“High Supracostal” PNL Access: Safety of Dilated Percutaneous Renal Access Above the 11th Rib
Joel E. Abbott1, Samuel Deem2, Julio G. Davalos3
1St Johns Providence Health, Madison Heights, MI; 2Charleston Area Medical Center, Charleston, WV; 3Chesapeake Urology Associates, Baltimore, MD

Introduction: Percutaneous Nephrolithotomy (PNL) is a minimally invasive surgical option for the treatment of large renal calculi. Traditionally supracostal renal access is avoided due to the increased risk of pleural complication. In this retrospective study, we coined the term “high supracostal (HS) renal access” to identify patients that underwent supracostal renal access through or above the 11th intercostal space (above the 11th rib) and compared this data to patients that underwent the well accepted subcostal access.

Materials & Methods: A retrospective analysis of all consecutive PNL procedures performed in a single academic institution by a single experienced urological surgeon over a 30 month period was performed. 142 patients underwent HS access and 113 patients underwent subcostal access. Computed tomography imaging was used extensively in planning renal access in all cases. Comparison of complication rates between the two groups was analyzed.

Results: Complications:

<table>
<thead>
<tr>
<th>High supracostal access</th>
<th>Subcostal access</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood transfusion</td>
<td>3 (3.52%)</td>
<td>5 (5.31%)</td>
</tr>
<tr>
<td>UTI</td>
<td>3 (3.40%)</td>
<td>2 (1.73%)</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>2 (2.14%)</td>
<td>1 (0.67%)</td>
</tr>
<tr>
<td>Clinically significant</td>
<td>6 (6.78%)</td>
<td>0</td>
</tr>
<tr>
<td>Pleural effusion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pleural effusion req VATS</td>
<td>2 (2.14%)</td>
<td>0</td>
</tr>
<tr>
<td>Pleural effusion req RCN</td>
<td>1 (1.05%)</td>
<td>0</td>
</tr>
<tr>
<td>Bacteremia/sepsis</td>
<td>2 (2.14%)</td>
<td>0</td>
</tr>
<tr>
<td>Collecting system tear</td>
<td>1 (1.05%)</td>
<td>0</td>
</tr>
<tr>
<td>Hematoma</td>
<td>2 (2.14%)</td>
<td>0</td>
</tr>
<tr>
<td>Fever</td>
<td>1 (1.05%)</td>
<td>0</td>
</tr>
</tbody>
</table>

Results are summarized in Table 1. Overall complication rates are similar between the two groups. Specific pleural complication risk was increased in the HS group, as expected.

Conclusions: In our experience, supracostal or high supracostal access often allows for a more direct route in kidney access opening the angle into the pelvis allowing ease of work, improved ability of rigid nephroscopy, less torque and manipulation on the kidney, improving technical ability of the PNL procedure despite a subtle (and acceptable) increase in pleural complication rates.

Male Sling Placement Impacts Recovery in Urinary Quality of Life Following Radical Prostatectomy
Brooke B. Edwards1, Jack M. Zuckermand1, Kurt A. McCammon2
1Eastern Virginia Medical School, Norfolk, VA; 2Urology of Virginia, Virginia Beach, VA

Introduction: Quality of life (Qol) outcomes are an essential concern among patients undergoing prostate cancer treatment. A longitudinal comparison using validated Qol instruments is valuable in evaluating outcomes. We assess the impact that the Advancing® sling had on urinary Qol, in patients with post-prostatectomy incontinence (PPI) after radical prostatectomy (RP) using a validated Qol instrument.

Materials & Methods: We retrospectively reviewed the charts of 38 patients who received both RP and subsequent Advancing® sling placement for PPI. Qol data was collected prospectively within our institution’s Qol database: Each patient completed the University of California Los Angeles, Prostate Cancer Index before RP and at intervals for 60 months after RP. Scoring ranged from 0 (worst) to 100 (best). Clinically significant changes were defined as a minimum difference of 10 points between the baseline and follow-up score.

Results: Thirty-eight patients met inclusion criteria. Mean follow-up was 26.6 months post-sling placement. Significant declines from baseline in urinary function and bother were found in post-RP patients with a decrease in 65 and 57 points, respectively. These patients did not receive significant increases in Qol scores after treatment with Advancing® sling placement, with increases of 46 and 53 points, respectively. Patients also demonstrated decreases in pad counts after sling placement, from 3 to 1 or 4 pads per day.

Conclusions: Men undergoing RP have a significant depreciation in urinary Qol. Although they do not regain their baseline Qol scores, they do improve significantly after Advancing® sling placement. Patient-reported pad counts may also act as a surrogate for urinary function Qol scores.

Patients with Urolithiasis Receiving Excessive Numbers of Computed Tomography Scans
Nicholas J. Toepfer, Joseph Leader, Jonathon Darer
Geisinger Medical Center, Danville, PA

Introduction: Computed tomography is an increasing source of radiation exposure as the number performed in the United States each year is increasing rapidly. An estimated 70 million CT scans are performed annually in the US resulting in 14,500 deaths secondary to radiation-induced carcinogenesis. The International Commission on Radiological Protection recommends limiting radiation from CT scans, yet it has been demonstrated that patients with urolithiasis often exceed these limits.

