Self-Reported Quality of Life**

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**Introduction:** With the rise of nephron-sparing management for renal cell carcinoma (RCC), quality of life (QOL) metrics may provide prognostic value above and beyond traditional demographic and disease parameters. We evaluate the utility of self-reported QOL results in predicting mortality among RCC patients and test the findings in a prospectively-maintained external database.

**Materials & Methods:** Predictive variables were pre-defined and analyzed using the Surveillance, Epidemiology, and End Results - Medicare Health Outcomes Survey (SEER-MHOS) database. QOL metrics were comprised of mental component summary (MCS) and physical component summary (PCS) scores. For each multivariable Cox proportional hazards regression, the Harrell’s concordance statistic (C-index) and Akaike Information Criteria (AIC) were calculated to determine predictive accuracy and parsimony, respectively. A lower AIC indicates a more parsimonious model. Findings from the SEER-MHOS database were tested in the prospectively-maintained Delayed Intervention and Surveillance for Small Renal Masses (DISSRM) database.

**Results:** In SEER-MHOS, 1494 patients with a median age of 73.4 years and follow-up time of 5.6 years were included. There were 747 deaths, 139 of which were due to RCC. Cox regression demonstrated that each additional MCS and PCS point reduced the hazard of all-cause mortality by 1.3% (95% CI 0.981-0.993, P < 0.001) and 2.3% (95% CI 0.971-0.984, P < 0.001), respectively. Regression models with QOL metrics demonstrated higher predictive accuracy (C-index 72.3% vs. 70.1%) and parsimony (AIC 9576.5 vs. 9454.5) than models without QOL metrics. In DISSRM, 479 patients with a median age of 65.3 years and follow-up time of 3.9 years were included. There were 49 deaths, 2 of which were due to RCC. In agreement with the SEER-MHOS analysis, regression models including QOL metrics demonstrated maximum predictive ability (C-index 77.8% vs. 74.1%) and parsimony (AIC 494.9 vs. 496.4) compared to those without QOL metrics. Further testing demonstrated that the single best question producing maximum predictive ability (C-index 76.9%) and parsimony (AIC 335.2) was one of physical functioning limitations in the context of “moderate activities such as moving a table, pushing a vacuum cleaner, bowing, or playing golf.”

**Conclusions:** Models with self-reported QOL metrics predict all-cause mortality in RCC patients with higher accuracy and parsimony than those without QOL metrics in two separate database tests. Physical health in particular was a stronger predictor of mortality than mental health.

**MP1-07**

**2018 MA-AUA Annual Meeting Abstracts**

9539
Propensity-matched Analysis of Stage-specific Efficacy of Adjuvant Chemotherapy for Bladder Cancer Following Radical Cystectomy

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Introduction: In the past decade, there have been major advancements in the use of perioperative chemotherapy for bladder cancer. While neoadjuvant chemotherapy has garnered the support of several phase III trials, contemporary randomized controlled trials exploring adjuvant chemotherapy (AC) have yielded inconsistent results due to premature termination and/or poor patient accrual. To address this evidence void, we compared the efficacy of AC versus observation after radical cystectomy by disease stage from a nationally representative sample of patients with bladder cancer in the US.

Materials & Methods: We included patients who underwent radical cystectomy for any pT3, pN0-1, M0 bladder cancer from 2004 to 2014 from the National Cancer Data Base. Patients diagnosed at death or autopsy, death within 30 days of cystectomy, or receipt of single-agent chemotherapy, or any radiation were excluded. Patients who underwent AC were propensity matched (1:1) with patients within the observation-only cohort (OC) based on selected demographics and clinical characteristics. Overall survival was modeled with multivariable Cox hazards regression modeling. Adjusted hazard ratios (aHR) and 95% confidence intervals (95%CI) were calculated. Statistical analysis was performed in SAS v9.4.

Results: After propensity matching, 3,066 patients (AC 1,533; OC 1,533) were included in the analysis. There were no differences in patient-, facility-, or tumor-level characteristics between groups. Compared with patients in OC, recipients of AC had significantly improved overall survival (aHR 0.67; 95%CI 0.61-0.74). All pathologic T stages with pN1 disease significantly benefited from adjuvant chemotherapy. Among the pN1 cohort, improved survival from adjuvant chemotherapy was seen in only stages pT3 (0.67; 0.55-0.83) and pT4 (0.70; 0.50-0.98).

Conclusions: In this retrospective population-based cancer registry study, AC was associated with improved survival in locally advanced (pT2-4, pN0) bladder cancer. Our findings suggest that AC is best suited for patients with bladder cancer in the US.

In the World of Bladder Tumors: Size Does Matter...

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Penn State Hershey Medical Center1, Penn State Health Milton S. Hershey Medical Center2, Penn State Milton S. Hershey Medical Center3, Penn State Health – Milton S. Hershey Medical Center4

Introduction: Cystoscopy with transurethral resection of bladder tumor (TURBT) is fundamental to the diagnosis and staging of bladder cancer. Variability among patients, tumors, and surgeons has made it difficult to standardize care. Management of small, medium, and large tumors is largely intuitive with the belief that tumors warrant longer duration of an indwelling catheter and length of hospital stay. We sought to compare outcomes following TURBT of small, medium, and large tumors to determine if larger tumors truly resulted in a greater degree of complications.

Materials & Methods: The National Surgical Quality Improvement Project (NSQIP) Participant Use File (PUF) was queried to extract all TURBT cases performed from 2011-2015. CPT codes 52234 (small), 52235 (medium), and 52240 (large) were queried to stratify the data into three cohorts. Outcomes of interest included the presence of any post-surgical complications, hospital length of stay (LOS), reoperation, 30-day readmission, and mortality. ANOVA was used to detect statistical significance between continuous variables across the three cohorts and chi2 tests were used for binary variables. Linear and logistic regressions were utilized to control for potential confounders.

Results: 17,839 patients who underwent TURBT were included. 44% had small tumors (n = 7,805), 35% had medium tumors (n = 6,240), and 21% had large tumors (n = 3,794). Univariate analysis revealed statistically significant differences in complication number, length of stay, reoperation rate, and mortality at 30 days, although this difference was likely clinically insignificant (0.40 days longer; p < 0.0001). Table 1 shows the multivariable regression models, and medium and large tumors were associated with significantly greater odds of a post-operative complication (OR = 1.37 and 1.64; p < 0.0001), reoperation (OR = 1.33 and 1.52; p = 0.002), readmission at 30 days (OR = 1.27 and 1.39; p = 0.0013), and mortality (OR = 1.45 and 2.59; p = 0.015 and p = 0.003). Large tumors were associated with a significantly longer LOS compared to small tumors, although this difference was likely clinically insignificant (0.40 days longer; p < 0.0001).

Conclusions: Larger tumor size (> 5 cm) is associated with greater length of stay, reoperation, readmission, and death following TURBT. These patients should be counseled appropriately and may warrant a longer period of observation prior to discharge.
Association Between Anticoagulant and Antiplatelet Agents and Complications of Transurethral Resection of Bladder Tumors
M. Strother1, R. Talwar1, A. Guevara-Mendez2, M. Gilson3, S. Malkowicz4, A. Wein1, T.J. Guzzo1
University of Pennsylvania1, University of Miami2, Drexel University2; Division of Urology, Department Of Surgery, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA1; Division of Urology at Cooper University Health Care3; Division of Urology at Cooper University Health Care3; Fox Chase Cancer Center4

Introduction: There is little procedure-specific data to guide the perioperative management of antiplatelet and anticoagulant medications in patients undergoing transurethral resection of bladder tumors (TURBT). We sought to determine the association between these medications and complications after TURBT.

Materials & Methods: We retrospectively reviewed the charts of 116 patients at the Hospital of the University of Pennsylvania who underwent their first TURBT between January 2016 and June 2017. Antiplatelet and anticoagulant medication was previously prospectively documented, including whether and for how long these were held perioperatively. Specific categories of these included aspirin, novel antiplatelet agents (only clopidogrel in our cohort), anticoagulants, omega-3 supplements, and non-steroidal anti-inflammatory drugs. Additional retrospectively collected exposure variables included patient age, sex, surgeon, size of tumor on imaging, mitomycin administration, and final tumor stage.

Our primary outcome was adverse events (AEs), a composite of unplanned postoperative admission, emergency department (ED) presentation, and return to the operating room.

Results: 27 (23.2%) patients suffered AEs, including 11 postoperative admissions, 18 ED presentations, and 2 returns to the operating room. There were no thromboembolic or cardiac events. All ED presentations were prompted by hematuria, suprapubic pain, catheter problems, and/or urinary retention. The median date of ED representation was 3 days postoperatively (interquartile range 1-4.25). All anticoagulants and clopidogrel were paused perioperatively. Nevertheless, patients taking anticoagulants were significantly more likely to suffer AEs (odds ratio (OR) 4.0, 95% confidence interval (CI) 1.2-13.7). Multivariate logistic regression similarly yielded anticoagulation as the exposure most closely associated with AEs, although this narrowly failed to reach statistical significance (p = 0.064). No significant difference in adverse events was detected in patients taking clopidogrel, NSAIDs, omega-3 supplements or aspirin even if the last of these was not paused perioperatively.

Conclusions: Anticoagulation but not antiplatelet therapy was significantly associated with adverse events after TURBT.

Frequency of High Grade Disease in Surgically Resected Kidney Cancer Specimens: An Unrecognized Factor Impacting Test Characteristics of Percutaneous Renal Mass Biopsy
Division of Urology at Cooper University Health Care2; Fox Chase Cancer Center3; Penn State Health - Milton S. Hershey Medical Center4

Introduction: Clinical utility of renal mass biopsy (RMB) for differentiating benign from malignant tumors is well-established; however, its ability to accurately predict tumor grade remains controversial. Indeed, grade concordance reports in the literature vary. Here, we query four large institutional kidney cancer surgical cohorts to better understand how the prevalence of high-grade disease affects RMB tumor grade concordance rates.

Materials & Methods: The prospectively maintained kidney cancer databases of 3 large volume centers across the State of Pennsylvania and 1 from Michigan were queried for the histopathological characteristics (pathological size, histology, nuclear grade) of resected pT1a renal masses. Only masses with clear cell histology and those with a documented nuclear grade were included in the analysis. The prevalence of HG disease, defined as Fuhrman nuclear grade 3 or 4 was calculated for each center. Using the biopsy sensitivities from the largest RMB series to date (Richard et al Eur Urol, 2015), we then calculated the expected RMB grade concordance rate and negative predictive value for RMB at each participating site.

Results: A total 1740 patients met criteria for analysis. The institutional prevalence of high-grade disease markedly varied from 13.6% to 37.9% (Table 1). Increased prevalence of HG disease was associated with a decrease in RMB overall grade concordance rates (94.1% to 83.7%) and reduced negative predictive value (93.6 to 79.2%) (Table 1).

Conclusions: The prevalence of high-grade disease in patients with a renal mass significantly varies even among institutions in the same state and across state lines. In turn, rates of high-grade disease have a significant impact on tumor grade concordance at RMB. As such, each institution must be cognizant of its case-mix and interpret RMB results accordingly.
Overuse of Cystoscopic Surveillance Among Patients with Low-risk Non-muscle-Invasive Bladder Cancer - A National Study of Patient, Provider, and Facility Characteristics

Early and Delayed Complications of Urinary Diversion for Benign Etiology

Introduction: There are limited studies evaluating outcomes following urinary diversion for benign indications. We sought to analyze complications following urinary diversion for non-malignant conditions, with specific focus on early and delayed complications over long-term follow-up.

Materials & Methods: We performed a retrospective review of patients undergoing urinary diversion for benign indications between January 2000 and December 2017. Data were collected including patient demographic and clinical characteristics, with focus placed on surgical characteristics and post-operative complications. Complications were graded according to the Clavien-Dindo classification and were classified as early (≤ 90 day post-operatively) or delayed (>90 days post-operatively). Logistic regression was used to assess for predictors of developing complications after urinary diversion.

Results: We identified 1,206 patients with low-risk bladder cancer (mean age 76; 99% male; 85% white; 15% with 1 comorbidities, 47% with 1 to 2, and 38% with 3 or more). We found overuse of cystoscopy among 75% of patients (905 of 1,206). This included 226 (81%) of 280 patients followed less than 1 year, 194 (85%) of 227 patients followed 1 to less than 2 years, and 485 (69%) of 699 patients followed for 2 years. Across all patients in the cohort, 4,805 cystoscopy procedures were performed although only 2,831 would have been recommended. Of 14 patient, provider, and facility characteristics assessed, few were associated with overuse of cystoscopy. Early versus delayed year of diagnosis (2005-2006 vs. 2011), white race vs. other/missing, 1 to 2 comorbidities, and attending provider vs. resident (Figure).

Conclusions: Overuse of cystoscopy among patients with low-risk NMIBC in our cohort was common, raising concerns about the cost and quality of bladder cancer surveillance. However, we found few patient and provider factors associated with overuse. The association of early year of diagnosis with overuse suggests lack of knowledge of surveillance recommendations as a potential cause of overuse. Further qualitative research is needed to confirm this hypothesis and to identify other determinants of overuse not captured in administrative data.

Table 2: Unadjusted and adjusted estimated effect of each predictor on 60-day mortality

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Univariable analysis</th>
<th>Multivariable analysis</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>OR (95% CI)</td>
<td>P-value</td>
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<tr>
<td>Age</td>
<td>0.99 (0.97-1.01)</td>
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<tr>
<td>Male</td>
<td>1.02 (0.99-1.04)</td>
<td>0.99</td>
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<tr>
<td>Race</td>
<td>0.75 (0.57-1.00)</td>
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<tr>
<td>Diabetes</td>
<td>1.40 (1.28-1.52)</td>
<td>0.03</td>
</tr>
<tr>
<td>Smoking</td>
<td>1.11 (1.05-1.17)</td>
<td>0.05</td>
</tr>
<tr>
<td>Charlson</td>
<td>1.01 (1.00-1.02)</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Table 3: Adjusted probability of 60-day mortality by distance

Figure 1: Adjusted probability of 60-day mortality by distance

Adjusted for age, sex, race, comorbidity, marital status, tumor stage, nodal status, population of county of residence, and SEER geographic region

<table>
<thead>
<tr>
<th>Predictor</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance</td>
<td>1.00 (1.00-1.00)</td>
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</tbody>
</table>

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Comparison of CxBladder and Cytology in Detecting Urothelial Carcinoma of the Bladder
A. Afadata, R. Campbell, M. Williams
Eastern Virginia Medical School

Introduction: Bladder cancer is the fifth most commonly diagnosed cancer in the US in 2018. Unfortunately, it also happens to be one of the most expensive cancers to treat due to the frequent surveillance required. Practically, a urinary biomarker with both high sensitivity and specificity for urothelial carcinoma (UC) could decrease the number of surveillance cystoscopies. The goal of the study was to determine the accuracy of cytology as compared CxBladder in detecting UC of the bladder confirmed by cystoscopy and biopsy.

Materials & Methods: This was a single institution, retrospective chart review study of all patients 18 years of age or older who were tested with urinary cytology and CxBladder (Detect or Monitor) as part of a standard bladder cancer surveillance protocol between 10/2013 through 02/2017. Urinary cytology was defined as positive if suspicious for malignancy or urothelial carcinoma. It was defined as negative if negative for malignancy or one of the three atypical subtypes including atypical suspicious for neoplasm. Sensitivity, specificity, positive predictive values (PPV), and negative predictive values (NPV) at the 95% confidence interval were used to assess the validity and reliability of above urinary biomarkers to detect the presence or absence of UC compared to the gold standard, cystoscopic examination +/- biopsies. Analyses were performed in SAS 9.4 (SAS Institute, Cary, NC).

Results: A total of 223 urine samples were collected from patients undergoing surveillance for UC. 195 cytology reports and 173 CxBladder reports (126 for Detect, and 47 for Monitor) were included in the analysis. The results for the urinary biomarkers are outlined in Table 1. Urinary cytology had a sensitivity of 39.2% and a specificity of 96.4%. CxBladder Monitor had the best sensitivity of 66.7%. The best NPV was recorded by CxBladder Monitor and indicates 93.3% of patients who tested negative truly did not have recurrence of urothelial carcinoma.

Conclusions: CxBladder Monitor has overall superior sensitivity and NPV compared to cytology, which makes it a better surveillance adjunct for patients with history of UC of bladder. This urinary biomarker improves our ability to “rule-out” disease recurrence non-invasively.

Table 1: Comparison of Diagnostic Yield of CxBladder and Cytology for Urothelial Carcinoma of the Bladder

<table>
<thead>
<tr>
<th>Test</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>PPV</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>CxBladder Monitor</td>
<td>66.7%</td>
<td>93.3%</td>
<td>1.05</td>
<td>0.89</td>
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<tr>
<td>Urinary cytology</td>
<td>39.2%</td>
<td>96.4%</td>
<td>0.75</td>
<td>1.00</td>
</tr>
</tbody>
</table>

MP1-13

Obesity and 30-day Outcomes Following Minimally Invasive Nephrectomy
L. Xia1, C.D. Sperling2, J.B. Berger3, M.H. Shin1, M.C. Strother1, T.J. Guzick1
University of Pennsylvania1; Cooper Medical School of Rowan University2; University of Pennsylvania Perelman School of Medicine3; University of Pennsylvania1

Introduction: To evaluate the association between obesity and postoperative outcomes following minimally invasive partial nephrectomy (MIPN) and minimally invasive radical nephrectomy (MINR).

Materials & Methods: Using the National Surgical Quality Improvement Program database, we identified adult patients who underwent either MIPN or MINR from 2012 to 2016. Patients were stratified by body mass index (BMI) according the World Health Organization classification of obesity (non-obese [BMI 18.5-29.9 kg/m²], class I obesity [BMI 30-34.9 kg/m²], class II obesity [BMI 35-39.9 kg/m²], and class III obesity [BMI ≥ 40 kg/m²]). Multivariable logistic regressions alternately including obesity class, comorbidity score, and both were used to evaluate the association among these variables with postoperative outcomes.

Results: A total of 21,334 patients (MIPN = 10,444, MINR = 10,890) were included. When only obesity class or comorbidity score was included in our multivariable logistic regression model, both variables were associated with increased odds of overall 30-day complications. However, when both obesity class and comorbidity were included in the model, comorbidity but not obesity was found to be associated with increased postoperative complications (Table). Obesity was also not found to be associated with unplanned readmission. However, obesity was independently associated with prolonged operative time and discharged to continued care in the full model.

Conclusions: This NSQIP study suggests that obesity does not independently predict the likelihood of overall complications or readmission within 30 days and should not be considered a major barrier for MIPN or MINR. Instead, obesity should be taken into consideration with other comorbidities when risk-stratifying patients prior to minimally invasive nephrectomy.

MP1-15

Percutaneous Microwave Ablation is Safe for Treatment of Anterior RCC Tumors
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University of Virginia1; University of Wisconsin School of Medicine and Public Health2; University of Wisconsin2; University of Wisconsin School of Medicine and Public Health3; University of Wisconsin4

Introduction: To evaluate the impact of anterior tumor location on oncologic efficacy and complication rates for 151 consecutive biopsy-proven CTa RCC tumors treated with percutaneous microwave (MW) ablation.

