1

Fosfomycin for Antibiotic Prophylaxis Prior to Transrectal Ultrasound-guided Prostate Biopsy

Andrew Colhoun[1], Jay Sulek[1], Zachary McDowell[1], Michael Climo[2], B. Mayer Grob[1]
[1]VCU/MCV, Richmond, VA; [2]Hunter Holmes McGuire VAMC, Richmond, VA

Introduction: Prostatitis, bacteremia and UTI are risks of transrectal ultrasound-guided (TRUS) prostate biopsy. Fluoroquinolone (FQ)-resistant bacterial infections have become prevalent creating a need for novel prophylactic agents. Fosfomycin is an oral bactericidal agent inhibiting cell wall synthesis with high urinary and prostatic tissue concentration. We sought to determine whether decreased infectious complications would be seen after TRUS prostate biopsy using fosfomycin for prophylaxis.

Materials & Methods: In July 2013 after consultation with epidemiology due increasing FQ-resistant bacterial complications at our institution, patients began receiving fosfomycin 3 g PO 2-3 hours before TRUS prostate biopsy for antibiotic prophylaxis. Charts were retrospectively reviewed from November 2012 through March 2014 for signs of infectious complications within 14 days of biopsy. Patients were analyzed in Group 1 if they had taken fosfomycin. Patients who received standard prophylaxis with 6 doses of ciprofloxacin prior to initiation of the fosfomycin regimen were analyzed in Group 2. All patients received phosphate enemas prior to biopsy. Patients were excluded if they did not meet criteria.

Results: A total of 429 patients were identified who underwent TRUS prostate biopsy, 34 did not meet criteria and were excluded from analysis. There was no difference in baseline demographics between the two groups. Group 1 consisted of 222 patients with 2 (0.9%) infectious complications and Group 2 consisted of 173 patients with 4 (2.3%) infectious complications, with no significant difference between groups (p = 0.41).

Conclusions: Fosfomycin is an effective agent for antimicrobial prophylaxis in patients undergoing TRUS prostate biopsy when compared to standard therapy.

2

Impact of Routine Oncological Follow up on Survival Following Radical Cystectomy

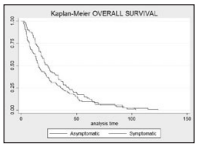
Jaber Alanzi, Keith Van Arsdalen, Thomas Guzzo, Alan Wein, S.Bruce Malkowicz
University of Pennsylvania, Philadelphia, PA

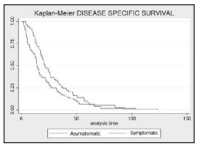
Introduction: We compared the survival rates in patients who presented with symptoms of recurrent disease to those whose recurrence was detected on routine oncological follow up.

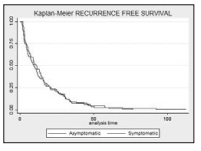
Materials & Methods: 598 patients underwent radical cystectomy for bladder cancer between 2/1987-10/2011, in a single institution by four surgeons. Survival rates categorized by the mode of diagnosis (asymptomatic vs symptomatic) was estimated using the Kaplan-Meier method and compared with the log rank test.

Results: 203 patients developed recurrent disease (33.9%), out of them 74 were asymptomatic (36.4%), 104 were symptomatic (51.2%) and 25 were excluded for insufficient data. There was no difference in the recurrence free survival between the two groups. There was a small difference that was not statistically significant in overall and disease specific survival.

Conclusions: There is no difference in survival rates including, overall, disease specific and recurrence-free survival following radical cystectomy between patients whose recurrence was detected on routine oncological follow up compared to those who present with symptoms.







3

Predictors of Cancer-specific Survival after Disease Recurrence in Patients with Renal Cell Carcinoma: The Effect of Time to Recurrence

Mikhail Regelman[1], Malte Rieken[2], Luis Kluth[2], Evanguelos Xylinas[2], Umberto Capitanio[3], Alberto Briganti[3], Laura-Maria Krabbe[4], Vitaly Margulis[4], Tobias Klatte[5], Matthew Kent[6], Daniel Sjoberg[6], Alexander Bachmann[7], Shahrokh F Shariat[5], Jay D Raman[1]
[1]Penn State Milton S. Hershey Medical Center, Hershey, PA; [2]Weill Cornell Medical College, New York, NY; [3]Vita-Salute University San Raffaele, Milan, Italy; [4]University of Texas Southwestern Medical Center, Dallas, TX; [5]Medical University of Vienna, Vienna, Austria; [6]Memorial Sloan-Kettering Cancer Center, New York, NY; [7]University Hospital Basel, Basel, Switzerland

Introduction: Time to recurrence (TTR) has been implicated as an important predictor of cancer-specific mortality (CSM) in various types of cancers. We review the course of renal cell carcinoma (RCC) following disease recurrence to identify prognostic factors that influence CSM with a special focus on TTR.

Materials & Methods: Records for 331 patients with disease recurrence after radical (n = 307) or partial nephrectomy (n = 24) with curative intent between 1987 and 2012 were reviewed. Cox proportional hazards regression model addressed the association between various clinicopathologic features and CSM following disease recurrence. TTR was defined as time from surgery to occurrence of disease recurrence.

Results: 232 (70%) men and 99 (30%) women were included. Median age at surgery was 62 years (Interquartile range, [IQR]: 53-69). Median time from nephrectomy to disease recurrence was 1.2 years (IQR: 0.5-3.3). Of the recurrences, 63 (19%) were local and 268 (81%) were distant. Shorter TTR (p = 0.0008), female gender (p = 0.035), and distant vs. local recurrence location (p < 0.0001) were independently associated with CSM following disease recurrence.

Conclusions: In patients experiencing disease recurrence following renal surgery for clinically localized RCC, shorter TTR, female gender, and distant recurrence were associated with worse CSM. Inclusion of these factors into risk stratification models may aid patient counseling and regarding prognosis and expected efficacy of salvage therapies.

4

Concomitant Traumatic Genitourinary Injuries: Results from a Large Urban Trauma Center

Zachary Piotrowski, Daniel C. Parker, Brian R. Cronson, Abhijit Pathak, Jack H. Mydlo, Jay Simhan
Temple University, Philadelphia, PA

Introduction: Urologists are often consulted for the management of genitourinary (GU) injury in the setting of acute trauma. We reviewed our large urban trauma center experience to determine the frequency with which multiple genitourinary injuries occur.

Materials & Methods: We retrospectively reviewed our prospectively maintained IRB approved trauma database for all GU injuries from 2004-2012. We then stratified patients by those with one GU injury, multiple concomitant GU injuries, and isolated GU injuries (e.g. no other organ system involvement). Patient demographics, traumatic mechanism, and location of all GU and non-GU injuries were analyzed.

Results: 312 patients (mean age 31, range 14-80, 85% male) with GU injuries were identified during the study period. Of these, 37 patients (37/312, 12%) suffered from multiple concomitant GU injuries while 229 patients (229/312, 73%, p < 0.01) presented with only one GU organ affected. An isolated GU injury with no other organ system involvement was noted at a similar rate (42/312, 13%) to patients with multiple GU injuries (p = 0.55). The two most common mechanisms were penetrating gunshot (188/312, 60%) and motor vehicle collision (32/312, 10.2%). In patients with multi-organ system trauma, the liver (27%) and small bowel (24%) were the most common non-GU organs involved.

Conclusions: In our large series, multiple traumatic GU organ involvement occurs as often as isolated injuries. In order to prevent missed diagnoses, urologists should consider this information when evaluating patients in the setting of acute urologic trauma.

5

The Expression of Cancer Testis Antigens in Human Urologic Malignancies

Shaoqing Zhou, Samuel Robinson, Albert Petrossian, Ekaterine Goliadze, Georgi Guruli
Virginia Commonwealth University, Richmond, VA

Introduction: Cancer testis antigens (CTA) are aberrantly expressed in various tumors, including urologic malignancies. Low expression of these highly immunogenic antigens might confer low immunogenicity to tumor and allow it to escape immune monitoring and grow unimpeded. To test this hypothesis, we obtained tissue from surgical specimens of patients with prostate, bladder and kidney cancers, and examined the expression of various CTAs.

Materials & Methods: Gene microarray was performed for human prostate epithelial cells (PrEC), hormone-sensitive prostate cancer cells (LNCaP) as well as castration resistant prostate cancer cells (PCC). Surgical specimen from radical nephrectomies, prostatectomies, and cystectomies were obtained from the tissue bank. Quantitative PCR was then performed to compare CTA expression of normal tissue versus tumor.

Results: Of the various CTA that were identified on gene microarray, many were found to have decreased expression in LNCaP and PCC compared to PrEC. Human kidney, bladder, and prostate surgical specimen were then separated into normal and tumor tissue. Quantative PCR results performed for these samples showed that most CTA (SSX2, Tex15, Cep55, etc.) were downregulated in tumor tissue as seen in microarray data.

Conclusions: CTA that were downregulated in prostate cancer cells were also found to have decreased expression in kidney and bladder cancer tissue when compared to their respective normal tissue. This decrease might allow tumors to escape immune monitoring. Measures directed toward increased expression of CTA in malignant tissue (epigenetic modifiers) mayincrease immune response to these tumors and be valuable tool in the treatment of advanced genitourinary malignancies.

6

Percent Lymph Node Involvement Predicts Mortality after Inguinal Lymph Node Dissection for Penile Cancer

Mark W. Ball, Joan Ko, Deborah Kaye, George J. Netto, Stephania Bezerra, Arthur L. Burnett, Trinity J. Bivalacqua
Johns Hopkins University School of Medicine, Baltimore, MD

Introduction: Inguinal lymph node dissection (ILND) is utilized in the treatment of penile cancer for patients with palpable inguinal lymph nodes (LN) and for those at high risk of nodal metastases. Previous reports have demonstrated worse survival with greater than 2 positive LN, but this method does not account for the extent of ILND. We hypothesize that percent LN involvement may predict survival in penile cancer.

Materials & Methods: Our institutional penile cancer database was queried for patients who underwent ILND from 1988 to 2012. Demographic and pathologic characteristics were analyzed to determine impact on recurrence-free survival (RFS). LN density, or the percent of positive LN out of total LN was calculated as a continuous variable and as a categorical variable at varying thresholds.

Results: 28 patients with complete follow-up were identified. Indications for ILND were stage ≥ T2 in 20 patients (71.4%), palpable adenopathy in 7 (25%), high grade T1 in 1 (36%). Median node yield was 17.5 (IQR 12–22), and positive lymph nodes were found in 14 patients (50%). RFS was significantly lower for patients with > 15% LN density (median survival 62 vs. 6.3 months, p = 0.0120. Controlling for age, medical comorbidities, number of positive LN, T stage and indication, LN density > 15% was independently associated with worse RFS (hazard ratio 5.5, p value 0.027).

Conclusions: In this small, retrospective cohort, the presence of nodal involvement above 15% was associated with decreased overall survival. These findings suggest that LN density may provide valuable prognostic information for patients undergoing ILND.

7

EP1 Receptor Mediates COX-2 Signaling Involved with Proliferation, Migration, and Transcription of Mitotic Genes in Prostate Cancer Cells and May Be a New Therapeutic Drug Target

Jacob A. Baber[1], Wannian Yang[2], Chandra Childress[2]
[1]*Geisinger Medical Center, Danville, PA;* [2]*Janet Weis Center for Research, Danville, PA*

Introduction: Cyclooxygenase 2 (COX-2) plays an important role in prostate cancer cell proliferation. However, the downstream signaling that mediates the COX-2 effect remains elusive. Prostaglandin E2, the major product of COX-2, transduces downstream signaling by activation of the hetero-trimeric G-protein coupled receptors EP1-4. In this study, we evaluate the role of the EP1 receptor signaling pathway in mediating COX-2 proliferation signaling in LNCaP prostate cancer cells.

Materials & Methods: Prostate cancer cells were cultured and treated with EP receptor antagonists, COX-2 inhibitors, and an androgen receptor (AR) inhibitor. The cellular proliferation and migration were detected by the MTT assay and the wound-healing assay, respectively. The effect of the EP1 antagonist or COX-2 inhibitors on transcription of mitotic genes were determined by RT-PCR.

Results: Treatment of LNCaP cells with COX-2 inhibitors inhibited cell proliferation in a dose dependent manner. The EP1 antagonist, but not the other EP receptor antagonists, produced a similar inhibitory effect on LNCaP cell proliferation and transcription of mitotic genes to that of the COX-2 inhibitors. Interestingly, the COX-2 inhibitors dramatically impaired LNCaP cell migration capacity, while the EP1 antagonist had a minor inhibitory effect. Furthermore, the EP1 antagonist and the AR inhibitor together had a synergistic inhibitory effect on LNCaP cells' proliferation.

Conclusions: The EP1 receptor mediates COX-2 signaling in promoting prostate cancer LNCaP cell proliferation. The effect of the EP1 receptor antagonist on inhibition of prostate cell proliferation and transcription of mitotic genes suggests that the EP1 receptor may be a potential target for prostate cancer therapy.

MP1

Contemporary Trends in Urology Residents' Exposure to Genitourinary Trauma

Daniel Parker, Neil Kocher, Zachary Piotrowski, Jack H. Mydlo, Jay Simhan
Temple University Hospital, Philadelphia, PA

Introduction: It is unclear whether the emergence of subspecialty genitourinary (GU) trauma and reconstruction training has influenced resident exposure and career choices. We evaluate trends in resident experiences with urologic trauma during residency training.

Materials & Methods: A 31-question, IRB-approved survey was sent to residency program directors of all ACGME accredited programs in July 2013. Areas evaluated included the extent of didactic instruction in GU trauma, resident/faculty perceptions of urologic trauma training, and exposure to a GU trauma/reconstruction (GUTR) fellowship-trained urologist. De-identified results were compared to responses from an identical survey administered in 2006.

Results: With a 43% (53/123 programs) response rate in 2013, the majority of program directors (86%) indicated that GU trauma exposure was an integral part of urologic training. Regardless, only 41% of respondents noted the presence of a GUTR urologist involved in resident training. The presence of a GUTR urologist influenced resident career choice towards trauma subspecialty training ($p < 0.01$) and resident involvement in trauma research ($p = 0.06$), as well as participation in multidisciplinary educational conferences with the trauma surgery service ($p = 0.02$). Compared to 2006 (response rate 57%, 64/112 programs), resident exposure to urologic trauma training ($p = 0.85$), the necessity of didactic instruction in GU trauma ($p = 0.55$), as well as the exposure to a GUTR urologist ($p = 0.45$) remained relatively unchanged.

Conclusions: Based on nationwide program director responses, curricula focusing on urogenital trauma are integral to resident education. Despite more fellowship training programs, resident exposure to GUTR-trained surgeons remains limited and largely unchanged.

MP2

Use of Ileovesicostomy in the Management of the Pediatric Neurogenic Bladder

Steven Kheyfets, Jared Bieniek, Joel Sumfest
Geisinger Medical Center, Danville, PA

Introduction: Creation of an ileovesicostomy is a viable option in some children with neurogenic bladder dysfunction who require constant, low-pressure bladder drainage. However, there exists limited data for this procedure among pediatric patients. This study reviewed records of pediatric patients undergoing ileovesicostomies to determine operative outcomes and long-term efficacy in treating pediatric neurogenic bladder dysfunction.

Materials & Methods: After obtaining IRB approval, the medical records of patients undergoing ileovesicostomy by a single pediatric urologist from January 2005 to July 2013 were reviewed. Demographics, preoperative medical status, operative data, and postoperative outcomes were recorded in a database and analyzed for descriptive statistics. The data set was examined to characterize the patient population and describe the perioperative and postoperative surgical outcomes.

Results: Within the study time period, seven patients underwent ileovesicostomy: Five procedures were performed with robotic assistance, one with laparoscopic bowel harvest and open ileovesicostomy, and one procedure as an open ileovesicostomy (with excision of gastrocystoplasty). Average length of surgery was 285 minutes, estimated blood loss was 24mL and length of stay averaged 5.4 days. Minor early post-operative complications occurred in two patients (ileus and hypertension). The mean duration of available follow-up was 25.4 months. Renal function slightly improved overall, and the degree of hydronephrosis on imaging was drastically reduced in all patients. No late complications occurred.

Conclusions: Ileovesicostomy provides a minimally invasive, feasible mode of urinary drainage in an array of pediatric patients with obstacles to continent drainage options.

MP3

Determining the Role of Androgen Receptor Acetylation in Prostate Cancer

Gregory C. McMahon[1], Erin M. Heine[1], Sravan Panuganti[1], Diane E. Merry[2], Scott Dehm[3], Karen E. Knudsen[2], Heather L. Montie[1]
[1]Philadelphia College of Osteopathic Medicine, Philadelphia, PA; [2]Thomas Jefferson University, Philadelphia, PA; [3]University of Minnesota, Minneapolis, MN

Introduction: The androgen receptor (AR) and its ligands are critical mediators of prostate cancer. Castrate-resistant prostate cancer (CRPC) is currently incurable. The mechanism behind the transformation to CRPC is an active area of research. AR lysine residues 630/632/633 are acetylated in response to androgen binding. This AR modification has been proposed to enhance the transcriptional function of AR and to contribute to prostate tumorigenesis. We are utilizing a genetic approach to determine the function of AR acetylation in AR-dependent prostate cancer in cell culture and in in vivo models. We hypothesize that acetylation contributes to aberrant AR activation in CRPC.

Materials & Methods: We have generated mutant AR constructs designed to simultaneously knockdown endogenous AR (shRNA) and express acetylation-mutant (acetylation-null or acetylation-mimic) AR. We have stably transfected these constructs into C4-2 (castrate-resistant) cells. Clonal cell lines have been selected based on equivalent AR protein levels and we are in the early stages of characterizing the growth rates of these cell lines. We are also analyzing the transcriptional function of acetylation-mutant AR in these cell lines via qPCR.

Results: Preliminary results indicate that C4-2 cells expressing AR, null for acetylation (arginine mutation of lysine 630/632/633), grow at a significantly reduced rate compared to cells expressing lysine intact AR.

Conclusions: In all, these studies have been developed to define whether AR acetylation could be a target for therapeutic development for the treatment of castrate-resistant prostate cancer.

Research is funded by a John Moran Young Investigator Award from the Prostate Cancer Foundation (H.L.M.).

MP4

Robotic Assisted Partial Nephrectomy Results in a Large Community Practice

Michael E. Franks[1], Elyssa Stoops[2], Mark Monahan[1], David Murphy[1], Tim Bradford[1], Charlie Jung[1], Kinloch nelson[1], Eric Cote[1], David Miller[1], Nada Wood[1]
[1]Virginia Urology, Richmond, VA; [2]Washington & Lee University, Lexington, VA

Introduction: Our community-based large group has implemented robotic assisted partial nephrectomy (RAPN) in the surgical treatment of the small renal mass (SRM) since 2008. Little outcome data is available from large group integrated practices vs academic centers. We sought to describe the evolution and outcomes of RAPN in our group.

Materials & Methods: A retrospective database review identified 281 patients who underwent RAPN over 5 years. Procedures were done by a group of 8 surgeons, many whom assist each other surgically. Patient demographics, tumor size, warm ischemia time (WIT), estimated blood loss (EBL), length of hospital stay (LOS), complications, and serum creatinine levels were reviewed. Operative times were not available.

Results: RAPN is currently the most common method of treating SRM in the practice. Patients (n = 281, mean age 58.9 ± 23.0 years, 55% male) with mean tumor size 3.13 ± 1.61 cm (77% malignant, 23% benign) were included in the study. The group experienced mean WIT of 20.6 ± 7.9 minutes, median EBL of 150 ± 258.2 mL, and LOS of 3.0 ± 1.6 days. A significant improvement in WIT was seen over time. Eight patients (2.8%) experienced Clavien grade III–IV postoperative complications. With mean follow up of 14.5 ± 10.1 months, serum creatinine change was negligible.

Conclusions: RAPN is a favored SRM surgical option in our integrated practice. Our team based approach and shared surgical experience in managing RAPN cases has yielded outcomes comparable to academic centers of excellence and provides a successful model for large community practice groups.

MP5

Characteristics of Emergency Department Visits for Patients with Nephrolithiasis

Justin B. Ziemba, Matthew E. Sterling, Keith N. Van Arsdalen, Phillip Mucksavage
University of Pennsylvania, Philadelphia, PA

Introduction: Nephrolithiasis is commonly diagnosed and managed within the emergency department (ED). We sought to characterize ED visits for patients with nephrolithiasis.

Materials & Methods: We performed a cross-sectional study of all patients > 18 years with a primary ICD-9 diagnosis of kidney calculus (592.00), ureteral calculus (592.1), and renal colic (788.0) who presented to a single-institution emergency department between 2000 and 2012.

Results: A total of 3,633 patients were available for analysis. The median patient age was 41 (IQR 31-52) years old. The number of visits per year ranged from 238 in 2000 to 311 in 2012. Patients presented during daytime hours in 63% (2287/3633) of visits and on a weekday in 75% (2719/3633) of visits. The median duration of the ED encounter was 354 (IQR 257-496) minutes. Diagnostic imaging was performed with CT in 55% (1296/2343), ultrasound in 9% (202/2343), abdominal x-ray in 25% (580/2343), and other in 11% (265/2343). On disposition, 15% (551/3633) were admitted, 3% (91/3633) placed in observation, 81% (2957/3633) discharged, and 1% (34/3633) were transferred. Overall, a total of 38% (1375/3633) of patients had a repeat ED visit during the study period. Of these, 26% (357/1375) were seen within 4 weeks and 6% (88/1375) within 48 hours of the initial ED visit. Only 4% (159/3633) of patients underwent a procedure from the ED with the majority (55%; 87/159) having a ureteral stent placed.

Conclusions: Patients presenting to the ED with nephrolithiasis are frequently discharged without the need for a procedure, but return ED visits are common.

MP6

Penile Prosthesis Placement in Patients with a History of Total Phallic Construction
Jack M. Zuckerman, Katherine Smentkowski, David Gilbert, Ramon Virasoro, Jeremy Tonkin, Gerald Jordan, Kurt McCammon
Eastern Virginia Medical School, Norfolk, VA

Introduction: Outcomes following penile prosthesis placement in patients with a history of total phallic construction are not well described.

Materials & Methods: Retrospective review penile prosthesis placement in patients with prior total phallic construction. Gortex sleave corporal construction was utilized in all patients.

Results: Twenty-five patients underwent neophallus prosthesis placement at a mean 34.4 years of age. Prosthesis placement occurred an average 42 months following phallic construction and follow-up was a mean of 60 months. Malleable prostheses were placed in 17 patients and inflatable in 8; implants were bilateral in 92%. Eight percent experienced operative complications including a bladder injury (1) and phallic flap arterial injury (1). Post-operative complications occurred in 24% at a median 5.9 months following placement. Four prosthesis (16%) were explanted secondary to infection or erosion and two additional required revision. Of the explanted prosthesis one was later replaced without further complication. Seventy-six percent of patients were sexually active following prosthesis placement.

Conclusions: Penile prosthesis placement is possible in patients with prior phallic construction. Although complications rates appear to be increased in this population compared to historic controls of normal anatomic males, the majority in this series were sexually active following prosthesis placement. This demonstrates the utility of prosthesis implantation in these difficult patients.