Materials & Methods: A retrospective review was performed looking at patients who had twenty or more CT scans of the abdomen or pelvis at our institution from January 2001 to December 2011.

Results: 97,446 patients had a CT scan of the abdomen or pelvis over the 11 year span. 1086 individuals had at least twenty CT scans of which 911 had a known diagnosis of malignancy which may have contributed to the high number of studies. Of the 175 patients with no history of cancer, 56 had a diagnosis of urolithiasis. These 56 patients had a total of 1495 scans and 84.4% of these scans were ordered after the patient was a known kidney stone former.

Conclusions: 5.1% of patients with at least twenty CT scans of the abdomen or pelvis over an 11 year span had a history of kidney stones without any malignancy. To decrease the risk of death associated with radiation-induced carcinogenesis, alternative diagnostic approaches such as ultrasound or low-dose CT should be implemented in patients presenting with renal colic, particularly in those with a previous history of urolithiasis.

Long-term Outcome and Surgical Interventions After Sacral Neuromodulation for Lower Urinary Tract Symptoms: A 7 Year, Single Center Experience
Chad P. Hubsher, Robert Jansen, Dale Riggs, Barbara Jackson, Stanley Zaslau
West Virginia University, Morgantown, WV

Introduction: Few reports address the reoperation rate after sacral neuromodulation implants for lower urinary tract symptoms. We report our long-term results and reoperations in patients who were initially implanted between 2004-05.

Materials & Methods: We retrospectively reviewed the first 50 patients who underwent InterStim® sacral neuromodulation implantation for lower urinary tract dysfunction at our institution to assess the long-term outcome, incidence, and cause of surgical re-intervention over the past 7 years.

Results: At our institution, sacral neuromodulation devices were implanted in 50 patients between 2004-2005. Indications for implantation were urinary urgency, frequency, and/or urge incontinence in 72% of patients, and idiopathic urinary retention in 28%. The explantation and re-implantation rates were 18% and 22%, respectively, with reasons detailed in Table 1. 82% of patients continue to benefit from sacral neuromodulation and 64% have their original InterStim® device after 7 years.

Conclusions: Sacral neuromodulation is a minimally invasive procedure with a durable long-term outcome. Based on our single center experience, patients are more likely to experience surgical site problems within the first 2 years. Additionally, an appropriate response after 24 months was noted to be indicative of continued patient benefit.

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6506
## Private Practice, Fellowship, and Academic Medicine: A Survey of Current Urology Residents

<table>
<thead>
<tr>
<th>Residents</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amy Burns3, Christopher Kintner4, Chad Tracy1, Craig Peters1, Noah Schenkman4</td>
<td>Mary H. James1, Ramon Virasoro2, Matthew D. Lyons3, Ajaydeep S. Sidhu4, Gerald H. Jordan2, Kurt A. McCammor2</td>
</tr>
</tbody>
</table>

### Introduction:
A resident’s decision to pursue fellowship (F), academic medicine (AM), or private practice (PP) involves many factors and subspecialty interest varies.

### Materials & Methods:
During the 2010 and 2011 AUA Basic Sciences, urology residents completed a 90-item survey that queried factors influencing career choice.

### Results:
364 residents attended and 280 participated. Mean age was 30.3 years, 172 were male, 68 were female, and most were in year 2 (40%) or 3 (40%) of training. 121 (30%) residents indicated they were more likely than not to pursue PP while 67 (28%) selected AM/F, 35 (15%) indicated both, and 17 (7%) neither. 54% of women and 38% of men intended to enter AM/F. Of 128 listing a 5-year residency, 23% planned on AM/F, 57% PP, 15% both, and 5% neither. Of 94 in 6-year programs, 33% planned on AM/F, 47% PP, 10% both, and 10% neither.

On a scale of 0-no interest to 3-very interested, AM/F residents were most interested in Urology/ Laparoscopy (4.03) and oncology (3.86), while PP residents were most interested in Endourology/Laparoscopy (3.88) followed by Oncology (1.71), Reconstruction/Trauma (1.71), Pediatrics (1.14), Interstitial (0.89), and Female (0.73).

### Conclusions:
The decision to pursue F, PP, or AM involves many factors. Intellectual stimulation and lifestyle were most influential among AM/F and PP groups, respectively.

## Influence of Preoperative Pelvic Floor Muscle Activity on Post-Prostatectomy Incontinence

<table>
<thead>
<tr>
<th>Residents</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mary H. James1, Bethany B. Gibbs2, Erin Glace3, Robert W. Givens3</td>
<td>Jessica Hammett, George Bailey, Tracey Krupski</td>
</tr>
</tbody>
</table>

### Introduction:
Urinary incontinence following radical prostatectomy is a significant clinical problem that compromises patient-quality of life. Pelvic floor muscle training has been shown to reduce continence recovery time. The objective of this study was to determine whether preoperative pelvic floor strength influences the degree and duration of post-prostatectomy incontinence.