Materials & Methods: This HIPAA-compliant, single center retrospective study was performed under a waiver of informed consent from the institutional review board. One hundred forty-eight consecutive patients [103 M/45 F; mean age: 67 years, IQR 61-73] with 151 CTa biopsy-proven RCC [median diameter: 2.4 cm, IQR 1.9-3.0 cm] were treated with percutaneous MW ablation between March 2011 and August 2017. Patient and procedural data were collected including RENAL nephrometry score, use/volume of hydrodisplacement, number of antennas, MW generator power/volume of hydrodisplacement, number of antennas, MW generator power/antenna (p = 0.0004). Technical success was achieved for all 151 tumors (100%) for lesion location as compared CxBladder in detecting UC of the bladder confirmed by cystoscopy and biopsy.

Results: Procedure and ablation duration were similar regardless of tumor location (p > 0.05). Mean procedure duration was 180 minutes (range = 101-510). Ablation duration was longer for larger (p = 0.01), more complex (p = 0.05) tumors requiring more than 1 antenna (p = 0.0004). Technical success was achieved for all 151 tumors (100%) including 67 anterior, 61 posterior and 23 ‘X’; (neither anterior nor posterior) tumors. Median length of hospitalization was 1 day (range = 0-5). Median clinical and imaging follow-up was 30 months (range = 0-77) months and 23 months (range = 0-71), respectively. There were 3 (2%) high-grade (Clavien ≥ II) procedure-related complications and 6 (4%) delayed complications, all urinomas. Six local recurrences (4%) were identified at a median of 6 (range = 0-27) post-ablation. Three-year OS was 95% (95%CI: 70-99%) for anterior, posterior and ‘X’, tumors. Three-year OS was 96% (95%CI: 89-98%).

Conclusions: Percutaneous MW ablation of anterior CTa RCC is safe and effective. Long-term follow-up is needed to establish durable oncologic efficacy.

Figure 1: Kaplan-Meier recurrence-free survival (RFS) after percutaneous microwave ablation of anterior, posterior and ‘X’ (neither anterior nor posterior) tumors.

MP1-14
Predictors of Benign Pathology Following Orchiectomy: Identifying Candidates for Testis Sparing Surgery

K. Patel, B.L. Taylor, F. Khani, D. Scherr, R. Ravishankar, P. Lal, S. Malkowicz

Weill Cornell Medicine; University of Pennsylvania; New York Presbyterian Hospital, Weill Cornell Medical College; Perelman School of Medicine; Division of Urology, Department of Surgery, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA

Introduction: Study of the tumor microenvironment in various cancers including urothelial cell carcinoma (UC) of the bladder has identified programmed death ligand 1 (PD-L1) as a potential target for immunotherapy. Uninhibited, malignant cells expressing PD-L1 complex with programmed death protein 1 (PD-1) and inhibit native T-cell responses to the tumor. Five agents have been approved for bladder cancer which bind to PD-L1 expressed by tumor cells and impede the formation of this complex. Several studies have attempted to validate PD-L1 staining of bladder tumors as a biomarker predictive of response to these agents, but with variable results. It is the goal of this study to evaluate PD-L1 staining fidelity between the primary tumor and lymph node metastases from cystectomy specimens and to evaluate whether neoadjuvant chemotherapy affects this relationship.

Materials & Methods: In this multicenter trial, two prospectively maintained bladder cancer databases were queried to identify 67 subjects who underwent radical cystectomy between 2008 and 2015 and were found to have residual bladder cancer as well as positive lymph nodes. These cases were retrospectively reviewed, and original pathologic specimens were stained for PD-L1. Primary histology and PD-L1 staining were re-reviewed by a genitourinary pathologist. Specimens were considered “positive” if tumor cells exhibited > 1% PD-L1 staining and were also evaluated by H-score. Systematic analysis was used to assess how various clinical variables, including NAC, affected odds of PD-L1 fidelity between primary and metastatic tumors.

Results: Overall PD-L1 staining status was preserved in 79.1% of cases. The interclass correlation coefficient (ICC) between the average bladder and lymph node H-scores was 0.85 (95% CI 0.75-0.91). NAC did not significantly impact odds of PD-L1 fidelity (OR 1.974, 95% CI 0.673-5.784). Among clinical variables analyzed, male sex was associated with significantly decreased odds of PD-L1 fidelity (OR 0.243, 95% CI 0.079-0.744). Bladder and lymph node H-score were also significantly associated with PD-L1 fidelity.

Conclusions: PD-L1 fidelity between primary bladder and metastatic lymph node tumors was observed in > 75% of cases in this study. Standard NAC did not impact PD-L1 concordance of tumor cells in this cohort. Further observation of PD-L1 status of both tumor and infiltrating immune cells in metastatic bladder cancer, particularly in the setting of checkpoint inhibitor therapy, will help further elucidate changes in the tumor microenvironment at the time of metastasis and guide therapeutics.

Effect of Neoadjuvant Chemotherapy on Programmed Death Ligand 1 (PD-L1) Staining Fidelity between the Primary Tumor and Lymph Node Metastases in Bladder Cancer

K. Patel, B.L. Taylor, F. Khani, D. Scherr, R. Ravishankar, P. Lal, S. Malkowicz

Weill Cornell Medicine; University of Pennsylvania; New York Presbyterian Hospital, Weill Cornell Medical College; Perelman School of Medicine; Division of Urology, Department of Surgery, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA

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Materials & Methods: In this multicenter trial, two prospectively maintained bladder cancer databases were queried to identify 67 subjects who underwent radical cystectomy between 2008 and 2015 and were found to have residual bladder cancer as well as positive lymph nodes. These cases were retrospectively reviewed, and original pathologic specimens were stained for PD-L1. Primary histology and PD-L1 staining were re-reviewed by a genitourinary pathologist. Specimens were considered “positive” if tumor cells exhibited > 1% PD-L1 staining and were also evaluated by H-score. Systematic analysis was used to assess how various clinical variables, including NAC, affected odds of PD-L1 fidelity between primary and metastatic tumors.

Results: Overall PD-L1 staining status was preserved in 79.1% of cases. The interclass correlation coefficient (ICC) between the average bladder and lymph node H-scores was 0.85 (95% CI 0.75-0.91). NAC did not significantly impact odds of PD-L1 fidelity (OR 1.974, 95% CI 0.673-5.784). Among clinical variables analyzed, male sex was associated with significantly decreased odds of PD-L1 fidelity (OR 0.243, 95% CI 0.079-0.744). Bladder and lymph node H-score were also significantly associated with PD-L1 fidelity.

Conclusions: PD-L1 fidelity between primary bladder and metastatic lymph node tumors was observed in > 75% of cases in this study. Standard NAC did not impact PD-L1 concordance of tumor cells in this cohort. Further observation of PD-L1 status of both tumor and infiltrating immune cells in metastatic bladder cancer, particularly in the setting of checkpoint inhibitor therapy, will help further elucidate changes in the tumor microenvironment at the time of metastasis and guide therapeutics.
External Valiation of Tele-Cystoscopy

University of Virginia1, Department of Urology, University of Virginia7

Introduction: Urology workforce shortages in rural areas limit access to surveillance cystoscopy for patients with bladder cancer. To address this, we developed a tele-cystoscopy model in which urologic advanced practice professionals (APPs) perform cystoscopies which are interpreted in real-time by board-certified urologists at remote locations. The purpose of this study was to externally validate the newly trained APPs' cystoscopies.

Materials & Methods: We have previously presented our systematic method for APP training in cystoscopy. Pilot tele-cystoscopy was performed by an APP with both an off-site UVA urologist to guide and interpret and an onsite urologist as backup support. The off-site UVA urologist evaluated the APP’s ability to perform a complete cystoscopy (observes all areas of the bladder, identifies UOs, etc.). De-identified recordings of the transmitted video were then sent in an electronic survey (Qualtrics, Provo, UT) to community urologists. External urologists were asked to evaluate the completeness of the transmitted cystoscopy.

Results: Five videos clips were reviewed by both an internal reviewer and external reviewer for completion. External reviewer generally agreed that the APP appeared to perform a complete cystoscopy identifying the essential anatomic landmarks (Table 1). The first three pairs of assessments are almost identical, and the last two pairs are very different.

Conclusions: External urologist evaluation of the quality of transmitted cystoscopy is feasible via electronic survey. Tele-cystoscopy may be a viable solution provide diagnoses to remote areas.

MP1-19

The Institution of a Venous Thromboembolism Directed Quality Improvement Protocol in Patients Undergoing Radical Cystectomy for Bladder Cancer
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Penn State Health - Milton S. Hershey Medical Center

Introduction: Radical cystectomy (RC) with urinary diversion performed for bladder cancer is associated with a significant rate of venous thromboembolic events (VTE). While VTE prophylaxis is recommended, there is lack of agreement regarding optimal protocols. We sought to determine the VTE risk reduction associated with each iteration of our VTE protocol.

Materials & Methods: We retrospectively reviewed our RC experience between 2006 and 2018. We assessed the prevalence of VTE risk factors in our RC population, and documented the evolution of our VTE prophylaxis protocols.

Results: 297 patients underwent RC. Results are summarized in Table 1. 163 received anticoagulation (AC) only while hospitalized (Group A). 59 received AC while hospitalized and for 3-4 weeks post-discharge (Group B). 75 received AC prior to RC and for 3-4 weeks post-RC with focused teaching on the importance of compliance with early ambulation and AC use (Group C). When comparing Groups B and C with group A, only Group C demonstrated a significant decrease in VTE events (p = 0.04), although the trend toward decreasing VTE incidence with increasingly aggressive prophylaxis across all three groups (15% vs. 10% vs. 5%). Further comparing Groups A and C, smoking was more prevalent in Group A (85% vs. 71%, p = 0.01) and more lymph nodes were harvested in Group C (p = 0.01), reflecting evolving practice patterns within our group (Table 1). There were no other statistically significant differences in the incidence of known VTE risk factors between groups. VTE prophylaxis, lymph node yield, and smoking were not independent predictors of VTE rates in a multivariable model.

Conclusions: Institution of an aggressive VTE prophylaxis program is associated with diminished VTE rates with no evidence of increased bleeding complications. However, VTE prophylaxis program is not shown to be an independent predictor of VTE rate on multivariable analysis, possibly because of changes in smoking incidence in the population that occurred concurrently with changes in VTE prevention protocols.

MP2-02

Convective Water Vapor Thermal Therapy: 3-Year Durable Outcomes of a Randomized Controlled Study for Treatment of Lower Urinary Tract Symptoms due to Benign Prostatic Hyperplasia
R. Levin, K. McVary, C. Roehrborn
Chaseapphire Urology

Introduction: Convective water vapor thermal therapy is a unique minimally invasive procedure for rapid ablation of prostate obstructive tissue including the median lobe and hyperplastic central zone tissue. We report 3-year outcomes of a randomized, controlled trial for treatment of moderate to severe lower urinary tract symptoms (LUTS) due to benign prostatic hyperplasia (BPH).

Materials & Methods: 197 men ≥ 50 years old with International Prostate Symptom Score (IPSS) ≥ 13, maximum flow rate (Qmax) ≤ 15 mL/s and prostate volume 30-80 cc, enrolled in 15 centers were randomized 2:1 to thermal therapy with Rezūm® System (136) or control (61). Control procedure was rigid cystoscopy with simulated active treatment sound. The total number of treatments in each lobe of the prostate was determined by the length of the prostatic urethra; it can be customized to the configuration of the gland including the median lobe/enlarged central zone. The primary endpoint compared IPSS reductions at 3 months after unblinding; evaluations continued annually for 3 years.

Results: Mean IPSS improvement by 3 months after thermal therapy was -11.2 vs. -4.3 points for control (p < 0.0001), remaining durable with 50% improvements from baseline throughout 3 years (p < 0.0001). Concomitantly 50% improvements in quality of life and Qmax were sustained over 3 years (p < 0.0001). Ablation of the median lobe in 30/133 subjects resulted in significantly decreased PVR. At 36 months PVR decrease was 61% of the mean baseline vs. 18% for subjects without a treated median lobe (p = 0.0109). No late related adverse events occurred; no de novo erectile dysfunction was reported. The surgical retreatment rate was 4.4% (6/135), primarily due to failure to initially treat the median lobe in 4/135 (3%) subjects.

Conclusions: The 3-years results indicate that convective water vapor thermal therapy achieves rapid and durable relief of LUTS, quality of life and flow rates and preservation of sexual function. This office or ambulatory outpatient procedure requires minimal anesthesia; subures is experience minimal intraprocedure and post-procedure side effects. The thermal therapy warrants positioning as a procedure for LUTS relief, both as an initial therapy versus medications and as an alternative to transurethral surgery for selected patients.
Incidence and Risk Factors for Incomplete Holmium Laser Enucleation of the Prostate (HoLEP)

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Introduction: Holmium laser enucleation of the prostate (HoLEP) is a surgical option for patients with benign prostatic hyperplasia (BPH). Inability to finish the procedure is a possible complication of the procedure that can lead to the need for a second HoLEP operation or even conversion to suprapubic prostatectomy. The purpose of this study was to investigate the incidence and reasons as to why certain patients undergoing HoLEP procedures could not be successfully completed.

Materials & Methods: A retrospective review, from an IRB approved database, of 515 patients that underwent a HoLEP by a single-surgeon at our institution between January 2012 and December 2017 was performed. Patients who were unable to complete the procedure were retrospectively identified and analyzed via chart review. Univariate analysis was performed for demographics and baseline characteristics. Results: A total of 71 (1.4%) patients undergoing HoLEP who could not be completed were identified. All patients required either a 2nd HoLEP procedure (3/7) or conversion to suprapubic prostatectomy (4/7). Patient 1 had a bladder that would not expand and morcellation was not possible. The patient subsequently underwent a second HoLEP operation one week later to undergo morcellation of tissue. Patient 2 underwent cystoscopy at the start of HoLEP procedure and was found to have a bloody prostate. The procedure was stopped and converted to open suprapubic prostatectomy. A total of 300 grams of prostatic tissue was removed. In patient’s 3, 4, and 5, the cystoscope was unable to reach the end of the bladder; so the operation was stopped and subsequently converted to suprapubic prostatectomy. Lastly, in patient 6 and 7, enucleation was completed, but the patients afterwards became edematous due to fluid overload secondary to absorption. A second HoLEP procedure was performed by experts for morcellation of tissue. Details of all 7 patients are listed below in Table 1. Mean prostatic gland volume on TRUS was 93.6 ± 56.6 grams for all patients. The average age and body mass index was 70.5 ± 8.5 years and 30 ± 11.9, respectively.

Conclusions: HoLEP is a safe and effective treatment for patients suffering from lower urinary tract symptoms. Inability to complete initial operation leading to a second HoLEP operation or conversion to open procedure is a rare but possible complication. Management and counseling should be directed towards providing patients with information in regards to this possibility.

MP2-04

Are 24-hour Urine Abnormalities Predictable in Patients With Low Urine Volume?

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Einstein Healthcare Network

Introduction: Maintaining urine volume above 2.5 liters is a common recommendation made by clinicians to help prevent kidney stone formation as adequate urine volume is a potential inhibitor of stone formation. Our goal was to identify the prevalence of low urine volume amongst stone formers as well as identify if low urine volume was associated with specific 24-hour urine abnormalities for patients in an underserved community.

Materials & Methods: A retrospective chart review was performed of patients treated at a single center between August 2014 and January 2018. Patient who submitted 24-hour urine samples were included. Patients were divided into two groups based on whether their urine volume was less than or greater than 2 liters, as it was unlikely for patients to be above 2.5 liters on an initial collection. Frequency of 24-hour urine abnormalities were then identified for patients with urine volume less than 2 liters and greater than 2 liters. Fisher’s exact test and multivariate logistic regression was then used to identify if low urine volume was associated with specific 24-hour urine abnormalities.

Results: Of 461 patients, 208 (45.1%) submitted an initial 24-hour urine collection. Low urine volume was the most prevalent 24-hour urine abnormality (133/208, 63.9%) followed by low urine citrate in females (68/109, 62.4%) and elevated supersaturation of uric acid (ssUA) (91/206, 44.2%). On bivariate analysis, low urine volume was associated with low urine pH (p=5.8 vs 7.3, 19% vs 26.9%, p=0.04), elevated supersaturation of calcium oxalate (ssCaOx) (CaOx > 10: 100% vs. 8%; p=0.001), elevated supersaturation of calcium phosphate (ssCaP > 2.8: 80% vs. 19%: p=0.02), elevated ssUA (ssUA > 1.758% vs. 24.2%, p=0.02), and low urine citrate in females (Citrate < 0.85: 63.5% vs. 14.7%, p=0.001). Interestingly, patients with low urine volume on 24-hour urine had lower frequencies of elevated urine oxalate (oxalate > 40: 43.2% vs. 57.6%, p=0.001), elevated urine calcium in males (caCaOx > 250: 32.3% vs. 67.7%, p=0.001), and elevated uric acid in males (uric acid > 0.8: 32.4% vs. 67.6%, p=0.001). On multivariate logistic regression low urine volume was an independent predictor of elevated ssCaP, elevated ssUA, low urine citrate in females, and low urine oxalate.

Conclusions: More than half of the patients in an underserved community fell short of achieving 80% of the recommended fluid volume necessary to lessen the risk of kidney stone formation. This has implications on other metabolic parameters. Optimizing urine volume is a simple, low cost treatment and should be the first education point when counseling patients on strategies for stone prevention.

MP2-05

Percutaneous Nephrolithotomy for All: A Contemporary Analysis of Risk Factors for Post-Op Sepsis

S. Mehta1, P. Simmons1, A. Griebel1, L. Griffiths, Z. Okeke, D.M. Hoening2
Northwell Health1; Temple University School of Medicine2; Smith Institute for Urology3

Introduction: Percutaneous nephrolithotomy (PCNL) is recommended for clearance of large stones. Post-PCNL sepsis can be a devastating sequela, and risk factors including diabetes mellitus, positive urine cultures, staghorn stones, and pre-existing nephrostomy tubes have been previously explored. We sought to explore other suspected risk factors for Post-PCNL sepsis.

Materials & Methods: The records of 147 consecutive PCNL procedures for nephrolithiasis between January and August 2015 were reviewed. We summarized demographics, medical history, and the presence of post-operative sepsis (two or more criteria of the systemic inflammatory response syndrome). We hypothesized that endoscopic intervention within the last year, central nervous system (CNS) impairments, history of UTI or urosepsis, ipsilateral PCNL, urinary diversion, pre-operative nephrostomy or stent, and positive intraoperative stone cultures would increase the risk of sepsis. We speculated having documented clearance of a prior infection and “tubeless” PCNL (post-op stent or ureteral catheter without nephrostomy tube) would be associated with less risk of sepsis. We compared patients who did and did not develop sepsis with univariate analysis using SPSS version 23.0.