MP7

Sickle Cell Disease in Priapism: Disparities in Care?
Gregory A. Joice, Max Kates, Nikolai Sopko, Johanna Hannan, Trinity Bivalacqua
Johns Hopkins, Baltimore, MD

Introduction: Priapism is a well-described manifestation of SCD patients, occurring in over one quarter of patients. However, whether priapism is managed differently in this large subset of patients remains unknown. We thus sought to determine the effect of SCD on inpatient outcomes and costs for patients admitted to the hospital with priapism.

Materials & Methods: Using the Nationwide Inpatient Sample (NIS), a weighted sample of 12,547 patients was selected with a diagnosis of priapism between 2002-2011. Baseline differences for patient demographics and hospital characteristics were compared between the SCD patients and non-SCD patients. Multivariate analysis was performed to identify the impact of SCD on elongated length of stay (LOS), utilization of penile operations, blood transfusion, and increased total cost.

Results: The overall proportion of SCD patients was 21.5%. SCD patients were younger, more often black, more likely to have Medicaid insurance and treated more frequently in urban teaching hospitals particularly in the South region. SCD was a significant predictor of having a blood transfusion (OR 16.3, $p < 0.001$), and an elongated LOS (OR 1.42, $p < 0.001$) but was protective from getting a penile operation (OR 0.40, $p < 0.001$). SCD was not a significant predictor of cost (OR 1.02, $p = 0.8690$) but there was an apparent 24% cost increase when stratifying by penile operation.

Conclusions: SCD patients represent a demographically distinct sub-group of priapism patients who have a different hospital course compared to the general population manifested by longer hospital stays and more blood transfusions but fewer penile operations.

MP8

The Administration of any Additional Bacillus Calmette-Guérin beyond Induction Therapy Improves Overall Survival in Primary High-Grade T1 Bladder Cancer
Zachary L. Smith[1], Thomas J. Guzzo[1], Senthil N. Jayarajan[2], Matthew E. Sterling[1], Muta M. Issa[3], Ryan W. Dobbs[3], S. Bruce Malkowicz[1], Daniel J. Canter[3]
[1]*University of Pennsylvania, Philadelphia, PA;* [2]*Temple University Hospital, Philadelphia, PA;* [3]*Atlanta Veterans' Affairs Medical Center and Emory University, Atlanta, GA*

Introduction: Intravesical Bacillus Calmette-Guérin (BCG) has proven the most effective treatment in preventing recurrence and progression of high-grade T1 (HGT1) and other high-risk non-muscle-invasive bladder cancer (BCa). While a full BCG maintenance course is often difficult to complete, we sought to describe the impact of any BCG administration beyond induction therapy in patients with an initial presentation of HGT1 BCa.

Material & Methods: We queried the BCa databases at two major academic centers to identify patients who presented with HGT1 as their initial BCa diagnosis between 1980 and 2012. Overall survival (OS), recurrence-free survival (RFS), and progression-free survival (PFS) were examined by Kaplan-Meier method.

Results: A total of 224 patients were identified; 199 (88.8%) and 201 (89.7%) were male and non-African American, respectively. Median age was 66 years. 203 (90.6%) patients presented with isolated HGT1 disease while 21 (9.4%) presented with HGT1 and concomitant carcinoma in-situ. Induction BCG was utilized in 174 (77.7%) patients, with 110 (63.2%) of these patients receiving some degree of BCG maintenance therapy. The 5-year and 10-year OS for patients who received only an induction course of BCG (58.5% and 48.7%) were poorer than those that received induction therapy plus any degree of maintenance therapy (84.8% and 74.0%) ($p = 0.0234$). Differences in RFS and PFS were not significant between groups.

Conclusions: In our large cohort of primary HGT1 BCa patients, the administration of any additional BCG after induction therapy yielded a significant impact on OS, reaffirming the importance of continuing additional BCG after completion of induction therapy.

MP9

Quantification of Feulgen Stain (DNA) Nuclear Morphometry Predicts Prostate Cancer Aggressiveness
Aniq ur rehman Gajdhar[1], Guangjing Zhu[1], James E. Verdone[1], Christine Davis[1], Jonathan I. Epstein[2], Robert W. Veltri[1]
[1]*The Brady Urological Institute, The Johns Hopkins University School of Medicine, Baltimore, MD;* [2]*Department of Pathology, The Johns Hopkins Hospital, Baltimore, MD*

Introduction: Nuclear morphologic features change significantly during prostate cancer (PCa) progression. We accurately quantified these changes in different Gleason scores of PCa using unique tissue microarray (TMA) stained with Feulgen DNA reagent. We evaluated tumor aggression by comparing indolent vs. aggressive Gleason score phenotypes and then we assessed biochemical progression (BCR) based on nuclear morphology changes.

Materials & Methods: Two TMAs with 80 PCa cases of different Gleason scores were used for Feulgen DNA staining and each PCa case includes quadruplicates of benign and cancer areas. Among these cases, 25% had biochemical recurrence (BCR). ImagePro Premier 9.1 software was used to quantify each nuclei in the cancer area only with up to 84 nuclear features including size, shape and texture. We utilized multivariate logistic regression (MLR) to discriminate indolent from aggressive PCa and predict BCR. Principle component analysis (PCA) and univariate logistic regression reduced the parameters to 11 nuclear features of interest.

Results: We utilized MLR to predict BCR and discriminate indolent from aggressive PCa. When predicting BCR, 11 parameters including size, shape and texture produced an ROC-AUC of 0.79. These parameters are also useful in discriminating indolent from aggressive PCa. Refer to the table below for detailed information.

Table 1. Multivariate Logistic Regression of Recurrence and Aggressiveness

	Pr Level	ROC-AUC	Sensitivity (%)	Specificity (%)	Probability Cutoff
Recurrence	0.15	0.79	70.00	70.83	0.26
	0.10	0.79	70.00	70.83	0.26
	0.05	0.68	60.00	62.50	0.30
Aggressive	0.15	0.87	77.50	79.31	0.56
	0.10	0.78	73.46	72.41	0.59
	0.05	0.75	69.39	68.97	0.60

Conclusions: Quantification of Feulgen DNA nuclear morphological features could be used to distinguish PCa tumor aggressiveness and predict BCR.

MP10

Impact of Surgical APGAR Score on Immediate Postoperative Outcomes and ICU Utilization after Radical Cystectomy

Eugene J. Pietzak, III, Kinnari Patel, Steve Parry, Alan J. Wein, S. Bruce Malkowicz, Thomas J. Guzzo
Hospital of the University of Pennsylvania, Philadelphia, PA

Introduction: Surgical APGAR score (SAS) is a validated measure of morbidity and mortality risk within 30-days of major surgery. We sought to better define its role in the immediate postoperative setting after radical cystectomy (RC).

Materials & Methods: We reviewed the records of consecutive patients undergoing open RC at our institution between May 2012 and April 2013. SAS was retrospectively calculated using a published adjusted scoring system for open RC. Patients were stratified into three groups by their SAS; low (≤ 4), moderate (5-7), and high (≥ 8).

Results: Of 65 patients, 5 (7.7%), 29 (44.6%), and 31 (47.7%) had a low, moderate, and high SAS, respectively. These groups did not differ by gender, race, age, Charleston Co-morbidity index, or insurance type. No difference was seen in complication rates during the perioperative period and within 30-days of RC. Furthermore, there was no difference in 30-day mortality or readmissions between groups. The absence of differences in outcomes between SAS groups may have resulted from our clinical care pathway involving routine ICU admissions after RC (64/65 98.5%). The need for ICU intervention was 100% (5/5), 42.9% (12/29), and 32.3% (10/31) for low, moderate, and high SAS, respectively ($p = 0.01$). The mean length of ICU stay was 3 days (± 1.9), 2.2 days (± 2.1), and 1.7 days (± 0.9) ($p < 0.001$) for each group. No difference was seen in ICU readmissions rates.

Conclusions: SAS may assist in objectively determining who is at risk for critical care requirements and who can be safely admitted to the surgical floor directly after radical cystectomy.

MP12

Initial Experience with Dual Probe Ultrasonic Intracorporeal Lithotripter in Percutaneous Nephrolithotomy at a Single Institution

Philip Zhao[1], Daniel Su[2], Neal Patel[1], Allen D Seftel[3]
[1]Rutgers-Robert Wood Johnson Medical School, New Brunswick, NJ; [2]National Cancer Institute, Bethesda, MD; [3]Cooper Medical School of Rowan University, Camden, NJ

Introduction: Dual frequency ultrasonic lithotripsy (DFUL) is a novel design that incorporates coaxial high and low frequency ultrasonic probes that act synergistically. We report our experience with DFUL and demonstrate its safety/efficacy in percutaneous nephrolithotomy (PCNL).

Materials & Methods: After IRB approval, we retrospectively compiled data from 31 patients who underwent PCNL using DFUL between 2009-2011. Access for all PCNL cases was obtained through a percutaneous nephrostomy/nephroureterostomy tube. Data including the age, operative/fluoroscopy times, stone size/location, EBL, transfusion rate, stone status, hospitalization duration and discourse were collected and analyzed. We also kept records of readmission rates and major/minor complications. Analysis of the data was performed obtaining the means and standard deviations of the parameters.

Results: Of the 31 patients, 37 PCNLs were performed. Overall stone-free rate was initially 56%, which increased to 70% after second-stage PCNL and/or ureteroscopy/lithotripsy in 4 of the study cohort. Our mean patient age was 46.2 ± 11.8 (range 24-70). Mean stone size was 22.1 ± 8.9 mm based on radiologic imaging preoperatively. Post-operative stone analysis revealed 10 (27%) of these staghorn calculi to be soft stones (uric acid or carbonate apatite). Stone analysis data was unavailable for 4 of the patients. Average operative time was 100 ± 32.7 minutes with a mean fluoroscopy time of 94.1 ± 32.6 seconds. Mean EBL was 131 ± 85.4 cc. Average hospitalization duration was 2.2 days.

Conclusions: Our experience with CyberWand in PCNL demonstrates a safe and effective modality for lithotripsy when compared with existing literature involving other techniques such as pneumatic, laser, and single pulse-rate ultrasonic lithotripsy devices.

MP11

A Human Prostatic Bacterial Isolate Alters the Prostatic Microenvironment and Accelerates Prostate Cancer Progression

Brian W. Simons[1], Nicholas M. Durham[1], Tullia Bruno[1], Joseph Grosso[1], Anthony J. Schaeffer[2], Ashley E. Ross[1], Paula J. Hurley[1], David M. Berman[3], Charles G. Drake[1], Praveen Thumbikat[2], Edward M. Schaeffer[1]
[1]Johns Hopkins University School of Medicine, Baltimore, MD; [2]Northwestern University Feinberg School of Medicine, Chicago, IL; [3]Queen's Univeristy, Kingston, ON, Canada

Introduction: Inflammation is associated with several diseases of the prostate including benign enlargement and cancer, but a causal relationship has not been established. Our objective was to characterize the prostate inflammatory microenvironment after infection with a human prostate derived bacterial strain and to determine the effect of inflammation on prostate cancer progression.

Materials & Methods: We mimicked typical human prostate infection with retrograde urethral instillation of CP1, a human prostatic isolate of Escherichia coli. Inflammation was characterized by histology, flow cytometry, and multiplex ELISA.

Results: CP1 bacteria induced acute inflammation in the prostate and seminal vesicles with chronic inflammation lasting at least one year. Infection induced inflammation with epithelial hyperplasia, stromal hyperplasia, and inflammatory cell infiltrates. In areas of inflammation, epithelial proliferation and hyperplasia often persist despite decreased expression of androgen receptor (AR). Inflammatory cells, characterized by flow cytometry, showed an increase in macrophages and lymphocytes, particularly Th17 cells. Inflammation was additionally assessed in the context of carcinogenesis. Multiplex cytokine profiles showed distinct inflammatory cytokines were expressed during prostate inflammation and cancer, with a subset of cytokines synergistically increased during concurrent inflammation and cancer. Furthermore, CP1 infection in the Hi-Myc mouse model of prostate cancer accelerated the development of invasive prostate adenocarcinoma with 70% more mice developing cancer by 4.5 months of age.

Conclusions: This study provides the first direct evidence that prostate inflammation accelerates prostate cancer progression, and gives insight into the microenvironment changes induced by inflammation that may accelerate tumor initiation or progression.

8

5-year Analysis of a Multi-institutional, Prospective Clinical Trial of Delayed Intervention and Surveillance for Small Renal Masses: The Dissrm Registry

Phillip M. Pierorazio, Michael A. Gorin, Mark W. Ball, Bruce J. Trock, Mohamad E. Allaf
Johns Hopkins, Baltimore, MD

Introduction: A growing body of retrospective literature has emerged regarding active surveillance (AS) for patients with small renal masses (SRM). The prospective, multi-institutional Delayed Intervention and Surveillance for Small Renal Masses (DISSRM) Registry was opened January 1, 2009, enrolling patients with SRM ≤ 4.0 cm who chose intervention or AS.

Materials & Methods: Patients were enrolled following consultation and choice of AS or intervention. Those electing AS followed an imaging protocol every 4-6 months for 2years, then every 6-12 months for 3 years. The Registry was designed and powered as a non-inferiority study. Objective criteria (DISSRM Score) for AS were developed from existing literature and refined based on experience with the registry. Analyses were performed in an intention to treat manner, with patients crossing over to intervention considered in the AS cohort.

Results: As of March 1, 2014, 454 patients have enrolled: 265 (55.9%) elected primary intervention, 188 (39.7%) AS, 21 (4.4%) elected to crossover to delayed intervention. AS patients were older, had worse ECOG scores, total comorbidities, cardiovascular comorbidities, smaller tumors, and more often had multiple and bilateral lesions. Average DISSRM score was 1.95 and 3.55 in the intervention and AS cohorts respectively. Overall survival was 89.6% and 93.0% ($p = 0.67$); cancer-specific survival was 98.2% and 100% at 4 years respectively ($p = 0.54$).

Conclusions: In a well-selected cohort with 5-years of prospective data, AS is not inferior to immediate intervention considering overall and CSS for patients with SRM. The DISSRM Score is a useful objective scoring method to differentiate patients with SRM most suitable for AS.

9

Vasoactive Intestinal Peptide and Pituitary Adenylate Cyclase Activating Peptide Receptor 1 (VPAC1) Targeted Detection of Genitourinary Cancer: A Urinary Assay

Edouard J. Trabulsi[1], Sushil K. Tripathi[2], Kaijun Zhang[2], Charalambos Solomides[3], Changpo Chen[4], Erik Wickstrom[4], Leonard G. Gomella[1], Mathew L. Thakur[5]
[1]Kimmel Cancer Center, Dept. of Urology, Thomas Jefferson University, Philadelphia, PA; [2]Dept. of Radiology, Thomas Jefferson University, Philadelphia, PA; [3]Dept. of Pathology, Thomas Jefferson University, Philadelphia, PA; [4]Dept. of Biochemistry and Molecular Biology, Thomas Jefferson University, Philadelphia, PA; [5]Kimmel Cancer Center, Dept. of Radiology, Thomas Jefferson University, Philadelphia, PA

Introduction: Prostate cancer (CaP) and bladder urothelial cancer (BUC) are the two most common malignancies in urology, and both overexpress VPAC1. VPAC1 is overexpressed at the onset of the malignancy, prior to elevation of PSA, or alteration of cell morphology. We hypothesize that VPAC1 expressed in high density on PC and BUC can be targeted for detection of shed tumor cells (STC) in voided urine, using TP4303, a VPAC1 specific biomolecule labeled with a near infrared fluorophore.

Materials & Methods: Urine samples (n = 115) were collected from normal volunteers (n = 52) and from patients with CaP (n = 27), BUC (n = 11), and other non-oncologic complaints (n = 25). Four samples (3%) were acellular and excluded (all normal or non-oncologic pts). Cytospun samples were incubated with TP4303 and DAPI counterstain. These slides were examined with confocal fluorescence microscopy.

Results: All 27 CaP patients (100%) and 10/11 BUC pts (91%) had STC. VPAC positive cells were detected much less commonly in the urine samples of normal volunteers or patients with non-oncologic conditions (Table 1).

Conclusions: The method is simple, noninvasive, rapid and appears to detect STC in patients with known prostate and bladder malignancy with high sensitivity. VPAC1 is a promising and novel approach for accurate and non-invasive detection of CaP and BUC from voided urine.

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Table 1.

Patient Description	Number	VPAC Positive	VPAC Negative
Prostate cancer	27	27 (100%)	0 (100%)
Bladder cancer	11	10 (91%)	1 (9%)
Non-oncology conditions	24	10 (42%)	14 (59%)
Normal volunteer	49	18 (37%)	31 (63%)

10

How Accurate is 3T MRI in Prostate Cancer Staging? A Comparison of Pre-Prostatectomy MRI Findings to Pathology Specimen in Robot Assisted Laparoscopic Prostatectomies (RALP)

Daniel Marchalik[1], Frank C. Hill[1], Jayashree Krishnan[2], Henry C. Wright[1], Hanaa Nissim[2], Edward Uchio[3], Keith Kowalczyk[2], Gaurav Bandi[1], John Lynch[1], Mohan Verghese[2], Jonathan Hwang[2]
[1]MedStar Georgetown University Hospital, Washington, DC; [2]MedStar Washington Hospital Center, Washington, DC; [3]University of California, Irvine, Irvine, CO

Introduction: The increasing use of 3T MRI in prostate cancer detection and staging brings into question the accuracy of this imaging modality. We explore this question by retrospectively comparing preoperative MRI findings to modified whole-mount final pathology specimen after RALP.

Materials & Methods: 1129 patients who underwent RALP from 2007-2013 were identified in our prospective IRB approved prostate cancer database. A subset of 40 patients who underwent a preoperative 3T prostate MRI without endorectal coil were identified. Final pathology was processed as modified whole mounts per protocol and read by a single senior pathologist. The pathologic findings were correlated with MRI results to determine whether MRI was an accurate predictor of cancer location, multifocality, Gleason score, surgical margin status, and extraprostatic extension.

Results: Of the 40 patients, 35 had complete radiologic and pathologic data. MRI adequately predicted tumor location in 23 of 35 patients (65.7%); however, radiographic evaluations accurately detected tumor multifocality in 12 of 35 patients (34.7%). MRI did demonstrate utility in the detection of extracapsular extension with a specificity of 88.5% and a sensitivity of 45.5%. Statistical significance was also noted in MRI's ability to accurately predict the primary tumor in cancers with high Gleason scores (8 or higher) and in patients with pre-operative PSA values over 10 ng/mL.

Conclusion: In our series, 3T MRI without endorectal coil was shown to be effective in predicting primary tumor location and extraprostatic extension in intermediate to high risk disease. However, MRI was not effective in predicting tumor multifocality.

11

Operative Duration and Intraoperative Transfusion Requirement are Associated with Patients Developing Complications Following Radical Nephroureterectomy

Yu-Kuan Lin[1], Erik Lehman[1], Laura-Maria Krabbe[2], Vitaly Margulis[2], Tobias Klatte[3], Shahrokh Shariat[3], Alex Arnouk[4], Costas Lallas[4], Edouard Trabulsi[4], Gregory Bozzini[5], Pierre Colin[5], Sarah Drouin[6], Morgan Roupret[6], Benoit Peyronnet[7], Karim Bensalah[7], Kari Bailey[8], David Canes[8], Jay Raman[1]
[1]Penn State University, Hershey, PA; [2]UT Southwestern, Dallas, TX; [3]Medical University of Vienna, Vienna, Austria; [4]Thomas Jefferson University Hospital, Philadelphia, PA; [5]Hospital of La Louvière, Lille, France; [6]Pierre and Marie Curie University, Paris, France; [7]CHU de Rennes, Rennes, France; [8]Lahey Clinic, Burlington, MA

Introduction: Clinical pathways are used to reduce length of stay and morbidity following surgical procedures. Identifying variables associated with adverse post-procedure events may guide expectations and allow tailoring of these pathways. We review operative and pathologic characteristics of patients undergoing radical nephroureterectomy (RNU) to identify factors associated with perioperative complications.

Materials & Methods: Medical records of 732 patients undergoing RNU at 8 academic centers were reviewed. Operative and pathologic data were collected. Complications occurring within 30-days of surgery were graded using modified Clavien-Dindo scale. Univariate and multivariate analyses determined association between operative and pathologic variables and perioperative complications.

Results: 371 men and 361 women (median age: 70 years) were included. 73% were performed via a minimally invasive approach. Median OR duration was 200 minute with median EBL of 165 cc. 12% received intraoperative transfusion. Final pathology noted that 56% of tumors were located in the kidney/renal pelvis, 50% were muscle invasive, and 68% were high grade, and 6% had positive surgical margins. Overall, 270 patients (37%) experienced a perioperative complication. On univariate analysis, EBL, OR duration, intraoperative transfusion, tumor location, pathologic stage, and surgical margin status were associated with complications. In a multivariate model, OR duration (OR 8.3, 95% CI 3.6-10.8, p = 0.004) and intraoperative transfusion requirement (OR 6.8, 95% CI 2.4-8.7, p = 0.009) remained significant.

Conclusions: Longer OR duration and intraoperative transfusion were associated with post-RNU complications, other factors did not predict complications. These data can be used for patient counseling as well as modification of clinical pathways after RNU.

12

Applying the United States Preventative Services Task Force Recommendation Against Prostate Cancer Screening to a Predominantly Black Cohort: A Theoretical Model

Christopher E. Bayne, Compton J. Benjamin
The George Washington University, Washington, DC

Introduction: The United States Preventative Services Task Force (USPSTF) recommendation against prostate-specific antigen (PSA)-based screening for prostate cancer (PC) references data from predominantly White populations. We investigated how the recommendation could affect PC detection in Black compared to White men.

Materials & Methods: Free PC screening was offered in an urban area in January 2014. Men < 40 years, > 75 years, or previously diagnosed with PC were excluded. Subjects underwent demographic survey, digital rectal examination (DRE), and PSA measurement. PSA >/= 4.0 ng/ml or suspicious DRE constituted a "positive screen" (S+). For S+ men, probable prostate biopsy (TRUSB) outcomes were calculated using the Prostate Cancer Prevention Trial Risk Calculator 2.0. A second, theoretical PC risk was calculated for S+ Black men using White criterion.

Results: 269 eligible men were screened, including 159 (59.1%) Black and 70 (26.0%) White men. Black and White cohorts were similar in age, PSA parameters, suspicious DRE, and PC family history. 19 (12.0%) Black and 11 (15.7%) White men were S+ (p = 0.28). Black men had a significantly higher calculated risk of high-grade PC (HGPC) (22.6%) and lower probability of negative TRUSB (60.9%) versus White men (8.9% and 72.6%, p = 0.01 and p = 0.02, respectively). Racial differences in risk of HGPC and any PC were nullified when White criterion were applied (p = 0.57 and p = 0.80, respectively).

Conclusions: Black men in our screened population have a significantly higher calculated risk of HGPC on TRUSB compared to White men. Applying the USPSTF recommendation may disproportionately affect early detection of HGPC in this population.

13

Contemporary Renal Biopsy: Medical Decision Aid?
Drew Jensen, Jessica Jackson, Shane Wells, Noah Schenkman, Tracey L. Krupski
University of Virginia, Charlottesville, VA

Introduction: Traditionally, patients were counseled that a heterogeneous renal mass had a >95% chance of being a malignancy, therefore, biopsy was unnecessary. However, active surveillance and ablation therapies have emerged as viable treatment options for small renal masses (SRM). Urologists have remained hesitant to pursue biopsy with "inconclusive" results reported up to 24% of the time. We sought to determine how often in a contemporary series percutaneous renal biopsy provided diagnostic information useful for clinical decision making.