### Materials & Methods:
All patients scheduled for robotic assisted laparoscopic radical prostatectomy were referred to a pelvic floor physical therapist. Pelvic floor strength was assessed using EMG evaluation. Chart review was performed to obtain post-operative continence data measured by reported pad per day (PPD) usage. Pelvic floor strength was compared in men who were continent versus not at each visit.

### Results:
There were 181 patients with 6 weeks follow-up and 170 patients with 6 weeks and 3 month follow-up. When defining continence as PPD=0 a higher resting tone was associated with return to continence at 6 week follow up (p=0.043) and using continence definition of PPD=1 a higher resting tone was associated with return to continence at the 3 month mark. (p=0.023). In this group the mean preoperative resting tone for continent patients was 4.5 microvolts compared to 3.4 microvolts in those patients with persistent incontinence.

### Conclusions:
In this small study a higher pelvic floor muscle resting tone was associated achievement of continence at 6 weeks when defining continence as PPD=0 and at 3 months when defining continence as PPD=1. This information could be useful for preoperative counseling regarding continence outcomes following prostatectomy.

## Outcomes Following Buccal Mucosal Graft Staged Urethroplasty

<table>
<thead>
<tr>
<th>Residents</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mary H. James1, Ramon Virasoro2, Matthew D. Lyons3, Ajaydeep S. Sidhu4, Gerald H. Jordan2, Kurt A. McCammor2</td>
<td>Jessica Hammett, George Bailey, Tracey Krupski</td>
</tr>
</tbody>
</table>

### Introduction:
Complex anterior urethral strictures provide a surgical challenge for the reconstructive urologist. Tissue substitution is often required for successful repair. Buccal mucosal graft (BMG) has become the tissue of choice given its excellent graft characteristics and low associated morbidity. We present our outcomes following a staged BMG urethroplasty.

### Materials & Methods:
Patients who underwent staged BMG urethroplasty between January 1, 1999 and August 8, 2011 were identified. A retrospective chart review was performed to collect clinical data. Outcomes were assessed including durability of results, recurrence rates, and additional procedures required.

### Results:
Fifty-seven patients underwent a staged BMG urethroplasty during the designated time period. The most common stricture etiologies were hypospadias (46%) followed by lichen sclerosus (28%). The average stricture length was 7.5 centimeters. Following the first stage procedure 11 (20%) patients elected not to undergo a second stage procedure. Complete follow-up was available in 42 patients (74%). There were 7 major complications (12%) including fistula development (4), penoscrotal tethering (2) and meatal stenosis (1). Three other patients required additional procedures including conversion to a perineal urethroprostomy, a suprapubic tube and urethral dilation. The overall success rate was 76% defined as patients who required no further procedure at an average follow-up of 25 months.

### Conclusion:
Substitution urethroplasty is often necessary to treat complex anterior urethral strictures such as those seen in complex hypospadias patients and in patients with lichen sclerosis. The staged BMG is an effective treatment for these patients with acceptable complication rates.
Clinical Outcomes of Cryoablation of Renal Lesions of All Sizes

Sarah Chan, Michael Phelan
University of Maryland, Baltimore, MD

Introduction: To evaluate the efficacy and outcomes of cryoablation on renal lesions of all sizes, including patients with solitary kidney.

Materials & Methods: We retrospectively analyzed the outcome of a single surgeon’s experience of percutaneous and laparoscopic renal cryoablation of renal lesions at a tertiary care center from May 2006 to January 2010. Cryoablations were evaluated with radiographic imaging by determining its size and presence of enhancement. Renal function was analyzed with serum creatinine concentration and estimated glomerular filtration rate preoperatively, at 3 months, and at most recent follow-up. Retreatment was defined as requiring a subsequent unplanned ablation.

Results: 130 patients who underwent cryoablation from May 2006 to January 2010, with a 136 total renal lesions treated. 101 patients included in the study, 14 patients had renal lesions measuring 4cm or greater and 7 patients had solitary kidneys. Average follow-up period was 37 months. Average tumor size of 3.2 cm. 67 lesions were treated percutaneously and 39 lesions were treated laparoscopically. 59 out of 130 patients had ASA score 3 or greater. Overall, 15 patients required a 2nd cryoablation and only 1 patient required a 3rd cryoablation. Thus retreatment rate was 14.2%. There was minimal change in creatinine and GFR. There was progression of the disease in 11 patients despite intervention with renal cryoablation.

Conclusions: Cryoablation is an effective alternative to treatment of renal masses in patients where preservation of renal function is crucial and patients with significant medical comorbidities, given they will comply with the rigorous imaging follow-up.