Results: In total, 140 operations met the inclusion criteria. Thirteen patients (9.3%) met sepsis criteria. Mean age (60.5 vs. 57.9), BMI (28.7 vs. 31.2), and hemoglobin A1C (5.5 vs. 6.4) did not differ significantly sepsis vs. no sepsis groups respectively. Results are summarized in Table 1. Only having CNS abnormalities showed statistically significant increased risk of sepsis. No patients with sepsis had an ipsilateral PCNL, urinary diversion, or pre-op nephrostomy tube. Other variables with large effect size were history of UTI, positive intra-op cultures, “tubeless” PCNL, and clearance of prior infection.

Conclusions: PCNL can be performed safely in patients with recent endoscopic intervention, treated infections, or reoperations on the same kidney. A pre-existing stent or positive stone culture does not significantly increase the risk of sepsis. Low sepsis rates for “tubeless” PCNL may be confounded by decreased case complexity. Patients with CNS deficits are at increased risk of post-PCNL sepsis and should be counseled appropriately.

Table 1. Factors associated with post-PCNL sepsis.

<table>
<thead>
<tr>
<th>Factor</th>
<th>OR</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endoscopic procedure &lt;1 year ago</td>
<td>1.25</td>
<td>0.12</td>
</tr>
<tr>
<td>CNS abnormality</td>
<td>22</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>NY UTAH</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>N/U urosepsis</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>Preop stent</td>
<td>1.53</td>
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<tr>
<td>Negative preop cultures</td>
<td>0.53</td>
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<tr>
<td>Intrap.; kidney urine culture</td>
<td>6.3</td>
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<tr>
<td>Intrap.; stome culture</td>
<td>1.9</td>
<td></td>
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<tr>
<td>“Tubeless” PCNL</td>
<td>0.33</td>
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</tr>
<tr>
<td>Documented clearance of prior infection</td>
<td>0.28</td>
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</tbody>
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Rational Antibiotic Therapy for Percutaneous Nephrolithotomy: A Look at Preoperative Cultures and Stone Cultures
S. Mehta1, P. Samson1, A. Grieco2, L. Griffiths, Z. Okeke, D.M. Hoenig3

Introduction: Current guidelines recommend treatment of positive preoperative cultures per the advice of nephrolithotomy expert. Consequently, less attention is typically given to the duration of treatment. Furthermore, recent literature states that positive intraoperative cultures are associated with a much higher rate of sepsis again without clear guidance on directing therapy. We hypothesized that there is a minimum number of days needed to properly treat a documented UTI and that untreated stone cultures are associated with post-PCNL sepsis.

Materials & Methods: The records of 147 consecutive PCNL procedures for nephrolithiasis between January and August 2015 were reviewed. Pretreatment with oral or intravenous antibiotics is based on culture sensitivities. Most are discharged with three to five days of cephalaxin or amoxicillin/clavulinate depending on surgeon preference. We stratified patients who developed sepsis from those who did not and then noted patients with positive pre-op or intra-op cultures. We summarized the organisms, antibiotic given, and duration.

Results: One hundred forty operations met the inclusion criteria. Thirteen patients (9.3%) met sepsis criteria. Of those, 9 (69%) had a positive pre-op urine culture. In comparison, 46 of 127 (36%) patients who did not have post-PCNL sepsis also had positive bladder urine cultures (p = 0.02). The duration of antibiotic therapy differed: 2 days (81.4) versus 4.5 days (2.3) to the sepsis versus no sepsis groups respectively (p = 0.02). Thirty-four patients had a positive intra-op stone or kidney urine cultures, 5 (38.5%) in the sepsis group and 29 (22.8%) in the no sepsis group (p = 1.0). Eleven of the 35 (31.4%) intra-op cultures were concordant with the preoperative culture. Only two cultures showing candida were explicitly treated, and the rest had no impact on the clinical course. In four cases, preoperative cultures resulted as gram positive organisms or contaminants were associated with staphylococcus or streptococcus in the stone cultures.

Conclusions: A longer preoperative antibiotic duration decreases the risk of post-PCNL sepsis in patients with positive preoperative cultures. Intra-op stone and urine cultures may have a less role in guiding therapy than previously thought. One theory is that PCNL urine cultures for percutaneous nephrolithotomy (PCNL) with a consensus on the duration of treatment. Furthermore, recent literature states that positive intraoperative cultures are associated with a much higher rate of sepsis again without clear guidance on directing therapy. We hypothesized that there is a minimum number of days needed to properly treat a documented UTI and that untreated stone cultures are associated with post-PCNL sepsis.

12 Month Study Results of the Prostatic Urethral Lift for Obstructive Median Lobe

G. Eure1, R. Tutrone2, D. Rukstalis3

Introduction: The Prostatic Urethral Lift (PUL) procedure for benign prostatic hyperplasia (BPH) has been proven to deliver rapid, significant, durable symptom relief with low morbidity and no sexual dysfunction. To date, the clinical evidence has been based on studies of men with lateral lobe enlargement only (LL). The objective of this study was to determine the safety and effectiveness of the PUL procedure using a new technique to treat obstructive median lobe (OML).

Materials & Methods: 45 subjects were prospectively enrolled in the MedLift clinical trial (NCT02625545), an extension of the L.I.F.T randomized study. Inclusion criteria were identical to those in the L.I.F.T study (age ≥ 50 years, AUASI ≥ 13, peak flow rate (Qmax) ≥ 12 mL/s and prostate volume ≤ 80cc) except for requiring an OML. During the PUL procedure, small UroLift® implants were placed to retract the lateral lobes. If median lobe obstruction persisted, a modified technique using the same design UroLift® system was used to deploy implants into the median lobe to create an unobstructed anterior channel. LLTs, quality of life (QOL), Qmax and sexual function were compared to L.I.F.T. study results at 12 months.

Results: Symptom response for OML subjects was significant and better than for LL subjects in the L.I.F.T study (Table 1). AUASI improvement for OML subjects was at least 13.4 points at 1, 3, 6, and 12 months and significantly better than baseline at every time point (p<0.05 and > 70%, respectively at 3, 6, 12 and 18 months). Qmax improved 90%–130% throughout follow up. At 1 month, 65% subjects reported ≥ 80 on the Quality of Recovery scale, 80% reported being “much” or “very much better” and 89% would recommend the procedure. There were no reports of de novo sustained erectile or ejaculatory dysfunction. Erectile function as measured by IIEF-5 remained stable and ejaculatory function (MFS-EJD score) was significantly improved throughout follow up (p < 0.001).

Conclusions: Patients in this study experienced excellent symptom improvement, no de novo erectile dysfunction, and preservation of sexual function. Obstructive median lobes can be safely and effectively treated with the PUL using a new FDA median lobe indication.
Moderated Poster Session 2: Education, Best Practices, Benign Disease

**MP2-10**

Outcomes of Minimally Invasive Hernia Repair in Robotic Assisted Radical Prostatectomy
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Introduction: Robotic assisted laparoscopic prostatectomy (RALP) is the current standard of care for the surgical management of prostate cancer. Inguinal and ventral hernias is a well known post operative complication, and incidence in the literature ranges from 7-21%.1,2 Arguably, some patients might have missed/undiagnosed hernias preoperatively that may become symptomatic post operatively. Studies have shown feasibility in concurrent hernia repair at time of RALP without a significant increase in complications, length of hospital stay (LOS) or need for reoperation.2 The objective of our study was to analyze our database of patients who underwent concurrent RALP with hernia repairs.

Materials & Methods: This was a retrospective chart review of patients who underwent concurrent RALP with inguinal or ventral hernia repairs at our institution between 2007 through 2016. The control group comprised randomly selected patients who underwent RALP alone during the same time period by the same surgeons. Primary outcomes were overall complications, recurrence rate, and LOS.

Results: There was a total of 51 patients who underwent concurrent RALP with hernia repair between 2007 through 2016 at our institution. Majority of patients had either one inguinal or umbilical hernia, but some had bilateral hernias or an umbilical and unilateral inguinal hernia. In total 32 inguinal and 24 umbilical hernias were repaired. There was no difference in mean age or BMI between the hernia group versus control, 60.2 ± 6.0 years and 29.7 ± 9.9, respectively. No hernia recurrence was recorded in the study group. No difference was found in LOS (1.35 vs. 1.9, p = 0.122). One patient in the hernia group was taken back to the OR a week later due to a partial small bowel obstruction for a negative diagnostic laparoscopy.

Conclusions: Our data shows that concurrent RALP with hernia repair is safe, effective, and not associated with increased LOS or complications. Men should be evaluated preoperatively for hernias and if present, should be offered the option of concurrent repair.

**MP2-12**

Are Industry Payments for Tadalafil Associated with Prescribing Habits Among Urologists and Primary Care Physicians?
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Introduction: Prior studies have shown that pharmaceutical industry payments may be associated with prescribing habits among physicians. The relationship between payments and prescription of phosphodiesterase type 5 inhibitors (PDE5Is) has not been explored. In this study, we evaluated whether industry payments for tadalafil were associated with prescribing habits among urologists (URO) and primary care physicians (PCPs).

Materials & Methods: Medicare Part D Public Use File and Open Payments Program database (OPP) were linked to identify URO and PCPs who prescribed and received a payment for tadalafil in 2015. PCPs were defined as internal medicine and family medicine physicians. We determined whether presence of and extent of payment were associated with prescription of tadalafil as well as the number of claims. Statistical tests included chi-squared test, univariable logistic regression and Pearson correlation coefficient.

Results: Within Medicare Part D, 2,602 URO and 3,095 PCPs prescribed tadalafil within OPP, 2,304 urologists and 12,465 PCPs received a payment from Eli Lilly pertaining to tadalafil, Range of payments were $10.21-$1,475.88 (median $25.16) for URO and $51.39-$2,61 (median $20.11) for PCPs. Payments were associated with tadalafil prescription among PCPs, but not among URO (Table 1). For URO, increased payment amount was not associated with prescribing (Table 2), but claim count was very weakly correlated with payment amount (p = 0.042, r = 0.083) and frequency (p = 0.006, r = 0.039). For PCPs, increased payment amount was associated with prescribing (Table 2), and claim count was very weakly correlated with payment amount (p = 0.01, r = 0.1), but not frequency (p = 0.47, r = 0.032).

Conclusions: There does not appear to be a strong relationship between payments and prescribing habits, which is reassuring regarding the ethics of physician-industry interaction. However, given the presence of a weak association, further study in other samples (eg. private insurance) and with other PDE5Is may be worthwhile.

**MP2-11**

Evaluation of Escherichia Coli Resistance to Fluoroquinolones in Men Undergoing Prostate Procedures: It’s Time to Change Preoperative Prophylaxis
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University Hospital Department of Surgery, Division of Urology6

Introduction: The AUA recommends fluoroquinolones (FQ) as primary perioperative prophylaxis for many urologic procedures. However, the Infectious Disease Society of America (IDSA) recommends avoiding empiric FQ use in genitourinary (GU) infections due to rising Gram-negative resistance. In particular, the American Urological Association (AUA) recommends avoiding empiric FQ use in perioperative prophylaxis for many urologic procedures. However, the Infectious Disease Society of America (IDSA) recommends avoiding empiric FQ use in genitourinary (GU) infections due to rising Gram-negative resistance. In particular, the American Urological Association (AUA) recommends avoiding empiric FQ use in perioperative prophylaxis. Increasingly, evidence is accumulating that FQ use is associated with increasing resistance. In particular, the American Urological Association (AUA) recommends avoiding empiric FQ use in perioperative prophylaxis. Increasingly, evidence is accumulating that FQ use is associated with increasing resistance. In particular, the American Urological Association (AUA) recommends avoiding empiric FQ use in perioperative prophylaxis. Increasingly, evidence is accumulating that FQ use is associated with increasing resistance. In particular, the American Urological Association (AUA) recommends avoiding empiric FQ use in perioperative prophylaxis. Increasingly, evidence is accumulating that FQ use is associated with increasing resistance. In particular, the American Urological Association (AUA) recommends avoiding empiric FQ use in perioperative prophylaxis. Increasingly, evidence is accumulating that FQ use is associated with increasing resistance. In particular, the American Urological Association (AUA) recommends avoiding empiric FQ use in perioperative prophylaxis. Increasingly, evidence is accumulating that FQ use is associated with increasing resistance. In particular, the American Urological Association (AUA) recommends avoiding empiric FQ use in perioperative prophylaxis. Increasingly, evidence is accumulating that FQ use is associated with increasing resistance. In particular, the American Urological Association (AUA) recommends avoiding empiric FQ use in perioperative prophylaxis. Increasingly, evidence is accumulating that FQ use is associated with increasing resistance. In particular, the American Urological Association (AUA) recommends avoiding empiric FQ use in perioperative prophylaxis. Increasingly, evidence is accumulating that FQ use is associated with increasing resistance. In particular, the American Urological Association (AUA) recommends avoiding empiric FQ use in perioperative prophylaxis. Increasingly, evidence is accumulating that FQ use is associated with increasing resistance.

Materials & Methods: We utilized TheraDoc® to retrospectively review men ≥18 years of age who underwent a primary prostate procedure between January 2014 and December 2017. All patients had a positive E. coli isolate from urine or blood within 12 months of the procedure. We excluded patients who underwent more than one prostate procedure. EPIC® was utilized for chart review. The primary endpoint was the prevalence of FQ resistant E. coli isolates in this population at Cooper University Hospital. We assessed E. coli as a marker of presence or absence of resistant genitourinary flora.

Results: Fifty-seven men met criteria for chart evaluation. The most common procedure identified was radical prostatectomy (44%), followed by prostate photovaporization (23%). Preoperative antibiotics were administered to all patients and most received a single agent. Ceftarolin or FQ were administered to 48% and 26%, respectively. Of 57 E. coli isolates, 31/57 (54%) were FQ resistant, while 8/57 (14%) were ceftriaxone resistant. Rates of FQ resistant E. colifrom the hospital antibiogram (32%) were significantly lower than our study population (54%) (P = 0.001). Forty-one percent (72%) received an FQ within 1 year of procedure. FQ resistance was significantly associated with prior FQ usage (P = 0.009).

Conclusions: FQ resistance to E. coli was unacceptably high (53%) in this urologic population. If pre-procedure culture data are unavailable, an alternative agent such as ceftriaxone should be considered for trans-urethral or trans-rectal prostate procedures. First generation cephalosporins remain 1st choice for radical prostatectomy. Based on our internal data, we now currently recommend ceftriaxone for prostate biopsy and prostate resection. Lastly, whole hospital antibiograms may not be reliable to predict resistance in this patient population.
**MP2-13**

Analysis of Urological Transfers to a Metropolitan Quaternary Care Center

I.B. Berger, A. Skokan, J. Ziemba

University of Pennsylvania Perelman School of Medicine

**Introduction:** Inpatient urological care is not universally available in the U.S. The inter-hospital transfer of patients represents one avenue to meet this critical need, but to date its use is largely unknown. Therefore, we performed an analysis of all patients transferred to the primary urology service of a metropolitan quaternary care center.

**Materials & Methods:** A cross-sectional retrospective review of all patients transferred to our health system from 9/1/2015-9/30/2017 was performed. Cases with a urology attending as the accepting physician underwent a chart review to confirm a urological diagnosis as the reason for transfer. Transfers were categorized into one of 10 mutually exclusive categories based on the primary diagnosis. We examined the specialty of requesting physician, availability of urology services at the requesting hospital, transfer distance, level of transfer, time to admission, need for surgical management, length of stay, and cost.

**Results:** A total of 87 primarily urological transfers were identified (0.5% of total transfers to the health system). The majority were transferred at emergent level (68%). This required on average 9.8 hours (SD ± 10.9 hours) for arrival. Average travel distance was 37 miles (SD ± 25 miles). While 92% of requesting hospitals had an associated urologist, they comprised only 15% of referring physicians. Hospitalists (38%) made up the largest category of referring physicians, followed by emergency medicine (33%). Categories of transfers and management are shown in the figure. Overall, 40% of patients required a procedure during their stay. The median LOS was 4 days (IQR: 2-8 days) and was not significantly different between surgically and medically managed patients (p = 0.60). The average total cost per transfer was $30,980, with an average fixed cost of $18,698 and an average variable cost of $12,282.

**Conclusions:** Despite being a large quaternary care referral center, our institution only received a relatively small number of urological transfers. Urological services were available at almost all referring hospitals. Once accepted, patients were transferred relatively quickly and over short distances. Less than half required a procedure. Future efforts may determine if these patients can safely avoid a transfer by leveraging our expertise through telemedicine with deference given to elective, procedure. Future efforts may determine if these patients can safely avoid a transfer.
Complications and Recurrence Following Urethroplasty
C. Goldman, N.M. Shaw1, K. Venkatesan2
MedStar Georgetown University Hospital1; MedStar Washington Hospital Center2

Introduction: We sought to describe our post-operative complications and stricture recurrence following anterior urethroplasty, and to investigate any correlation between them.

Materials & Methods: We retrospectively reviewed patients undergoing anterior urethroplasty at MedStar Washington Hospital Center by a single surgeon. We recorded peri-operative complications and classified them as infectious, anastomotic, voiding, bleeding, oral mucosa related, or otherwise non-urologic, including cardiac, pulmonary, hematologic, or other systemic complications. Complications were classified by the Clavien-Dindo system. Recurrence was diagnosed by urethrogram or cystoscopy.

Results: From September 2012 to March 2018, 211 anterior urethroplasties were performed. Mean patient age was 51 years (17-81). Thirty-seven of 211 (17.5%) procedures resulted in post-operative complications. Complications were categorized as infectious (14), anastomotic (7), bleeding (2), voiding (8), related to the oral buccal mucosal graft site (2) or otherwise non-urologic (4). Peno-bulbar urethroplasty had the highest rate of complication (33.3%) however there was no significant difference in complication by location, as demonstrated in Table 1 (p = 0.132). Ten procedures (4.7%) resulted in Clavien grade III or higher complication: 3/14 infectious, 1/7 anastomotic, 2/2 bleeding and 3/8 voiding complications. One procedure resulted in mortality due to cardiac arrest on post-operative day one. Complications were not significantly associated with recurrence of stricture (p = 0.367). Thirty of 211 (14.2%) procedures resulted in stricture recurrence at a mean 5.7 months (1-22) time to recurrence. As shown in Table 1, there was no significant difference in recurrence rates based on urethroplasty location (p = 0.402).

Conclusions: Urethroplasty is safe and serious complications are rare; infection is the most common complication. Our results are consistent with prior published rates of complications and recurrence. Complications, while unlikely, should always be included in pre-operative counseling. Fortunately, if they do occur, complications do not appear to portend a greater risk of stricture recurrence.

Table 1: Complications and recurrence of stricture by location of urethroplasty.

<table>
<thead>
<tr>
<th>Location</th>
<th>Complication Rate (%)</th>
<th>Recurrence Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peno-bulbar</td>
<td>33.3%</td>
<td>57.1%</td>
</tr>
<tr>
<td>Penoscrotal</td>
<td>25.0%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Laterocoronal</td>
<td>8.7%</td>
<td>8.7%</td>
</tr>
</tbody>
</table>

Procalcitonin is a Useful Biomarker for Predicting Positive Urine and Blood Cultures in Cases of Acute Urolithiasis
J. Allen, N.J. Kocher1, K. Lehman2, N. Streper3, J. Knoedler
Penn State Health Milton S. Hershey Medical Center1; Penn State Health Milton S. Hershey Medical Center2; Penn State Health Milton S. Hershey Medical Center3

Introduction: Patients presenting with obstructive urolithiasis warrant emergent urinary drainage if there is clinical suspicion of concurrent urinary infection. Procalcitonin (PCT) is an ultra-sensitive serum marker of systemic infection and sepsis. Our objective was to evaluate the utility of PCT as an early marker for the diagnosis and differentiation of urinary tract infection and sepsis in patients presenting with obstructive urolithiasis.