Materials & Methods: We performed a retrospective study of our IRB approved database of SRM. We queried the database for those patients who underwent renal biopsy from January 2011 to December 2013, extracting procedure information as well as pathologic data. The data was analyzed at the lesion level as some patients had more than one lesion biopsied.

Results: We performed 98 renal biopsies from January 2011 to December 2013 for SRM. Renal biopsy provided a diagnosis in 80/98 (82%) of cases and was inconclusive in 18%. Benign lesions were identified in 15/98 (15%) while biopsy confirmed malignancy 64/98 (65%). Of those that were malignant (n=64), the breakdown of histologic findings included: 72% clear cell RCC, 14% papillary RCC, and 14% other. Post biopsy imaging identified 5 hematomas; 2 required transfusions leading to a 2% Clavien III complication rate.

Conclusions: Renal biopsy has diagnostic utility in the modern era with a low complication rate and 15% were actually benign. We propose that renal biopsy is safe and provides useful information for medical decision making.

MP13

Prevalence and Usage Patterns of Complementary and Alternative Medicine in a High Volume Tertiary Care Urology Practice
Michael J. Amirian, Patricia Lewandowski, Paul Bloch, Deborah T. Glassman
Thomas Jefferson University, Philadelphia, PA

Introduction: Complementary and alternative medicine (CAM) refers to a range of therapies not incorporated into conventional allopathic healthcare. The use of CAM therapies has increased with mixed outcomes. This study aims to define the prevalence and usage patterns of CAM therapy.

Materials & Methods: Over four weeks, patients answered a questionnaire regarding CAM therapy use. Patients were asked about demographic factors and CAM use. A chi-square test was used to determine any associations between CAM use and demographic variables. A p-value less than or equal to 0.05 was considered statistically significant.

Results: 619 out of 1,547 patients completed the questionnaire. CAM therapies were used by 19.3% of patients. Female gender and a completed college education were significantly more prevalent in the CAM user population compared to the population of patients who did not use CAM ($p = 0.004$ and $p = 0.002$, respectively). Most frequent CAM therapies used to help manage urological diseases included dietary supplements (50.0%) and dietary modifications (40.9%). 77.5% of patients reported improvement in their symptoms attributable to the CAM use. Sixty one percent of CAM users first heard about CAM from resources beyond their medical providers.

Conclusions: CAM use was reported by a considerable percentage of patients. Most of these patients attributed additional relief from urological symptoms to CAM. However, many patients are accessing CAM therapy without the guidance from their urologists. Therefore, urologists should actively assess whether their patients are using CAM and become familiar with the risks and benefits involved so that they may educate their patients effectively.

14

Do Pre-Biopsy Rectal Swabs for Fluoroquinolone-Resistance Reduce Prostate Biopsy-Related Infections?
Jason E. Michaud, Aniq Gajdhar, Lucinda Robinson, Stephen M. Schatz, Pravin K. Rao, E. James Wright, Christian P. Pavlovich
The Johns Hopkins School of Medicine, Baltimore, MD

Introduction: The increase in multidrug-resistant bacteria, including fluoroquinolone (FQ)-resistant E. coli, has led to a rise in infectious complications following transrectal ultrasound (TRUS)-guided prostate biopsy (PBX). In an effort to reduce infections, pre-biopsy stool cultures (rectal swabs) were developed to guide antibiotic prophylaxis. We sought to evaluate the effectiveness of rectal swabs to reduce biopsy-related infections.

Materials & Methods: We reviewed all men who underwent TRUS-guided PBX in 2013, during which there was provider variability in the adoption of rectal swabs. Patients without rectal swabs and those with rectas swabs that grew FQ-susceptible organisms received pre-procedure ciprofloxacin. Patients with rectal swabs showing FQ-resistance received culture-directed antibiotics. We recorded FQ-resistance rates and 30-day post-procedure infectious complications.

Results: 120 patients underwent TRUS-guided PBX in 2013. 52 (43%) had pre-procedure rectal swabs; 68 (57%) did not. Among men who did not receive rectal swabs, 4/68 (5.8%) developed infectious complications, including 2 who developed sepsis; among men who received rectal swabs, the infectious complication rate was 3.8% (2/52) including 1 episode of sepsis ($p = 0.70$). There were no infectious complications among men with FQ-sensitive rectal swabs. FQ-resistant organisms were found in 9/52 (17%) men, 22% (2/9) of whom developed infectious complications, including 1 episode of sepsis, despite culture-directed prophylaxis.

Conclusions: We identified a small but insignificant decrease in infectious complications in men who underwent rectal swab prior to TRUS-guided PBX. Despite targeted prophylaxis however, there remained a high rate of infectious complications among men with FQ-resistance, highlighting the difficulty in preventing infection in this population.

MP14

Phenotypic Heterogeneity in Small Renal Masses
Mark W. Ball, Stephania Bezerra, Michael A. Gorin, Christian P. Pavlovich, Phillip M. Pierorazio, George J. Netto, Mohamad E. Allaf
Johns Hopkins University School of Medicine, Baltimore, MD

Introduction: Renal cell carcinoma is a heterogeneous disease both at the molecular and histologic level. However, the extent that Fuhrman grade heterogeneity is present, particularly in small renal masses (SRMs), has not been quantified. Because of the development of biopsy driven management protocols, we sought to quantify grade heterogeneity in SRMs.

Materials & Methods: Our renal mass database was queried for patients with T1a renal masses, stratified by the following criteria: $<$ or $\geq$ 2 cm, clear cell or papillary histology, low-grade (LG; Fuhrman I -II) or high-grade (HG; Fuhrman III-IV). Four consecutive specimens were chosen from each of strata for a total of 32. All specimens were sectioned per institutional tissue protocol. All tissue was analyzed by a single genitourinary pathologist. The highest grade present in each 10x-powered field was recorded. A case was classified as heterogeneous if multiple grades were present, and it was classified as discordant if the highest Fuhrman grade was present in less than 50% of the specimen.

Results: A median of 5 slides (IQR 3.5-7.5) and 59 10x powered fields (IQR 34-109) were examined per patient. Overall, 26 samples (81.3%) were heterogeneous, including 15 of 16 (93.8%) HG specimens. Among all cases, 10 (31.3%) were discordant, and among HG specimens, 4 (25%) were discordant. The median fraction of LG tissue in HG specimens was 38.9% (IQR 12.2 – 57.2).

Conclusions: SRMs demonstrate considerable phenotypic heterogeneity. Since the majority of HG tumors harbor a significant amount of LG disease, HG components may be missed on routine biopsy.

MP15

Cost of Providing Specific 24 Hour Phone Access to Patients with Acute Renal Colic
Eugene Kramolowsky, Mark Monahan, Jacob Wright, David Rapp, Nada Wood
Virginia Urology, Richmond, VA

Introduction: Patients with acute onset of symptoms secondary to urinary stone disease frequently seek immediate care in hospital emergency rooms (ER). Often they could be managed at lower cost in outpatient settings if urologist access was available. A large urology group provided 24 hour phone access (SL) specifically for stone patients along with other services. Cost allocation analysis was performed to determine the expense of providing this service.

Materials & Methods: Calls to SL were answered 24 hours/day, 7 days/week by dedicated personnel equipped with wireless phone, laptop computer, and internet access to office and hospital. SL number was publically advertised and provided to established stone patients, local ER and primary care physicians. Expenses associated with organization, implementation and ongoing operation of SL were calculated.

Results: Between Jan 2009 and July 2013, 9,482 SL calls were handled. Over 53% (5,067) were placed when office was closed. Call duration in 96.4% of cases was less than 20 minutes. Cost of providing SL access was categorized into personnel, marketing and hardware /ongoing supply costs. The largest expense was personnel $143,321 ($31,849 /yr). Marketing was $76,166 ($16,926/yr) and hardware/ supply cost was $13,938 ($3,098/yr). The total cost of providing SL access to patients during the study period was $233,425 ($51,873/yr). Itemized cost per call was $24/call.

Conclusion: Providing SL access cost over $50,000 per year. Improved access to patients with acute renal colic outside the ER setting may decrease the cost of care but requires increased expenditure of capital to provide access.

MP16

Risk Factors for Intra-Prostatic Incision into Malignant Glands at Radical Prostatectomy
Nathaniel Readal, Sung-Woo Park, Bruce J. Trock, Elizabeth Humphreys, Jonathan I. Epstein, Alan W. Partin, Misop Han
Johns Hopkins Hospital, Baltimore, MD

Introduction: A histologically identified intra-prostatic incision (IPI) into malignant glands is associated with an increase in biochemical recurrence following radical prostatectomy (RP). Risk risk factors for IPI during RP for clinically localized prostate cancer (PCa) were evaluated.

Materials & Methods: From 1993 to 2013, 19,986 men with PCa underwent RP at our institution. 14,434 cases had complete clinicopathologic data. IPI was defined as an iatrogenic incision into the prostate resulting in the presence of malignant glands at the inked surgical margin. Univariate and multivariable logistic regression analyses were conducted to assess the association between preoperative variables and IPI.

Results: The incidence of IPI into malignant tissue was 2.8% (410 cases). In univariate and multivariable analyses, obesity, lower prostate weight, surgeon's experience, and pure laparoscopic RP were associated with a higher risk of IPI. The odds ratio for BMI and prostate weight were 1.05 (95% CI 1.03-1.08, $p < 0.001$) and 0.99 (95% CI 0.98-0.99, $p < 0.001$), respectively. The OR for surgeon's experience and pure laparoscopic RP compared to open RP were 0.71 (95% CI 0.55-0.90, $p = 0.005$) and 2.05 (95% CI 1.35-3.11, $p = 0.001$), respectively.

Conclusions: The overall incidence of IPI into malignant tissue was low (2.8%). IPI during RP is higher in men with obesity and lower prostate weight. In addition, a pure laparoscopic RP and the early experience of each surgeon were associated with a higher risk of IPI. Tumor characteristics were not associated with the probability of IPI.

MP17

Predict Prostate Cancer Aggression with Multiple Biomarkers Using a Novel Quantitative Tissue Immunoassay
Guangjing Zhu[1], Zhi Liu[1], Christhunesa S Christudass[1], Jonathan I Epstein[2], Hui Zhang[2], Joon-Yong Chung[3], Stephen M. Hewitt[3], Robert W. Veltri[1]
[1]*The James Buchanan Brady Urological Institute, The Johns Hopkins University School of Medicine, Baltimore, MD;* [2]*Department of Pathology, The Johns Hopkins University School of Medicine, Baltimore, MD;* [3]*Laboratory of Pathology, Center for Cancer Research, National Cancer Institute, Bethesda, MD*

Introduction: Characterization of prostate cancer (PCa) may necessitate multiple biomarkers considering the heterogeneity of prostate tumors. We utilized an integrated, high-throughput quantitative molecular biomarker-based method for predicting PCa progression referred to as Multiplex Tissue Immunoblotting (MTI) using unique tissue microarray (TMA) and small volume active surveillance biopsies.

Materials & Methods: Two TMAs with 80 PCa cases of different Gleason scores were used and each PCa case includes quadruplicates of cancer and cancer-adjacent benign areas. Among these cases, 25% had biochemical recurrence (BCR). MTI was used to detect and quantify the expression of 6 biomarkers on a single 5µm section: CACNA1D, Periostin, Her2/neu, EZH2, Ki67 and (-7)ProPSA. We utilized Logistic Regression to discriminate indolent from aggressive PCa and predict BCR. Active surveillance biopsies were used for further verification.

Results: CACNA1D, HER2/neu and Periostin expression are well correlated with Gleason scores. CACNA1D and HER2/neu with Gleason score can improve predictive ability of biochemical recurrence (BCR) (ROC-AUC = 0.79). CACNA1D, HER2/neu and Periostin expression distinguish indolent and aggressive PCa: in cancer areas (ROC-AUC = 0.98, sensitivity = 95.0% and specificity = 95.8%); in cancer adjacent benign areas (ROC-AUC = 0.94, sensitivity = 88.1% and specificity = 88.9%). CACNA1D separates escapees (requires treatment) and non-escapees (can remain on monitoring) in the active surveillance cohort ($p = 0.004$) in our preliminary data of 25 biopsy cases.

Conclusions: Above all, our results suggest that several molecular biomarkers when assayed on a single 5µm tissue section by MTI increased the prediction capability to distinguish Gleason scores. Additionally, they may be useful to predict PCa aggressive phenotype and BCR.

MP18

Erectile Dysfunction after Recurrent Ischemic Priapism in Patients with and without Sickle Cell Disease: A Characterization and Comparative Analysis of Risk Factors
Uzoma A. Anele, Irene N. Trueheart, Arthur L. Burnett
The Johns Hopkins School of Medicine, Baltimore, MD

Introduction: Erectile Dysfunction (ED) is a known complication of recurrent ischemic priapism (RIP) with a documented high risk in sickle cell disease (SCD) patients, but the factors associated with this outcome uniquely relevant to this population are unclear.

Materials & Methods: We performed a retrospective study of 82 RIP patients [44 SCD and 38 non-SCD (29-idiopathic, 9-drug-related)] presenting to our clinic from June 2004 to March 2014 using priapism-specific, IIEF and SHIM questionnaires.

Results: Twenty-three of 43 (53.5%) SCD (mean age 27.39 ± 8.9 years) vs 16 of 37 (43.2%) non-SCD patients (mean age 35.3 ± 12.0 years) had ED (IIEF < 25, SHIM < 22) ($p = 0.38$). SCD patients had a mean RIP duration history of 8.75 ± 7.1 years vs 4.8 ± 7.2 years in non-SCD patients ($p = 0.01$). Twelve of 43 (27.9%) SCD patients had episodes regularly lasting > 2 hours vs 24 of 35 (68.6%) non-SCD patients ($p = 0.0005$). Among patients with ED, 6 of 22 (27.3%) SCD vs 13 of 14 (92.9%) non-SCD had episodes lasting > 2 hours ($p = 0.0001$). When these ED groups were adjusted for mean RIP duration history, 6 of 22 (27.3%) SCD vs 6 of 7 (85.7%) non-SCD patients had episodes lasting > 2 hours ($p = 0.016$). No differences were found in ED rates regarding frequency of episodes within and between groups.

Conclusion: RIP patients with SCD appear as likely to experience ED as non-SCD RIP patients. SCD patients are less likely to experience RIP episodes regularly lasting > 2 hours compared to non-SCD patients. The likelihood of experiencing ED in SCD RIP appears to be less associated with longer episode durations than in non-SCD RIP.

MP19

Is Periurethral Injection of Macroplastique® a Viable Option for Patients with Post-prostatectomy Urinary Incontinence?

Jessica DeLong, Matthew Ingham, Robert Strehlow, Kurt McCammon
Eastern Virginia Medical School, Norfolk, VA

Introduction: Male stress urinary incontinence is a significant morbidity following treatment for prostate cancer. Injectables have traditionally not been successful for treatment, but post robotic prostatectomy patients may represent a different population. We assessed whether periurethral injection of Macroplastique® is effective for men with post-prostatectomy incontinence (PPI).

Materials & Methods: A retrospective chart review identified men who underwent periurethral injection of Macroplastique® for bothersome PPI between May 2011 and December 2013. Pre and post-operative pad use was recorded, as well as pertinent perioperative data. Success was defined as at least 50% improvement in incontinence.

Results: Fourteen men were identified. One patient underwent previous pelvic radiation. Average patient age was 66 years. Twelve of the 14 patients (86%) underwent prior AdVance™ sling placement that failed to sufficiently improve their PPI. Median preoperative pad use per day was 2 (range 1-6). At a mean follow up of 9 months, 9 of 14 men (65%) were successful. Seven of those 9 (78%) were "cured" with zero to one pads per day. Three patients went on to receive artificial urinary sphincters, and one to undergo AdVance™ placement. One patient underwent repeat Macroplastique® injection and is dry. There were no major complications.

Conclusions: Periurethral injection of Macroplastique® has favorable results with short-term follow up for men with bothersome PPI. It has low morbidity, and does not preclude successful surgical intervention in the future if needed. Larger studies with longer follow up are needed to confirm these results.

MP20

DiRECT: A Novel Instrument to Teach the Digital Rectal Exam and Assess Proficiency

Matthew Timberlake, Matthew Clements, Karen Schmidt, Tracey Krupski
University of Virginia, Charlottesville, VA

Introduction: The ACGME is placing new emphasis on competency assessment for students and trainees. The digital rectal exam (DRE) has been identified as a frequent area of deficiency among graduating medical students. The private, invasive and entirely tactile nature of the examination limits opportunities for practicing correct technique and makes provision of constructive feedback difficult. We created the Digital Rectal Exam Clinical Tool (DiRECT), a novel instrument designed to teach examination technique and assess DRE proficiency.

Materials & Methods: Components of the DRE to be included in the instrument were defined using a modified Delphi method. Ten expert clinicians (5 urologists, 5 radiation oncologists) independently described key aspects of the exam as well as levels of distinction for components that exist on a continuum, e.g. prostate size. Definitions were compiled and consensus was established with a series of teleconferences. For the purpose of assessing proficiency, a scoring system was devised using a Rasch-based partial credit model to assign relative weight to individual examination components.

Results: Fifteen examination components were grouped into five categories—landmarks, texture, size, nodularity, and anal-related. Four levels of distinction characterize both prostate size and prostate texture. The categories were weighted from most to least important as follows: identification and localization of a prostate nodule, prostate size, prostate texture, and anal features.

Conclusions: In an era of decreased utilization of biochemical testing, the importance of accurate physical examination for the detection of prostate lesions must be emphasized. DiRECT has the potential to systematize teaching and improve student and trainee proficiency.

MP21

Secondary Interventions after Treatment for Locally Advanced Prostate Cancer

Rachael Sussman, Andrew Harbin, John Lynch, Jim Hu, Keith Kowalczyk
Georgetown University Hospital, Washington, DC

Introduction: While traditional therapies for clinical T3-T4 prostate cancer are androgen deprivation and radiation, many are questioning the application of surgery as a primary treatment. We retrospectively analyzed the incidence of secondary diagnoses and interventions in patients undergoing radical prostatectomy (RP), radiation therapy (RT), and watchful waiting/active surveillance (WWAS) to determine the long term impact of these modalities.

Materials & Methods: Using SEER-Medicare linked data during 1995-2007, we identified 10,451 patients with clinical T3 or T4 prostate cancer who underwent RP, RT or WWAS. Procedures and diagnoses related to the primary therapy were identified according to the CPT and ICD-9 codes and incidence of these interventions and diagnoses were compared among the 3 treatment modalities.

Results: After excluding patients with unknown demographic information, 10,451patients with locally advanced prostate cancer underwent primary therapy with RP (n = 6,224), RT (n = 2,171) or WWAS (n = 2,056). Patients undergoing RT were most likely to suffer from GU obstruction diagnoses, hydronephrosis, urinary retention, cystoscopic intervention, infectious complications, inflammatory disease of the prostate, dysuria, urinary frequency and hematuria. Patients undergoing RP were most likely to suffer from urethral stricture, erectile dysfunction and incontinence and their associated interventions. Patients undergoing WWAS were most likely to suffer from urinary obstruction.

Conclusions: Our analysis found a significantly higher incidence of secondary diagnoses and procedures after RT for locally advanced PCa when compared to either RP or WWAS.

MP22

The Financial Impact of Robotic Technology for Partial and Radical Nephrectomy

Max Kates, Mark W. Ball, Hiten D. Patel, Michael A. Gorin, Phillip P. Pierorazio, Mohamad E. Allaf
Johns Hopkins, Baltimore, MD

Introduction: We sought to evaluate the financial impact of robotic technology for partial nephrectomy (PN) and radical nephrectomy (RN) in the state of Maryland.

Materials & Methods: The Maryland Health Services Cost Review Commission (HSCRC) documents all acute care hospital charges data. This database was queried for patients who underwent laparoscopic or robotic RN and PN from 2008-2012. Total hospital charge, sub-charge and length of stay (LOS) were analyzed separately for RN and PN.

Results: Overall, 2,834 patients were identified. Of those, 282 were laparoscopic PN (LPN), 1,078 robotic PN (RPN), 1,098 laparoscopic RN (LRN) and 376 robotic RN (RRN). For PN, the total hospital charge was $19,062 for LPN and $18,255 for RPN ($p = 0.138$), with a charge savings of $807 per case in favor of robotics. For RN, total hospital charge was $23,391 for RRN and $18,280 for LPN ($p = 0.004$), with a charge premium of $5,111 for robotic casesLOS was shorter for RPN compared to LPN (2.51 vs 2.99 days, $p < 0.0001$) and for RRN compared to LRN (3.52 vs 3.98, $p = 0.0498$).

Conclusions: RPN is associated with less hospital charges than LPN, while RRN is associated with higher hospital charges than LRN. Savings for RPN are driven by decreased room and board charge, while the premium for RRN is driven by higher operating room and supply charges. The use of RRN on routine cases should be discouraged. The economic impact of nephrons saved by performing PN over RN remains undefined.

MP23

CT Classification of Ureteral Calculi Parameters for Predicting Ureteroscopy Complications

Nathan E. Hale, Samuel Deem, Joshua Lohri, Jamie Olsen
Charleston Area Medical Center, Charleston, WV

Introduction: The primary objective was to determine if there was a pattern of computed tomography (CT) imaging characteristics that could predict complications and outcomes from ureteroscopy for removal of ureteral calculi.

Materials & Methods: A retrospective analysis of CT scan parameters in subjects that had previously undergone ureteroscopy for treatment of ureteral calculi was performed on 250 patient. Ninety-eight patients met the inclusion criteria and were subsuquently included in final analyses.

Results: Stone size greater than 0.67 centimeters and location in the proximal ureter were found to be statistically significant in predicting complications. When individualizing operative complications with stone characteristics, a stone density of 817 houndsfield units (HU) or greater, stone size of 0.79 centimeters or greater, and operative time greater than 53 minutes all showed statistical significance for the presence of hematuria.

Conclusion: We conclude that pre-operative CT scan parameters can be a valuable asset in predicting intra-operative and post-operative complications. Stone size, location, and density appear to be independent risk factors for predicting intra-operative and/or post-operative ureteroscopic complications. CT scan interpretation in the pre-surgical setting is value tool in assessing and preventing complications related to the treatment of ureterolithiasis using ureteroscopy.

15

Multi-institutional Experience with Pediatric Laparoendoscopic Single Site Surgery

Ronak Gor[1], Christopher Long[2], Aseem Shukla[2], Andrew Kirsch[3], Marcos Perez-Brayfield[4], Arun Srinivasan[2]
[1]Einstein Healthcare Network, Philadelphia, PA; [2]Children's Hospital of Philadelphia, Philadelphia, PA; [3]Children's Healthcare of Atlanta, Atlanta, GA; [4]University of Puerto Rico, San Juan, PR

Introduction: Laparoendoscopic single-site (LESS) surgery modifies traditional laparoscopy (TL) by utilizing a single umbilical incision where all working instruments are placed and specimens are removed. Reproducible benefits of LESS are cosmetic. We review peri-procedural outcomes from a multi-institutional series of pediatric urology patients treated with LESS.