Data presented as mean +/- standard or n (%)

Table 1: Patient Demographic and baseline information and complications

<table>
<thead>
<tr>
<th>Age &lt; 50</th>
<th>120</th>
<th>103</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean pt age</td>
<td>62.2 (14)</td>
<td>63.0 (13)</td>
</tr>
<tr>
<td>Gender (%)</td>
<td>0.51</td>
<td>0.52</td>
</tr>
<tr>
<td>M</td>
<td>28 (16)</td>
<td>126 (80)</td>
</tr>
<tr>
<td>F</td>
<td>5.5 (34)</td>
<td>29 (38)</td>
</tr>
<tr>
<td>Race (%)</td>
<td>0.79</td>
<td>0.79</td>
</tr>
<tr>
<td>White</td>
<td>24 (77)</td>
<td>72 (62)</td>
</tr>
<tr>
<td>Nonwhite</td>
<td>27 (3)</td>
<td>27 (3)</td>
</tr>
<tr>
<td>Smoking status (%)</td>
<td>125 (75)</td>
<td>125 (75)</td>
</tr>
<tr>
<td>Mean ASA score</td>
<td>2.94 (0.6)</td>
<td>2.75 (0.5)</td>
</tr>
<tr>
<td>Mean albumin</td>
<td>5.02 (0.4)</td>
<td>4.20 (0.3)</td>
</tr>
<tr>
<td>Time to surgery (days)</td>
<td>71 (77)</td>
<td>50 (34)</td>
</tr>
<tr>
<td>Follow up (mos)</td>
<td>21 (12)</td>
<td>26 (17)</td>
</tr>
</tbody>
</table>

Immunocompetent (m) 28 (9) 3 (3) 147 (94)
Immunocompromised (m) 10 (5) 0.4 0

Complications (%)

| Immediate post-op | 19 (3) | 57 (36) | 0.09
| Overall           | 27 (57) | 105 (65) | 0.02
| Minor complications | 55 (8) | 58 (36) | 0.28
| Major complications | 21 (5) | 42 (25) | 0.13

Mean overall/Clavien score 2.40 (2.1) 2.40 (0.6) 0.96

Mean presented as mean +/- standard error (%)

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Materials & Methods: Seventy-seven patients were recruited after institutional review board approval was obtained, and urine was collected. The urine was analyzed using the three methods of pH measurement, and these results were repeated twice. Statistical analysis, including intraclass and interclass reliability, was performed using SPSS.

Results: The mean pH as measured by dipstick, litmus paper and pH meter were 6.25, 6.21, and 6.03, respectively. There was no significant difference in mean pH between dipstick and litmus (p = 0.438), litmus and pH meter (0.052) or dipstick and pH meter (p = 0.094). The intraclass correlation coefficients (ICC), which is a statistical estimate of the reliability between two or more tests, was found to be 0.9611 between all three methods.

Conclusions: The three methods of pH measurement did not differ significantly. This indicates that litmus paper and dipstick may be potentially useful methods of monitoring response to urinary alkalinization, and repeat office visits and 24 hour urine measurements may be reduced.

Evaluation of Radiation Safety Training and Knowledge Amongst Urologists in the United States - A Nationwide Survey

Christopher I. Yingling, Kelly Lofthus, Haveesh Sharma, Gaurav Bandi
Georgetown University Hospital Department of Urology, Washington, DC

Introduction: Objective: to determine the current training and knowledge about radiation safety amongst all the urologists in United States.

Materials & Methods: An email survey was distributed to all AUA members with an email address in the AUA directory. The survey consisted of 5 demographic questions and 10 knowledge questions. Responses were tabulated and statistically analyzed to evaluate current trends.

Results: The overall response rate was 2.4% (257 responses). 41.5% of respondents reported previous radiation safety training. This group had a better performance (80.4% correct responses) compared to those who had no training (46%, p=0.047). Dedicated endourologists (>75% of practice is endourology) and fellowship trained endourologists (48.3%) did not perform better than their non-fellowship trained and lower volume (<25% endourology) counterparts (47.5%, p=0.34). Residents (54.5%) and urologists with <5yr experience (50%) were significantly more likely to have received radiation safety training than their more experienced counterparts (5-15yr experience= 45.8%; >15yr experience=34.8%; p=0.001). Based on experience in practice, only urologists with <5yr experience performed significantly better (51.6%; p=0.042) than the whole group.

Conclusions: Our survey noted better performance on the knowledge questionnaire only in urologists with previous radiation safety education, but not with experience or specific fellowship training in endourology. Current residents and younger urologists (<5yr experience) were significantly more likely to have received previous radiation safety training.

Whole prostate volume contouring Central gland volume contouring
Empiric Antibiotics for an Elevated PSA: Randomized, Prospective, Controlled Multi-institutional Trial
Jay D. Raman1, Joseph Pettus2, Ofer Yosesovitch3, Shilajit Kundu3, Scott Eggener2
1Henry Ford Hospital, Detroit, MI; 2University of Chicago, Chicago, IL; 3Wake Forest University, Winston Salem, NC; 4Tel Aviv University, Tel Aviv, Israel; 5Northeastern University, Chicago, IL; 6University of Chicago, Chicago, IL

Introduction: The impact of an empiric course of antibiotics for a newly elevated PSA in an asymptomatic male is poorly understood.