Materials & Methods: With IRB approval, we generated a prospective database of patients presenting to Hershey Medical Center with obstructive urolithiasis. All patients had PCT drawn at time of presentation along with standard of care workup. Clinical course, including urine and blood cultures, was followed and correlated with admission PCT and WBC values. Comparison between values was made with the Mann-Whitney test. Receiver operating characteristic (ROC) curves were constructed to assess the predictive ability of PCT and WBC for infection and sepsis.

Results: Of the 30 patients accrued, 7 and 3 patients were found to have positive urine and blood cultures, respectively and 7 patients met criteria for sepsis. Elevated PCT was highly prognostic of positive cultures (p = 0.00056) and sepsis (p = 0.00028). PCT was more sensitive than WBC in predicting positive cultures with an area under the ROC curve of 0.922 (urine) and 0.981 (blood) for PCT compared to 0.643 (urine) and 0.432 (blood) for WBC. Youden’s indices for PCT were determined to be 0.14 ng/mL and 1.0 ng/mL, for diagnosis of positive urine and blood cultures, respectively. PCT > 0.14 ng/mL was sensitive (0.86) and specific (0.83) for positive urine culture, while a PCT of > 1.0 ng/mL was highly sensitive (1) and specific (0.96) for positive blood cultures.

Conclusions: PCT is an effective biomarker in the setting of obstructive urolithiasis, and outperformed WBC as an early predictor of urinary tract infection, including bacteremia and sepsis. Further studies may prove PCT to be a valuable tool in the urologist’s armamentarium in the workup of acute obstructive urolithiasis.

Figure 1: Receiver operating characteristic (ROC) curves comparing diagnostic values of procalcitonin (PCT) and WBC in predicting positive urine and blood cultures.

Table 1: Predictive ability of procalcitonin (PCT) for positive urine and blood cultures.

<table>
<thead>
<tr>
<th>Procalcitonin (ng/mL)</th>
<th>Present</th>
<th>Absent</th>
<th>Total</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>PPV</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤0.14</td>
<td>6/6</td>
<td>1/1</td>
<td>7</td>
<td>0.857</td>
<td>0.820</td>
<td>0.765</td>
<td>0.967</td>
</tr>
<tr>
<td>&gt;0.14</td>
<td>1/1</td>
<td>2/2</td>
<td>3</td>
<td>0.643</td>
<td>0.667</td>
<td>0.714</td>
<td>0.889</td>
</tr>
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<td>0.643</td>
<td>0.667</td>
<td>0.714</td>
<td>0.889</td>
</tr>
</tbody>
</table>

PPV: Positive Predictive Value, NPV: Negative Predictive Value
Community Centered Retrospective Review of Prostatic Urethral Lift - A Single Surgeons Experience

G. McMahon1, M. Thaker2, M. Wilson1, T. Mueller1
Rowan University SOM/Jefferson Health/Our Lady of Lourdes1; Rowan University SOM, New Jersey Urology2

Introduction: Benign prostatic hyperplasia (BPH) with associated lower urinary tract symptoms (LUTS) has a significant impact on quality of life. Multi-institutional projects have demonstrated prostatic urethral lift (PUL) as a minimally invasive procedure with strong 5-year durability, minimal side effect profile, and no associated erectile or ejaculatory dysfunction. Long term single series data are needed. We aim to evaluate the performance of PUL in our single series community cohort.

Materials & Methods: We completed a retrospective chart review of men who underwent PUL in the office from January 2016 to August 2017. PUL, also known as UroLift (NeoTract, Pleasanton, CA, USA), was performed in the office under sedation by a single surgeon. International prostatic symptom score (IPSS) and quality of life (QOL) were recorded at baseline and at subsequent office visits. A paired-samples T-test was used to compare pre and post treatment values and a Pearson coefficient was used to determine the strength of relationships between variables. A value of p < 0.05 was set as the threshold for statistical significance.

Results: We identified 122 men who had undergone a PUL. Descriptive statistics demonstrated an average age of 69.5 ± 9.6, prostate volume of 51.6 ± 27.8, and number of implants used 5.5 ± 1.0. When comparing IPSS and QOL 83 and 80 paired samples were available and the mean follow up period was 9.3 ± 6.03 months. IPSS and QOL improved significantly from 20.4 ± 6.2 to 6.3 ± 4.7 (-14.08 ± 6.6 p < 0.05). Significant relationships existed between both pre-operative IPSS and IPSS score difference (IPSS at last follow up – pre-operative IPSS) r = 0.734 (p < 0.05) and QOL and QOL difference r = 0.463 (p < 0.05). The number of implants used was found to be associated with prostate volume (r = 0.492 p < 0.05) but not IPSS or QOL score differences.

Conclusions: Our single surgeon series demonstrated statistically significant improvement in IPSS and QOL at an average of 9 months. In addition, initial IPSS and QOL scores were found to significantly correlate with IPSS and QOL score improvements. Continued follow up is needed to compare our results against previously published data.

Analysis of Online Urologist Ratings: Does Subspeciality Influence Mean Rating?

J. Zillioux1, C. Pike1, D. Sharma2, D. Rapp1
University of Virginia1; Department of Urology, University of Virginia2

Introduction: Americans are increasingly using online rating websites to obtain information about physicians and to provide feedback. We sought to perform an analysis of online ratings information, with specific focus on the relationship between overall urologist rating and urologist subspecialty.

Materials & Methods: We conducted an analysis of urologic physician ratings on Healthgrades.com. We selected 20 states throughout four US geographical regions and collected ratings data for all urologists across three practice sizes within each state (largest private practice group; largest academic center; three small urology practices, < 5 physicians). Using available online information, physicians were further categorized into one of the following subspeciality groups: general, female urology, infertility and men’s sexual health, pediatrics, reconstruction, robotics/oncology, and stones/endourology. Ratings data were collected, which are provided on a scale of 1-5 (1 = “poor”; 5 = “excellent”). Statistical analysis was performed using Kruskal-Wallis analysis to assess for significant differences in the distributions of ratings within each subgroup.

Results: Data was analyzed on 872 urologists with a mean age of 53 (+/-10) years. Comparison of median ratings by physician and practice characteristics are detailed in Table 1. The median overall urologist rating was 4.0 (IQR [3.4-4.7]). Kruskal-Wallis analysis demonstrated that academic practice type and robotics/oncology subspecialty ratings were significantly higher when compared to remaining practice types or subspecialties (p < 0.001 for both). All other comparisons throughout practice type, specialty, region, and gender failed to demonstrate statistically significant differences.

Conclusions: In our study of online urologist ratings, academic practice setting and robotics/oncology subspecialty were associated with higher overall ratings. Further study is needed to assess whether this finding persists across other online rating websites.

Table 1: Classification of Physicians and Summary Statistics (n=872)

<table>
<thead>
<tr>
<th>Practice Size</th>
<th>N (%)</th>
<th>Median Rating (IQR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>424 (49)</td>
<td>3.9 [3.4, 4.4]</td>
</tr>
<tr>
<td>Academic</td>
<td>282 (32)</td>
<td>4.4 [3.8, 5.0]</td>
</tr>
<tr>
<td>Small</td>
<td>166 (19)</td>
<td>3.8 [3.2, 4.3]</td>
</tr>
<tr>
<td>Specialty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>426 (49)</td>
<td>3.9 [3.3, 4.4]</td>
</tr>
<tr>
<td>Robotics/Onco</td>
<td>195 (22)</td>
<td>4.5 [3.8, 5.0]</td>
</tr>
<tr>
<td>Female</td>
<td>81 (9)</td>
<td>4.0 [3.5, 4.5]</td>
</tr>
<tr>
<td>Stones/endouro</td>
<td>65 (7)</td>
<td>4.3 [3.5, 5.0]</td>
</tr>
<tr>
<td>Infertility/Men's Health</td>
<td>48 (6)</td>
<td>3.8 [3.5, 4.5]</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>45 (5)</td>
<td>4.1 [3.4, 4.5]</td>
</tr>
<tr>
<td>Reconstruction</td>
<td>12 (1)</td>
<td>4.0 [3.4, 4.8]</td>
</tr>
<tr>
<td>Region</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midwest</td>
<td>209 (33)</td>
<td>4.2 [3.4, 4.8]</td>
</tr>
<tr>
<td>South</td>
<td>247 (28)</td>
<td>4.0 [3.4, 4.5]</td>
</tr>
<tr>
<td>Southeast</td>
<td>203 (23)</td>
<td>4.1 [3.5, 4.7]</td>
</tr>
<tr>
<td>West</td>
<td>153 (15)</td>
<td>4.0 [3.3, 4.4]</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>784 (90)</td>
<td>4.0 [3.4, 4.7]</td>
</tr>
<tr>
<td>Female</td>
<td>88 (10)</td>
<td>4.0 [3.4, 4.6]</td>
</tr>
</tbody>
</table>

Initiative to Improve Oncologic Management of Small Renal Masses: A Shared Decision-Making Model

A.M. Caruso
Perelman School of Medicine at the University of Pennsylvania

Introduction: The finding of small renal mass (SRM) on radiological imaging and the potential of a cancer diagnosis is anxiety provoking for most patients. When diagnosed with a SRM, patients are confronted with multiple treatment options forcing a decision on a therapeutic course. The decision-making process often occurs in the absence of any framework to guide patients. The purpose of this initiative was to develop and implement a shared-decision-making (SDM) model for newly diagnosed patients. Specific goals of the SDM model were to improve patient knowledge, alleviate patient anxiety, and improve patient confidence to make evidence-based decisions.

Materials & Methods: A SDM model was developed and implemented utilizing an educational video [Urology Care Foundation’s “What is a renal mass?” video] and a structured provider discussion. Patient knowledge, anxiety, and confidence in decision-making was assessed using a pre- and post-intervention survey. Structured provider discussions included risks and benefits of each management strategy individualized to the patient’s situation. Initial preference, informed preference and final treatment decision were recorded for each patient.

Results: RESULTS: Thirty-four participants demonstrated improved knowledge with a mean of 1.8, 4 were unchanged, 2 decreased. A Wilcoxon signed rank test was used for data analysis, P value < 0.001. 1.8, CI 0.995 (1.5-2.9) indicated a significant improvement in knowledge post intervention. Two questions pertained to patient’s self-assessment of anxiety and confidence in decision-making. Approximately 40% of patients reported a decrease in their anxiety rating by a mean of 38%. When confidence in decision-making improved, it improved by a mean of 38%.

Conclusions: There was clear trend towards a greater patient understanding of SRMs. A SDM model which incorporated an intervention (educational video and structured provider discussion) showed improved patient knowledge, alleviation of anxiety and improved confidence in decision-making. The findings demonstrate the feasibility of implementing a SDM model with newly diagnosed patients. Results should encourage providers who aspire to incorporate a SDM model as a Best Practice for educating and counseling all such patients.
Moderated Poster Session 2: Education, Best Practices, Benign Disease

**MP2-21**

An Analysis of Learning Curve to Achieve Competency at MR/US Fusion Biopsy at a Single Center

Sidney Kimmel Medical College at Thomas Jefferson University; SKMC at Thomas Jefferson University; Thomas Jefferson University Hospital; Thomas Jefferson University

**Introduction:** The number of targeted magnetic resonance/ultrasound (MR/US) fusion prostate biopsies required to reach competency has not been evaluated. The primary aim of this study is to determine the minimum number of MR/US fusion biopsies that urologists need to perform to achieve proficiency, as defined by a detection rate of clinically significant prostate cancer (CS-PCa) at or above the level of standard sextant biopsy in men with PIRADS 4 and 5 lesions on prostate MRI.

**Materials & Methods:** Three hundred sixteen men underwent concurrent targeted and standard prostate biopsies from January 2016 to October 2017 at our institution. The detection rate of CS-PCa of targeted biopsy was compared to standard biopsy. CS-PCa is defined as intermediate risk group or higher based on NCCN guidelines, i.e. grade group 1 with PSA > 10ng/mL or grade group 2 and above. Cumulative sum (CUSUM) analysis was used to produce a learning curve and determine the minimal number of targeted biopsies a urologist needs to perform to achieve a cancer detection rate at or above the rate of standard biopsy.

**Results:** Four fellowship-trained urologists performed targeted biopsies at our institution with varying case volumes of 11, 39, 80, and 186 cases for surgeons 1 through 4, respectively. The overall CS-PCa detection rate was 32.9% (104 men) on combined targeted and standard biopsies. Targeted biopsy detected 75 cases (72.1%) whereas standard biopsy detected 76 cases (72.1%). CUSUM analysis of CS-PCa detection showed that two urologists (surgeons 3 and 4) achieved proficiency in targeted biopsy at 40 and 85 cases, respectively. After the first 40 targeted biopsies, surgeon 3’s targeted biopsy rate improved from 36% to 52%, while his standard biopsy rate remained at 44%, <0.001. After the first 85 targeted biopsies, the CS-PCa detection rate on targeted biopsies by surgeon 4 improves by 7.9 fold (C1 1:15, 41.3, p < 0.02). Two urologists (surgeons 1 and 2) have not performed enough targeted biopsies to determine their proficiency.

**Conclusions:** The ACGME requires at least 25 TRUS biopsies for graduating urologists to graduate. Our study shows that targeted biopsies can help a urologist attain competency in CS-PCa detection at lower rates than the standard sextant biopsy.

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**MP2-22**

Implementation and Outcomes of Prostate Needle Biopsy Using a Trans-Perineal Approach

M. Stencil, N. Hale, S. Hill, S. Deem
Charleston Area Medical Center; Department of Urology, Charleston Area Medical Center

**Introduction:** Prostate cancer is the most common cancer in men, accounting for an estimated 164,890 new cases in 2018, and over 32,260 deaths. Prostate needle biopsy has traditionally been diagnosed with prostate needle biopsy using a trans-rectal approach. However, prostate needle biopsy using a trans-perineal approach has become more prevalent because of its improved ability to sample the anterior and peripheral zones of the prostate, and decreased risk of infection. In this study we describe the experience of a single academic center during the implementation of prostate needle biopsy via the trans-perineal approach.

**Materials & Methods:** This retrospective study included the first 114 patients who underwent trans-perineal prostate needle biopsy between January 2017 and December 2017 with three attending urologists in a teaching environment. Cystoscopy was performed at the time of each biopsy, and conducted in an outpatient surgical center under general anesthesia with one dose of perioperative antibiotics. Follow-up was conducted within two weeks.

**Results:** The mean patient age was 63.5 years, and self-reported ethnicity was 88% Caucasian, 11% African American, and 1% Hispanic. The most common reason for biopsy was elevated prostate specific antigen (71%), active surveillance (15%), and abnormal prostate exam (14%). The median PSA was 7.5. The cancer detection rate was 66.9% overall, but was 71% for first time biopsies, and 40% in those with a previously negative biopsy. The mean time to complete each biopsy during the first 3 months was 33.7 minutes, whereas the mean time to complete each biopsy during the last 3 months was 24.8 minutes (p = 0.001). The cancer detection rate during the 1st to 4th quarter was 58.3% vs. 76.3%, respectively (p = 0.001). The most common side effects were mild, self-limiting hematuria/hematospermia (8.8%), urinary retention (2.6%), perineal pain (3.5%), fever requiring admission (0.9%).

**Conclusions:** In this study we present the outcomes and implementation of the trans-perineal approach of prostate needle biopsy. We show evidence that this approach is safe, can be implemented quickly, and provides patients with an acceptable side-effect risk profile with excellent cancer detection rates.

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**MP2-23**

The Use of Indocyanine Green during Robotic Ureteroenteric Reimplantation for the Management of Benign Anatomic Strictures

Temple University Hospital; Temple University; Temple University School of Medicine

**Introduction:** Indocyanine green (ICG) has been utilized as a real-time intraprocedural contrast agent to facilitate identification of the ureter and localization of ureteral strictures during robotic ureteral construction. However, the use of ICG during robotic ureteroenteric stricture repair has yet to be reported. We describe our technique for intraperitoneal and intraduodenal diversion ICG during robotic ureteroenteric reimplantation and report our outcomes.

**Materials & Methods:** We retrospectively reviewed 8 patients who underwent robotic ureteroenteric reimplantations by a single surgeon between August 2013 and July 2017. ICG (25 milligrams in 10 milliliters of distilled water) was injected antegrade and/or retrograde into the lumen of the ureter via a percutaneous nephrostomy tube and/or ureteral catheter, and retrograde into the lumen of the urinary diversion via a Foley catheter. All patients consented to off-label use of ICG. Postoperatively, all patients were assessed for: clinical success: the absence of flank pain attributable to ureteral pathology; and radiological success: the absence of obstruction on renal scan and/or loopogram.

**Results:** Visualization of ICG under near-infrared fluorescence allowed for precise identification of the stricture/ureter and urinary diversion, which fluoresced green, and localization of the anatomic structures, which poorly fluoresced green compared to healthy ureter. Five of 8 (62.5%) patients underwent a Bricker anastomosis, 1/8 (12.5%) patients underwent a Wallace anastomosis, 1/8 (12.5%) patients underwent an appendicolateral interposition, and 1/8 (12.5%) patients underwent a left to right transureteroureterostomy. The median operative time was 208 minutes (IQR 191-299), estimated blood loss was 125 milliliters (IQR 69-190), and length of stay was 6 days (4-8). Three of 8 (37.5%) patients suffered a major (Clavien ≥ 2), and 2/8 (25.0%) patients suffered a major (Clavien > 2) post-operative complication within 90 days of surgery. There were no complications related to ICG use. At a median follow-up of 29 months (IQR 21-38), 8/10 (80%) ureteroenteric reimplantations were clinically and radiologically successful.

**Conclusions:** Intraureteral and intraduodenal diversion ICG may be utilized as a real-time contrast agent during robotic ureteroenteric reimplantation to facilitate identification of the stricture/ureter and urinary diversion, and delineation of the ureteroenteric stricture margins. Despite this, robotic ureteroenteric reimplantation remains a significantly morbid procedure.

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**MP2-24**

Ileal Conduit Reconstruction in Patients With Stomal Stenosis or Retraction Using a New Segment of Ileum

A. Syed, M.S. Shah, A.M. Murphy, A.K. Das, P.J. Shenton
Thomas Jefferson University Hospital

**Introduction:** Creation of an ileal conduit may be complicated by late stomal stenosis or stricture deaths. Poorly functioning stomas can limit the adherence of an ostomy appliance problematic. These complications can be difficult to manage. Many of these complications may not occur for years following creation of the stoma. Complete resection of the old conduit with reconstruction of a new conduit using a new loop of ileum is technically challenging primarily due to difficulty performing a new uretero-ileal anastomosis. We present our experience with ileal conduit reconstruction for late stomal complications using a second segment of ileum that avoids any revision of the existing uretero-ileal anastomasis.