Materials & Methods: LESS cases from three pediatric referral centers were reviewed. Four fellowship-trained pediatric urologists performed all cases. Compiled data included age, sex, operative (OR) time, blood loss (EBL), length of stay (LOS), and complications per Clavien classification.

Results: Fifty-four patients (mean age 8.4 years) underwent 57 procedures: 28 nephrectomies, 7 nephroureterectomies, 3 bilateral nephrectomies, 5 heminephrectomies, 5 renal cyst decortications, 3 bilateral gonadectomies, 1 Malone antegrade continence enema (MACE), 1 calyceal diverticulectomy, and 1 ovarian detorsion with cystectomy. Mean OR times for all cases were comparable to published TL literature. Right nephrectomies compared with left had higher EBL ($p = 0.015$). Overall mean LOS was 36.2 hours. One patient required port site hernia repair (Clavien IIIb). One patient developed a superficial port site infection (Clavien II). No patients required conversion to TL; however, one patient required an accessory port for liver retraction. Cosmetic outcomes were well received by patients and their parents.

Conclusion: We highlight success of LESS in patients as young as 3 months of age along with application in areas not previously described such as cyst decortication, MACE, and calyceal diverticulectomy. Children may be ideal candidates for LESS given their relative paucity of intra-abdominal and retroperitoneal fat and defined tissue planes.

MP24

Increased α-actin and TGFβ-1 Levels in Bladder Exstrophy Smooth Muscle Cells

Ezekiel E. Young[1], Eric Z. Massanyi[2], Heather DiCarlo[1], Brian Inouye[1], John P. Gearhart[1], Larissa A. Shimoda[1]
[1]Johns Hopkins Medical Institutions, Baltimore, MD; [2]Northeast Ohio Medical University, Akron, OH

Introduction: Previous studies showed that exstrophy bladder smooth muscle cells (eSMCs) exhibited enhanced TGFβ-1-mediated migration. Herein we compare TGFβ-1 gene and secreted protein levels between cultured eSMCs and controls. Since the cytoskeleton regulates cell movement and TGFβ-1 upregulates actin, we hypothesized that structural and contractile protein expression might also differ from controls.

Materials & Methods: Primary bladder SMC cultures were generated from exstrophy patients (23) and controls (children with vesicoureteral reflux (18) or adults with no known urologic disease (2)). SMCs (passage 1-5) were grown to confluence and placed into basal media for 24 hours prior to mRNA, protein and media extraction. Quantitative PCR was used to measure TGFβ-1 and 18s (housekeeping) mRNA levels. Immunoblots were serially probed for smooth muscle specific α-actin (SMA), β-actin, β-tubulin, and glyceraldehyde 3-phosphate dehydrogenase (GAPDH); protein levels were measured via densitometry and normalized to GAPDH. TGFβ-1 protein secretion was measured by ELISA analysis of culture media.

Results: eSMCs exhibited a 2-fold increase in TGFβ-1 mRNA compared to controls ($p < 0.05$). Secreted TGFβ-1 protein did not differ between groups. SMA protein was 1.8-fold higher in eSMCs; however, did not reach statistical significance ($p = 0.16$). β-actin and β-tubulin did not differ between groups. Subgroup analyses showed no significant effects of patient age, exstrophy subtype, sex or type of surgery.

Conclusions: eSMCs express elevated TGFβ-1 mRNA but control-level TGFβ-1protein secretion. eSMCs may also express elevated SMA; however, further data will be needed. TGFβ-1 may stimulate SMA expression via intracellular processes in eSMCs, yielding the observed increased migration.

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Trends in Stage-specific Incidence Rates for Urothelial Carcinoma of the Bladder in Pennsylvania: 1986 to 2010

Yu-Kuan Lin, Fabian Camacho, Eugene Lengerich, Jay Raman
Penn State University, Hershey, PA

Introduction: The incidence of urothelial cancer (UC) continues to rise within the United States, especially in Pennsylvania. We review 25-years of UC incidence within Pennsylvania to identify disease incidence and geographic areas of concern, in order to identify "high risk" cohorts for targeted intervention.

Materials & Methods: Crude and age-adjusted UC incidence rates were calculated for Pennsylvania counties in 5-year intervals. Chloropleth maps plotting incidence rates across time and counties were created using the GeoDa statistical package. Rates were shrunk towards local area means using a spatial Empirical Bayes smoothing technique. Identification of hot-spots was accomplished using univariate LISA methods.

Results: 93,478 cases of UC were recorded in Pennsylvania from 1986 to 2010. More than 80% of cases were localized disease (in situ/local disease), 9.5% regional, and 3.8% distant. The age-adjusted UC rate increased from 23.0 to 26.2 patients per 100,000, average annual percentage change (APC) of 0.6%. Over the last 25 years, there is an increase in distant UC (annual APC 0.6%), especially over the past 15 years (APC 4.5%). Chloropleth maps highlighted growing "hot spots" of cancer incidence in the southwestern and northeastern portion of the state.

Conclusions: UC incidence in Pennsylvania has continued to rise over the past 25 years, with a 4.5% APC increase in distant disease over the past 15 years. "Hot spots" of UC are concentrated in the southwestern and northeastern regions. Further studies are necessary to delineate whether these trends are attributable to environmental exposures, delayed presentation, or access to care.

17

Role of Epigenetic Modification and Immunomodulation in a Murine Prostate Cancer Model

Shaoqing Zhou, Samuel Robinson, Albert Petrossian, Ekaterine Goliadze, Georgi Guruli
Virginia Commonwealth University, Richmond, VA

Introduction: Decreased expression of highly immunogenic cancer-testis antigens (CTA) might help tumor to achieve low immunogenicity, escape immune surveillance and grow unimpeded. Our aim was to evaluate CTA expression in tumor and normal tissues and to investigate possible means of improving the immune response in a murine prostate cancer (CaP) model by using the combination of epigenetic modifier 5-azacitidine (5-AzaC) and immunomodulator lenalidomide. No study to date has examined these agents in combination to treat CaP, or their impact on immune system.

Materials & Methods: Gene microarrays and quantitative PCR (qPCR) were performed and the expression of different CTA were compared between murine tumor and normal prostate. Effect of 5-AzaC and lenalidomide was assessed on murine CaP (RM-1 cells) and immunocompetent dendritic cells (DC). Flow cytometry was performed for the expression of co-stimulatory molecules on DC and expression of several cytokines was evaluated.

Results: Gene arrays and qPCR demonstrated decreased expression for most CTA in CaP tissue compare to normal prostate. CTA expression increased in a dose dependent fashion in RM-1 cells exposed to 5-AzaC. Flow cytometry demonstrated increased expression of co-stimulatory molecules (CD40, CD80, CD86, CD205) on DC after their treatment with 5-AzaC and lenalidomide (15%). Production of pro-inflammatory cytokines IL-12 and IL-15 also increased.

Conclusions: Decreased expression of CTA by prostate cancer can be a mean of escaping immune monitoring. Combination of epigenetic modification and immunomodulation by 5-AzaC and lenalidomide increased tumor immunogenicity and enhanced DC function, and can be used in the treatment of advanced prostate cancer.

18

30-day Moribity Outcomes of Prolonged Laparoscopic Kidney Procedures Compared to Shorter Open Procedures: NSQIP Analysis

Alice Semerjian[1], Sara Zettervall[2], Richard Amdur[2], Compton Benjamin[1], Khashayer Vaziri[2]
[1]*George Washington University Department of Urology, Washington, DC;* [2]*George Washington University Department of Surgery, Washington, DC*

Introduction: Prolonged operative time (ORT) is often considered a drawback to laparoscopic surgery due to increased morbidity. Limited data exists comparing long laparoscopic ORT to shorter open ORT. This study aims to identify ORT when a laparoscopic procedure becomes inferior to its open counterpart.

Materials & Methods: Laparoscopic and open total and partial nephrectomies, and nephroureterectomies were identified in the National Surgical Quality Improvement Program (NSQIP) database from 2005-2010. Procedures were stratified into 4 ORT groups: 0-90 minutes, 91 minutes-3 hours, 3-6 hours, and ≥ 6 hours. 30-day mortality and morbidity were analyzed (see Figure 1). Univariate analysis was performed using chi-square and Fishers Exact tests. Significant univariate results were then tested using stepwise logistic regression, controlling for demographics, comorbidities, and preoperative treatments.

Results: 4,593 patients were identified. Laparoscopic procedures had significantly improved outcomes compared to open counterparts of similar ORT. Laparoscopic procedures > 6 hours have a significantly higher risk of reintubation and sepsis than open cases 6 hours compared to open procedures 3-6 hours (Figure 1).

Conclusions: Laparoscopic operations are less morbid than open operations of similar ORT. The advantages of laparoscopy diminish as ORT exceeds 6 hours, when compared to open procedures completed in < 3 hours and equivocal to open procedures of 3-6 hours. These data should be considered when a surgeon decides to convert to achieve optimal outcomes.

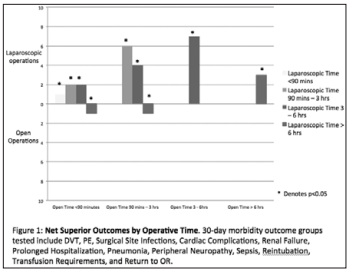

Figure 1: **Net Superior Outcomes by Operative Time.** 30-day morbidity outcome groups tested include DVT, PE, Surgical Site Infections, Cardiac Complications, Renal Failure, Prolonged Hospitalization, Pneumonia, Peripheral Neuropathy, Sepsis, Reintubation, Transfusion Requirements, and Return to OR.

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Practice Patterns of Acute Renal Colic in the Emergency Department

Justin B. Ziemba, Matthew E. Sterling, Phillip Mucksavage
University of Pennsylvania, Philadelphia, PA

Introduction: Nephrolithiasis is a common disease, which often necessitates emergency department (ED) evaluation and management. The objective of this investigation is to characterize ED providers' current practice patterns for an episode of acute renal colic.

Materials & Methods: We identified a total of 157 ED providers (attendings, trainees, and advanced practice providers) within an academic health system. All providers were invited via email to complete an electronic survey regarding their care of patients with acute renal colic. A total of 58 providers completed the survey for a response rate of 37% (58/157).

Results: Of the 58 respondents, only 4 (7%) were aware of the American Urological Association (AUA) guidelines on the imaging and management of ureteral calculi. In an adult non-pregnant patient, a low-dose non-contrast CT (NCCT) would be the imaging modality of choice for 36 (62%) of the ED providers. The most frequent indication for urologic consultation would be evidence of obstructive uropathy in 49 (85%). A total of 55 (95%) respondents would discharge the patient on an alpha-blocker. When stratified by level of training, attendings were more likely to consult urology based on stone size (27/29 v 18/25; p = 0.038), persistent symptoms despite medical therapy (26/29 v 14/25; p = 0.005), and a recent ED visit for renal colic (7/29 v 1/25; p = 0.038).

Conclusions: Practice patterns within the ED are variable and are influenced by level of training.

Figure 1. Emergency Department Providers Management of Nephrolithiasis

Question		Responses (%)
Level of Training	Attending	29 (50)
	Trainee	21 (43)
	Advanced Practice Provider	4 (7)
Aware of the AUA Guidelines on the Imaging and Management of Ureteral Calculi	Yes	4 (7)
	No	54 (93)
First-line Imaging Modality in an Adult NON-Pregnant Patient	NCCT	8 (14)
	Low-Dose NCCT	36 (62)
	Renal/Bladder Ultrasound	3 (5)
	Abdominal X-ray	1 (2)
	Intravenous Pyelography	0 (0)
	None	1 (2)
First-line Imaging Modality in an Adult Pregnant Patient	NCCT	0 (0)
	Low-Dose NCCT	0 (0)
	Renal/Bladder Ultrasound	57 (98)
	Abdominal X-Ray	1 (2)
	Intravenous Pyelography	0 (0)
	None	0 (0)
Initial Laboratory Studies	Basic Metabolic Panel	Yes 44 (81)
		No 10 (17)
	Lactic Acid	Yes 2 (3)
		No 56 (97)
	Calcium	Yes 4 (7)
		No 54 (93)
	Complete Blood Count	Yes 25 (43)
		No 33 (57)
	Urinalysis	Yes 58 (100)
		No 0 (0)
	Urine Culture	Yes 46 (83)
		No 10 (17)
Initial Medical Therapy	Narcotic	Yes 22 (38)
		No 36 (62)
	Non-Steroidal Anti-Inflammatory	Yes 57 (98)
		No 1 (2)
	Antiemetic	Yes 33 (57)
		No 25 (43)
	Alpha-Blocker	Yes 27 (64)
		No 21 (36)
	Antibiotics	Yes 1 (2)
		No 57 (98)
	Intravenous Hydration	Yes 40 (69)
		No 18 (31)
Indications for Urologic Consultation	Stone Size	Yes 48 (83)
		No 10 (17)
	Evidence of Obstructive	Yes 49 (85)

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A Comparison of Iatrogenic Vascular Lesions Following Robotic and Open Partial Nephrectomy

Ali Husain[1], Caitlin Lim[1], Tien Yu[2], Robert Uzzo[1,2], Alexander Kutikov[2], Marc Smaldone[2], Rosalia Viterbo[2], David Chen[2], Richard Greenberg[1,2], Daniel Canter[1,2], Serge Ginzburg[1,2]
[1]*Albert Einstein Medical Center, Philadelphia, PA;* [2]*Fox Chase Cancer Center, Philadelphia, PA*

Introduction: Renal vascular lesions such as pseudoaneurysms (PA) or arteriovenous fistulae (AVF) are complications of nephron sparing surgery (NSS). We evaluated the incidence of symptomatic PA/AVFs after NSS and compared minimally invasive (MIS) and open surgical approaches.

Materials & Methods: A retrospective review of a single-institution kidney database was performed. Patients underwent NSS between September 2000 and October 2013. Demographic and clinico-pathologic characteristics were evaluated. Univariable analyses utilizing Wilcoxon on Chi square tests and multivariable logistic regression analysis were performed.

Results: Of the 1,118 patients, 50.9% were subjected to a MIS approach and 49.1% to an open approach. Median age was 58 years, 65% were male, median tumor size was 3.5 cm, and 13% had multifocal lesions. Tumor complexity was low, intermediate and high in 30%, 55% and 15%, respectively, as quantified by the Renal Nephrometry score (RNS). Mean estimated blood loss was 210 ccs and duration of warm ischemia was 30.8 minutes. Twelve (1.1%) patients experienced PA/AVF, 6 (1.10%) in the MIS and 6 (1.05%) in the open partial nephrectomy group. Univariable analyses revealed that surgical approach, estimated blood loss, ischemia time and tumor multifocality were not statistically significant predictors of PA/AVF. Interestingly, RNS was higher in the PA/AVF cohort and statistically significant in univariable (p = *0.014*) and multivariable analyses *(*p = *0.013)*.

Conclusions: Incidence of renal vascular lesions following NSS in our large cohort was 1.1% and was not significantly different between surgical approaches. Tumor complexity, as measured by the RNS, was associated with a higher likelihood of iatrogenic vascular lesion formation.

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Long-term Erectile Function Outcomes of Patients in a Randomized Controlled Trial of Nightly vs On-demand Penile Rehabilitation with Sildenafil after Nerve-sparing Radical Prostatectomy

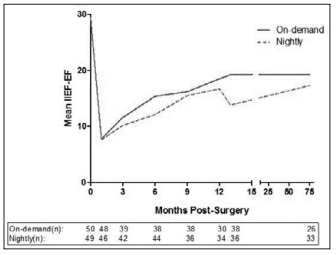
Nilay M. Gandhi, Lynda Z. Mettee, Zhaoyong Feng, Bruce Trock, Christian P. Pavlovich
The Johns Hopkins School of Medicine, The James Buchanan Brady Urological Institute, Baltimore, MD

Introduction: Penile rehabilitation following radical prostatectomy (RP) is common despite conflicting evidence. We present long-term erectile function (EF) data following participation in a published trial of different sildenafil dosing regimens after RP.

Materials & Methods: An online survey was offered to all 100 men from the 2006-2007 randomized trial, which assessed the rehabilitative effects of nightly compared to on-demand (maximum 6 tablets/month) 50 mg sildenafil for one year after nerve-sparing minimally-invasive RP. IIEF-6 scores were compared according to treatment group, and use of subsequent erectile aids was queried.

Results: 59 patients responded (33 [66%] nightly, 26 [52%] on-demand) at median of 86 months from trial enrollment. Patient characteristics (age, baseline IIEF-6, race, nerve-sparing score [NSS]) did not differ between survey responders and non-responders. Mean IIEF-6 scores were 17.3 [nightly group] and 19.3 [on-demand group] (p = 0.509), while mean % return-to-baseline EF was 58% versus 66%, respectively (p = 0.442). In mixed-model analysis, age and NSS remained significant predictors of both IIEF score (p = 0.01 and 0.005, respectively) and % return-to-baseline (p = 0.009 and 0.006, respectively) long-term. No difference was noted in erectile aids use between groups at last follow-up (p = 0.285).

Conclusions: At 7 years, no significant difference in IIEF-6 scores or % return-to-baseline EF was noted regardless of randomization to nightly or on-demand sildenafil for penile rehabilitation after RP. Rather, age and NSS were the significant predictors of return to potency.



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Variability in Medicare Utilization and Payment among Urologists

Joan S. Ko, Heather Chalfin, Bruce J. Trock, Zhaoyong Feng, Elizabeth Humphreys, Sung-Woo Park, H. Ballentine Carter, Misop Han
The Johns Hopkins School of Medicine, Baltimore, MD

Introduction: In 2012, Medicare paid physicians $77 billion (per Medicare Provider Utilization and Payment Data). We investigated utilization patterns to identify urologists whose actual payment deviated significantly from expected, and compared their practice patterns to average urologists.

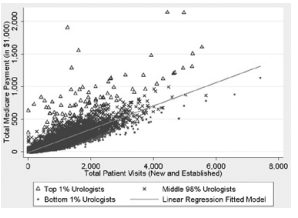
Materials & Methods: The data included payment/utilization data of 8,792 urologists. Linear regression was used to correlate Medicare payments vs. number of patient visits. Urologists in the top 1% of actual payment in excess of predicted payment were compared to those whose actual and predicted payments were similar. Then, we used logistic regression to compare the number of common procedures performed/patient visit of the top 1% vs. average urologists.

Results: The median 2012 Medicare payment was $125,997. The Figure shows the association between overall Medicare payment and number of patient visits (new and established, R2 = 0.70). Urologists in the top 1% of payment in excess of that predicted by the regression (n = 88) performed certain procedures more frequently per patient visit than did average urologists (Table).

Conclusions: The strongest predictor of overall Medicare payment was the number of patient visits. Urologists in the top 1% of actual payment exceeding predicted payment earned significantly more by performing certain procedures more frequently per patient visit compared to average urologists.

Table. Odds Ratio of # of Procedures/# of Patient Visits (Top 1%/Average Urologists)

CPT code	Procedure Description	Odds Ratio (95% CI, p value)
A51798	Bladder scan	0.65 (0.41-1.04, 0.07)
A51000	Cystoscopy	0.40 (0.24-0.66, < 0.001)
J9155	Degarelix	7.08 (3.48-14.41, < 0.001)
J9217	Leuprolide	3.49 (2.13-5.71, < 0.001)
A82570	Urine creatinine	4.17 (2.64-6.59, < 0.001)
A51741	Uroflow	4.32 (2.43-7.67, < 0.001)
A76872	TRUS	5.51 (2.84-10.66, < 0.001)
A76857	Pelvic US	4.56 (2.92-7.12, < 0.001)
CT scans	Combined CT scan CPTs	2.36 (1.47-3.79, < 0.001)



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Safety of Peri-operative Subcutaneous Heparin for Partial Nephrectomy

Brenton Winship, Neal Patel, Lang Nguyen, Sean Bhalla, Alice Semerjian, Thomas W. Jarrett
George Washington University, Washington, DC

Introduction: The development of deep venous thrombosis (DVT) or pulmonary embolism (PE) following urologic surgery is a potentially life threatening complication. Patients undergoing partial nephrectomy are at increased risk for the development of DVT or PE as they often possess multiple risk factors including malignancy, advanced age, and prolonged surgical time. This risk can be significantly reduced by administration of perioperative sub-cutaneous heparin (SQH), however many surgeons feel this is contraindicated due to the potential for blood loss and related complications.

Materials & Methods: The medical records of 293 consecutive patients undergoing planned open, laparoscopic, or robotic assisted partial nephrectomy by a single surgeon over a seven year period were reviewed. Approximately halfway through the period, the standard DVT prevention practice was changed from sequential compression stockings and early ambulation to include 5000 units of SQH administered 30-60 minutes prior to incision and continuing every 8 hours until discharge.

Results: 158 patients received perioperative SQH. There was no significant difference in surgical blood loss, transfusions, operative time, change in pre to post-operative hemoglobin or creatinine, conversion to radical nephrectomy, or duration of stay between the groups. There were no DVTs in either group. There was one PE in the group receiving SQH which was incidentally discovered.

Conclusions: Patients undergoing renal surgery for cancer are at increased risk for the development of DVT and PE. Prophylaxis against this serious complication with perioperative SQH is safe in patients undergoing partial nephrectomy despite common surgeon concerns regarding blood loss and related complications.

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Quantifying Voiding Function, Symptom Improvement, and Post-Surgical Outcomes Following Laser Enucleation of the Prostate

Michael J. Amirian, Jeffrey B. Walker, Akhil K. Das
Thomas Jefferson University, Philadelphia, PA

Introduction: Benign prostatic hyperplasia (BPH) is a common cause of lower urinary tract symptoms in men. When medical management fails, a prostate reducing procedure is the next step. Laser enucleation of the prostate (LEP) has been evovling as a treatment alternative to traditional transurethral resection. The purpose of this study was to quantify the effect of this therapy on urinary functional parameters, symptoms, and post-surgical outcomes.

Materials & Methods: A retrospective chart review was conducted on 87 patients shown to have symptomatic bladder outlet obstruction on urodynamic testing. These patients underwent consecutive holmium (Ho) (44 patients) or diode (Di) (43 patients) LEP between January and December 2013. Prostate volume was measured by cystoscopy or ultrasound. Preoperative and postoperative post-void residual volume (PVR), peak voiding flow (PF), as well as AUA symptom score (AUASS), were compared using paired Student's t-tests.

Results: Average hospital stay was 1.6 days. Foley catheter was removed after an average of 1.8 days, although 70% were removed post-operative day 1. Average size of prostate was 81 g (range: 25-237 g; median 75 g). PVR was significantly decreased by an average of 193 ml ($p < 0.0001$) following enucleation. PF was significantly increased by an average of 16 ml/s ($p < 0.0001$). AUASS was significantly decreased by 8.8 points ($p < 0.001$), and by 1.2 points on the quality of life question ($p < 0.005$).

Conclusions: HoLEP or DiLEP is a highly effective surgical option to improve objective urinary flow parameters and subjective symptoms with excellent post surgical outcomes in patients with BPH.

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Robotic Simple Prostatectomy for Symptomatic Large-Gland BPH: Safety, Feasibility, and Comparative Analysis

Mark W. Ball, Gautam Jayram, Christian P. Pavlovich, Misop Han
Johns Hopkins Hospital, Baltimore, MD

Introduction: Understanding the degree of phenotypic heterogeneity within a small renal mass (SRM) may have implications for interpreting renal mass biopsy data. In this study we sought to quantify the nuclear grade heterogeneity within SRMs.