Materials & Methods: Men of any age with a PSA ≥2.5 ng/ml and normal digital rectal examination undergoing their first prostate biopsy were recruited from five medical centers. Patients with previous biopsy, prostate cancer, urinary tract infection (UTI) or prostatitis within the prior year, antibiotic use within one month, five medical centers. Patients with previous biopsy, prostate cancer, urinary tract infection (UTI) or prostatitis within the prior year, antibiotic use within one month, respectively (p=0.7). Prostate cancer was detected in 36 (47%) men. Detection rates did not significantly differ between individuals with an increasing PSA versus decreasing PSA.

Conclusions: Empiric use of antibiotics for asymptomatic men with an elevated PSA is not of clinical benefit.

MP8
Impact of Comorbidity on Hospitalization Cost in Patients Undergoing Radical Prostatectomy
Augustine C. Obi2eze1, Addi H. Haider3, Adepoju Adekeya2, Edward E. Cornell, III1, Chiledum Ahaghotu1
1Howard University College of Medicine, Washington, DC; 2University of Illinois at Chicago, Chicago, IL; 3Johns Hopkins School of Medicine, Baltimore, MD

Introduction: Patients undergoing radical prostatectomy often have concurrent comorbid conditions. We sought to use a nationally representative database to investigate the impact of comorbidity on hospitalization costs for these patients.

Materials & Methods: A retrospective analysis was conducted using the Nationwide Inpatient Sample database 2005-2009. Patients aged 40 years or older who underwent radical prostatectomy as primary procedure were identified using appropriate ICD-9-CM codes. Study cohort was divided into four categories according to Charlson Comorbidity Index (CCI): 0, 1, 2, and ≥3. Generalized linear models were used to estimate the adjusted mean cost of hospitalization for each of the categories, with CCI of 2 as the reference. For each parameter, pairwise t-tests were performed and Pearson’s correlation coefficients were calculated to compare samples 1 and 2. Additionally, the number of cases with statistically significant differences between samples 1 and 2. None of the other parameters demonstrated a statistically significant difference between samples 1 and 2. Pearson’s correlation demonstrated a high degree of correlation between 24-hour urine samples for all variables (r = 0.66-0.95, each p < 0.0001). Depending on the urinary parameter assessed, 5.5% to 44.9% of patients changed from normal to abnormal or vice versa. High-risk NMIBC patients in contrast to their younger counterparts.

Conclusions: Our survey reports that BCG is underutilized in the management of high-risk NMIBC. Older practitioners are utilizing induction BCG alone for high-risk NMIBC patients.

MP10
Survey of the Use of Bacille Calmette-Guerin (BCG) in the Management of High-Risk Non-Muscle Invasive Bladder Cancer (NMIBC)

Introduction: To survey the use of bacille Calmette-Guerin (BCG) in the management of high-risk non-muscle invasive bladder cancer (NMIBC).

Materials & Methods: Five hundred and fifty-nine urologists received a survey to assess their location, type of practice, fellowship background, and years in practice. Frequency and practice patterns for the use of BCG were assessed.

Results: One hundred and forty nine (26%) of 559 urologists submitted responses. One hundred and thirteen (76%) are in private practice, 74 (50%) are located in a suburban setting, 59 (35%) in an urban setting and 22 (15%) in a rural environment. Twenty eight (19%) are fellowship trained in urologic oncology and 83 (56%) have been in practice more than 10 years. One hundred and six (71%) treat four or more bladder cancer patients every month. All urologists reported the use of BCG instillations as part of their routine practice. One hundred and ten (24%) urologists reported using BCG induction plus maintenance therapy for high-grade Ta, T1 and Tis patients while 32 (21%) urologists perform only induction course BCG therapy for these patients. 26 out of 83 (31%) urologists in practice greater than 10 years and 16 out of 66 (24%) urologists in practice less than 10 years regardless of practice location or fellowship background are using only BCG induction therapy for high-risk NMIBC patients.

Conclusions: The diagnostic yield and appropriately target stone prevention strategies.
Equal Data - Less Radiation: Low Dose and Standard CT Scans Yield Equivalent Stone Measurements
Brian R. Crosson1, Zachary Pietrowski1, William Sohn2, Ralph V. Clayman2, Jason V. Lee3, Phillip Mucksavage3
1Temple University Hospital, Philadelphia, PA; 2University of California, Irvine, Irvine, CA; 3University of Toronto School of Medicine, Toronto, ON, Canada

Introduction: Low dose computed tomography has recently been introduced as a means to evaluate patients with nephrolithiasis. Since stone size, density, and skin-to-stone distance are critical in determining the proper treatment modality, a comparison between the two scans is sought.