**Materials & Methods:** Eleven patients with stomal stenosis (4 patients) or stomal retraction (7 patients) underwent stomal repair 20.5 +/- 19.7 years following initial ileal conduit construction. Mean patient age was 55.5 +/- 9.8 years. The indication for the ileal conduit was bladder cancer in three patients and neobladder bladder in eight patients (three with spinal cord injury and five with spina bifida). The five patients with spina bifida all had ileal conduit surgery as children over 40 years prior to revision. Surgery progressed in the following order: exploratory laparotomy,akedown of ostomy, excision of the stoma, and reconstruction of the anastomosis or stoma. Each patient with stoma stenosis or stricture died, select patients with stoma stenosis or stricture who had feasible conduits using a new segment of ileum. We present our experience with ileal conduit reconstruction for late stomal complications using a second segment of ileum that avoids any revision of the existing uretero-ileal anastomasis.

**Results:** Mean operative time was 219 +/- 54 minutes. Estimate blood loss was 134.0 +/- 59 mL. All patients have functioning, viable stomas with a minimum of 36 months follow-up. We have observed no bowel related complications.

**Conclusions:** Surgical revisions necessary for the management of late stomal complications of ileal conduit may be technically complex. Reconstruction with additional ileal segment to create a composite conduit is a viable option with excellent outcomes. We have found this technique particularly useful in obese patients and in patients with pediatric constructed conduits.
Surgical Delay for Radical Prostatectomy May Be Associated with Higher Positive Surgical Margin Rates and Increased Biochemical Recurrence

Virginia Commonwealth University1; Virginia Commonwealth University School of Medicine2

Introduction: There is limited evidence on whether delays in surgical therapy for prostate cancer lead to adverse outcomes in the long run. At our institution, patients referred from outside facilities for radical prostatectomy (RP) experienced longer time intervals between diagnostic biopsy and surgical intervention, when compared to patients from our own facility. Therefore, the goal of our investigation was to determine any association between delay in RP, and incidence of biochemical recurrence (BCR).

Materials & Methods: We performed a single-institution retrospective study of all patients undergoing RP at our institution between the years 2010 - 2011. Patients were stratified into two groups based on whether they were referred to our institution for surgical intervention, or whether they were already followed by our institution at time of initial biopsy. Patient characteristics and perioperative outcomes were identified. Primary outcome was incidence of biochemical recurrence (BCR), defined by American Urological Association guidelines as two subsequent PSA values above 0.2 ng/mL, within 12 months of the initial PSA elevation. Secondary outcomes of interest included positive surgical margins, and Gleason score upgrade (defined as an increase in total Gleason score from initial biopsy to surgical pathology).

Results: A total of 71 patients underwent RP at our institution during the study period. Of these, 38 patients were referred from outside facilities (delayed group), and 33 were from our institution (home group). Preoperative characteristics were similar between delayed and home groups, apart from the interval between initial biopsy and surgical intervention (mean 211.9 and 134.4 days respectively, p < 0.001). The delayed group was followed for a mean of 6.5 ± 1.3 years, and the home group for a mean of 6.2 ± 1.4 years. Groups were similar in regards to method of RP (robotic vs. open), Gleason score on surgical pathology, Gleason score upgrade, and extra-capsular extension. There was a trend towards higher rates of positive surgical margins in the delayed group at 21.1% (8/38), vs. the home group at 6.3% (2/32), p = 0.069. The incidence of BCR was significantly higher in the delayed group at 36.8% (14/38), vs. the home group at 6.1% (2/32), p = 0.002. Among patients with BCR, time to recurrence was similar between delayed and home groups (mean 3.68 ± 1.9 vs. 2.88 ± 0.19 years), p = 0.817.

Conclusions: Our data suggest delays in radical prostatectomy may be associated with a higher rate of BCR in patients with prostate cancer, implying efforts should be made to minimize surgical delay.

Spatial Distribution of Biopsy Cores and the Detection of Intra-Lesion Pathologic Heterogeneity

Thomas Jefferson University Hospital

Introduction: To determine if spatial distribution of multiparametric MRI-transrectal ultrasound (mpMRI-TRUS) fusion biopsy cores to the index lesion reveals trends in the detection of intra-lesion Gleason heterogeneity and a more optimal biopsy strategy to sample the prostate.

Materials & Methods: A prospectively maintained single-institution database was analyzed for patients who underwent mpMRI fusion with targeted and systematic 12-core biopsy in 2017. Index lesion was defined as the lesion with longest diameter on T2W-MRI. In order to improve diagnostic accuracy of fusion biopsies, we changed our template for biopsy in July 2017. In cohort 1 (starting July 2017), fusion biopsy cores biopsies were taken in areas of the center of the target as well as 1cm laterally on each side. For cohort 2 (prior to July 2017), targeted biopsies were taken from the center of the lesion only. Gleason heterogeneity was defined as a difference in the maximum Gleason score obtained from fusion cores in the center of the index lesion vs. cores obtained from the periphery (cohort 1), or any difference in maximum Gleason score obtained from fusion cores targeted to the index lesion (cohort 2) compared with systematic 12 cores TRUS biopsy. Chi square test was used to compare Gleason heterogeneity between cohorts.

Results: 99 consecutive patients (35 and 64 in cohorts 1 and 2, respectively) with median age (SD) and PSA of 66.9 (± 5.9) and 9.7 (± 8.2) respectively, were included. Mean index tumor diameter was 16.4 ± 4.49 and 15.8 ± 6.11, respectively (p = 0.047). Age, PSA, PI-RADS score, pre-operative MRI lesion size and Gleason score from 12-core biopsy were not significantly different between cohorts. Median number of biopsy cores taken from cohort 1 was 4.2 (center, 2 periphery) and 2 in cohort 2. Gleason heterogeneity was observed at a significantly higher rate in cohort 1 vs. cohort 2 (58% vs. 24%; p = 0.041). In cohort 1, Gleason score from cores obtained from the center of the lesion were higher than Gleason scores obtained from the periphery of the targeted lesion in 57% of cases.

Conclusions: Presently, there is no consensus on the spatial placement or number of biopsy cores within lesions during mpMRI-TRUS fusion biopsy. Since changing our fusion biopsy strategy, we demonstrate that there is tumor heterogeneity in biopsy specimens, and that increased number of cores, as well as cores focused to the center of the largest lesion in the prostate, yield higher Gleason scores than cores focused to the periphery of the lesion. These results may contribute to the spatial recommendations for biopsy cores in the future.
Introduction: Multiparametric magnetic resonance imaging (mpMRI) has emerged as a valuable tool to improve the risk stratification of patients with clinically localized prostate cancer (PCa). We hoped to better identify the risk of adverse pathological features following radical prostatectomy (RP) in patients with Grade Group (GG) 1 and 2 on biopsy who had high PI-RADS scores.

Materials & Methods: Between 2014 and 2017, we retrospectively analyzed 203 patients who had an mpMRI prior to radical prostatectomy (RP) with Grade Group (GG) 1 (Gleason 3+3=6) and GG 2 (Gleason 3+4=7) prostate cancer on systematic +/- mpMRI-TRUS fusion targeted prostate biopsy. PI-RADS version 2 (PI-RADSv2) scores were grouped into high (4 and 5) and low (<3) and compared to adverse RP pathology results including any upgrading, upgrading to ≥GG 3 (Gleason 4+3=7), extraprostatic extension (EPE), seminal vesical invasion (SVI), and positive pelvic lymph nodes.

Results: On biopsy, 102 and 101 patients had GG1 and GG2 pathology, respectively prior to RP. 43.6% (84/192) of patients with GG1 and 61.8% (63/102) with GG2 had PI-RADSv2 ≥4 and 5 lesions. For GG1, PI-RADSv2 ≥4 and 5 lesions were significantly associated with any upgrading (68% vs. 47%, p = 0.02), upgrading to ≥GG3 (16% vs. 2%, p = 0.02), EPE (18% vs. 3.5%, p = 0.01), and any adverse pathology (≥ GG3, SVI, EPE or positive pelvic lymph nodes; 27% vs. 5%, p = 0.02). Men with PIRADSv2 >4 had a NPV of 95% for adverse pathology: For GG2, compared to low PI-RADSv2 scores, PI-RADSv2 ≥4 and 5 scores were significantly associated with EPE (40% vs. 21%, p = 0.03), adverse pathology (48% vs. 23%, p = 0.006), and had higher rates of upgrading ≥GG3 (21% vs. 13%, p = 0.21) although the latter did not reach significance at conventional thresholds. Pre-RP PSA was higher in those with any adverse pathology in GG1 group (median [IQR]; 7.4 [5.6-21] vs. 5.4 [4.8,8.3], p = 0.005), as well as GG2 group (median [IQR]; 6.45 [5.1-14] vs. 6.1 [4.3-7.6], p = 0.02).

Conclusions: For patients with GG1 and GG2 PCa on biopsy, high PI-RADSv2 lesions were associated with adverse pathological features on RP. For those with GG1 PCa, PI-RADSv2 ≥4 and 5 lesions are associated with a 7-fold risk of adverse pathology on RP, raising the suspicion for radiologic-pathologic discordance. Additional studies are required to determine whether high PI-RADSv2 scores should influence eligibility for active surveillance or need for repeat targeted biopsy.

Factors Associated with Active Surveillance Utilization as Initial Management Strategy for Men with Newly-Diagnosed Prostate Cancer

Factors Associated with Active Surveillance Utilization as Initial Management Strategy for Men with Newly-Diagnosed Prostate Cancer


Temple University Lewis Katz School of Medicine; Temple University Hospital; Geisinger Health System; Health Care Improvement Foundation (HCIF); University of Pennsylvania; The Health Care Improvement Foundation; Pennsylvania Health - Milton S. Hershey Medical Center; Fox Chase Cancer Center; Cooper University Hospital Department of Surgery, Division of Urology; Thomas Jefferson University Hospital

Introduction: Active surveillance (AS) is a recommended management strategy for men with low risk prostate cancer. Prior studies have shown significant variation in AS utilization among providers. We aimed to characterize factors associated with AS utilization among men with newly diagnosed prostate cancer in a regional collaborative.

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

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

Conclusions: Within PURC, AS was the most common initial treatment modality for men with NCCN very-low and low risk prostate cancer. Patient age and measures of disease risk (grade group, PSA, tumor volume on biopsy) were strongly associated with AS utilization. Studies of large collaborative datasets such as PURC may allow for a better understanding of the factors underlying practice and provider-level variation in AS utilization.
Moderated Poster Session 3: Prostate Cancer

**MP3-07**

Trends in Robotic Prostatectomy and Surgical Treatment for Male Stress Urinary Incontinence

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**Introduction:** Robot-assisted laparoscopic radical prostatectomy (RALRP) has steadily increased in adoption over the past several years. However, it is controversial if the increased penetration of RALRP has led to a decrease in male stress urinary incontinence requiring surgical correction. Current studies analyzing trends in artificial urinary sphincter (AUS) and sling placement have been limited by only assessing inpatient procedures.

**Materials & Methods:** We queried the Nationwide Inpatient Sample (NIS) from 2009 to 2014 for annual inpatient rates of AUS, male sling, and radical prostatectomy utilizing appropriate ICD-9 codes. National estimates were generated utilizing the included weighting methodology. RALRP was identified by searching secondary procedure codes for ICD-9 code 17.4 as indicating a robotic assisted procedure. The percent of outpatient surgeries was determined utilizing the National Surgery Quality Improvement Program (NSQIP) database to calculate inpatient/outpatient case mix for AUS, male sling, and radical prostatectomy during the same time period. Total national census was calculated by applying the percentage outpatient surgery to the inpatient case volume per year to produce overall estimates. Trends for case volume was calculated using linear regression.

**Results:** We identified 13,060 male slings, 14,970 AUS placements, and 391,128 radical prostatectomies from 2009 to 2014. Overall, male slings decreased from 2009 to 2014 (2,466 to 909 cases) but had stable ratios of outpatient procedures (85% to 86%). AUS similarly decreased over the time period (5,000 to 1,796 cases) but also increased in percentage of outpatient procedures (54% to 73%). Radical prostatectomy decreased over the time period (77,235 to 46,863) with overall few outpatient procedures (3% to 6%). However, RALRP increased from 27,805 to 37,130 cases as did percent robotic prostatectomies (36% to 80%).

**Conclusions:** In this contemporary national cohort of both inpatient and outpatient incontinence procedures, both AUS and male slings are decreasing overtime though are more increasing being performed in the outpatient setting. Radical prostatectomy is overall decreasing in incidence but RALRP is increasing both absolutely and relative to open prostatectomy. Future longitudinal studies are necessary to assess for the role that robotics play in the decreasing incidence of male incontinence procedures after prostatectomy.

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**MP3-08**

Our Initial Experience with the 4Kscore® and How It Changes Practice in an Academic Urology Practice

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**Introduction:** Since the early 1990’s, PSA screening has resulted in a 45% reduction in prostate cancer mortality. Despite this, there has been a lack of consensus among national policy panels about the optimal PSA threshold for biopsy recommendations due to its poor specificity. Hence, there have been efforts to risk-stratify patients with abnormal PSA values to better guide biopsy decisions. The 4Kscore® is a novel test which predicts the percentage risk of clinically significant prostate cancer (≥ Gleason 3 + 4 by assessing clinical information and four serum markers. While there have been several validation studies regarding use of the 4Kscore, there is a paucity of data on how this test impacts clinical practice. In this abstract, we aimed to assess how the 4Kscore influenced biopsy related decisions in men evaluated in an academic urology practice.

**Materials & Methods:** We retrospectively reviewed our electronic medical database containing patients who underwent US/MRI fusion biopsy (n = 444) and identified men with prior invasive BCG exposure. We then reviewed mpMRI results and subsequent fusion prostate biopsy findings.

**Results:** Ten men treated with BCG who were found to have PIRADS 4 or 5 lesions on mpMRI and underwent fusion biopsy were identified (Table 1). Men who were biopsy naïve (30%), had history of previous negative biopsy (30%) and who were on Active-Surveillance for low risk prostate cancer (40%) were included. The cohort was a median 64 (IQR 59-69) years of age and had median PSA of 6.3 (IQR 4.5-9.2). 80% of patients demonstrated biopsy-proven granulomatous prostatitis (GP). Pathology revealed clinically significant (Gleason Grade Group (GG Group) ≥ 2 prostate cancer in 3 patients (30%) with 1 additional patient (10%) harboring GG Group = 1 disease. Targeted biopsy of MRI abnormalities revealed significant cancer in 20% of cases, with 90% demonstrating GP. Previously-described “Actionable Intelligence Metric” (AIM) was 0% for this cohort (i.e. targeted cores did not provide additional information over information from the 12-core template).

**Conclusions:** In this largest series to date, we show that although high risk lesions on mpMRI in patients with previous exposure to intravesical BCG likely represent GP, clinically significant prostate cancer may be present and is radiographically indistinguishable from granulomas. These limited data suggest the clinical utility of mpMRI in patients who have received intravesical BCG.

![Granulomatous Prostatitis...](image1)

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**MP3-09**

Granulomatous Prostatitis is a Common Finding on Multiparametric MRI in Patients with Previous Exposure to Intravesical Bacillus Calmette-Guerin and may be Indistinguishable from Clinically Significant Prostate Cancer

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**Introduction:** Granulomatous prostatitis (GP) secondary to Bacillus Calmette-Guerin (BCG) exposure is a well-described clinical entity. Influence of previous BCG exposure on imaging findings in patients undergoing multiparametric Magnetic Resonance Imaging (mpMRI) for detection and management of prostate cancer is poorly understood. As such, we describe a cohort of patients with previous BCG exposure who underwent US/MRI fusion biopsy at our institution.

**Materials & Methods:** We reviewed our prospective database containing patients who underwent US/MRI fusion biopsy (n = 444) and identified men with prior invasive BCG exposure. We then reviewed mpMRI results and subsequent fusion prostate biopsy findings.

**Results:** Ten men treated with BCG who were found to have PIRADS 4 or 5 lesions on mpMRI and underwent fusion biopsy were identified (Table 1). Men who were biopsy naïve (30%), had history of previous negative biopsy (30%) and who were on Active-Surveillance for low risk prostate cancer (40%) were included. The cohort was a median 64 (IQR 59-69) years of age and had median PSA of 6.3 (IQR 4.5-9.2). 80% of patients demonstrated biopsy-proven granulomatous prostatitis (GP). Pathology revealed clinically significant (Gleason Grade Group (GG Group) ≥ 2 prostate cancer in 3 patients (30%) with 1 additional patient (10%) harboring GG Group = 1 disease. Targeted biopsy of MRI abnormalities revealed significant cancer in 20% of cases, with 90% demonstrating GP. Previously-described “Actionable Intelligence Metric” (AIM) was 0% for this cohort (i.e. targeted cores did not provide additional information over information from the 12-core template).

**Conclusions:** In this largest series to date, we show that although high risk lesions on mpMRI in patients with previous exposure to intravesical BCG likely represent GP, clinically significant prostate cancer may be present and is radiographically indistinguishable from granulomas. These limited data suggest the clinical utility of mpMRI in patients who have received intravesical BCG.

![Granulomatous Prostatitis...](image2)

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Onset and Maintenance of Testosterone Suppression in Four Pivotal Trials of Subcutaneously Administered Leuprolide Acetate Formulated with Biodegradable Polymer Delivery System

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Introduction: Subcutaneously administered leuprolide acetate (SC-LA) formulated with a biodegradable polymer delivery system has demonstrated efficacy in suppressing testosterone (T) levels to achieve and maintain castration (T < 50 ng/dL) in patients with advanced prostate cancer (PCa). Increasing evidence suggests that reaching and sustaining the lowest T possible is desirable during androgen deprivation therapy and correlates with disease specific survival. Data were pooled from four pivotal trials to determine the onset and maintenance of T levels at or lower than castrate levels with SC-LA treatment.

Materials & Methods: Euagonal PCa patients received either 7.5 (6 doses), 22.5, 30, or 45 mg (2 doses each) of SC-LA lasting 1, 3, 4, or 6 months, respectively, in 4-open, fixed-dose, pivotal trials. T was measured 2-4 times on day 0 and once on days 1, 2, 3, 7, and every week until the next dose through the end of the studies; the 45 mg group had an additional measurement taken on day 2. Target T levels were 50, 20, and 10 ng/dL. The onset of T suppression and the proportion of time serum T remained below the target levels were calculated for each patient by extrapolating the time point when T first crossed the target. Proportion of time below target was calculated as total time T remained below target divided by time after target first achieved to end of study.

Results: In the pooled population (N = 437), median onset of T levels ≤ 50, ≤ 20, and ≤ 10 ng/dL were 21, 28, and 35 days respectively. Once target T was achieved, the mean proportion of time that patients maintained T suppression below each target level was 100%, 94%-99%, and 66%-85% for T ≤ 50, 20, and 10 ng/dL respectively (Table).