Materials & Methods: Our renal mass database was queried for patients with T1a renal masses, stratified by the following criteria: < or ≥ 2 cm, clear cell or papillary histology, low-grade (LG; Fuhrman I-II) or high-grade (HG; Fuhrman III-IV). Four consecutive specimens were chosen from each strata for a total of 32. All specimens were sectioned per institutional protocol and analyzed by a single genitourinary pathologist. The highest grade present in each 10x-powered field was recorded. A case was classified as heterogeneous if multiple grades were present and classified as discordant if the highest Fuhrman grade was present in less than 50% of the specimen.

Results: A median of 5 slides (IQR 3.5-7.5) and 59 10x powered fields (IQR 34-109) were examined per patient. Overall, 26 samples (81.3%) were heterogeneous, including 15/16 (93.8%) HG specimens. Among all cases, 10/32 (31.3%) were discordant, and among HG specimens, 4/16 (25%) were discordant. The median fraction of LG tissue in HG specimens was 38.9% (IQR 12.2-57.2).

Conclusions: SRMs demonstrate considerable phenotypic heterogeneity. Since the majority of HG tumors harbor a significant amount of LG disease, HG components may be missed on routine biopsy.

Table 1. Comparison of perioperative outcomes in RALSP and OSP

	Robotic (n=20)	Open (n=20)	*p-value*
Median Age	67 yrs (59 -72)	70 yrs (56-80)	*0.5*
Median Preop IPSS	20 (9 - 32)	18 (12 -25)	*0.7*
Median Preop PSA	7.6ng/dl (0.3 - 29.9)	8.6ng/dl (3.2 - 12.5)	*0.8*
Preop TRUS prostate size	125 gm (86 - 264)	118 gm (81 - 200)	*0.6*
Urinary retention (%)	13 (65)	17 (85)	*0.1*
Prior outlet surgery (%)	2 (10)	1 (5)	*1*
Median OR time	176 min (147 - 261)	171 min (137 - 254)	*0.4*
Median EBL	225 ml (50 - 500)	800 ml (150 - 3300)	***<0.01***
Requiring transfusion (%)	1 (5)	4 (20)	*0.2*
Median LOS	2 days (1 - 5)	3 days (2 - 6)	***<0.01***
Median Catheter duration	10 days (9 - 12)	10 days (6 - 13)	*0.4*
Clavien 1 complications	2 (10)	2 (10)	*1*
Clavien >2 complications	1 (5)	1 (5)	*1*
Median Path gland wt	87 g (58 - 277)	76 g (19 - 128)	*0.3*
Cancer in specimen	6 (30)	2 (10)	*0.1*
Median follow-up	276 days (31 - 489)	572 days (21 - 1561)	
Require CIC postoperatively	2 (10)	1 (5)	*1*

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Increased Use of Systemic Chemotherapy for All Stages of Urothelial Cancer: Contemporary Data from the Pennsylvania Cancer Registry

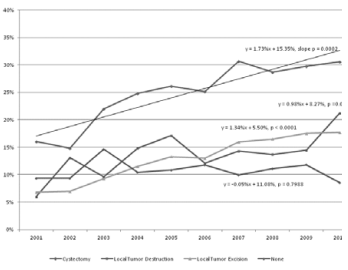
Christopher R. Reynolds, Jay Raman
Penn State Hershey Medical Center, Hershey, PA

Introduction: Historical studies highlight underutilization of systemic chemotherapy (SC) in the management of urothelial carcinoma (UC). We review contemporary data from the Pennsylvania Cancer Registry to outline current trends of use of SC.

Materials & Methods: A descriptive analysis was conducted examining chemotherapy rates by surgery strata from 2001-2010. A multivariate logistic regression model queried variables associated with delivery of SC. Interactions between each of these predictors and year were examined and included in the model if significant ($p < 0.05$).

Results: A total of 38,685 cases of urothelial cancer were recorded in Pennsylvania from 2001 to 2010. Systemic chemotherapy was administered in 14% of patients across the study cohort with an increase from 8.6% in 2001 to 19.0% in 2010. Increased utilization of perioperative chemotherapy in conjunction with surgery was noted for patients undergoing radical cystectomy (RC), local tumor destruction, and local tumor excision. Despite this increase, only 30.6% of patients undergoing RC in 2010 received perioperative SC. In a multivariate model, younger patient age ($p = 0.02$), male gender ($p < 0.01$), and white, non-hispanic race ($p < 0.01$) were associated with receipt of SC.

Conclusions: Systemic chemotherapy use for all stages of UC has increased over the past 10 years. Nonetheless, under one-third of patients undergoing RC at the end of our study period received perioperative SC. Age, gender, and race differences continue to be factors associated with delivery of SC.



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Evidence of Prostate Cancer "Reverse Stage Migration" Toward More Advanced Disease at Diagnosis

Sean R. Wessel, Adam C. Reese
Temple University School of Medicine, Philadelphia, PA

Introduction: The introduction of PSA-based screening for prostate cancer caused a stage migration toward less advanced disease at the time of diagnosis. More recently, concern for overdiagnosis and overtreatment has led to a backlash against PSA screening. We hypothesize that this may have resulted in a "reverse stage-migration" toward more advanced disease.

Materials & Methods: We analyzed the Pennsylvania Cancer registry, a statewide registry of all cancers diagnosed in Pennsylvania. We collected data on stage (localized, regional, or metastatic) and PSA value at the time of diagnosis for all prostate cancers diagnosed between 2004 and 2011.

Results: 82,849 prostate cancers were diagnosed in Pennsylvania between 2004 and 2011 with a peak incidence in 2007. During this time, there has been an increase in the percentage of patients with advanced stage disease (regional or distant metastasis) (Figure 1) and high PSA values (≥ 10 ng/ml) (Figure 2) at diagnosis.

Conclusions: This analysis suggests a "reverse stage-migration" toward more advanced prostate cancer at the time of diagnosis, which predated the 2011 USPTF recommendations against PSA screening. The USPTF recommendation is likely to exacerbate this concerning trend toward advanced stage disease, potentially resulting in an increase in prostate cancer-specific mortality.

Figure 1. Percent of Cancers Diagnosed at Advanced Stages (Regional or Metastatic)

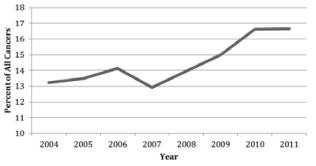
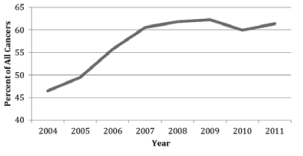


Figure 2. Percent of Cancers Diagnosed with PSA ≥ 10



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Neoadjuvant Chemotherapy Prediction of Extravesical Cancer Control Based off Pathologic Staging

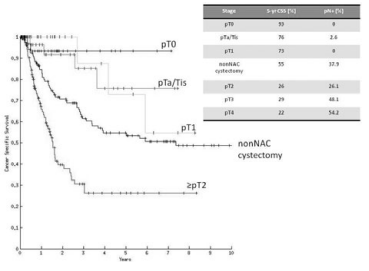
Nilay M. Gandhi, Alex Baras, Jen Jane-Liu, Mark Schoenberg, George Netto, Trinity Bivalacqua
The Johns Hopkins School of Medicine, The James Buchanan Brady Urological Institute, Baltimore, MD

Introduction: Neoadjuvant chemotherapy (NAC) with radical cystectomy (RC) for muscle-invasive bladder cancer (MIBC) remains underutilized. We investigate extravesical cancer-control based off cancer-specific-survival (CSS) in RC patients treated with/without NAC at our institution.

Materials & Methods: A retrospective review identified NAC-RC patients from 2000-2013 at Johns Hopkins Hospital. Pathologic response (pR) was defined by residual non-invasive disease (< pT1), whereas non-responders (NR) were ≥ pT2. A matched 124 patient non-NAC RC comparison group from 1994-2007 was used.

Results: 219 patients underwent RC after NAC (69% receiving Gemcitabine-Cisplatin). 58% had no pR, 38% demonstrated pR, of which 20% were pT0. Pre-operative clinical stage between groups was not significant. 5-year CSS for pT0 was 93%, while pTa/Tis and pT1 were 76% and 73%, respectively. No significant difference was noted pT0 and p ≤ T1 ($p = 0.066$), between NAC-NR (≥ pT2) or between nonNAC ≥ pT2. The 5-year CSS between nonNAC and NAC-NR was significant (54% vs 31%, $p < 0.01$).

Conclusions: No survival difference was seen between NAC versus non-NAC patients; however NAC-R exhibited a 5-year CSS of 84.3%. NAC-pR (< pT1) behave similarly to pT0 with no significant difference noted in 5-year CSS and should be considered adequate responders. Patients with residual pT1 demonstrate a declining trend in CSS following 5 years, approaching that of nonNAC-RC, suggesting these patients are at greatest risk for delayed recurrence following that interval despite similar CSS to residual non-invasive disease.



Stage	5-yr CSS (%)	pVal (%)
pT0	93	0
pTa/Tis	76	2.6
pT1	73	0
nonNAC cystectomy	55	37.9
pT2	26	26.1
pT3	29	48.1
pT4	22	54.2

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Impact of Race on Selecting Appropriate Patients for Active Surveillance with Seemingly Low Risk Prostate Cancer

Eugene J. Pietzak, III, Kinnari Patel, Steve Parry, Keith Van Arsdalen, Alan J. Wein, S. Bruce Malkowicz, Thomas J. Guzzo
Hospital of the University of Pennsylvania, Philadelphia, PA

Introduction: There is increasing concern that current active surveillance (AS) criteria may be inappropriate for African Americans (AA) suggesting a need for race specific criteria.

Materials & Methods: Sensitivity, specificity, positive predictive values, receiver operator curves, and Area Under the Curve (AUC) were calculated for six published active surveillance criteria (NCCN, MSKCC, PRIAS, Hopkins, UCSF, & Miami) to predict organ confined Gleason 6 disease at radical prostatectomy. Clinical parameters for AA with favorable final pathology were then compared to AA with unfavorable pathology, and AS criteria were adjusted to determine if selection improved.

Results: Of 468 patients with low risk prostate cancer, 308/402 (76.6%) white Americans (WA) patients, and 55/66 (83.3%) AA patients were eligible for AS by one or more criteria ($p = 0.23$). PRIAS criteria had the highest rate of favorable pathology (81.7%) and best performance (AUC = 0.7) in WA. However, all six AS criteria performed universally poor in AA (all AUC ≤ 0.55). When comparing AA with favorable pathology to AA with unfavorable pathology, only family history of prostate cancer differed (11/25 [47.8%] v. 8/41 [22.2%], $p = 0.04$). When adjusting AS criteria in AA to exclude those with a positive family history, the AUC increased from 0.52 to 0.6 for UCSF criteria, and from 0.53 to 0.61 for MSKCC criteria.

Conclusions: Current AS criteria underperform in selecting appropriate AA patients for AS. AA considering AS should be counseled about their increased risk for occult adverse pathology, particularly with a family history of prostate cancer.

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African American Race is Associated with Adverse Oncologic Outcomes Following Radical Prostatectomy: Long-term Follow-up

Farzana A. Faisal, Debasish Sundi, Ashley E. Ross, Elizabeth B. Humphreys, Alan W. Partin, Misop Han, Edward M. Schaeffer
Brady Urological Institute, Johns Hopkins University, Baltimore, MD

Introduction: Studies describing racial disparities in outcomes following radical prostatectomy (RP) are conflicting. We report race-based outcomes after RP in a cohort stratified by NCCN risk category with updated follow-up.

Materials & Methods: We studied 11207 white and 1099 African American (AA) pre-treatment-naïve men who underwent RP at Johns Hopkins (1992-2013) with complete pre-operative and post-operative data. Pathologic and oncologic outcomes were compared between races using multivariable models that controlled separately for pre-operative and post-operative covariates.

Results: Median follow-up was 5.0 and 3.0 years for white and AA men, respectively ($p < 0.001$). AA men were more likely to have positive surgical margins ($p < 0.05$ for low, intermediate risk classes), adverse pathological features ($p < 0.05$ for each risk class), and be upgraded at RP ($p < 0.01$ for very-low, low risk classes). AA race was an independent predictor of biochemical recurrence among NCCN low (HR 2.22, $p < 0.001$) and intermediate risk (HR 1.34, $p = 0.032$) classes and pathologic Gleason score ≤ 6, 7, or 8 (range HR 1.67-4.22, $p < 0.05$). There was no difference in biochemical free survival between very-low risk AA men and low risk white men ($p = 0.890$) or low risk AA men and intermediate risk white men ($p = 0.060$).

Conclusions: When stratified by NCCN risk, AA men with very-low, low or intermediate risk PCa who undergo RP are more likely to have adverse pathologic findings and biochemical recurrence compared to white men. AA men with "low risk" PCa, especially those considering active surveillance, should be counseled that their recurrence risks can resemble those of whites in higher risk categories.

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Referrals for Urinary Tract Infections in the Pediatric Population and Adherence to the Academy of Pediatricians Guidelines

Sunil Reddy, Sonia Patel, Bruce Sprague, Daoud Dajani, Hans Pohl
Children's National Medical Center, Washington, DC

Introduction: Pediatric urinary tract infection (UTI) is a prevalent problem affecting 5% of children aged two months to two years. Due to the potential for serious morbidity, the American Academy of Pediatricians (APP) published guidelines on diagnosis, treatment, and imaging of pediatric UTIs.
Pediatric urologists receive many referrals to evaluate and treat pediatric UTIs and few studies have evaluated adherence to the AAP guidelines and quality of referrals.

Materials & Methods: This is a retrospective review of pediatric UTIs referrals to CNMC between 8/2013 and 2/2014. Variables evaluated included age, gender, Urinalysis (UA), Urine culture (UC), imaging, and specimen collection method. A diagnosis of a UTI was only made when a UA and UC were obtained on the same day and were positive according to the 2011 AAP guidelines.

Results: 187 patients, with a total of 266 UAs and 438 UCs met the inclusion criteria. 67% were > 24 months of age and 76% were female. 67% of UAs and 31% of UCs met the AAP criteria for a positive result. 24% had at least one confirmed UTI. Prior to referral, rates of obtained UAs and UCs were 54% and 88% respectively. Renal/Bladder ultrasound (RBUS) was obtained in 47% of cases with one or more confirmed UTI, and a voiding cystourethrogram (VCUG) was obtained in 10% of cases with two or more confirmed UTIs.

Conclusions: There is poor adherence to the AAP guidelines on the diagnosis and management of UTIs resulting in unnecessary or inadequately evaluated referrals to pediatric urologists.

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Laparoscopic Percutaneous Inguinal Hernia Repair (LPHR) in Children: Single Center Outcomes and a Review of Technique

Troy Sukhu[1], Katherine W. Herbst[2], C. D. Anthony Herndon[1], Sean T. Corbett[1]
[1]University of Virginia Children's Hospital/University of Virginia School of Medicine, Charlottesville, VA; [2]Connecticut Children's Medical Center/University of Connecticut, Hartford, CT

Introduction: Several concerns exist regarding pediatric laparoscopic inguinal hernia repair, including increased operative time and rates of recurrence. We prefer a laparoscopic percutaneous hernia repair (LPHR) as opposed to the conventional laparoscopic approach. We aim to explain our technique and results in comparison to traditional open repair (OR).

Materials & Methods: After IRB approval, we retrospectively reviewd patients undergoing LPHR and an age- and laterality-matched cohort undergoing OR at our institution between January 2010 and September 2013. We compared complications, rates of hernia recurrence, and operative times. LPHR was performed using a single 2-3 mm Step trocar through the umbilicus and 1-2 mm stab incision placed over either or both inguinal rings. An Ethibond suture was passed through the stab incision and the ipsilateral hernia defect was closed under direct visualization.

Results: With 48 total patients, there were 24 patients in each group (LPHR and OR) with a mean age of 44 months (± 29.1 months) and 42.7 months (± 29.6 months) respectively. Although sample size was small, median operative times for LPHR were significantly shorter than for OR by 38 minutes ($p < .001$). None of the patients in either cohort experienced complications or hernia recurrence.

Conclusions: In our experience to date, LPHR appears to be an effective alternative to OR with a potential advantage of decreased operative time without increased risk of complications or recurrence.

Characteristic	Total	LPHR	Open	p-value
Male, n (%)	46 (96%)	23 (96%)	23 (96%)	p=1.00[a]
Age (mos), mean (±SD)	43.3 (29.1)	41.0 (29.1)	42.7 (29.6)	p=0.88[b]
Weight (kg), mean (±SD)	16.3 (5.8)	16.2 (5.7)	16.3 (5.9)	p=0.97[b]
Laterality, n (%)				p=1.00[a]
Unilateral	36 (75)	18 (75)	18 (75)	
Bilateral	12 (25)	6 (25)	6 (25)	
Operative Time, median (range)	42 (13-135)	29 (13-49)	67 (41-135)	p<0.001[c]
Follow up (days), median (range)	48 (21-146)	51 (37-113)	46 (21-146)	p=0.280[c]

[a] Fisher's Exact Test [b] t-test [c] Mann-Whitney U

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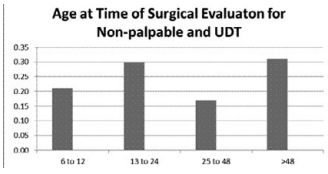
The Pattern of Referral for Undescended Testicles in West Virginia
Dana C. Point, Chad Morley, Stanley Zaslau, Osama Al-Omar
WVU Hospitals, Morgantown, WV

Introduction: Early treatment and identification of cryptorchidism is essential to preventing testicular degeneration, improving fertility and preventing testicular cancer. Current recommendations advocate performing orchidopexy between 6-12 months of age. Additionally, orchidopexy age has been suggested as an indicator of awareness and access to regional pediatric surgical services. We evaluated the age of pediatric patients presenting for urologic evaluation and management of non-palpable and undescended testicles (UDT) in West Virginia.

Materials & Methods: We retrospectively reviewed all pediatric patients who underwent orchidopexy and diagnostic laparoscopy for management of UDT or non-palpable testicles from January 2013 through March 2014. Ages at time of surgery were determined. Patients were separated into those undergoing surgical evaluation or intervention at 6 to 12 months, 13 to 24 months, 25 to 48 months, and > 48 months of age.

Results: Seventy patients underwent surgical evaluation or correction. Only 52% underwent evaluation within the recommended time period of 6-24 months. 17% were evaluated at 25-48 months and 31% underwent intervention after 48 months of age. Ten percent were evaluated after the age of 10 years.

Conclusions: Timely diagnosis and referral will lead to boys undergoing orchidopexy at the optimal age, resulting in better urologic outcomes. Improved primary care education, and access to pediatric surgical evaluation of UDT and non-palpable testicles are needed to improve the timeliness of intervention within our state.



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Newborn Exstrophy Closure without Osteotomy: Is There a Role?
Brian M. Inouye, Mahmoud Abdelwahab, Heather N. Di Carlo, Ezekiel E. Young, Ali Tourchi, Mehnaj Grewal, John P. Gearhart
Johns Hopkins Hospital, Baltimore, MD

Introduction: Recent studies suggest the potential for classic bladder exstrophy (CBE) closure without osteotomy. Still, many patients require osteotomy if they have a large bladder template, excessive pubic diastasis, or non-malleable pelvis. We seek to understand the outcomes of bladder closure with and without pelvic osteotomy.

Materials & Methods: An institutional database of 1208 exstrophy complex patients was reviewed for CBE patients closed at the authors' institution within 1 month of life. Patient demographics, closure history, diastasis distance, bladder capacity, and outcomes were compared by chi-squared tests between osteotomy and non-osteotomy patients. Failure was defined as wound and bladder dehiscence, prolapse, or bladder outlet obstruction requiring re-operation. A bladder capacity greater than 100 cc was deemed sufficient for bladder neck reconstruction (BNR).

Results: Of 848 CBE patients, 100 met inclusion criteria: 38 closed with osteotomy (26 male, 12 female), and 62 closed without (42 male, 20 female). There were 4 failed closures in the osteotomy group (2 dehiscence, 2 prolapse) and 4 failed closures in the non-osteotomy group (2 dehiscence, 2 prolapse). There was no significant difference in failed closures between the two groups (11% vs. 7%, $p = 0.466$). The osteotomy group had a higher percentage of patients with bladder capacity sufficient for BNR (82% vs. 71%, $p = 0.234$).

Conclusions: With thoughtful planning, newborn CBE patients may be closed safely without a pelvic osteotomy by experienced exstrophy surgeons. However, if the combined surgical team has any doubt concerning the diastasis width or pelvic malleability, an osteotomy is mandatory.

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Buccal Mucosal Graft Augmented Anastomosis Urethroplasty for Anterior Urethral Strictures: Long Term Results from two International Institutions
Gregory T. Chesnut[1], Ramon Virasoro[1], Jeremy Tonkin[1], Cara Wright[1], Shawn Marhamati[1], Gerald T. Jordan[1], Jessica DeLong[1], Uri Gur[2], Kurt McCammon[1]
[1]*Eastern Virginia Medical School, Norfolk, VA;* [2]*CEMIC, Buenos Aires, Argentina*

Introduction: We evaluated long-term success of Augmented Anastomosis Urethroplasty (AAU) with buccal mucosal graft (BMG) among patients undergoing this procedure at two institutions and assessed patient and surgical factors which may contribute to long-term effectiveness of this approach.

Materials & Methods: A retrospective chart review of 100 patients operated by a three surgeons at two different international institutions between 1991 and 2011 was conducted. Patient and stricture characteristics were analyzed, as were outcomes, complications, and satisfaction. Factors predisposing to failure were evaluated.

Results: Mean stricture length was 6.5 cm and dorsal onlay was used in 85 patients with ventral placement in 15. Prior to AAU, 135 patients underwent one or more corrective procedures, most commonly internal urethrotomy in 46% of patients. Comorbidities included obesity in 12% and diabetes mellitus in 11% of patients. At a mean follow-up of 88 months (60-229), overall success rate is 91%. Among patients with stricture recurrence, initial stricture length measured 8.06 cm, compared with 6.25 cm for patients without recurrence. Time to recurrence ranged from 1 month to 132 months (average 35.2 months). Five (55.6%) patients with recurrence underwent 2 prior corrective procedures and 4 underwent 1 prior surgery. Neither DM nor obesity were associated with recurrence.

Conclusions: AAU offers durable results. Longer strictures were associated with less optimal results. Patients with longer strictures have history of more prior dilations and urethrotomies. Diabetes and obesity are not associated with short or long term complications. One should avoid dilations and urethrotomies that may result in longer strictures.

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Neural Proliferation, Mast Cell Quantity and Mucosal Response to Stress in a Murine Model for Painful Bladder Syndrome (Interstitial Cystitis)
Morris L. Jessop, Dale Riggs, Barbara Jackson, Stanley Zaslau
West Virginia University, Morgantown, WV

Introduction: The etiology of painful bladder syndrome (PBS) is unclear. Previous studies suggest that stress may induce pathological changes in the bladders of patients with PBS. This study evaluates the effects of stress on urothelium thickness, mast cell response and neuron proliferation in a murine model for PBS.