Materials & Methods: Ten patients seen in the emergency room over a mean of 23 days (range 0 to 51 days) had both a conventional scan and a low-dose scan for the same stone. Radiation dose reduction was calculated based on the patient’s BMI. CT scans were performed with 2 mm section cuts, and coronal views were reconstructed. These images were then randomized and reviewed by a urology resident and staff radiologist. Sizes of the stones were measured and Hounsfield units, or skin-to-stone distance between a low dose and conventional scanned images were reconstructed. These images were then randomized and reviewed by a urology resident and staff radiologist. Sizes of the stones were measured and Hounsfeld units, skin-to-stone distance between a low dose and conventional scanned images were reconstructed. These images were then randomized and reviewed by a urology resident and staff radiologist. Sizes of the stones were measured and Hounsfeld units, skin-to-stone distance were calculated.

Results: There was no difference in stone size between the two dosage levels, as measured in height, width, length, or volume of the stone (p values 0.9, 0.7, 0.8, and 0.8 respectively). In addition, no difference in Hounsfield units was appreciated between the two scans (p = 0.6), nor was there any significant difference in skin-to-stone distance (p=0.5). Between the two scans, there was an average effective dose reduction of 73% from 23 mSv to 6 mSv (p = 0.002).

Conclusions: There was no significant difference in the measurement of stone size. Hounsfield units, or skin-to-stone distance between a low dose and conventional scanned CT scan. However, the low dose scan resulted in a marked reduction in radiation dose to the patient.

Factors Associated with Improved Ureteroscopic Biopsy Yield of Upper Tract Urothelial Carcinoma Tumors
Thomas Clements, Eugene Cha, Shahrokh Shariat, Douglas Scherr, Jay Raman

Introduction: Ureteroscopic (URS) biopsy has become a mainstay in the diagnosis of upper tract urothelial carcinoma (UTUC) tumors. There is a lack of consensus regarding the ability for URS biopsy to accurately determine the grade and stage of UTUC lesions.

Methods: Data from 138 patients who underwent URS biopsy prior to RNU were reviewed. Variables analyzed included: tumor size (cm), location (renal pelvis/ureter), type of ureteroscope (rigid/flexible), biopsy instrument (cup biopsy/basket), and number of biopsies obtained.

Results: On final RNU pathology, 51 patients (37%) had muscle invasive (pT2) and 87 (63%) had high grade UTUC. Over 70% of biopsies were performed via a flexible ureteroscope with 68% of cases using cup biopsy and 32% basket. The median number of URS biopsies was 3. Overall concordance of URS biopsy with final pathologic grade (high vs. low) was 84% and with final pathologic stage (pT2 vs. >pT2) was 59%. On univariate analysis, increasing tumor size (p=0.02) and a greater number of biopsies (p=0.001) were associated with improvements in biopsy-final pathology concordance. In a multivariate model, obtaining 4 or more URS biopsies was associated with a 5-fold greater likelihood of accurately grading and staging UTUC lesions (OR 5.2, p=0.01). Specifically, patients with ≥4 URS biopsies had a biopsy-final pathology concordance of 94% for grade and 79% for stage.

Conclusion: URS biopsy had a concordance of 84% and 59% with final grade and stage of UTUC tumors. Obtaining 4 or more biopsies at URS significantly increased the likelihood of pathologic concordance with the final specimen.
Laparoscopic CRYOablation of Small Renal Masses: A Single Center Experience
Shaun E. L. Wason1, Timothy Powell1, Raymond S. Lance2, Robert W. Givens3, Michael D. Fabrizio4
1Eastern Virginia Medical School, Norfolk, VA; 2Eastern Virginia Medical School/Urology of Virginia, Norfolk, VA

Introduction: Laparoscopic renal cryoablation (LRC) is a minimally invasive, nephron-sparing option for treating small renal lesions. We present a retrospective review and report intermediate oncological outcomes of a large cohort of patients who underwent LRC at our institution.

Materials & Methods: Patients with peripheral renal masses <5.0 cm were offered LRC as an alternative to partial nephrectomy. All lesions were characterized by intraoperative ultrasound and treated with two freeze-thaw cycles.

Results: From February 2003 to December 2010, 109 consecutive patients underwent 112 procedures. Average patient age was 65 (range, 30-82), mean tumor size was 2.3cm (range, 1.0-4.3) and mean follow-up was 32 months (range, 1-89). Intraoperative needle biopsy of targeted lesions yielded a 67% malignancy rate. Mean estimated blood loss was <50ml (68%) (range, <50ml-500ml), with 5 patients requiring a blood transfusion. There was one open conversion. Most patients were discharged home on postoperative day one (51%) (range, 1-22). Complications occurred in 13 patients (12%), with most complications (85%) classified as Grade II or less. At last follow up, there were 3 recurrences (3%). Two of these patients underwent salvage percutaneous cryoablation and the third underwent salvage partial nephrectomy. All patients are currently NED.