Conclusions: Our analysis suggests that a higher biopsy volume of Gleason 4+4 disease is correlated with adverse pathologic outcomes after RP. These patients unsurprisingly face a higher incidence of disease recurrence postoperatively. Patients with LVD may have a better chance of cure with RARP than predicted based upon their Gleason score alone.
### MP3-13

**In-vivo Trial of Subharmonic Contrast-enhanced Imaging for the Detection of Prostate Cancer**

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**Thomas Jefferson University Hospital**

**Introduction:** Subharmonic imaging (SHI) is a new technique for imaging of microbubble ultrasound contrast agents with improved tissue suppression. We conducted a pilot study to evaluate contrast enhanced SHI of the prostate for the detection of prostate cancer (PCa).

**Materials & Methods:** Fifty-five patients referred for prostate biopsy were included in this study supported by a grant from the NIH R21 CA22214. Each patient was imaged with a transrectal 15-5D ultrasound transducer on modified Logiq E9 system (GE Healthcare; Milwaukee, WI) that was altered to perform SHI (transmit/receive: 7.0/3.5MHz). Ultrasound contrast was infused intravenously over 10 minutes using 3 mL of Definity™ (Perflutren Lipid Microsphere, Lantheus Medical Imaging, N. Billerica, MA) diluted in 50 mL of saline. Images were obtained using conventional grayscale, color and power Doppler, conventional contrast harmonic imaging (HI) as well as SHI and flash replenishment in combination with SHI (MIP-SHI). Doppler flow and contrast enhancement were rated on a 5 point subjective scale for each sextant of the prostate. Prostate biopsy was performed with up to 6 targeted cores based on contrast-enhanced imaging, followed by 12 part systematic biopsy.

**Results:** Contrast enhancement was clearly observed with both HI and SHI techniques in all subjects. SHI provided improved contrast signal and tissue suppression relative to conventional HI. Microvascular architecture and increased vascularity were best delineated with MIP-SHI. Each contrast-enhanced technique demonstrated statistically significant predictive value for localization of PCa.

**Conclusions:** This first in vivo application of contrast enhanced SHI in the prostate demonstrated enhancement in all patients, with focal areas of contrast enhancement predictive of PCa in targeted biopsy specimens. Detection of PCa included 9 patients whose PCa was not identified by MRI.

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### MP3-15

**Survival Outcomes of Initial Local Therapy on Clinically Localized Gleason 9-10 Prostate Cancer: A Surveillance, Epidemiology, and End Results Database Analysis**

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**Introduction:** Men with Gleason score 9-10 prostate cancer have significantly worse outcomes compared to those with Gleason score 8 disease. Choice of upfront treatments remain controversial for this patient cohort. Using the Surveillance, Epidemiology, and End Results (SEER) database, we evaluated the impact of initial treatment with external beam radiation therapy (EBRT), external beam radiation therapy with brachytherapy (EBRT+BT), or surgery on prostate cancer-specific mortality (PCSM) and overall mortality in Gleason 9-10 disease.

**Materials & Methods:** The SEER database was queried for men diagnosed with Gleason score 9-10 prostate cancer from 2004-2014. Only localized disease with clinical T0 and N0 status was included. Gathered data included demographic, pathologic, therapy received, and survival outcomes. Using JMP v11.0, Kaplan-Meier survival curves and univariate and multivariate analyses were generated for initial therapy with EBRT, EBRT+BT, or surgery.

**Results:** A total of 11,359 men were included with 5,078 (44.7%) who underwent upfront treatment with EBRT alone, 683 (6.0%) with EBRT+BT, and 5,596 (49.3%) with surgery. 7-year PCSM rates were 26.8%, 14.1%, and 9.4% for EBRT, EBRT+BT, and surgery respectively (p < 0.001) (Figure 1). 7-year overall mortality rates were 41.7%, 26.3%, and 16.0% for EBRT, EBRT+BT, and surgery respectively (p < 0.001) (Figure 2). When controlling for age, Gleason score, clinical tumor stage, and PSA level on multivariate analysis, EBRT had greater PCSM than either surgery or EBRT+BT (HR 0.32, 95% CI 0.23-0.44, p < 0.001 and HR 0.37, 95% CI 0.33-0.40, p = 0.015 respectively).

**Conclusions:** Among men with localized Gleason 9-10 disease, surgery and EBRT+BT showed significant improvement in survival outcomes compared to EBRT alone. When compared with EBRT+BT, surgery showed improvement in overall mortality but no significant difference in PCSM. Future prospective studies are warranted.

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### MP3-14

**Impact of National Cancer Policies on Global Prostate Cancer Incidence and Mortality: A Cancer Atlas Analysis**

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**Introduction:** Prostate cancer (CaP) is an epidemiologically complex disease with heterogeneous incidence and mortality. In global CaP epidemiology, the influence of health systems-level factors on disease burden is unclear. This study examines how cancer surveillance programs and policies of national health infrastructures impact the global burden of CaP.

**Materials & Methods:** We queried the Cancer Atlas, a global cancer database of health surveillance statistics. We performed Pearson correlations and multiple regression analyses using these variables and country-specific rates of CaP incidence and mortality.

**Results:** We analyzed CaP incidence and mortality rates reported by 187 national health systems. Country-specific incidence was strongly positively correlated with the quality of population-based cancer registries (PBR), which collect and measure surveillance statistics (P < 0.001). Having a national high-quality PBR (vs. regional high-quality or lesser quality) was the strongest predictor of CaP incidence among all structural and socioeconomic variables (Fig. 1A; P < 0.001). Health systems with cancer control policies had lower rates of CaP mortality. For instance, mortality was negatively correlated with the extent of warning labels on cigarette packaging (as a proxy for cancer prevention programs) (P < 0.001). Mean mortality was 11.7 and 11.8/100,000 for countries with medium and large labels, respectively, vs. 17.8/100,000 for small/ no labels (Fig. 1B). CaP mortality was also lower in countries with vs. without an operational national cancer control strategy (Fig. 1C; 13.1 vs. 16.3/100,000, P = 0.05).

**Conclusions:** Although the substantially higher incidence of CaP in countries with a high-quality PBR may reflect differences in screening practices, a portion may be explained by a decreased capture of clinically-significant CaP in countries with regional-only or lower quality PBR. Given the heterogeneity of this disease and diverse national healthcare priorities, the significance of these findings warrants further study.
Combination of Magnetic Resonance Imaging and Decipher Test Provide Improved Predictive Value of Extracapsular Extension in Prostate Cancer

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Introduction: Magnetic resonance imaging (MRI) is emerging as a highly-utilized tool for diagnosis and risk-stratification of prostate cancer. One area of interest has been in detection of extracapsular extension (ECE) of prostate tumors. The approach, however, has demonstrated limited accuracy with a 49% sensitivity and 74% specificity for ECE. The Decipher test is a genomic classifier that measures RNA expression of 22 different biomarkers using biopsy or prostatectomy specimens that is being used for prognostic analysis of prostate cancer. The aim of this study was to determine if the combined use of MRI and Decipher test would result in an improvement in risk stratification through an improved predictive value of ECE.

Materials & Methods: Between April 2015 and August 2017, 26 patients underwent robot-assisted radical prostatectomy following prostate MRI at the University of Maryland Medical Center. Specimens obtained were sent for analysis of Decipher scores, which reported 5 year metastasis risk of the cancer. MRI was evaluated for several criteria including imaging-based suggestion of ECE and Prostate Imaging Reporting and Data System (PI-RADS) score. Multivariate and receiver operating characteristic (ROC) curve analysis was used to assess the predictive values of Decipher scores and PI-RADS scores for pathologic ECE.

Results: In total, 26 patients with complete data were analyzed of whom 14 had ECE (62%). 4 of these patients were PI-RADS 3, 14 were PI-RADS 4, and 8 were PI-RADS 5. The 5 year metastasis risks obtained from Decipher tests ranged from 1% to 45.9%. Three ROC curves were created to compare the ability of PI-RADS score to predict ECE, Decipher score to predict ECE, and Decipher and PI-RADS scores combined to predict ECE. This demonstrated improved predictive value of ECE when Decipher and PI-RADS scores are used together with the area under the curve (AUC) = 0.92 when compared to each score separately (Decipher score vs. ECE AUC = 0.71, PI-RADS score vs. ECE AUC = 0.83, p < 0.05). Thus combining the genomic testing and MRI improved prediction of pathologic ECE in the prostatectomy sample.

Conclusions: Use of prostate MP-MRI PI-RADS score and genomic testing scores may work synergistically to help predict pathologic ECE for prostate cancer at time of radical prostatectomy.

Impact of Age at Diagnosis on Cause of Death in Prostate Cancer

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Introduction: Prostate cancer typically has a low rate of prevalence of lethal disease. However, patients who develop prostate cancer at an earlier age may be at risk for a greater risk of dying due to prostate cancer, as life expectancy is greater and younger age of onset is associated with more aggressive disease. Understanding risk of death from prostate cancer by age may affect treatment decisions. This study attempts to characterize the mortality and cause of death (COD) trends associated with age at diagnosis of prostate cancer.

Materials & Methods: The relationship between COD and age at diagnosis was investigated using data obtained from the US Surveillance, Epidemiology, and End Results Program (1973-2014) for prostate cancer (N = 1,210,922). Patients in which the cancer was not their primary cancer, COD data was missing, and those with incomplete survival months were excluded. In patients who had known COD, the percent COD due to prostate cancer versus other COD was examined.

Results: A total of 803,331 men were examined. The median follow-up was 74 months. Figure 1 demonstrates the proportion of COD attributable to prostate cancer from age 40-85+. Notably, the percent COD attributed to prostate cancer peaks in the 40-44 year age group at 66%, then gradually decreases until it nadirs in the 75-79 year old age group where it was 24% (p < 0.0001).

Conclusions: In the United States, men who were diagnosed at a younger age with prostate cancer were more likely to have their death attributed to prostate cancer than men diagnosed at an older age.

Practice Patterns for Use of Prostate Cancer Biomarkers in the Pennsylvania Urologic Regional Collaborative (PURC)

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Introduction: A major paradigm shift in the PSA-based approach to prostate cancer screening has led to the development of a number of prostate cancer biomarkers designed to supplement PSA-based screening approaches. Numerous prostate cancer biomarkers have overlapping indications and are marketed heavily, but to date there is little data regarding their utilization. We review practice patterns for prostate cancer biomarker utilization in a large statewide quality registry with a focus on the extent of heterogeneity across practices and providers.

Materials & Methods: The Pennsylvania Urologic Regional Collaborative (PURC) is a voluntary collaborative of urology practices in Pennsylvania and New Jersey focused on evaluation and improvement of prostate cancer care. Established in 2015, 9 participating practices encompassing 88 physicians have accrued over 5,600 patients into the registry. We identified all men whom underwent prostate cancer biomarker testing, and report utilization patterns. Additionally, a survey regarding biomarker use was administered to all practitioners within the collaborative.

Results: 260 (17.9%) men underwent prostate cancer biomarker testing. Biomarker testing was most commonly performed in men with NCCN low and intermediate-risk disease (28.6% and 39.1%, respectively). When stratified by treatment type, biomarker testing was most common among patients whose primary treatment was active surveillance (52.2%). There was significant variation in genomic testing by practice and within each practice site (Fig 1). The survey response rate was 29.5%. 82.4% of respondents utilize biomarkers in their prostate cancer patients; doubts regarding clinical efficacy was the number one reason cited for not using biomarkers. When posed with a hypothetical clinical scenario, 25% of respondents selected a non-indicated biomarker.

Conclusions: Within a large prostate cancer quality collaborative, we identified significant variation in prostate cancer biomarker utilization by practice and provider. Understanding practice-level biomarker testing trends may identify targets for quality improvement and enhance appropriate test utilization.

Proportion of cause of death attributable to prostate cancer

Proportion of cause of death attributable to prostate cancer

Age & Men of Prostate Cancer Diagnosis

Table 1. Possible causes of death by age.
Can Prolaris Score be Used to Predict Change in Gleason Score from Biopsy to Post-radical Prostatectomy Pathology? 

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Introduction: Gleason Score (GS) assignment from prostate biopsy has a significant rate of discordance with that assigned from postoperative radical prostatectomy (RP) pathology. The Prolaris Score (PS), derived from a genomic Cell Cycle progression analysis and Prostate Cancer Risk Assessment (CAPRA) score, has been validated in numerous settings as an independent predictor of cancer-related death and biochemical recurrence. The score is used to predict whether an individual’s cancer is more aggressive, less aggressive, or consistent with others in his AUA risk group. Thus far, the ability of the PS to predict a change in GS between biopsy and RP has not been evaluated.

Materials & Methods: We evaluated 66 men with prostate cancer who underwent treatment with RP at one tertiary care center between 2015 and 2017. Patients were stratified by AUA risk score with representation in low (LR), intermediate (IR), and high-risk (HR) groups. They were subsequently sub-grouped by change in GS as upsgrade, downgrade, or no change. A PS score of ≤ 75% (less aggressive) or ≥ 100% (more aggressive) was obtained for each patient. The mean PS for each subgroup was then calculated to assess for correlation between Prolaris-predicted risk and grade-change.

Results: The analyzed cohort included 34 LR, 25 IR, and 12 LR patients with biopsy GS ≥ 3+3 (15.4%), ≥ 3+4 (35.0%), ≥ 3+5 (15.0%), ≥ 4+3 (9.2%), and ≥ 4+5 (1.5%). 86% of patients had pre-biopsy PSA levels ≥ 10.0. PS distribution included 6.2% with scores of ≥ 1.2, 5.3% ≥ 2.5-3.5, and 40% ≥ 3.6-5.5. Overall, upgraded (n = 18), no change (n = 34), and downgraded (n = 12) groups had average PS (with standard deviations) of 3.34 ± 0.76, 3.34 ± 0.58, and 3.84 ± 0.71, respectively. A one-way analysis of variance (ANOVA) was calculated on patients’ Prolaris Scores, stratified by grade change. The analysis was not significant, F(2, 63) = 2.46, p = 0.094.

Conclusions: When analyzed as a whole, and when stratified by AUA risk, there was no significant correlation between average PS and grade change from biopsy to post-RP pathology. While the average PS for the “no change” group was within the 2.5-3.5 range, there was a high degree of variance within the group. Furthermore, the ANOVA revealed that the average PS was not significantly different than those of the upgraded or downgraded groups. Our data suggest that the Prolaris Score may not be used to reliably predict a change in biopsy GS. Both its independence from GS and its validated efficacy in predicting mortality and biochemical recurrence make the Prolaris Score a valuable tool to be used in risk stratification and shared decision-making.

Regional Variation in the “Diffusion” of Radical Prostatectomy 

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Introduction: Volumes of radical prostatectomy (RP) have decreased in recent years for a variety of reasons, including greater use of expectant management and decreased screening and diagnosis. It is not clear, however, how changes in surgical practice have varied across healthcare regions. In this study, we 1) investigated regional variation in changes in RP volume, and 2) hypothesized that high initial volume was associated with a greater decrease over time, assuming that high regional variation in changes in RP volume, and 2) hypothesized that high initial volume was associated with a greater decrease over time, assuming that high volume may represent overtreatment of older patients.

Materials & Methods: Using publicly available longitudinal research files (http://www.dartmouthdiffusion.org/index.php) from The Dartmouth Atlas, we examined annual incidence of RP across hospital referral regions (HRRs) between 2004-2014 in a Medicare population. RP rates were adjusted for age and race, and absolute and percent changes over time were identified. Pearson correlations were calculated to determine whether baseline regional volume was associated with the magnitude of change.

Results: The mean rate of RP per 1,000 male Medicare beneficiaries was 1.33 (standard deviation = 0.58) per HRR in 2004, with a range of 0.36-3.14. The mean absolute decrease in volume was 0.41 (median 0.37), range -2.20 to +1.15. There was a mean change of -20% (range -73% to +140%) between 2004-2014, median change was -27%. Regional volume in 2004 was significant correlated with the absolute decrease in RP volume in the ensuing 10 years (r = -0.82, p < 0.001), as well as the percent decrease (r = 0.60, p < 0.001). Despite the overall trend of decreased volume, some regions with low baseline practices had an increase in volume during the study period.

Conclusions: There is substantial regional variation in both rates of RP, and in the magnitude of change over time. High baseline surgery volume was associated with a greater decrease in volume, possibly reflecting “overuse” of RP that decreased over time. Interestingly, a subset of regions with low baseline volume had increases in volume during the study period.

Dynamic Elasticity of Bladder Tissue: A Novel Predictor of Volume Accommodation During Urodynamic Testing 

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Introduction: Dynamic elasticity, or reversible strain softening, is a material property of bladders that is identified using comparative-fill urodynamic studies (UDS), and may play a role in the bladder’s ability to accommodate variable fill rates and volumes. The aim of this study was to test the hypothesis that individuals with a lower dynamic elasticity can better accommodate the faster filling of UDS compared to individuals without dynamic elasticity.

Materials & Methods: Individuals with and without urgency based on ICIq-OAB survey question 5a (≥ 3 and = 0, respectively) were enrolled in this prospective study and completed 3-day void diaries. Vesical pressure (Pv) data were collected during a repeat fill-and-empty UDS protocol at a rate of 10% of cystometric capacity per minute. Dynamic elasticity was quantified by comparing three fills (1-3). Fill 1 (before voiding) was used as a baseline after an active void. Fill 2 (after strain softening) was used to show the degree of dynamic elasticity lost due to strain softening and occurred following passive emptying via syringe aspiration. Fill 3 (after active voiding) was used to show how much dynamic elasticity was recovered due to the active voiding. For each fill, the average Pv was calculated. Individuals that showed decrease in Pv from Fill 1 to Fill 2 and increase in Pv from Fill 2 to Fill 3 were defined as having dynamic elasticity.

Results: In this study, 5/12 (41.7%) participants with OAB and 6/7 (85.7%) participants without OAB exhibited dynamic elasticity. The maximum UDS volume (60 mL ± 64 mL) in 9/12 (75.0%) individuals with dynamic elasticity exceeded the maximum 3-day voided volume (519 mL ± 56 mL). This compares with only 1/7 (14.3%) individuals without dynamic elasticity. There was a significant association (Fisher’s exact test, p = 0.03) between the presence of observed dynamic elasticity and the ability of the bladder to accommodate a larger volume during UDS.

Conclusions: Dynamic elasticity is a biomechanical property of the bladder that can be calculated using a repeat-fill UDS protocol, and individuals with OAB experience lower rates of dynamic elasticity compared to controls. These OAB individuals were unable to accommodate larger volumes during UDS compared to maximum voided volumes recorded on 3-day void diaries. Identification of reduced dynamic elasticity may help explain why individuals with OAB cannot adapt to faster filling and larger volumes, and quantification of dynamic elasticity could lead to improved subtyping of OAB and more targeted therapies.
Moderated Poster Session 4: Female Urology, Pediatrics, Trauma, General Urology

**MP4-02**
**The Effect of Site-Specific Autologous Platelet-Rich Plasma Application During Vaginoplasty for Gender Affirmation Surgery**

**Introduction:** We utilize the application of autologous platelet-rich plasma (PRP) to improve outcomes during vaginoplasty for male-to-female gender affirmation surgery (MF-GAS), but the optimal site of application is not well-defined. This study compares site-specific application of PRP to the neo-labia (PRP-NL) versus the neo-vagina (PRP-NV) to assess risk factors and outcomes.