Materials & Methods: 40 mice were randomized to either a sedentary (n = 20) group or an activity wheel (n = 20). After 4 weeks, each group was further randomized to sedentary/control = 10, sedentary/chronic stress = 10, activity wheel/control = 10 and activity wheel/chronic stress = 10. Animals in each stress group were exposed to a series of stressors (cage tilt, damp sawdust, social stress, varying light/dark cycles) for 8 weeks. Mice were then sacrificed and the bladders pathologically evaluated. Evaluation categories included number of mast cells found in urothelium/detrusor layers, urothelium thickness, and quantity of S100 staining. The results were compared using one way analysis of variance.

Results: There was a significant difference between mean urothelium thickness in stressed versus control mice, $F(3,36) = 3.237$, $p = 0.033$. However, there was no significant difference in the quantity of urothelium/lamina propria, $F(3,36) = 0.692$, $p = 0.563$, or detrusor mast cells, $F(3,36) = 0.485$, $p = 0.695$. There was no significant difference in the quantity of mucosal S100 staining, $F(3,36) = 1.061$, $p = 0.378$, or detrusor S100 staining, $F(3,36) = 0.557$, $p = 0.495$.

Conclusions: A significant decrease in urothelium thickness was observed in stressed compared to control mice. There was no significant difference in neuron proliferation or quantity of mast cells between all groups. This study further reinforces the potential role of urothelium thinning in the etiology of PBS.

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Effect of Concurrent Prolapse Surgery on Stress Urinary Incontinence Outcomes Following TVTO

MaryEllen T. Dolat[1], Joesph Habibi[1], Zachary McDowell[1], David E. Rapp[2]
[1]Virginia Commonwealth University School of Medicine, Richmond, VA; [2]Virginia Commonwealth University School of Medicine, Virginia Urology Center for Incontinence and Pelvic Floor Recontruction, Richmond, VA

Introduction: A variety of pelvic organ prolapse (POP) surgeries are performed concurrent to mid-urethral sling (MUS) placement. It is unknown whether differing POP surgeries may affect SUI outcomes following MUS placement.

Materials & Methods: We performed a retrospective cohort analysis of patients undergoing TVTO in conjunction with POP repair (cystocele with mesh graft (CM), cystocele with cadaveric fascia (CF), colpocleisis (C), and sacrocolpopexy (SCP)). Primary outcomes included validated measures of SUI (ICIQ-FLUTS SD and 3-day bladder diary), measured pre-operatively and at 6-weeks, 1- and 2-years post-operatively. Multi-variate analyses using mixed-effects regressions were used to assess for differences in SUI outcomes based on POP repair type.

Results: 102 patients were identified for study analysis (CM, n = 45; CF, n = 37; SCP, n = 16; C, n = 4). Four patients undergoing colpocleisis were excluded from primary analysis given lack of sufficient cohort size. When adjusted for effects of covariates (age, prior hysterectomy/incontinence repair/prolapse surgery, preoperative POP stage), improvement in ICIQ-FLUTS SD was seen in all three surgery groups across 2-year follow-up ($p < 0.05$). Similarly, a reduction in PPD across 2-year follow-up was seen in each group except SCP ($p < 0.05$). The only statistically significant difference in change over assessment between surgeries comprised CM, which demonstrated lesser improvement in ICIQ-FLUTS SD (pre-operative vs 2-year) ($p = 0.04$), although it did not differ from other surgeries at either time point.

Conclusions: Regardless of POP surgery type, patients demonstrate improvements in validated SUI outcomes through 2-years. Although minimal differences were seen when comparing POP surgery cohorts, patients undergoing CM may demonstrate slightly less improvement in SUI outcomes at 2-years post-operatively.

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Is Younger Patient Age still Associated with Benign Renal Tumor Histology?

Awet Gherezghiher, Jay Raman, Erik Lehman
Hershey Medical Center, Hershey, PA

Introduction: Older studies implicate that younger patients are more likely to have benign kidney tumors. We review a contemporary cohort of patients undergoing renal tumor surgery to determine whether this association between patient age and benign histology still exists.

Materials & Methods: A review of 315 patients who underwent a partial (n = 158) or radical (n = 157) nephrectomy over the past 5 years was performed. Clinical, radiographic and pathologic data were analyzed to determine factors associated with a renal cell carcinoma (RCC) diagnosis.

Results: 185 men and 128 women with a median age of 60, BMI of 31, tumor size of 4 cm, and nephrometry score of 6 were included. 7% of our cohort were younger than 40, 15% were younger than 45, and 24% were younger than 50 years of age. 89% of tumors were RCC with 70% of these being of clear cell subtype. On univariate analysis, tumor size ($p = 0.02$), nephrometry score ($p = 0.02$), male gender ($p = 0.03$) and radical (vs. partial) nephrectomy ($p = 0.007$) were associated with RCC. Patient age, however, was not associated with malignant histology (OR 0.89, 95% CI 0.39-2.05, $p = 0.79$). On multivariate analysis, only increasing nephrometry score was associated with RCC (OR 7.1, 95% CI 3.2-13.4, $p = 0.008$).

Conclusions: This contemporary cohort highlights that younger patients have a similar risk of malignant renal histology as older counterparts. Such information may aid the decision-making process for younger patients presenting with renal cortical tumors.

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Radiographically Evident Port Site Hernia after Robotic-assisted Urologic Surgery: Incidence and Risk Factors

Jules P. Manger, Matthew C. Christie, Abdulaziz M. Khiyami, Afshan A. Ornan, Noah S. Schenkman
University of Virginia, Charlottesville, VA

Introduction: Laparoscopic port site hernias are rare entities with reported incidence of 1% or less. The incidence of occult radiographically-evident hernia has not been described after robotic-assisted urologic surgery.

Materials & Methods: A retrospective review of robotic-assisted urologic surgery was performed at a single institution from 2009-2012. Patients with preoperative and postoperative computed tomography (CT) were included for analysis and were examined for new hernia by three reviewers.

Results: One hundred seventeen cases were identified. The mean age and BMI were 58 years and 29 kg/m^2, respectively. The population was 83% male. The incidence of radiographically evident port site hernia was 6.8% (8/117 patients). In case-control analysis, there was no difference with respect to age, gender, BMI, smoking status, diabetes mellitus, wound infection, ASA score, procedure type, blood loss, prior abdominal surgery, or history of hernia. Specimen size greater than 40 g ($p = 0.018$) and immunosuppressive drug therapy ($p = 0.037$) were significant risk factors for port site hernia.

Conclusion: While the incidence of clinically evident port site hernia remains low in robotic-assisted urologic surgery, the radiographically detected occult hernia was 6.8% in this series. These occurred most often in sites extended for specimen extraction and at larger port sites. Further follow-up will be needed to determine if any of the clinically occult hernias will become symptomatic.

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Repeat Robotic Partial Nephrectomy for Complex Renal Tumors: Characteristics and Renal Functional Outcomes

Annerleim Walton Diaz, Minhaj M. Siddiqui, Ryan Hankins, Peter A. Pinto, Gennady Bratslavsky, W. Marston Linehan, Adam R. Metwalli
National Institutes of Health, Bethesda, MD

Introduction: Repeat open renal surgeries have been shown to have higher blood loss and complication rate compared to first time renal surgery. Consequently, many surgeons avoid minimally invasive techniques in the setting of repeat renal surgery. We present the characteristics and short-term renal functional outcomes of patients who underwent a repeat robotic partial nephrectomy at the NIH.

Materials & Methods: We identified patients who underwent complex multifocal partial nephrectomies between January 2007 and December 2013. Patients with ≥ 2 ipsilateral kidney surgery, the second one being a robotic partial nephrectomy (reop) were selected. Clinical characteristics, surgical parameters and renal functional outcomes preoperative (preop) and at 3 month follow-up were collected and compared.

Results: 125 patients underwent robotic partial nephrectomy between January 2007 and December 2013. Of these, 20.8% (26/125) underwent repeat robotic partial nephrectomy. Mean age was 48.8 ± 12.8 years. Mean number of tumors resected was 4.3 ± 5.8, mean surgery time was 366.6 ± 122.1 minutes, mean EBL was 1426 ± 1769 cc. Mean preop creatinine was 1.02 ± 0.3 vs 0.95 ± 0.3 mg/dl for those with one kidney surgery, and at 3 month follow up was 1.1 ± 0.3 vs 1 ± 0.3 mg/dL for those with one procedure. Mean change in creatinine from preop level to three month follow up was 0.09 mg/dL for the reop group vs 0.05 mg/dL for those who only underwent one kidney procedure ($p = 0.3$).

Conclusions: Repeat robotic partial nephrectomy is safe and feasible in highly selected patients. At three month follow-up renal function preservation is excellent with respect to preoperative levels.

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An Evaluation of the Impact of Creatinine to Weight Ratio in 24-hour Urine Studies for Renal Stone Prevention

Jack W. Lambert[1], Mark Sawyer[1], Nicole Miller[2], Michael Fabrizio[1]
[1]EVMS, Norfolk, VA; [2]Vanderbilt University, Nashville, TN

Introduction: Proper interpretation of 24-hour urine studies with abnormal Cr/kg ratios has been recently questioned. We sought to determine if data from our large cohort of stone formers confirmed limitations of this measure.

Materials & Methods: Initial 24-hour urine studies (1/2006-8/2012) for 2,956 non-cystinuric adult stone formers (M = 1618, F=1338) were examined. Patients were stratified into low, expected and high Cr/kg ratios using Litholink references ranges (18.0-24.0 mg/kg for males and 15.0-20.0 mg/kg for females).

Results: 51.2% of patients fell outside of the expected Cr/kg reference range, with a 15 year difference between the high (59) and low (44) groups. BMI and weight both increased as the Cr/kg ratio decreased. Most variables differed significantly depending on the Cr/kg group. Also, there was a significant difference in the Ca/Cr ratio between the groups (low = 147.8, expected 156.2, high = 135.1) for females (p = 0.036) but not for males (p = 0.728).

Conclusions: Our data confirm limitations of the Cr/kg ratio as the measure of an adequate 24-hour urine study. Also, some groups may be inappropriately treated with thiazides if the Cr/kg ration is not considered. Concentration and supersaturation of urolithogenic variables is likely better as assessing for the risk of developing urolithiasis than total excretion in patients with abnormal Cr/kg ratios.

Table. 24 -hour urine variables based on Cr/kg ratios

	Low Ratio (M < 18, F < 15)	Expected ratio	High Ratio (M > 24, F > 20)	Kruskal-Wallis p value
Patient (N = -2956)	966 (32.7%)	1444 (48.8%)	546 (18.5%)	
Age	59 (49-67)	51 (41-61)	44 (33-53)	< 0.001
Weight (kg)	90 (77.1-105.2)	83.9 (70.8-97.5)	76.2 (63.5-88.5)	< 0.001
Creatinine (mg/day)	1247 (989-1554)	1642 (1283-1967)	1970 (1456-2381)	< 0.001
Volume (Liters)	1.47 (1.05-2.07)	1.66 (1.20-2.21)	1.90 (1.39-2.44)	< 0.001
Lean body mass (kg) Females Males	 49.4 62.6	 46.4 60.8	 42.9 58.2	 < 0.001 < 0.001
Calcium (mg/d)	163.4 (102.4-240.9)	212.5 (138.2-294.0)	238.9 (158.3-331.2)	< 0.001
Oxalate Conc.	22.1 (16.4-29.3)	22.1 (16.4-29.0)	21.1 (16.1-28.0)	0.279
pH	5.94	6.01	6.14	< 0.001

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A Validation Study of the Penile Prosthesis Predictive Calculator in Patients Diagnosed with Erectile Dysfunction

Uzoma A. Anele, Brian V. Le, Arthur L. Burnett, Robert L. Segal
The Johns Hopkins School of Medicine, Baltimore, MD

Introduction: Penile prosthesis (PP) implantation is definitive treatment for erectile dysfunction (ED), yet it is often delayed for a variety of reasons. From claims data, we previously developed a tool for determining a patient's likelihood of eventually receiving a PP. Here we evaluate this instrument's utility by comparing populations receiving surgical (PP) vs non-surgical ED management at a single institution.

Materials & Methods: Retrospective analysis was performed on ED patients seen at this institution from January to December 2012. Inclusion criteria included ED diagnosis and first-time PP implantation. Patients receiving surgical management (PP) were compared to matched non-surgical controls. Patients' demographics, co-morbidities, and ED therapy based on claims data were previously analyzed using stepwise regression modeling to derive this calculator. Risk factors that carried the most weight were Peyronie's disease, prostate cancer, priapism, and use of second-line ED therapies such as intracavernosal injections. Scores were determined by calculating the product of weighted relative risks and were compared between PP and non-PP groups.

Results: We established a cohort of 60 PP patients (average age 59.9 + 9.3 years) and matched them with 120 non-PP patients (average age 57.7 + 10.7 years). The mean score of the PP group was 8.46 (95% CI, 5.325-11.59) vs. the non-PP group's 3.95 (95% CI, 3.118-4.787) (p = 0.0004).

Conclusion: The calculator risk-stratified men that ultimately underwent PP compared to non-surgically managed controls. This is an appropriate and objective tool for determining likelihood of PP implantation in men with ED and may help clinicians in patient counseling and care management.

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Low Osteocalcin Levels are Associated with Androgen Deficiency

Brian V Le, Kevin Billups, Uzoma Anele, Arthur L. Burnett, II
Johns Hopkins Hospital, Baltimore, MD

Introduction: Recent studies in mice have identified a novel regulatory relationship between bone turnover marker osteocalcin (OC) and testosterone (T) production. OC may be an important regulator of testosterone production in humans as well. We examined the relationship between testosterone and osteocalcin in hypogonadal and eugonadal men.

Materials & Methods: We conducted a prospective longitudinal cohort study enrolling men presenting to the a Men's Health Clinic who warranted work-up for hypogonadism based on responses to the Androgen Deficiency in Aging Male (ADAM) survey. Men were excluded if on ADT, TRT, or bone medications. Serum T, free T, SHBG, bioavailable T, and osteocalcin were obtained from blood samples and assayed. Additionally, men completed IPSS and IIEF-5 questionnaires.

Results: Ninety-two men were enrolled to participate in this prospective longitudinal cohort study. Total T and osteocalcin demonstrated a positive linear relationship with a correlation coefficient of R = 0.45 (95% CI 0.22-0.60). Free T and osteocalcin were also correlated at R = 0.31 (95% CI 0.10-0.52). Hypogonadal men (total T ≤ 350 ng/dL) had significantly lower osteocalcin levels than eugonadal men (11.4 vs. 21.9 p < 0.01). There were no significant differences in total IPSS and IIEF-5 scores between the hypogonadal and eugonadal cohort.

Conclusions: Androgen deficiency is associated with lower osteocalcin levels. This supports a relationship between bone health and testosterone steroidogenesis. Further studies are needed to evaluate the nature of this relationship and effects of modulating osteocalcin levels as a potential avenue for the treatment of hypogonadism.

44

Durability and Cost-effectiveness of Ureteroscope Repairs

Jennifer Rolef, Patrick Mufarrij, Thomas W. Jarrett
George Washington University, Washington, DC

Introduction: Flexible ureteroscopy remains one of the most common approaches to remove calculi residing in the urinary tract. The repair process for flexible ureteroscopes significantly impacts the durability of these instruments, and represents a significant cost for ureteroscopy. We sought to assess the durability and cost-effectiveness of flexible ureteroscope repairs by comparing manufacturer and third-party maintenance at our institution.

Materials & Methods: Data regarding flexible ureteroscope usage and repairs at our institution from 2011 through 2013 were retrospectively collected. The number of repairs per usage in 2011 and 2012, when the manufacturer was performing repairs, was compared to the number of repairs per usage in 2013, when a third-party repair company was used. The overall cost of repairs between the two time periods was also analyzed.

Results: In 2011 and 2012, a total of 557 procedures were performed using Karl Storz ureteroscopes. During this time period, the manufacturer performed a total of 28 repairs, and the average number of procedures per repair was 19.9. In 2013, a total of 320 procedures were performed, requiring 29 repairs by a third-party company. The average numbers of procedures per repair in 2013 was 13.9. The cost of ureteroscope repairs in 2011 and 2012 totaled $170,126 compared to $152,990 in 2013. When adjusted for the number of procedures per repair, the cost increased by 62%.

Conclusion: Our analysis suggests that ureteroscope durability can be improved when repairs are performed by the manufacturer. This directly translates into significantly reduced cost.

P1

One-Stage, Dorsal Onlay Urethroplasty with Clamshell Ventral Flap in Adults with a History of Hypospadias Repair

Ronak Gor, Matthew Brennan, Gregory Diorio, Phillip Ginsberg, Michael Metro
Einstein Healthcare Network, Philadelphia, PA

Introduction: Urethral strictures are the most common, and often most severe complications of hypospadias repair. Duckett pioneered the island onlay urethroplasty that has help repair many young males. For those developing strictures, staged repairs are often required, prolonging convalescence. We describe our experience with a one-stage urethroplasty utilizing a dorsal buccal mucosa graft (BMG) onlay, with "clamshell" ventral flap in patients with refractory urethral stricture disease and history of island onlay hypospadias repair.

Materials & Methods: Four men with prior island onlay hypospadias repair underwent the titled procedure where the existing island onlay was lifted off its dorsal attachments and reflected ventrally without disturbing its blood supply. An appropriately sized BMG was fixed to the attenuated dorsal plate. The mobilized flap was then enveloped over a 14 Fr catheter and three point closure involving flap, BMG, and corporal body was performed. Pre-op and post-op urine flow rates (Qmax) were recorded and compared. Two-year voiding-related quality of life was assessed.

Results: Mean age and latency to repair were 43 and 36 years. Mean follow-up was 33 months. Mean stricture length was 4.9 cm. All patients had prior dilations and urethrotomies. See Table 1 for outcome variables.

Conclusions: We meld the advantages of a pedicled-flap and BMG tissue-transfer reconstruction in a reproducible, one-stage procedure in a difficult to treat population. We report favorable preliminary outcomes.

Patient No	Complications	Revision	Pre-op Qmax (mL/sec)	2-month post-op Qmax (mL/sec)	2-year post-op Qmax (mL/sec)	2-year post-op relative QOL (poor, fair, good, great)
1	Bulbar stricture requiring anastomotic urethroplasty	No	6	26	18	Great
2	None	No	8	24	28	Great
3	None	No	3	13	21	Great
4	Balloon dilation	No	6	13	12 (18 post dilation)	Good
Mean				5.75	17.75	20.25

P2

Comparing Relative Effectiveness of Cryosurgery and External Beam Radiation as Treatments for Localized Prostate Cancer

Shan Guleria[1], W. Lloyd Glover[2], Anshu S. Guleria[1]
[1]Guleria Urology Associates, Manassass, VA; [2]Fairfax Urology, Fairfax, VA

Introduction: Over the past decade prostate cryoablation has been gaining acceptance as a treatment for primary and recurrent localized prostate cancer. External beam radiotherapy (EBRT) is more well-established and known to patients and urologists. By comparing the failure rates and the complication rates in our sample group, we aimed to determine the relative effectiveness of the two treatments.

Materials & Methods: Retrospective data were collected from 181 patients who underwent cryotherapy and 40 patients who were treated with EBRT since 2002. Post-treatment PSA levels were tracked in the patients for up to 10 years and the occurrence complications was recorded. Biochemical failure was defined in accordance to the Phoenix definition (nadir PSA plus 2 ng/mL). Non-parametric tests were used to determine the significance of the data.

Results: Our data found no significant difference in biochemical failure rates between the two treatments after one year post-treatment ($\chi^2 = 0.698$, p-value = 0.404) or five years post-treatment ($\chi^2 = 0.066$, p-value = 0.797). Most complications occurred with statistically equal frequency in both treatment groups, but gastrointestinal problems were more common in radiation patients than in cryotherapy patients ($\chi^2 = 19.261$, p-value = 0.000).

Conclusions: These results suggest that cryoablation of the prostate is as effective a treatment as EBRT. As more long term cryotherapy data becomes available, it may move into a favorable position as a first line therapy for localized prostate cancer. Limitations of research in this field are lack of randomized trials and consensus in defining treatment failure.

P3

Prostate Brachytherapy and Secondary Urothelial Malignancy

George H. Salama
The Commonwealth Medical College, Scranton, PA

Introduction: The incidence of secondary urothelial malignancy in the setting of radiation therapy has been documented. We noted an unusually high incidence of urothelial carcinoma in patients who received brachytherapy. We examined our brachytherapy patients for the incidence, presentation, and management of these secondary urothelial malignancies.

Materials & Methods: Chart review of 265 patients being treated at a community Urology office receiving only brachytherapy via I-125 radiation for localized prostate cancer between 1996 and 2004.

Results: 9 patients developed high grade, muscle- invasive urothelial malignancy after brachytherapy (3.4%), compared to the lifetime incidence of muscle-invasive urothelial carcinoma in U.S. men of 1.1%. The most common presentation was gross hematuria (66%). 6 of 9 malignancies were pathologically staged as T4. The average dosage of radiation for all 9 patients was 134 cGy using I-125 seeds. The average time between seed implant and diagnosis of secondary malignancy was 85 months, with time periods ranging from 36 months to 141 months. The rate of associated mortality in these patients was 78% (7 out of 9 patients), with an average time from diagnosis to death being 11 months.

Conclusion: We have found a subset of highly lethal secondary urothelial malignancies associated with brachytherapy. The recognition of this association in other brachytherapy series would be important to identify, as early recognition of this complication gives the patient the best chance of survival. The results of our study expose the need for future research on brachytherapy; it's dosing, and its potential complications that may outweigh the benefits.

P4

Focal Apical Margin Positivity in Robot Assisted Laparoscopic Prostatectomy: Effects of Nerve Sparing on Margin Status

Daniel Marchalik[1], Frank C. Hill[1], Jayashree Krishnan[2], Hanaa Nissim[2], Jacob Brems[3], Edward Uchio[4], Jonah Murdock[5], Keith Kowalczyk[1], Gaurav Bandi[1], John Lynch[1], Mohan Verghese[2], Jonathan Hwang[2]
[1]MedStar Georgetown University Hospital, Washington, DC; [2]MedStar Washington Hospital Center, Washington, DC; [3]Georgetown University Medical School, Washington, DC; [4]UIC, Irvine, Irvine, CA; [5]DC Veterans Affairs, Washington, DC

Introduction: The apex is the most commonly involved site of surgical margin positivity following a robot assisted laparoscopic prostatectomy (RALP). The decision to conduct nerve sparing on the laterality of apical margin positivity has not been previously assessed.

Materials and methods: 1170 patients who underwent RALP from 2007-2013 were identified in our prospective IRB approved prostate cancer database. 34 patients with isolated positive apical margins were isolated. Pathology specimens were evaluated to determine specific site of margin positivity (right/left and anterior/posterior) and compared to disease grade, pre-operative PSA and laterality of nerve sparing.

Results: Of 1170 patients, 34 (2.9%) had isolated positive apical margins. 71% of positive apical margins occurred in the anterior apex, regardless of laterality. 66.7% (14/21) of right positive margin and 80% (12/15) of left positive margins occurred on the same side as the side on which nerve sparing was performed. 30.3% (10/33) positive margins occurred in a side that had no nerve sparing performed on it.