Conclusions: LRC is a good option for nephron sparing surgery in select patients with small peripheral renal masses. The procedure is well tolerated, with low morbidity and has shown excellent intermediate oncological treatment results. Post-treatment surveillance with periodic imaging is essential to identify radiological recurrences which may be salvaged with repeat cryoablation or partial nephrectomy.

Pathological Characteristics of Cystic Renal Lesions
Adam C. Reese, Phillip M. Pierorazio, Christian P. Pavlovich
Johns Hopkins Brady Urological Institute, Baltimore, MD

Introduction: The pathological findings of cystic renal lesions removed due to concern for malignancy are poorly characterized. We describe the histology and grade of cystic renal lesions following extirpation.

Materials & Methods: We analyzed our institutional database of renal surgeries, including patients who underwent radical or partial nephrectomy between 2004 and 2010 for cystic renal lesions. The Bosniak score of these lesions and pathological outcomes following nephrectomy were analyzed.

Results: We identified 126 patients who met the inclusion criteria. Of these, the Bosniak classification was as follows: 23 Bosniak II lesions (18%), 33 Bosniak III lesions (26%), 45 Bosniak IV lesions (36%), and 23 cystic lesions in which data was insufficient to assign a Bosniak score (20%). On pathological analysis, 90 (71%) of these lesions were malignant. Malignancy was identified 30%, 64%, and 89% of Bosniak II, III, and IV lesions, respectively. The histology and pathological characteristics of the malignant lesions are shown in the Table. Tumor size, pathological stage, and Fuhrman grade did not significantly differ by tumor histology. Surgical margins were negative in all but 1 (1%) of the malignant lesions.

Conclusions: Papillary histology is slightly more common in cystic RCCs than in solid lesions. Furthermore, the majority of cystic RCCs are low stage, low grade tumors, suggesting that these lesions may behave in a more indolent fashion than solid renal tumors.

Retrospective Effectiveness and Safety of Valrubcin in Non-Muscle-Invasive Bladder Cancer Following Reintroduction
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1Vanderbilt University Medical Center, Nashville, TN; 2Endo Pharmaceuticals Inc., Chadds Ford, PA; 3Chesapeake Urology Research Associates, Teaneck, MD

Introduction: Valrubcin was approved in the United States in 1998, voluntarily withdrawn in 2002, and reintroduced in 2009. This multicenter study in adults with non-muscle-invasive bladder cancer (NMIBC) is the first since reintroduction.

Materials & Methods: Event-free survival (EFS) was analyzed using Kaplan-Meier methods; an event was defined as recurrence, progression, or death. Local adverse reactions (LARs) were “probable” or “possible” valrubcin-related, or had unknown causality.

Results: 113 patients (median age, 75 y [range, 42-95]) received intravesical (IV) valrubcin (median, 6 instillations [range, 2-18]). Prior therapy included IV immunotherapy (mean [SD], 3.5 [4.3] courses). IV chemotherapy (0.7 [1.8] courses), transurethral bladder resections (2.5 [2.4]), and fulgurations (1.1 [2.0]). Median (95% CI) EFS time was 3.5 (2.5-4.0) months. EFS rate was 52% at 3 months and 30% at 6 months. 15 patients (13%) underwent radical cystectomy. LARs occurred in 56 patients (50%) and serious adverse events in 7 (6%); 5 patients (4%) discontinued after PFUI repair. Mean patient age was 33 years. At average follow up of 3.1 years, the surgery was successful in 14 of 17 patients (82%), including one without any pharmacologic assistance, five using PDE-5 inhibitors, three with intracavernosal injections (ICI), and five using both PDE-5 inhibitors and ICI. Mean right/left peak systolic velocity of the dorsal penile artery duplex ultrasound went from 26.7/28.0 preoperatively to 44.6/47.3 postoperatively; equivalent values for the cavernosal arteries were 20.5/25.7 and 35.8/35.5 cm/sec.

Conclusions: Penile arterial revascularization in carefully selected patients can allow for successful treatment of PFUI and refractory ED caused by PFUI.
Degree of Nerve-Sparing after Robot-Assisted Laparoscopic Radical Prostatectomy (RALP): Correlation with Sexual Recovery
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1Thomas Jefferson University, Philadelphia, PA; 2Kimmel Cancer Center, Thomas Jefferson University, Philadelphia, PA

Introduction: Traditionally nerve sparing (NS) has been “all or nothing”, but it is apparent that degrees of NS can be achieved. We assessed the impact of NS during RALP on sexual recovery, measured by patient reported results of the erectile function domain (EF-5) of IIEF at ≥12 months after surgery.

Materials & Methods: We retrospectively reviewed our institutional IRB-approved RALP database from 2006 to 2010. Preoperatively potent men who had ≥12 months follow-up were included. An EF-5 score of ≥16+/−PDE-5i therapy was considered potent. NS was scored by the surgeon for each side using a 1 to 4 scale, [1=complete nerve preservation, 4=complete nerve resection]. Scores were assigned bilaterally, and combined to yield a Total Nerve-Sparing Sum (TNSS). TNSS and postoperative erectile function was compared. Postoperative penile rehabilitation was offered to each patient, including maintenance PDE-5i therapy +/- vacuum device.