**Materials & Methods:** A retrospective review of 172 patients who underwent penile inversion vaginoplasty MF-GAS from 11/2016 to 11/2017 was performed. Data included site of PRP application, complications, operative data, age, BMI, medical comorbidities and patient compliance with postoperative care.

**Results:** Patients (n = 172) had median follow-up of 2.99 months, median BMI of 25.2, and a median age of 38.1 years. PRP was applied to the neolabia and the neovagina in 46.5% (n = 80) and 53.5% (n = 92) of patients in a nonrandomized fashion. 2.9% (n = 5) were undergoing revision vaginoplasties. The mean length of stay (LOS) was 2 days and median blood loss (EBL) was 100 cc. Overall, complication rates were low (Table 1). A total of 16 patients (9.7%) required reoperation/revision. PRP application did not significantly influence LOS (mean = 2.0 vs. 2.2, p = 0.118), however there was a significant difference in EBL between the cohorts with PRP-NL compared to PRP-NV (mean = 91.2 cc vs. 115.6 cc, p = 0.011). PRP-NV was associated with a 68% reduction in the risk (Table 1) of future reoperations compared to PRP-NL. When stratifying reoperations, PRP-NV was associated with an 88% reduction in the risk of reoperation for vaginoplasty/narrowing. Location of PRP application was not significantly associated with any other complication. Multivariable logistic regression confirmed that PRP-NL reduced the likelihood of surgical revision (OR 0.23, CI 0.05-0.99; p = 0.049) compared to PRP-NL. BMI, history of prior neovaginal surgery, HIV status, diabetes, hypertension, smoking, COPD, breast augmentation, and noncompliance did not affect risk of reoperation/revision (p > 0.05).

**Conclusions:** Our current study demonstrates similar overall outcomes between the two cohorts, with improvements in EBL and decreased revisions necessary in the PRP-NV cohort. Future studies should prospectively evaluate the efficacy of such interventions in order to continue to achieve improved patient outcomes.

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**MP4-03**
**Long Term Reoperation Rates in Patients Post-Holmium Laser Enucleation of the Prostate**

**Introduction:** Holmium laser enucleation of the prostate (HoLEP) is a surgical treatment option for patients with benign prostatic hyperplasia (BPH). Reoperation rates are thought to be relatively low after initial HoLEP. The purpose of this study was to determine that long-term reoperation rates in patients after HoLEP.

**Materials & Methods:** A retrospective review, from an IRB approved database, of 632 patients that underwent a HoLEP at our institution between January 2010 and December 2017 was performed. Long-term reoperation was defined as patients who underwent initial HoLEP operation and then later on, a subsequent HoLEP or transurethral resection of the prostate (TURP) was required. Reoperation rates were analyzed at 1, 5, and 8 years post initial operation. All procedures were performed by a single-surgeon. Univariate analysis was performed for demographics and baseline characteristics.

**Results:** A total of 30/632 (4.7%) patients who received initial HoLEP operation required reoperation. Of these patients, 93% (28/30) opted to undergo repeat HoLEP procedure and 7% (2/30) opted for transurethral resection of the prostate. One-year reoperation rate was 1.6%. Five-year reoperation rate was 2.9%. Eight-year reoperation rate was 4.7%. Average trans-rectal ultrasound (TRUS) prostate size for patients undergoing reoperations (± standard deviation) was 110.7 ± 56.2 grams. Mean prostate gland volume on TRUS was 93.6 ± 56.6 grams for all patients. The average age and body mass index was 70.5 ± 8.5 years and 30 ± 11.9, respectively.

**Conclusions:** HoLEP is a safe and effective treatment for patients suffering from lower urinary tract symptoms. Long-term reoperation rates are relatively low. Prostate gland size may be associated with increased need for reoperation. Management and counseling should be directed towards a plan, especially in patients with larger prostate size.
The Relationship between Erectile Dysfunction, Obesity, and Physical Activity: The West Virginia University Experience


West Virginia University School of Medicine1; WVU Medicine - Department of Urology2; West Virginia University School of Medicine3; West Virginia University School of Medicine4

Introduction: The relationship between erectile dysfunction (ED) and age is well established and significant. Obesity and the lack of physical activity are major health concerns in the United States. West Virginia has the distinction of being the most obese state in America, with an obesity rate of 37.7% in 2017. Currently, West Virginia has some of the highest rates of heart disease, physical inactivity, diabetes, and smoking in the United States. Herein, we examine the possible effect of obesity and physical activity on ED through analysis of data on 289 subjects (age 50 or greater) who completed the Sexual Health Inventory for Men (SHIM).

Materials & Methods: SHIM surveys were given to patients at a university-based urology clinic being seen for general urological problems. A total of 653 surveys were administered and 289 of these surveys were completed sufficiently for analysis. Results were sorted into levels by SHIM score as follows: Severe ED (1-7), Moderate ED (8-11), Mild to Moderate (12-16), Mild ED (17-21) and No ED (22-25). Self-reported leisure-time physical activity was measured by the Godin Leisure-Time Exercise Questionnaire. Data is reported as Mean ± St. Deviation. Statistical analysis was determined by ANOVA.

Results: No difference was observed in Age or Body Mass Index (BMI) when compared across the SHIM levels. Significant differences were observed between SHIM levels across Godin Questionnaire scores (P < 0.001), with the Severe ED group exhibiting significantly lower levels of physical activity compared to both the Mild ED (P < 0.001) and No ED levels (P < 0.001).

Conclusions: The obesity epidemic is a serious health concern in the United States due to the association of obesity with negative health consequences. In our patient population, BMI had no effect on the degree or presence of ED. Individuals with increased physical activity as measured by the Godin Questionnaire exhibited improved SHIM scores. Increased physical activity exhibits many beneficial effects, and our results support this. Further investigation into the effects of obesity and increased physical activity on ED is ongoing.

**SHIM **

<table>
<thead>
<tr>
<th>Severe</th>
<th>Moderate</th>
<th>Mild-Med.</th>
<th>Mild</th>
<th>No ED</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>64.13 ± 7.26</td>
<td>61.63 ± 7.88</td>
<td>65.76 ± 9.21</td>
<td>64.68 ± 8.55</td>
<td>62.20 ± 7.73</td>
</tr>
<tr>
<td>BMI</td>
<td>30.83 ± 5.75</td>
<td>31.25 ± 6.36</td>
<td>28.86 ± 4.90</td>
<td>31.38 ± 5.72</td>
<td>29.62 ± 5.64</td>
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</tbody>
</table>

MP4-06

Features and Outcomes of Diabetic and Non-Diabetic Patients Presenting with Prostatic Abscess

B. Wiseman1, M. Jessop2, C. Crigger3, J. Barnard2, S. Zaslau2

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Introduction: Prostatic abscess is an uncommon disease and diabetes mellitus (DM) is a known risk factor for development. No prior studies have compared features or outcomes in diabetic and non-diabetic patients.

Materials & Methods: We retrospectively reviewed our series of 17 patients presenting with prostatic abscesses since 2012. We reviewed and compared patient demographics, presenting features, management, and follow-up.

Results: Of the 17 patients presenting with prostatic abscess, 12 were diabetic and 5 non-diabetic. Mean age at presentation was 60.6 years and average FBV 1cl 8.3% in DM patients. No differences were observed between DM and non-diabetic patients with abscess size (3.3 vs. 3.2 cm, p = 0.95), abscess multifocality (58% vs. 50%, p = 1.0), BMI (29.4 vs. 31.6 kg/m², p = 0.58), WBC count on presentation (16.2 vs. 17.1, p = 0.80), LOS (11.3 vs. 16.8 days, p = 0.49), presence of abnormal UA (82% vs. 67%, p = 0.58), positive blood cultures (42% vs. 67%, p = 0.61) or history of tobacco use (58% vs. 67%, p = 1.0). Management included transurethral (n = 12), transrectal (n = 4), IR (n = 1), and laparoscopic (n = 1) drainage and was not dependent on presence of DM. Mean antibiotic duration was 43 days. The most common culture organism in the abscess fluid was coagulase-positive staphylococcus (n = 11). Mean follow-up was 254 days with abscess recurrence in 1 non-diabetic patient.

Conclusions: In our small series, features and outcomes were not significantly different in patients with DM presenting with prostatic abscess.
Effect of Body Mass Index on Recurrence Following Urethroplasty

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Introduction: In the treatment of urethral strictures, urethroplasty has been demonstrated to be an effective, durable, and cost-effective surgical option. Limited investigation exists to understand whether obesity is an independent risk factor for urethroplasty failure. We sought to assess whether BMI is an independent predictor for stricture recurrence following urethroplasty.

Materials & Methods: We performed a retrospective review of patients undergoing urethroplasty between 2007 and 2014, identifying 137 patients for study inclusion. Data collected included body mass index (BMI), patient demographics, and surgical characteristics including age, stricture length and location, etiology, and urethroplasty technique. Logistic regression was performed to assess predictors for stricture recurrence using both univariate and multivariate models.

Results: Mean patient age and follow-up was 47 years (± 16.4) and 92 months (± 30.5), respectively. A recurrence rate of 17% was identified, with a mean time to recurrence of 29 months. There was no difference when comparing the mean BMI in patients with and without recurrence (28.9 vs. 30.4 kg/m2, respectively) (p = 0.40). A higher rate of stricture recurrence was seen when comparing the cohort with a BMI < 25 versus remaining cohorts (BMI 25-30; BMI > 30). However, in univariate and multivariate analysis, BMI failed to demonstrate statistical significance as a predictor for urethroplasty outcome (Table 1). On multivariate analysis, fasciocutaneous repair type was predictive of stricture recurrence. No additional potential predictors assessed were found to be significant.

Conclusions: In the present study, BMI did not independently predict stricture recurrence following urethroplasty.

Table 1. Potential Predictors for Stricture Recurrence, Multivariate Analysis

<table>
<thead>
<tr>
<th>Predictor</th>
<th>OR (95% CI)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1.02 (0.99-1.07)</td>
<td>0.22</td>
</tr>
<tr>
<td>BMI</td>
<td>1.00 (0.92-1.09)</td>
<td>0.93</td>
</tr>
<tr>
<td>Stricture length</td>
<td>0.75 (0.55-0.98)</td>
<td>0.06</td>
</tr>
<tr>
<td>Stricture location</td>
<td>2.77 (2.25-28.14)</td>
<td>0.37</td>
</tr>
<tr>
<td>Etiology</td>
<td>1.00 (0.86-1.00)</td>
<td>0.97</td>
</tr>
<tr>
<td>Tobacco use</td>
<td>0.80 (0.62-1.03)</td>
<td>0.09</td>
</tr>
<tr>
<td>Alcohol use</td>
<td>1.00 (0.95-1.06)</td>
<td>0.93</td>
</tr>
<tr>
<td>Repair type</td>
<td>3.50 (0.84-14.06)</td>
<td>0.06</td>
</tr>
<tr>
<td>Time to repair</td>
<td>0.59 (0.32-1.04)</td>
<td>0.04</td>
</tr>
<tr>
<td>Complications</td>
<td>0.07 (0.02-0.26)</td>
<td>0.04</td>
</tr>
</tbody>
</table>

BMI: body mass index, TPS: tumor and primary anastomosis, F: fasciocutaneous

Testicular Transposition Trends Towards Decreasing Length of Stay in Fournier’s Gangrene

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Introduction: Fournier’s Gangrene (FG) is a rapidly progressive necrotizing infection of the genitalia. Despite aggressive treatment, mortality rates are reported to be as high as 60%. Much of the morbidity is incurred during the initial hospital stay after the initial debridement. Transposition of testicles into subcutaneous thigh pouches with local skin advancement is one strategy by which soft tissue defects can be repaired. The present study sought to analyze the effect of testicular transposition on length of stay and rate of complications in FG patients.

Materials & Methods: Retrospective chart review was undertaken to identify FG patients from 2009 to 2012. Abstracted data included age, sex, length of stay, BMI, mortality, tobacco and alcohol use. Comorbidities were classified based on organ system. Length of stay and complications were compared across reconstruction types (Table 1). Data were analyzed using non-paired, two tailed t-test with significance p < 0.05.

Results: 31 male patients were identified with FG of which 20 met inclusion criteria. Patient comorbidities associated with FG included diabetes (70%), hypertension (70%), and smoking (55%). An average of 2.9 debridements were required for each patient and 80% had removal of scrotal skin. Orchietomy was required in 15% of patients. Average time to reconstruction was 16.65 days from initial debridement. 45% of patients underwent transposition of one or more testicles with 55% also receiving local skin advancement. Skin grafting was required in 40% of patients. Testicular transposition trended towards a decreased length of stay relative to other reconstructive methods (18.82 vs. 28.78 days p = 0.09). Mortality was 10% for our study. Postoperative complications did not vary significantly based on type of reconstruction (Table 1).

Conclusions: Our findings validate the diagnosis of Fournier’s gangrene as a challenging clinical paradigm requiring multidisciplinary care and often protracted hospital stays with significant morbidity. The majority of our patients were obese, diabetic, smokers with hypertension and advanced age. Further investigation through larger volume studies may validate testicular transposition with local skin advancement as the optimal reconstructive strategy to decrease length of stay in FG patients.
MP4-10

Weight-Based Gentamicin May Be Associated with Increased Acute Kidney Injury in Urologic Prosthetic Surgery
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Introduction: Despite the known nephrotoxicity of gentamicin, many societies (including the American Urological Association in 2008) have published guidelines recommending a single periprofessional gentamicin dose of 5 mg/kg for antimicrobial prophylaxis during urologic prostatic surgery. This recommendation is based on the theoretical renal safety and increased antimicrobial activity of a single large dose. The goal of our investigation was to identify rates of acute kidney injury (AKI) in urologic prostatic surgery both before and after adoption of weight-based gentamicin dosing.

Materials & Methods: We performed a single-institution retrospective study of all patients receiving perioperative gentamicin during implant, revision, or explant of penile prostheses or artificial urinary sphincters between 2000-2017. Patient characteristics and perioperative outcomes were identified. Patients with available pre- and postoperative creatinine values were included. AKI was defined by Kidney Disease: Improving Global Outcomes (KDIGO) criteria. Comparative analyses were performed between patients receiving standard-dose gentamicin and weight-based gentamicin.

Results: Of 415 urologic prostatic surgeries performed during the study period, 124 met inclusion criteria with paired pre- and postoperative creatinine values. Sixty-seven received standard-dose gentamicin and 57 received weight-based gentamicin (mean dose 1.0 ± 1.4 vs. 3.7 ± 1.4 mg/kg, p < 0.05). There were no significant differences in perioperative renal function or various comorbidities between groups; however, the standard-dose group was slightly younger (mean age 60.5 ± 8.5 vs. 64.0 ± 7.4 years, p < 0.05), and comprised more male patients (35.4 vs. 20.9%, p = 0.02) in the weight-based group. Two of 67 (3.0%) in the standard-dose group vs. 9 of 57 (15.8%, p = 0.02) in the weight-based group developed AKI (figure 1). Device infection rate was similar between standard-dose and weight-based groups (5.2 vs. 5.3%, p = 1.00).

Conclusions: Our data suggest weight-based perioperative gentamicin dosing may be associated with an increased risk of AKI, without noticeably improving infection rates. Weight-based dosing may warrant closer perioperative monitoring of renal function, and merits larger investigations to determine risks and benefits.

MP4-12

Discrete Event Simulation of a Dedicated Procedure Day in Urology Clinics
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Department of Urology, University of Virginia1; University of Virginia2

Introduction: Urology clinics have a relatively high number of procedures performed relative to other outpatient clinics. Incorporating these procedure visits into a standard office visit workflow can present a challenge due to differing demands on support staff and room/equipment turnover times. Our objective was to model the impact of a procedure-only-day compared with the traditional clinic day that has procedure visits interspersed with evaluation and management (E&M) visits in terms of staff utilization and patient wait times.

Materials & Methods: We used discrete event simulation to compare an experimental model (procedure-only-day plus two E&M days) compared to traditional model (three mixed days) per week. Resources included front desk, nursing/medical staff, and urologists. Percent utilization of resources, patient wait times, and total time through the system were compared between the two models. Inputs included type and duration of procedure, type and duration of E&M, intake times based on visit type, and turnover times. The distribution of visits was based on one month of three urologist schedules while the other inputs were tracked for an eight month period.

Results: Over 1 month, 25% of visits were procedures with an even distribution of cystoscopy, cystoscopy with stent removal, and transrectal ultrasound-guided prostate biopsy. Mathematical distributions were fit to the inputs and used for modeling over a simulated 4-week period, with 10 repetitions. The mean wait time in the traditional model was 25.3 minutes (95% confidence interval (CI) 21.6, 28.9) compared to 22.9 (95% CI 19.6, 26.3) in the experimental model. The mean total time in the system was the same at 125 minutes. A sensitivity analysis varying the percent of procedure visits from 20-50% showed more favorable wait times in the experimental model with increasing percent procedures. There were no differences physician and nurse utilization between models.

Conclusions: Addition of a procedure-only clinic day does not appear to increase wait times, time through the system, or decrease physician or nursing utilization.

MP4-11

Medical Malpractice in Urology: Sources of Litigation, Risk Factors, and Outcomes
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University of South Florida Morsani College of Medicine1; University of Pittsburgh Medical Center2; Lehigh Valley Health Network3

Introduction: Litigation often causes changes in practice patterns. Urologists, like many other specialists, will refer difficult patients to other providers and limit the scope of their practice due to concerns of litigation. The aim of this study was to examine medical malpractice lawsuits involving urologists.

Materials & Methods: A retrospective analysis of Westlaw database was conducted to identify medical malpractice suits involving urologists between 2000-2015. General characteristics of cases were identified including geographic distribution, sex of plaintiff, and age range of patients. Cases were further divided into procedural and nonprocedural lawsuits. The primary outcomes of interest were the claims resulting in litigation and details of case outcomes. Case outcomes included whether a payout was made to a plaintiff, payout amount, and postoperative complications.

Results: 63 cases were included for analysis with a urologist as a defendant. 79% (n = 44) of cases were procedural cases, with 30% (n = 13) involving the prostate. The most common postoperative injuries included sexual dysfunction, chronic pain, and lower urinary tract symptoms. 30% (n = 19) of cases were identified as nonprocedural. The most common nonprocedural case claims included failure to diagnose 22.5% (n = 9) and treat in a timely manner 20% (n = 8). 17 cases provided indemnity payment data. 59% (n = 10) of cases resulted in a payout. The average payout was $1,096,210 with a median payment of $731,415.

Conclusions: Common causes of litigation among urologists were identified in this study. In most cases, urologists faced litigation for an error or complication occurring within a procedural case involving the prostate or urinary tract. Urologists faced highest payout for unnecessary radiation therapy and misdiagnosis of prostate cancer.
Novel Observations of Female Pelvic Anatomy in Classic Bladder Exstrophy Using Three-Dimensional MRI Reconstruction

Johns Hopkins Hospital

Introduction: The pelvic anatomy of females with classic bladder exstrophy (CBE) has been discussed anecdotally, but has never been quantified in anticipation of reconstruction. Measuring and understanding the unique female anatomy in CBE is paramount for surgical navigation and reconstructive outcomes. This study presents quantitative measurements about the cervix, vagina, and erectile bodies in unaltered female CBE pelvises.