Conclusion: Positive apical margins were more likely to occur on the anterior apex and on the side undergoing nerve sparing. However, our series also demonstrated that 30% of positive apical margins occurred on the side not undergoing nerve sparing. This preliminary descriptive data calls into question the correlation between the election to perform nerve sparing and the ultimate location of positive apical margins.

N = 33	Right + Margin (n = 22)	Left + Margin (n = 15)	Anterior + Margin (n = 24)	Posterior + Margin (n = 9)
Right Nerve Sparing (n = 5)	2	3	4	1
Left Nerve Sparing (n = 4)	4	0	4	0
No Nerve Sparing (n = 3)	3	0	2	1
Bilateral Nerve Sparing (n = 21)	13	12	15	6

P5

Rnaseh2a Roles in Regulating Prostate Cancer Cell Cycle and Survival

Zhenhua Huang, Sr., Edward Schaeffer, Sr., Ashley Ross
Johns Hopkins University, Baltimore, MD

RNASEH2A is a component of the heterotrimeric type II ribonuclease H enzyme (RNAseH2). Diseases associated with RNASEH2A include aicardi-goutieres syndrome, and aicardi-goutieres syndrome type 4, et al. Here, we found RNASEH2A is highly expressed in human prostate cancer cell lines and prostate cancer tissues. TMA assay showed that 31% high, 63% medium and 6% low RNASEH2A expressing was found in 430 samples and higher Gleason score samples possess more RNASEH2A protein expression. RNASEH2A knockdown in prostate cancer cell lines inhibit significantly cell proliferation, whereas its over-expression in these cells increase obviously cell growth. Cell cycle detected by flow cytometry showed that a longer G1 phase and a shorter S phase were observed in RNASEH2A knockdown cells. Transcriptional profiles analyzed by cDNA array showed that a few cell cycle control genes (CDC45, EIF4E2, UHRF1, CDCA4, CDCA3, CDC20, DEK) as well as some kinases were down-regulated by RNASEH2A knockdown. Many histone related gene expression were up-regulated upon RNASEH2A was downregulated. The migration capability of prostate cancer cells was significantly impeded if RNASEH2A was down-regulated. Finally, we discovered that forced RNASEH2A expression in both prostate normal and cancer cells enhanced their survival if they were treated by Gamma irradiation, which is in line with the clinic data showing that higher RNASEH2A expressing was often found in the samples from patient who had been treated with radiation therapy. Summarily, RNASEH2A is an important gene in regulating cancer cell cycle, migration, survival et al, which might be a key target for prostate cancer treatment.

P6

Risk of Myocardial Infarction after Robotic Prostatectomy in Patients with History of Coronary Artery Disease and Cardiac Stent Placement

Mona Yezdani, Landon Nguyen, Harold Frazier, Thomas Jarrett, Stephanie Knapp, Nak Choi, Devin Patel
George Washington University, Washington, DC

Introduction: One of the most concerning complications associated with robotic-assisted laparoscopic radical prostatectomy (RALRP) is myocardial infarction (MI). This paper quantifies the cardiac risk in patients undergoing RALRP, specifically targeting those with a history of MI treated with angioplasty and cardiac stent placement. This will allow patients to better assess their risk when undergoing RALRP.

Materials & Methods: We retrospectively reviewed 1405 patients who underwent RALRP by two surgeons at one institution from March 2007 to January 2013. Of those, 40 patients, with average age of 63, had a history of MI and cardiac stent placement.

Results: Three patients with a history of MI treated with cardiac stent(s) had an MI after RALRP demonstrating a 7.5% risk compared with an overall risk of 0.2% for MI after RALRP. Two of these patients were previously treated with drug eluting stents (DES) while the other had a bare metal stent (BMS). The number of stents placed was not a significant risk factor ($p = 0.4$). Two patients stopped Plavix seven days prior to the procedure and continued aspirin throughout, while the third was no longer on aspirin or Plavix, without increased blood loss.

Conclusion: Patients undergoing RALRP with a history of MI and cardiac stent have a higher risk of MI post-operatively compared to the general population. The type and number of cardiac stent was not statistically significance. For high risk patients, routine peri-operative aspirin can safely be continued. Discussion with patient's cardiologist is critical to determine its necessity in reducing risk of stent thrombosis.

P7

Rho Kinase Regulation Enables Acute Regulation of Human Detrusor Bladder Compliance

MaryEllen Dolat[1], John E. Speich[2], Joseph Habibi[1], R. Wayne Barbee[1], Paul H. Ratz[1], Adam P. Klausner[1]
[1]*Virginia Commonwealth University School of Medicine, Richmond, VA;* [2]*Virginia Commonwealth University School of Engineering, Richmond, VA*

Introduction: The present study was designed to examine human detrusor smooth muscle (hDSM) revealing that detrusor length-dependent preload is acutely regulated by detrusor smooth muscle.

Materials & Methods: Strips of hDSM were obtained following cystectomy (3 male and 1 female, age 25-74 yo). An active length-tension curve identified the reference muscle length (L_{ref}). Tissues were subjected to 3 sequential load-unload cycles and tension (T) was measured at L_{ref} for each cycle as an index of compliance (T_1, T_2, T_3). Prior to cycles 1 & 3, tissues were contracted at 60%L_{ref} to mimic the final stage of a voiding contraction. No contraction occurred in the 20 min period at 60%L_{ref} between cycles 1 & 2. Rho kinase inhibitor was added to one tissue set prior to cycle 3.

Results: In hDSM, $T_2/T_1 = 0.58$, which was < 1.0 ($n = 4$, $p < 0.05$) because a fraction of T_1 at L_{ref} was lost during loading to 130%L_{ref} and was not restored during the wait at 60% L_{ref}. $T_3/T_1 = 0.92$ was not < 1.0, indicating that tension at L_{ref} lost during loading to 130% L_{ref} was restored by contraction at 60%L_{ref}. In tissues exposed to rho kinase inhibitor prior to cycle 3, $T_3/T_1 = 0.64$ was not $>$ the $T_2/T_1 = 0.47$ obtained prior to drug treatment ($n = 4$), indicating that rho kinase inhibition prior to T_3 prevented restoration of tension lost to strain softening.

Conclusions: HDSM displays length-history- and rho kinase-dependent compliance regulation. Pathological changes may accentuate bladder tone during filling suggesting a relationship to overactive bladder.

P8

Factors Associated with Rapid Return to Total Urinary Continence after Robot-assisted Radical Prostatectomy

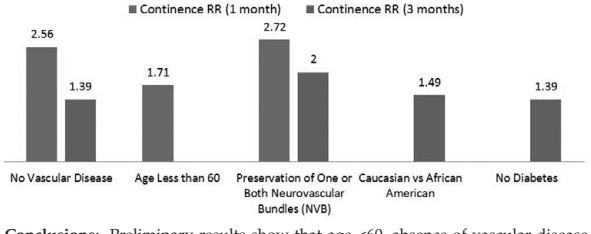
Ian R. Whiteside, Arjun Poddar, Pragati Shrestha, Michael D. Fabrizio, Robert W. Given, Raymond S. Lance
EVMS, Norfolk, VA

Introduction: A number of studies evaluating continence at 3 months or later exist; however, there is a lack of studies regarding earlier continence. Our aim was to evaluate selection and operative factors associated with pad-free continence at 1 and 3 months after robot-assisted radical prostatectomy (RARP).

Materials & Methods: 918 patients who indicated baseline continence on either the UCLA RAND or EPIC validated quality of life surveys were selected from our database of men treated by RARP between 2006 and 2013. Continence was defined as 0 pads. The factors, as described in the results section below, were evaluated at 1 and 3 months to determine the relative risk (RR) of continence.

Results: Overall Continence: 1 month: 12% of responding patients (74/616). 3 months: 37% (240/644).
At 3 months: mean operative time was significant ($p = 0.03$) for continent (246.35 minutes, $\sigma = 44.16$) vs. incontinent (256 minutes, $\sigma = 49.84$); mean estimated blood loss was significant ($p = 0.01$) for continent (170.56 ml, $\sigma = 168.32$) vs. incontinent (215.21 mL, $\sigma = 285.47$).
Further results are summarized in figure 1.
Factors insignificant at 1 and/or 3 months were excluded from the report at this time.

Figure 1



Conclusions: Preliminary results show that age <60, absence of vascular disease, and preservation of NVB are associated with early return to continence. Surgical technique modifications are under further study.

P9

Big or Small: Using BMI to Analyze PCNL Complications and Outcomes
Jamie L. Olsen, Nathan Hale, Samuel Deem, Asmita Modak
Charleston Area Medical Center, Charleston, WV

Introduction: Body Mass Index (BMI) is on the rise and there are many unknowns regarding surgical outcomes and complications among the morbidly obese. This study analyzed percutaneous nephrolithotomy (PCNL) surgery complications and outcomes amongst an array of BMI's.

Materials & Methods: A retrospective, observational review of data. BMI was analyzed for complications and surgical outcomes. BMI broken into 5 categories: less than 18.5, 18.5-25, 25-30, 30-40, greater than 40. A comparison of hounsfeld units (HF) and BMI for a total of 255 patients. Second look procedures (n = 25) were excluded. 12 excluded for missing HF values. 218 patient's data used for final analysis. Descriptive statistics was done. Categorical variables were compared between two groups by using chi-square test/ fisher's exact test as appropriate and continuous variables. Comparison was made using two-sample t test between two groups. All comparisons were done at 95% of level of significance.

Results: Amongst BMI groups there was no difference in stone free rate ($p = 0.3568$). Higher initial stone burden was found in BMI > 40 ($p = 0.0177$). Blood loss was higher with BMI > 40 ($p = 0.0372$). Total operative time was longer in BMI 1000) were observed in BMI 40 ($p = 0.0372$).

Conclusions: Increasing BMI shows increased risk for having complications during PCNL. Although stone free rates show no significant difference, identifying risk factors based on BMI prior to surgery can give better data on chances for adverse events. Early data on being underweight (BMI < 18.5) shows trends that indicate increased risks of complications, although further numbers are needed to increase study power.

P10

Health-Related Quality of Life in Elderly Prostate Cancer Patients Treated with Stereotactic Body Radiation Therapy
Da David Jiang, Leonard Chen, Rudy A. Moures, Joy S. Kim, Thomas M. Yung, Brian T. Collins, Simeng Suy, Sean P. Collins, John H. Lynch
Georgetown University School of Medicine, Washington, DC

Introduction: Prostate cancer (PCa) is primarily a disease of older men. The recently validated questionnaire QLQ-ELD14 specifically assesses the HRQOL of elderly cancer patients. Herein, we evaluate HRQOL in patients undergoing stereotactic body radiation therapy (SBRT) for PCa.

Materials & Methods: From Jan. 2013 to Apr. 2014, we prospectively assess the HRQOL of 313 PCa patients with a median age of 70 years. Patients completed the QLQ-ELD14 questionnaire before treatment and/or during routine follow-up visits. We then separated the completed questionnaires into 3 groups: completed prior to SBRT (baseline), 0-2 years post-SBRT and > 2 years post-SBRT. Each of 7 scales ranges from 0 -100.

Results: In this cross-sectional analysis, we observed decreased mobility following SBRT with scores from 6.4 ± 1.6 at baseline to 13.5 ± 2.0 > 2 years post-SBRT. Nonetheless, patients felt that the burden of illness were low with domain scores decreasing from 21.0 ± 2.8 at baseline to 17.6 ± 2.1 > 2 years post-SBRT. The proportion of men feeling that the treatment burden was quite a bit to very much increased from 4.8% at baseline to 5.3% at > 2 years post-SBRT.

Conclusions: In this cross-sectional study, mobility declined following prostate SBRT. The etiology of this finding remains unclear. Nonetheless, the burden of treatment associated with prostate SBRT appears to be low. Less than 10% of men felt treatment burden was quite a bit to very much > 2 years post-SBRT. These findings should be validated by longitudinal studies.

P11

Comparison of Expanded Lower Quadrant and Periumbilical Port Site Specimen Extraction Sites in an Obese Population during Robotic-Assisted Laparoscopic Radical Nephrectomy
Chad P. Hubsher, Mohamad Salkini
West Virginia University, Morgantown, WV

Introduction: In an attempt to identify the ideal location for renal extraction in an obese population during a robotic-assisted laparoscopic radical nephrectomy (RALRN), we compared expanded lower quadrant port site incisions to expanded periumbilical port site incisions in patients with a BMI > 30.

Materials & Methods: A retrospective review of obese patients that underwent a RALRN was conducted. Attention focused on size of the intact specimen, location of extraction, and presence of hernias on follow-up CT imaging.

Results: Between 2009 and 2013, 21 obese patients (mean BMI 37.3, range 30.1 to 59.2) underwent RALRN with average follow up imaging of 15.3 months (range 6 to 33 months). Lower quadrant extraction was performed on 9 patients with mean specimen size of 12.8 cm (range 9.7 to 15.0 cm). Follow up imaging detected 3 small incisional hernias, 1 was clinically significant. Periumbilical extraction was performed on 12 patients with mean specimen size of 16.3 cm (range 11.5 to 22.5 cm). Follow up imaging identified 3 small incisional hernias, none clinically significant. There was no difference in BMI ($p = 0.59$) and no difference in hernia formation, based on clinical exam ($p = 0.43$) or imaging ($p = 1.00$). However, the size of extracted specimen from the periumbilical incision was significantly greater than the lower quadrant incision ($p = 0.01$).

Conclusions: In obese patients undergoing RALRN, expanded lower quadrant port site and periumbilical incisions are both suitable sites for kidney specimen extraction, although periumbilical incisions may be more conducive for larger specimens.

P12

Injection of Mitomycin C during Vesical Neck Incision in Men with Recalcitrant Bladder Neck Contractures and prior Radiation Therapy for Prostate Cancer
Ronak Gor, Phillip Ginsberg, Michael Metro
Einstein Healthcare Network, Philadelphia, PA

Introduction: The antiproliferative agent, mitomycin C (MMC), has shown preliminary efficacy as an intralesional injection during vesical neck incision (IVN) for recalcitrant bladder neck contracture (BNC). The effect of radiation therapy on efficacy of MMC injections is unknown, and herein, is the objective of study.

Materials & Methods: All patients with recalcitrant BNC who underwent IVN with MMC injection (IVN+MMC) were included. All patients had at least one prior IVN. Tri or quadrant IVN were made with injection of 0.4 mg/ml MMC to each incision site. Cold-knife was used for incision without coagulation, in efforts to minimize thermal damage.

Results: Nine patients were identified. Mean follow-up was 8 months (range 4-12 months). Six had history of radiation therapy for CaP (RT) and three were radiation-naive (RN). One RT patient (17%) achieved an open bladder neck after one procedure. Four (67%) RT patients were open after two procedures, while one failed two procedures. All three RN patients achieved an open bladder neck after one procedure. All patients had stress incontinence prior to intervention, for which, symptoms were exacerbated post-operatively in all but one patient from each group.

Conclusion: Radiated tissue characteristics are less amenable to wound healing and may present a barrier to intralesional therapies. While IVN+MMC resulted in open bladder necks in most RT patients, more than one procedure was often necessary. Patients with prior radiation undergoing IVN+MMC should be counseled appropriately.

P13

Impact of Obesity on Urethroplasty Outcomes

F. Cameron Hill[1], Jordan Luskin[1], Fornati Bedell[1], Mohan Verghese[2], Krishnan Venkatesan[2]
[1]Georgetown University, Washington, DC; [2]Medstar Washington Hospital Center, Washington, DC

Introduction: Obesity is an epidemic, becoming an increasingly more common comorbidity in patients we treat, including urethral stricture. There is a relatively paucity of literature examining the effect of obesity on urethroplasty. We reviewed our experience and outcomes with regards to Body Mass Index (BMI).

Materials & Methods: Retrospective review of all patients undergoing urethroplasty was conducted, stratifying patients into BMI < 25, 25-30, and > 30. Demographic data were identified. Outcomes analyzed included operative time, estimated blood loss (EBL), length of stay (LOS), and complications as classified by the Clavien-Dindo system.

Results: From September 2012 to April 2014, 30 patients underwent anterior urethroplasty. 8 had BMI < 25, 13 with BMI 25-30, and 9 with a BMI > 30. The majority of patients (73%) were overweight or obese. Obese patients trended towards longer mean stricture length (8 cm), longer mean operative time (337 minutes), and higher mean EBL (411 mL). There were more complications in overweight and obese patients. At mean follow-up of 9 months, there was also a trend toward higher stricture recurrence rate among overweight and obese patients.

Conclusions: Urethroplasty in the obese patient presents a more technically challenging procedure, associated with longer operative times, increased blood loss, more complications, and higher recurrence rate. Obese patients as a group had a longer mean stricture length, but it is not clear that this is a direct sequelae of obesity. This is important for patient selection, patient counseling and setting expectations.

P14

Contrast-Enhanced Harmonic and Subharmonic Ultrasound Evaluation of Renal Mass Cryoablation

Edouard J. Trabulsi[1], John R. Eisenbrey[2], Prscilla Machado[2], Colette N. Shaw[2], Andrej Lyshchik[2], Costas D. Lallas[1], Daniel A. Merton[2], Traci B. Fox[2], Ji-Bin Liu[2], Daniel B. Brown[2], Flemming Forsberg[2]
[1]Kimmel Cancer Center, Dept. of Urology, Thomas Jefferson University, Philadelphia, PA; [2]Dept. of Radiology, Thomas Jefferson University, Philadelphia, PA

Introduction: The objective of this study was to evaluate contrast-enhanced (CEUS) harmonic and subharmonic ultrasound in patients undergoing renal cryoablation, and compare this modality with MRI or CT at baseline and follow-up.

Materials & Methods: Twelve patients with 13 renal masses underwent CEUS prior to biopsy and cryoablation. A modified GE Logiq 9 ultrasound scanner was used. Each mass was evaluated with grayscale, subharmonic imaging (SHI) and harmonic imaging (HI) with Optison™ contrast. A blinded radiologist evaluated the heterogeneity, intensity, and wash-in/wash-out kinetics of the mass relative to renal cortex. Contrast signal time intensity curves (TICs) were constructed, to calculate the time to peak, perfusion, maximum intensity, and area under the curve. The radiologist evaluation and TIC from each CEUS mode were compared to needle biopsy pathology.

Results: Of the 13 masses, there were 9 RCC, 2 benign renal parenchyma, 1 necrosis, and 1 benign oncocytoma. All showed heterogeneous contrast enhancement. Enhancement was observed during early contrast wash-in phase in 2/9 malignant and 3/4 benign lesions on SHI, and 3/9 malignant and 1/4 benign lesions on HI. Early contrast wash out was observed in 6/9 malignant and 0/4 benign lesions in SHI (sensitivity = 67%, specificity = 100%), and 8/9 malignant and 1/4 benign lesions in HI (sensitivity = 89%, specificity = 75%).

Conclusions: In this small sample, early contrast washout on CHI or SHI appears to be a reliable indicator of RCC on CEUS. Further studies are needed to validate this non-nephrotoxic modality to characterize and follow renal cryoablation.

P15

Priapism Impact Profile (PIP) Questionnaire: Development and Initial Evaluation

Arthur L. Burnett, Uzoma A. Anele, Irene N. Trueheart
The Johns Hopkins School of Medicine, Baltimore, MD

Introduction: No validated clinical instruments exist for quantifying the physical and emotional impact of experiencing priapism.

Materials & Methods: We created a 12-item questionnaire self-administered by adult clinic patients seen from Jan 2011 to April 2014 to survey priapism impact in 3 domains: quality of life (QoL), sexual function (SF), and physical impact (PI). Higher scores indicate poorer experience in respective domains. Scores were stratified according to various factors including priapism duration, erectile dysfunction (ED), and activity history (remote being > 1 year priapism-free). The PIP was assessed for internal consistency and construct validity using priapism history, IIEF and SHIM scores.

Results: Each domain and the total scale demonstrated high degrees of internal consistency (Cronbach's alpha values > 0.75 and 0.90, respectively). Fifty-three patients (mean age 31.6 + 11.5 years) completed the questionnaire. Patients with active priapism history (n = 41) had higher QoL, SF, PI, and total scores than those with remote history (n = 8) (p = 0.008, 0.08, 0.0003, 0.005, respectively). Patients with history of episodes > 2 hours had higher QoL, SF, PI, and total scores than those with shorter episodes (p = 0.002, 0.03, 0.0006, 0.002, respectively). Patients with "Mild to Moderate" to "Severe" ED (SHIM < 17, IIEF < 19) had higher QoL, SF, PI, and total scores than those with no ED or "Mild ED" (p = 0.11, 0.0002, 0.11, 0.007).

Conclusions: The PIP is a psychometrically sound and refined instrument with appropriate domains that can discriminate adequately between relevant clinical factors. It may serve as a valuable tool in clinical practice and for future research purposes such as evaluating responses to priapism interventions.

P16

Gender Differences for Never Smokers Undergoing Radical Cystectomy

Eugene J. Pietzak, III, Kinnari Patel, Steve Parry, S. Bruce Malkowicz, Thomas J. Guzzo
Hospital of the University of Pennsylvania, Philadelphia, PA

Introduction: Females with urothelial bladder cancer (UBC) have worse outcomes than males. The reasons are multi-factorial, but include differences in smoking behavior. We sought to examine if gender disparities exist in patients with no tobacco history.

Materials & Methods: We identified 94 never-smokers with UBC who underwent radical cystectomy at our institution between 1998 and 2008. We compared for gender differences in clinical characteristics, pathological outcomes, and survival. Statistical tests included Chi square, t-test, Wilcoxon rank sum, logistic regression, log rank and Fine-Gray competing risk.

Results: Of the 94 patients, 32 (38.1%) were female. No clinical characteristics differed between male and females including age, race, clinical stage, neoadjuvant therapy, LVI, hydronephrosis, and clinical stage. At final pathology, similar rates of stage, positive margins, and LVI were seen. No statistical difference in upstaging was seen for females v. males (24.1% v. 36.6%, p = 0.3). However, a significantly higher rate of lymph node involvement was seen in females v. males (41.4% v. 15.6% p = 0.01, mean lymph node density = 17.4% v. 2.3% p = 0.02). On multivariable analysis, only female gender (OR = 7.8 [CI: 1.1-55.5]) and higher pathologic stage (OR = 2.5 [CI: 1.1-5.8]) were predictive of positive pathologic lymph nodes. At median follow-up of 24.5 months, no difference was found for overall survival (p = 0.6), cancer specific survival (p = 0.7), and recurrence free survival (0.8) in female never smokers.

Conclusions: In never smokers with UBC, females were more likely to have occult lymph node involvement found at radical cystectomy. Neoadjuvant chemotherapy and extended lymphadenectomy may be particularly beneficial to female never-smokers.

P17

Identification of Men with the Highest Risk of Early Disease Recurrence after Radical Prostatectomy

Debasish Sundi, Vinson Wang, Phillip M. Pierorazio, Misop Han, Alan W. Partin, Phuoc Tran, Ashley E. Ross, Trinity J. Bivalacqua
Johns Hopkins University, Baltimore, MD

Introduction: Men destined to have early biochemical recurrence (BCR) following radical prostatectomy (RP) may be optimal candidates for multimodal treatment. Here we identified pre-operative predictors of early BCR within a surgical cohort who recurred.

Materials & Methods: An institutional prostate cancer (PCa) database containing over 20,000 patients was queried to identify 1471 men who had BCR after RP, and pre-operative predictors of early versus late BCR were assessed. Early BCR was defined as recurrence within one year after RP. Within the recurrence cohort, those with National Comprehensive Cancer Network (NCCN) high-risk features were more likely to experience early BCR. Therefore, in all NCCN high-risk men in the database, we abstracted detailed pathologic biopsy data. Among 753 high-risk men, 41 alternate multivariable criteria were assessed for their ability to predict early BCR in crude and adjusted logistic regression models.

Results: The criteria that best identified those likely to experience early BCR are primary Gleason pattern 5 on biopsy or ≥4 cores containing pattern 4 (odds ratio 3.17, $p < 0.001$). These criteria included 26.7% of NCCN high-risk men. Additionally, these criteria selected for men within the high-risk classification who were at significantly higher risk of subsequent metastasis (adjusted hazard ratio 3.04, $p < 0.001$) and cancer-specific-mortality (adjusted hazard ratio 3.27, $p < 0.001$).

Conclusions: In men with PCa who present with high-risk features, pre-operative criteria have the ability to discriminate the subgroup most likely to experience early BCR after RP. Men at risk for early disease recurrence may be the most suitable candidates for multimodal therapy.

P18

Impact of Weight Loss on Urologic Disease: A Preliminary Study on 'Low-T'

Kirin K. Syed[1], Nicole M. Harris[2], Louis H. Balsama[3], Marc A. Neff[4], Gordon A. Brown[5]
[1]Rowan-SOM, Department of Urology, Stratford, NJ; [2]Rowan-SOM, Department of General Surgery, Stratford, NJ; [3]Surgical Specialists of Washington Township, Washington Township, NJ; [4]Advocare Associates in General Surgery, Cherry Hill, NJ; [5]Delaware Valley Urology, Voorhees, NJ

Introduction: A complex and bidirectional relationship between obesity and testosterone has been described in literature. Mulligan et al reported an estimated prevalence of hypogonadism among men aged > 45 years to be 38.7% with an odds ratio of 2.74 in patients with a body mass index (BMI) ≥ 25 kg/m^2. We evaluated the effects of weight loss on male androgen markers in a modern cohort of patients within a community based, private practice setting.

Materials & Methods: An interdisciplinary approach was utilized to identify men who underwent bariatric weight loss surgery from August 2012 to January 2014. Pre and post-operative (3 month) serum total testosterone (TT), free testosterone (FT), prostate specific antigen (PSA), follicle stimulating hormone (FSH), and leutinizing hormone (LH) levels were assessed.

Results: Retrospective review identified 19 men with an average age and BMI of 50 years and 52.36 kg/m^2 respectively. The prevalence of pre-operative hypogonadism, defined as TT < 250 ng/dL, was 63% (12/19) and none were on androgen replacement therapy. At the 3 month interval, total average weight loss was 17.5% with a 75% increase in overall testosterone levels. Preliminary analysis revealed average pre and post-operative PSA levels of 0.55 ng/mL and 0.61 ng/mL and percent changes in FT, LH and FSH of 11.51%, -16.87% and -19.49% respectively.

Conclusion: In this study, an overall trend of increasing free and total testosterone was noted with concomitant decrease in LH, FSH and BMI. There was no significant change in PSA despite rising testosterone levels. Our data demonstrates that weight loss may reduce the incidence of hypogonadism.

P19

Robotic Retroperitoneal Lymph Node Dissection for Clinical Stage I NSGCT: Initial Study of Feasibility and Comparative Analysis

Mark W. Ball, Gautam Jayram, Michael A. Gorin, Phillip M. Pierorazio, Mohamad E. Allaf
Johns Hopkins University School of Medicine, Baltimore, MD

Introduction: Retroperitoneal lymph node dissection (RPLND) is a management option with diagnostic and therapeutic intent for clinical stage I (CSI) non-seminomatous testicular cancer (NSGCT). We evaluated outcomes of an early series of robotic RPLND for safety and feasibility and compared it to a matched cohort of laparoscopic RPLND for CSI disease.

Materials & Methods: A retrospective review was performed of all L-RPLND and R-RPLNDs performed by a single surgeon for clinical stage 1 NSGCT. For both approaches, side-specific modified templates with a nerve-sparing intent were performed. Perioperative outcomes were analyzed.

Results: R-RPLND was performed in 14 patients. Median age was 29 years (range: 20-41), and median patient BMI was 27 (range: 22-35). 12 of 14 patients were discharged on postoperative day #1. Median LN yield was 30 (range 9-74). 3 patients (21%) were pN1, and 1 of these opted for adjuvant chemotherapy. At a median follow up of 8 months, there were no recurrences. All patients have achieved post-operative antegrade ejaculation. Compared to the most recent 14 L-RPLND from the same surgeon, operative time, blood loss, lymph node yield and early discharge appeared to favor the robotic cohort.

Conclusions: With short term follow-up, R-RPLND for CSI NSGCT appears safe and feasible in experienced hand, with acceptable perioperative outcomes, LN yield and preservation of antegrade ejaculation. Long-term follow-up is needed to asses oncologic efficacy.

P20

Grade Reclassification on Active Surveillance: Age Matters

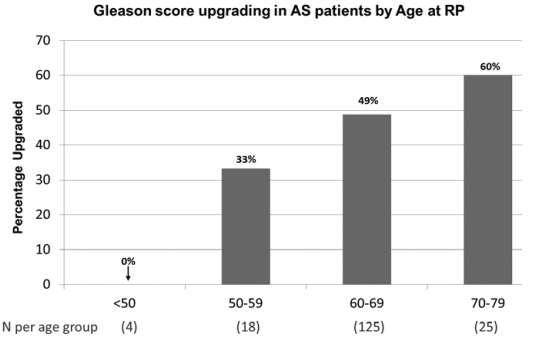
Jeffrey J. Tosoian, Bruce J. Trock, Max Kates, Patricia Landis, Jonathan I. Epstein, H. Ballentine Carter
Johns Hopkins Medical Institutions, Baltimore, MD

Introduction: Active surveillance (AS) may reduce overtreatment of prostate cancer (PCA). We evaluated the effect of advancing age on the risk of grade reclassification in men on AS.

Materials & Methods: Since 1995, AS has been offered to men with very low risk PCA. We evaluated the association between age at radical prostatectomy (RP) and risk of upgrading to GS ≥ 7 among men in AS who underwent RP since 2005.

Results: Of 172 patients on AS that underwent RP since 2005, the proportion found to have GS ≥ 7 on final RP pathology increased with older age; 0 (0.0%) of men less than age 50, 6 (33%) age 50-59, 61 (49%) age 60-69, and 15 (60%) age ≥ 70 ($p = 0.014$, see figure). The association with age remained significant after adjustment for number of positive biopsies, maximum core involvement, and PSA density ($p = 0.011$). The association was similar even when we restricted analysis to the 99 men who underwent RP for reasons other than biopsy GS upgrading, i.e. excluding men whose latest biopsy increased to GS ≥ 7.

Conclusions: Advancing age seems to represent a significant risk factor for grade reclassification in men with favorable risk prostate cancer on AS. While a prevailing view is that the frequency of surveillance biopsy can be safely decreased with advancing age, these data suggest that older men may require more vigilant follow-up, rather than less.



P21

Urine Volume and Body Weight Are Independent Predictors of 24-hour Urine Components

Jack W. Lambert[1], Mark Sawyer[1], Nicole Miller[2], Michael Fabrizio[1]
[1]EVMS, Norfolk, VA; [2]Vanderbilt University, Nashville, TN

Introduction: Urinary excretion of both calcium and oxalate have been demonstrated to be affected by body weight. The intent of this study is to assess weight and urine volume as predictors of 24-hour urine parameters.

Materials & Methods: The EVMS/Urology of Virginia database of 24-hour urine collections (Litholink; 1/2006-8/2012) with Cr/kg within the gender appropriate reference range was used for this retrospective analysis (n = 1444 patients, M = 831; F = 613). Multivariate linear regression was used to evaluate urine volume and weight. Also evaluated was lean body mass.

Results: Urinary volume and weight were both independent and significant predictors ($p < 0.001$) for increased excretion of all 24-hour urinary parameters with the exception of weight for supersaturation of calcium phosphate ($p = 0.231$). Lean body mass was similarly predictive in linear regressions with volume, but given a very high correlation with body weight ($r = 0.91$) could not be included as a separate variable. All urinary components increase with increasing volume as well as weight. Weight and volume together explained from 12.9% of variation in citrate excretion up to 49.7% for uric acid excretion. In a separate predictive model of calcium, after adjusting for both 24-hour urinary sodium and urea nitrogen ($p < 0.001$), urine volume ($p = 0.001$) and weight ($p = 0.008$) remained significant predictors.

Conclusions: Both urine volume and body weight are independently significant predictors of nearly all 24-hour urine parameters in patients with "adequate" collections. Our findings suggest reliance on absolute values instead of concentrations could result in overtreatment of patients. However, clearly weight loss should be encouraged in overweight stone formers.

P22

Combined Dorsal and Ventral Grafting: A New Technique for Complete Urethral Obliteration

Robert Strehlow, Shawn Marhamati, Cara Wright, Jack Zuckerman, Ramon Virasoro, Jeremy Tonkin, Kurt McCammon
EVMS, Norfolk, VA

Introduction: Tight urethral strictures not amenable to one-sided onlay may require dorsal and ventral tissue transfer. Combined dorsal and ventral buccal mucosal graft (BMG) for urethral strictures using the corpus spongiosum as a graft bed has not been described. We describe our technique using dorsal and ventral grafting for tight urethral strictures.

Materials & Methods: Retrospective review of our urethral stricture database identified for patients having undergone combination dorsal and ventral BMG urethroplasty. Patient characteristics, operative and post-operative outcomes were tabulated.

Results: Eleven patients underwent this combined procedure at mean 59.5 years of age. In this cohort, urethral strictures were iatrogenic in five, idiopathic in 4 and secondary to straddle injury or lichen sclerosis in one each. All but one patient had prior attempts at stricture treatment with either DVIU or formal reconstruction. There were no intraoperative complications. UTI's developed in 2 patients postoperatively, including one requiring hospital admission. One patient complained of incontinence in the early postoperative period. At a mean 8.2 months of follow up there were no symptomatic stricture recurrences.

Conclusions: Combined ventral and dorsal BMG is a new and feasible option for repair of obliterative urethral strictures. In this small cohort, outcomes appear comparable to stricture repair utilizing ventral or dorsal grafting alone.

P23

National Resource Utilization In Radical Cystectomy For Bladder Cancer

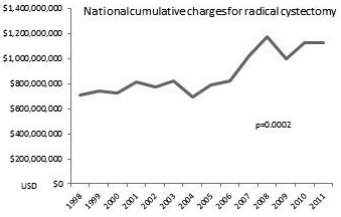
Jen-Jane Liu, Nilay Gandhi, Christian Pavlovich, Trinity Bivalacqua
Johns Hopkins Hospital, Baltimore, MD

Introduction: Bladder cancer is the most expensive urologic malignancy to diagnose and treat. Using a national, contemporary database, we assessed trends in hospital charges associated with radical cystectomy for the treatment of bladder cancer.

Materials & Methods: We identified all admissions for radical cystectomy in the setting of a diagnosis of bladder cancer using ICD-9 coding from the Nationwide Inpatient Sample from 1998 through 2011. We examined the number of radical cystectomies performed, total hospital charges, and length of stay. We also determined the total national charges per year for radical cystectomy. Charges were adjusted using the Consumer Price Index for inpatient hospital services to control for health care-specific inflation.

Results: The total number of radical cystectomies performed increased significantly over the study period (p for trend < 0.001). Over the same period, length of hospital stay after cystectomy decreased significantly from 11 to 9 days ($p < 0.001$). Despite the decreasing length of stay, total charges per hospital admission also increased from $86,310 to $108,510 ($p < 0.001$). National cumulative inpatient charges for radical cystectomy increased significantly over the study period from $706,624,897 to $1,129,814,669 ($p < 0.001$, Figure).

Conclusions: Although duration of hospitalization after radical cystectomy is decreasing, hospital charges are increasing. Further study is needed to determine factors contributing to resource utilization for radical cystectomy.



P24

Glycolysis is Necessary for Cell Motility and Cytoskeleton Remodeling in Epithelial to Mesenchymal Transition in Prostate Cancer Cells

Takumi Shiraishi[1], Jessie Huang[2], James E. Verdone[1], James Hernandez[1], Steven M. Mooney[1], Steven S. An[3], Kenneth J. Pienta[4]
[1]The James Buchanan Brady Urological Institute, Department of Urology, The Johns Hopkins School of Medicine, Baltimore, MD; [2]Department of Environmental Health Sciences, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD; [3]In Vivo Cellular and Molecular Imaging Center, The Johns Hopkins School of Medicine; Department of Environmental Health Sciences, Johns Hopkins Bloomberg School of Public Health; Physical Sciences in Oncology Center, Johns Hopkins University, Baltimore, MD; [4]The James Buchanan Brady Urological Institute, Department of Urology, Oncology, and Pharmacology and Molecular Sciences, The Johns Hopkins School of Medicine, Baltimore, MD

Introduction: Metabolic alterations contribute to cellular phenotypes in tumor progression. Epithelial to mesenchymal transition (EMT) is a critical step of tumorigenesis - lethal cancers are the result of metastasizing cells that have developed a mesenchymal phenotype. The cellular energy requirements for EMT and their impacts on cell motility have not been well described.

Materials & Methods: Epithelial and mesenchymal cancer cell models derived from prostate cancer (PC3) and breast cancer (MDA-MB-231) cell lines were used in this study. Oxygen consumption rate (OCR) and extracellular acidification rate (ECAR) were measured using a Seahorse Bioscience XF24 Extracellular Flux Analyzer. Cytoskeleton (CSK) remodeling was measured by spontaneous and forced motions of RGD-coated ferrimagnetic microbeads. Cell migration was recorded by EVOS FL Auto system and analyzed by ImageJ software.

Results: Mesenchymal cancer cells exhibited higher glycolysis compared to epithelial cancer cells while no significant change was observed in total ATP production rate. Mesenchymal cancer cells demonstrated increased expression and activity of hexokinase 1, and M1 and M2 isoform of pyruvate kinase without any changes in the ratio of mitochondrial DNA to nuclear DNA and mitochondrial proteins. Higher glycolysis was associated with increased rates of CSK remodeling and faster cell migration which were blocked by inhibition of the glycolytic pathway but not mitochondrial ATP synthesis.

Conclusions: Cell motility is dependent on aerobic glycolysis and not oxidative phosphorylation. These results extend our understanding of metabolic alterations of EMT, providing new potential biomarkers for prognosis and targets for cancer therapy.

P25

Predicting the Risk of Non-organ-confined Prostate Cancer when Perineural Invasion is Found on Biopsy

Michael A. Gorin, Heather J. Chalfin, Jonathan I. Epstein, Zhaoyong Feng, Alan W. Partin, Bruce J. Trock
Johns Hopkins University School of Medicine, Baltimore, MD

Introduction: Conflicting data exists regarding the risk of non-organ–confined (non-OC) prostate cancer among men with perineural invasion (PNI) detected on prostate biopsy. The aim of this study was to better define the risk of non-OC disease in this patient cohort.

Materials & Methods: Our radical prostatectomy database was queried for men with PNI on prostate biopsy. Patients with and without non-OC disease were compared for differences in preoperative clinical and pathologic characteristics, including three biopsy-based measures of tumor volume (number of cores with cancer, percentage of cores with cancer, and maximum percent core involvement with cancer). After evaluating the different preoperative variables in univariate analyses, a multivariable logistic regression model was generated, and bootstrap estimates of the risk of non-OC disease were calculated.

Results: 556 patients with PNI were analyzed, 279 (50.2%) of whom had non-OC prostate cancer. In univariate analyses, preoperative PSA, clinical T stage, biopsy Gleason sum, and the three measures of tumor volume were significantly associated with non-OC disease. Of the three measures of tumor volume, the highest degree of model discrimination was obtained using maximum percent core involvement with cancer. Incorporating this variable, preoperative PSA, clinical T stage, and biopsy Gleason sum into a multivariable model, the estimated risk of non-OC disease was found to range from 13.8% to 94.4% (c-index = 0.735).

Conclusions: Men with PNI on prostate biopsy are at a wide range of risk for non-OC disease. Preoperative estimation of this risk is improved by considering readily available biopsy estimates of tumor volume.

P26

Surgical Apgar Score Predicts an Increased Risk for Major Complication and Death Following Renal Mass Excision

Timothy Ito[1], Philip Abbosh[1], Reza Mehrazin[1], Jeffrey Tomaszewski[1], Serge Ginzburg[2], Daniel Canter[2], Richard Greenberg[1], Rosalia Viterbo[1], David Chen[1], Alexander Kutikov[1], Marc Smaldone[1], Robert Uzzo[1]
[1]*Fox Chase Cancer Center, Philadelphia, PA;* [2]*Einstein Healthcare Network, Philadelphia, PA*

Introduction: Reliable prognostication of surgical patients at higher risk for experiencing major complications aids in guiding perioperative clinical decision making. A low Surgical Apgar Score (SAS) has been shown to predict major complications following general/vascular surgery, but has not been tested in urologic cohorts. We aimed to assess the performance of the SAS in patients undergoing renal mass excision.

Materials & Methods: Data for 895 patients undergoing renal mass excision via radical/partial nephrectomy from 2010-2013 was extracted from a prospectively collected database at a single institution. SAS (based on EBL, lowest intraoperative HR and MAP) was calculated utilizing electronic anesthesia records. Major postoperative complications examined included 90-day mortality, cardiac events, significant leak/hemorrhage, and readmission/re-operation within 30 days of surgery.

Results: A total of 13.4% experienced major postoperative complications. Clavien grade I, II, III, IV and V complications were experienced by 27%, 6%, 48%, 9% and 10% respectively. The 90-day mortality rate was 1.3%. SAS was significantly lower in patients experiencing major postoperative complications (mean 7.3 vs 7.8, $p = 0.006$). Patients with SAS < 4 were 3.69 times more likely to experience a major complication ($p = 0.008$) and 22 times more likely to die within 90 days of surgery ($p = 0.0008$) when compared to patients with SAS > 8. Patients experiencing major complications also were significantly older (mean 62 vs 59 yo, $p = 0.03$), and more likely to have undergone open surgery (57% vs 31%, $p < 0.0001$).

Conclusion: SAS is a simply collected operative metric for predicting patients at a higher risk for major complication or death following renal mass excision.

P27

Secondary Re-closure in Classic Bladder Exstrophy: The Johns Hopkins Experience

Brian M. Inouye, Heather N. Di Carlo, Ezekiel E. Young, Ali Tourchi, John Gearhart
Johns Hopkins Hospital, Baltimore, MD

Introduction: Each failed classic bladder exstrophy (CBE) closure results in a decreased chance of ever attaining continence. To minimize secondary failures, most institutions utilize pelvic osteotomy with re-closure. Still, re-closure with and without osteotomy can still fail. Herein the authors analyze the outcomes of failed CBE re-closure with and without pelvic osteotomy.

Materials & Methods: An institutional database of 1210 exstrophy complex patients was reviewed for CBE patients who had two prior failed closures with the third closure at the authors' institution. Patient demographics, closure history, diastasis distance, bladder capacity, and outcomes were examined by chi-squared tests comparing osteotomy status with first re-closure.

Results: Of 848 CBE patients, 17 met inclusion criteria: 12 with osteotomy at re-closure (Group 1), and 5 without (Group 2). Median time between initial closure and re-closure in the two groups were 6.5 (range: 0-42) and 3 (range: 0-59) months, respectively. There was no significant difference in the rate of attaining sufficient bladder capacity for bladder neck reconstruction (BNR) between Group 1 and 2 (60% vs. 42%, $p = 0.490$). Within Group 1, patients receiving proper immobilization with external fixation ($n = 5$) demonstrated a significantly greater rate of attaining sufficient bladder capacity for BNR compared to patients who did not (80% vs.14%, $p = 0.023$). There were no differences in the rates of attaining dryness per urethra.

Conclusions: CBE outcomes worsen with each successive failed closure. Re-closure should be performed with osteotomy and proper immobilization to maximize the chance of sufficient capacity for BNR or augmentation cystoplasty.

P28

Retrograde Pyelography after Non-diagnostic Urothelial Imaging: Is it ever necessary?

Abdo Kabarriti, Shailen Sehgal, Chris Miller, Robert Kovell, Parvati Ramchandani, Thomas Guzzo, Phillip Mucksavage
Hospital University of Pennsylvania, Philadelphia, PA

Introduction: The purpose of this study is to determine the value of follow-up workup of an incompletely opacified upper tract on CT urogram with retrograde pyelography.

Materials & Methods: An IRB approved single-institution retrospective cohort review of all the patients who underwent a retrograde pyelography after non-diagnostic visualization on CT urogram at our institution was performed. Retrograde pyelography was performed thorugh ureteral catheter insertion with pullout retrograde pyelography or via Rutner catheter. All imaging was reviewed by a GU radiologist.

Results: A total of 234 incompletely opacified systems were reviewed. Of these, 135 had a history of urothelial carcinoma and 53 had abnormal cytology. Six patients had a non-diagnostic evaluation with the retrograde pyelography while 2 patients had a positive retrograde pyelography. Both of these patients did not have a history of cancer. There was no significant difference in retrograde pyelography evaluation between patients who had a history of urothelial carcinoma versus those who did not, those who presented with gross hematuria versus those who presented with microhematuria and those with abnormal cytology versus those with negative cytology.

Conclusions: The risk of omitting further diagnostic evaluation after NDV is small, but not zero. There is little to no information in the literature in regard to the next step in clinical management after this diagnostic dilemma. More studies need to be done to determine under what circumstances RPG can safely be omitted after non-diagnositic visualization on urothelial imaging.

P29

Novel Laser Fiber Safety Device

Allen D. Seftel
Cooper University Hospital, Camden, NJ

Introduction: Operating room fires and patient or personnel burns are a major hazard that results from accidental discharge of laser energy. Small hand held laser fibers are used in about six million laser surgical procedures each year, including ureteroscopy and BPH. This very serious problem triggered a recent FDA alert (http://www.fda.gov/MedicalDevices/Safety/AlertsandNotices/ucm275189.htm) issued following numerous reports of fires to the surgical drapes, and skin burns.

Materials & Methods: An anonymous email survey was sent to Endourology Society members to verify the magnitude of the problem. To address this unmet safety need, we have devised a laser fiber safety holder that will contain accidentally discharged laser energy. The holder is composed of an inner silicone tube and an outer protective shell.

Results: Over 100 physician email respondents reported patient or operating room personnel injury or burn in 1-5% of endo-urologic cases. The primary study end point was to verify a lack of laser energy penetration thru the silicone tubing upon 10 seconds of accidental laser energy discharge. Laser energy did not penetrate thru the inner silicone tubing at 10 seconds of laser energy exposure using the holmium laser fiber (20-100 watts, 270 microns to 1000 microns, n = 3 each), the green light KTP moxy fiber (120 W and 180 W, n = 3 each), and the 980 diode laser fiber (n = 3).

Conclusions: Accidental operating room laser energy discharge represents a significant hazard. The prevalence is underreported. We have developed a novel laser fiber safety holder to mitigate surgical risk upon accidental laser fiber energy discharge.