Materials & Methods: Three-dimensional reconstruction of pelvic Magnetic Resonance Imaging (Avanto, Siemens, Erlangen, Germany), acquired using T1 and T2 weighted sequences, were performed (Dextroscope, Bracco Imaging S.p.A., Milan, Italy) on 8 females ranging in age from 0.67-12.17 months. Four female CBE patients (mean age 6.8 months) with MRIs before their osteotomy and primary closure were compared to four age matched controls with normal pelvises (mean age 5.8 months). Measurements of the erectile bodies, the cervix, and the vagina were taken.

Results: The mean distance between clitoral halves in CBE females was 1.35 cm (mean diastasis 3.9 cm), while the mean distance in controls was 0.04 cm. The distance between the anl verge and vagina was larger in CBE females (mean 2.64 cm) than in controls (mean 1.62 cm). The total vaginal length in CBE females (mean 1.67 cm) was half the length compared to controls (mean 3.39 cm). The mean angle between the cervical os axis and the vaginal axis was more acute in females with CBE (121.9 degrees) compared to normals (163.7 degrees). All four controls had anteverted cervical ora, while three of four females with CBE had a retroversion (121.9 degrees) compared to normals (163.7 degrees). The mean angle between the clitoral bodies was smaller in CBE females (88.05 degrees, right; 88.90 degrees, left) than in controls (134.5 degrees, right; 138.75 degrees, left). The average total length of each clitoral body was comparable in CBE females (26 mm) and controls (29.1 mm), however the proportion of anteriorly dependent clitoris to pelvic rami associated clitoris was over five times larger in CBE patients (9.56 anterior:posterior) when compared to normals (1.67 anterior:posterior).

Conclusions: Along with quantifying several anecdotal relationships of the cervix and vagina with implications for fertility, this study offers novel observations about the anatomy of the erectile bodies in female exstrophy infants. Most importantly, contrary to the erectile bodies in male CBE patients, females have the majority of the clitoral body anterior to the pelvic attachment.
**MP4-16**

**The Role of Human Acellular Dermis in Preventing Fistulas after Bladder Neck Transection in the Exstrophy-Epispadias Complex**

K. Benz, J. Jayman, M. Maruf, G. Joice, M. Kasprenski, N. Sopko, H. DiCarlo, J. Gearhart

**Johns Hopkins Hospital**

**Introduction:** Fistulas are a common complication following bladder neck transection (BNT), and methods of tissue interposition are utilized to decrease fistulization rates post-operatively. The purpose of this study is to evaluate Human Acellular Dermis (HAD) as an adjunct during BNT by comparing its surgical outcomes with other types of tissue interposition.

**Materials & Methods:** A prospectively-maintained institutional database of Exstrophy-Epispadias Complex (EEC) patients was reviewed for those who underwent a BNT with at least 6 months follow-up. The primary outcome was the occurrence of BNT-related fistulas.

**Results:** In total, 147 EEC patients underwent a BNT with a mean follow-up time of 6.9 years (range 0.52 years to 23.35 years). There were 124 (84.4%) classic exstrophy patients, 22 (15.0%) cloacal exstrophy patients, and 1 (0.7%) penopubic epispadias patient. A total of 12 (8.2%) BNTs resulted in fistulization, including 4 vesicoperineal fistulas, 7 vesicourethral fistulas, and one vesicovaginal fistula. There were 5 (22.7%) fistulas in the cloacal exstrophy cohort, and 7 (5.6%) fistulas in the classic bladder exstrophy cohort (p = 0.019). Using either HAD or native tissue flaps resulted in a lower fistulization rate than using no interposed layers (5.8% vs. 20.3%; p = 0.039). Of those with HAD, the use of a fibrin sealant did not decrease fistulization rates when compared to HAD alone (6.3% vs. 8.8%; p = 0.695). There was no statistical difference in surgical complications between the use of HAD and native flaps (8.6% vs. 5%, p = 0.716).

**Conclusions:** Use of soft tissue flaps and HAD is associated with decreased fistulization rates after BNT. HAD is a simple option and an effective adjunct that does not require harvesting of tissues in patients where a native flap is not feasible.

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**MP4-17**

**Clinical and MRI Manifestations of Penile Loss After Complete Primary of Bladder Exstrophy**

M. Maruf, M. Kasprenski, J. Jayman, K. Benz, J. Michaud, E. Dunn, J. Gearhart

**Johns Hopkins Hospital**

**Introduction:** Epispadias repair, using the complete penile disassembly technique, is frequently combined with primary bladder closure in patients with classic bladder exstrophy (CBE). Yet, penile disassembly has been purported as a risk for penile injury by ischemic mechanisms. Herein, the authors present all CBE cases referred to their institution where primary closure with penile disassembly epispadias repair was complicated by penile injury.

**Materials & Methods:** A prospectively maintained institutional database of 1336 exstrophy-epispadias complex patients was reviewed for complete primary repair of CBE cases referred to the authors’ institution, and those with injury to the penis were identified. The location, extent of injury, and subsequent management is reported. Triplanar magnetic resonance imaging (MRI) of the pelvis with volumetric analysis was used for penile compartment quantification.

**Results:** Of the 173 CBE patients referred after a prior complete primary repair, 25 (14%) were identified with penile loss. A majority (80%) were closed in the neonatal period, and 52% had a pelvic osteotomy. Ten patients (40%) had a failed primary closure. Median follow-up time was 9.8 years (range 3.3-21.3). Penile injury was complicated by ischemic mechanisms. Herein, the authors present all CBE patients with penile injury.

**Conclusions:** As a part of the primary bladder closure, penile disassembly for epispadias repair may lead to penile ischemia. In addition to reconstructive planning, MRI may be used to quantify penile injury. CBE patients with penile injury can be managed with myocutaneous phalloplasty. Because of the soft tissue loss with complete penile disassembly, it may be time to reevaluate the application of this technique in the reconstruction of bladder exstrophy.

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**MP4-18**

**Characterization of Pediatric Bowel and Bladder Dysfunction via Pupillometry**

E.L. Malbrun1, D. Strum2, K. Jackson2, J. Finkel2

**George Washington University1; Children’s National2**

**Introduction:** Bowel and Bladder Dysfunction (BBD) refers to a heterogeneous group of voiding disorders, accounting for an estimated 40% of pediatric urology visits. Symptoms of BBD include enuresis, urgency, and urinary retention, often accompanied by constipation. While the role of the autonomic nervous system (ANS) in regulation of voiding is well-characterized, it is not known if children presenting with BBD exhibit distinct patterns of ANS activity that could be measured for diagnosis, or targeted for intervention. Pupillometry allows for assessment of systemic ANS activity, and therefore could elucidate differences in ANS function among BBD patients. This study aimed to determine whether a pupillary response can be characterized for BBD.

**Materials & Methods:** The Neuprotecs PLR-2000 pupillometer was used to assess 7 pupillary parameters: maximum diameter (MAX), minimum pupil diameter (MIN), change in diameter (DELTA), latency (LAT), average constriction velocity (ACV), maximum constriction velocity (MCV), and average dilation velocity (ADV). Both BBD patients and controls were recruited from the urology clinic at Children’s National. Pupillometry was conducted before and after voiding.

**Results:** BBD patients showed a significantly larger MAX in the pre-voiding condition relative to controls. Additionally, several pre- and post-voiding parameters showed near-significant differences. The changes in values pre- and post-voiding were also compared, and BBD patients showed significantly larger changes in both MAX and ACV. These results suggest that BBD patients may have a distinctive profile of ANS activity, and that this profile may be detectable in a clinical setting via pupillometry.

**Conclusions:** The role of the ANS in voiding is well described, with the parasympathetic nervous system (PNS) generally more active during voiding, and the sympathetic nervous system (SNS) more active during the retention phase in healthy patients. The larger MAX seen in the pre-voiding condition among BBD patients could indicate relatively higher SNS activity during the retention phase. This is consistent with a finding from a study of cardiac autonomic activity among BBD patients, which found higher baseline heart rates relative to controls. The significantly larger changes in MIN and ACV between pre- and post-voiding conditions among BBD patients could indicate greater variability in ANS activity.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Pre-voiding</th>
<th>Post-voiding</th>
<th>Change pre- to post-voiding</th>
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<tr>
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<tr>
<td>DELTA</td>
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</tr>
<tr>
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<td>0.01094</td>
<td>0.00000</td>
</tr>
<tr>
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</tr>
<tr>
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<td>ADV</td>
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**Characterization of Pediatric Bowel and Bladder Dysfunction via Pupillometry**

2018 MA-AUA Annual Meeting Abstracts
Parental Compliance for Two Stage Fowler-Stephens Laparoscopic Orchiopeachy: Is Everyone Following Up for the Second Stage and, if not, Who Is at Risk?
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George Washington University1; Children’s National Medical Center2

Introduction: Patients undergoing a two-stage Fowler-Stephens laparoscopic orchiopeachy for intra-abdominal testes are typically recommended to undergo the second stage 4-6 months after the first stage. As part of a quality care initiative, our studied examined if patients were following up within this window and, if not, why patients were lost to follow up.

Materials & Methods: We retrospectively reviewed a cohort of 105 patients who underwent the first stage of a 2-stage Fowler-Stephens orchiopeachy at our institution between 1/2005 and 1/2015. Bivariate and multivariate analyses were performed to compare clinical, surgical, and socioeconomic factors. Patients identified as having undergone the first but not second stage procedure were contacted in an attempt to schedule the second stage procedure.

Results: Of the 105 patients, the mean and median interval between the 1st and 2nd stage procedure was 7.2 months and 5 months (2-65 months). Twenty-seven of the 105 patients (25.7%) followed up > 6 months after their first stage procedure. Four (3.8%) did not ever undergo a second stage procedure at our institution. Those patients were not able to be contacted. Contact was re-established with one patient who subsequently underwent the second stage of the procedure at 8 years of age, 45 months after the first stage procedure. The parents chose to not follow up for the second stage due to fear of another procedure under general anesthesia, despite knowledge that a second procedure would be required. Of patients who completed the second stage of their Fowler-Stephens, those that were older were less likely to have followed up within 4-6 months. (OR 0.78 p = 0.02.)

Conclusions: Although uncommon, some patients offered a two-staged operation will not follow up for the second stage, highlighting the importance of thorough counseling. As patients with undescended testes get older, they are less likely to follow up within the recommended time frame. Protocols for routinely contacting patients 3 months after a first stage Fowler-Stephens orchiopeachy could potentially improve parental compliance with standard recommendations for timing of the 2nd stage.

Cold-Knife Incision of Posterior Urethral Valve (PUV) in Neonates
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West Virginia University1; WVU Medicine Children’s - Chief of Pediatric Urology2

Introduction: Posterior urethral valves (PUVs) are found in 1 in 8000-25,000 male live births. Standard of care is to relieve obstruction and drain the bladder by either ablating the valve or performing vesicostomy within the first week of life. Treatment options vary widely and range from endoscopic fulguration (bugbee, hot-knife, and laser), and cold-knife incision to blind passage of a valvotome. Usage of a standard urethrostome requires 180-degree inversion of the scope to incise at 5- and 7-o’clock positions as the hook is inserted ventrally. This can prove technically difficult in small neonates. Barber et al reported their experience with a modified urethrostome in which the hook is inserted dorsally. We report the efficacy and safety of using a 9 Fr Wolf resectoscope for cold-knife incision of PUV using a dorsally inserted hook.

Materials & Methods: We report our case series of 6 males who underwent this technique from May 2015 to February 2018. We collected pre- and postoperative serum creatinine (Cr), voiding cystourethrography (VCUG), and renal-bladder ultrasonography (RBUS) were obtained, when possible.

Results: Of the 6 patients, 4 patients underwent postoperative VCUG, with evidence of improvement in reflux with 3 patients having severe grade 5 reflux. Intraoperatively, no complications occurred. Postoperatively, Cr levels reflected improved renal function in all 6 patients (mean 0.9, range 0.39-2.67) with paired t-test showing a mean improvement in Cr within our cohort of 0.73, just outside significance (p = 0.0514), likely the result of our study being under-powered. Four patients had their Foley catheter removed within 48 hours while 2 patients required a Foley catheter for 4 and 10 days. Of the 4 patients who underwent postoperative RBUS, I showed complete resolution, with the remainder showing improvement, and importantly, no worsening hydronephrosis. These same 4 patients underwent postoperative VUDS, with evidence of improvement in reflux in all and complete resolution of reflux in 2 patients.

Conclusions: While humble in its size, our case series sheds further light on the safety of cold-knife valvotomy as no morbidity was observed with marked improvements in serum Cr levels and, by correlation, renal improvement, bordering on significance.

An Essential Study to Assess the Performance and Safety Data of a New 5 French Air-Charged Catheter for Use in Pediatric Patients for Urodynamics
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WVU Medicine Children’s - Pediatric Urology2; WVU Medicine Children’s - Chief of Pediatric Urology2

Introduction: This clinical investigation assessed the safety and effectiveness of the new T-DOC® 5 French vesicle and abdominal catheters for measuring urodynamic pressure in pediatric patients. Secondly, to obtain feedback related to user feasibility. Currently, a T-DOC® 7 Fr catheter is used. The 5 Fr catheter is a smaller version of the 7 Fr catheter. The 5 Fr version is intended for both adult and pediatric patients, however, there are no published data related to use in the pediatric population.

Materials & Methods: Study site obtained ethics board approval. Parents completed informed consent and assent as applicable. Study conducted from January 2018 - May 2018. Inclusion criteria are pediatric patients 12 and younger indicated for Video Urodynamics (VUDS) for medically necessary reason per physician discretion. Exclusion criteria are patients with bladder infections, urological strictures, or suprapubic catheter. To assess first objective, T-DOC® 5 Fr vesical and abdominal catheters were connected to VUDS transducers. Product competency was tested. Vescile and then abdominal catheter was placed. Catheter insertion depth, problems during insertion, and catheters staying in place were assessed. Unexplained artefacts and patient factors that affect tracing were recorded. Any adverse events during study were documented. An Investigator Assessment Evaluation of the safety and effectiveness of the vesical and abdominal catheter was recorded. Patients received a follow-up telephone call 5-7 days after study to assess for any adverse events. Physicians that inserted 3 or more catheters completed a Clinical User Questionnaire (CUQ) to rate subjective interpretation regarding use of catheters.

Results: Four female and 8 male patients were in the study. Average insertion depth of vesical and abdominal catheter was 11.3 cm and 14.5 cm. One problem noted with insertion of abdominal catheter was related to patient stool retention. Catheters stayed in place on all studies. There were no unexplained artefacts or non-physiologic causes on study tracing. No adverse events occurred during the VUDS studies. On follow up call, 4 of 11 patients reported an adverse event after VUDS. All resolved within 24 hours. One patient was unable to reach and did not return phone call. Two physicians completed CUQ and rated the new T-DOC® 5 Fr vesicle and abdominal catheters overall much easier to use, much easier for patient to void around, and much more stable pressure tracing. Noted comment felt 5 Fr catheter felt less traumatic.

Conclusions: The T-DOC® 5 Fr air charged catheter is safe and effective for use with pediatric patients age 12 and younger in need of VUDS testing.
Predictors of Total Nephrectomy after Trauma: A Study from the National Trauma Data Bank

A. Zeineddin1, M.F. Nunez2, G. Ortega3, A.R. Metwalli1
Howard University Hospital1; Research Centers in Minority Institutions Program Howard University, Clive O. Callender Howard-Harvard Health Sciences Outcomes Research Center2; Howard University Hospital1; Research Centers in Minority Institutions Program Howard University, Clive O. Callender Howard-Harvard Health Sciences Outcome Research Center2

Introduction: Nephron sparing surgery is a mainstay in managing renal tumors. In renal trauma, conservative management strategies are increasingly being utilized. We queried the National Trauma Data Bank (NTDB) to identify predictors of total nephrectomy (TN) and assess the impact of insurance status and rate on intervention for renal trauma.

Materials & Methods: We examined all patients with renal injuries in NTDB from years 2007-2015. Patients were divided into four management groups: Non-operative (conservative), minimally-invasive (MI), open repair other than TN (Other), and TN. Bivariate and multivariate models were performed to predict the type of intervention and outcomes.

Results: Of 65,577 patients identified, 57,565 were managed conservatively, 2,304 MI, 3,138 TN, and 2,570 Other. Significant differences in baseline characteristics of demographics and injury were noted between groups. (Table 1) On multivariate analysis, higher AAST grade, older age, penetrating injury, higher ISS, and hypotension predicted the need for any intervention with an increased probability for total nephrectomy (TN) compared to conservative or MI. Surprisingly, having any intervention correlated with lower in-hospital mortality (OR 0.62, p < 0.01) and incidence of prolonged stay (OR 0.72 p < 0.01) but a higher probability of major complications (OR 1.9, p < 0.01).

Conclusions: Measures of injury severity correlated most strongly with the probability of TN after renal trauma. Insurance status and race were not robust predictors. The finding of decreased in-hospital mortality with any intervention compared to observation warrants further study.

<table>
<thead>
<tr>
<th>Table 1: Patient demographics and characteristics</th>
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<tbody>
<tr>
<td>Variable</td>
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</tr>
<tr>
<td>Total number of patients</td>
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Materials & Methods: A retrospective review was performed on 34,413 blunt trauma cases to identify patients presenting with traumatic bladder ruptures over the past 10 years (January 2008-January 2018) at our rural tertiary care facility. Patient data were collected including age, gender, BMI, mechanism of injury, type of injury. The primary treatment modality (surgical vs. catheter drainage), length of catheterization, and complications were also assessed.

Results: Chart review identified 44 patients with bladder trauma. Mean age was 41.84 years, mean BMI was 24.8, 95% were Caucasian, and 55% were female. MVC was the most common mechanism, representing 45% of total injuries. Other mechanisms included falls (20%) and ATV accidents (13.6%). 31 patients had extraperitoneal injury and 13 were intraperitoneal. Pelvic fractures were present in 93% and 9% had additional solid organ injuries. Formal cystogram was performed in 90% on presentation and mean time to cystogram was 4 hours. Gross hematuria was associated with 95% of cases. Operative management was required of all intraperitoneal injuries and 35.5% of extraperitoneal cases. Bladder closure in operative cases was typically performed in 2 layers with absorbable suture in a running fashion. The intraperitoneal and extraperitoneal injuries managed operatively were compared and length of catheterization (26 d vs. 22 d, p = 0.46), time from injury to normal fluorocystogram (19.8 d vs. 20.7 d, p = 0.80), and time from injury to repair (4.3 v. 60.5h, p<0.05) were not statistically different between cohorts.

Conclusions: The present study provides a 10 year retrospective review characterizing the presentation, management, and follow up of bladder trauma patients at a rural tertiary care facility. Further study will seek to allow bladder trauma teams to standardize management, streamline care, and minimize complications for patients presenting with traumatic bladder injuries.