Results: A total of 204 men were included, including 68 with TNSS of 2, 79 with TNSS of 3-4, and 57 with TNSS of 5-8. The potency rates were 85%, 70%, and 26% respectively (p<0.05). Higher, void volume surgeries and high volume high hospitals was associated with a significantly lower cost for RP overall.

Conclusions: High surgical volume was associated with lower cost of RP. However, even at high surgical volume, the cost of RALRP still exceeded that of RP.

Effect of Denosumab on Prolonging Bone Metastasis Free Survival (BMFS) in Men with Non-Metastatic Castration-Resistant Prostate Cancer (CRPC) Presenting with Aggressive PSA Kinetics
Paul Sieber1, Matthew R. Smith2, Fred Saad3, Neal Shore4, Stephane Oudard5, Kurt Miller6, Bertrand Tombal7, Zhizhen Ye8, Roger Wilt9, Carsten Conrads1
1Urological Associates of Lancaster, Lancaster, PA; 2Massachusetts General Hospital Cancer Center, Boston, MA; 3University of Montpellier Hospital Center, CRCHUM, Montreal, QC, Canada; 4University of Virginia, Charlottesville, VA; 5Université Catholique de Louvain Cliniques Universitaires Saint Luc, Bruxelles, Belgium; 6Amgen, Inc, Thousand Oaks, CA

Introduction: Denosumab, an anti-RANK Ligand monoclonal antibody, has been shown to prolong BMFS by a median 4.2 months with a 15% risk reduction vs placebo in men with non-metastatic CRPC and baseline prostate specific antigen (PSA) value ≥8.0 ng/mL and/or PSA doubling time (DT) ≤10.0 months. To determine the efficacy of denosumab in men at even greater risk for bone metastases, we evaluated BMFS in a subset of men with PSADT ≤6 months, a cutoff based on a previous report (Smith MR, et al: J Clin Oncol. 23:2918-2925, 2005).

Materials & Methods: 1432 men with nonmetastatic CRPC (baseline medians - PSA 12.3 ng/mL, PSADT 5.1 mo, ADT duration: 47.1 mo) were randomized 1:1 to receive monthly subcutaneous denosumab 120 mg or placebo. The primary endpoint was BMFS, reported previously, with a 4.2 mo treatment difference in favor of denosumab.

Results: Median BMFS in the placebo group with PSADT ≤6 mo was 6.5 mo shorter than for the placebo group in the overall population (18.7 mo vs 25.2 mo). In patients with PSADT ≤6 mo, denosumab prolonged BMFS by a median 7.2 mo and with a 23% reduction in risk compared with placebo (Table). Men with PSADT ≤6 mo, denosumab prolonged BMFS by a median 7.2 mo and with a 23% reduction in risk compared with placebo (Table).

Table

<table>
<thead>
<tr>
<th>Population</th>
<th>Sample Size</th>
<th>BMFS-Median (Months)</th>
<th>BMFS Treatment Difference (Months)</th>
<th>Hazard Ratio</th>
<th>95% Confidence Interval</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Patients</td>
<td>1432</td>
<td>29.5</td>
<td>19.5</td>
<td>4.2</td>
<td>0.85</td>
<td>0.71 - 0.98</td>
</tr>
<tr>
<td>PSADT ≤6 months</td>
<td>701</td>
<td>23.9</td>
<td>15.7</td>
<td>7.2</td>
<td>0.77</td>
<td>0.64 - 0.93</td>
</tr>
</tbody>
</table>

Conclusions: Patients with shortened PSADT are at higher risk of developing bone metastasis and denosumab is markedly effective in prolonging BMFS in this subset of patients.
Laparoscopic Skills: Are There Predictors of Urology Resident Performance?
Katherine P. Davenport1, Amy Burns3, Sevann Helo4, George Bailey4, Craig A. Peters3, Noah S. Schenkman4
1Children’s National Medical Center, Sheikh Zayed Institute for Pediatric Surgical Innovation, Washington, DC; 2University of Iowa, Department of Urology, Iowa City, IA; 3University of Virginia, Department of Urology, Charlottesville, VA

Introduction: The goal of this study was to identify factors which predict urology resident technical performance during simulated standard laparoscopic tasks.

Materials & Methods: 29 urology residents participated in this study which consisted of completing a survey about training experience, activities and demographics, followed by performing peg transfer (PT) and simple suture/knot tying (SS) tasks on standard laparoscopic training equipment. De-identified videos were reviewed by board-certified urologist and surgeon. The PT was evaluated based on bead handling, two-handed coordination, and efficiency. The SS was evaluated based on knot quality, needle handling, precision, and efficiency. Survey characteristics and study performances were examined for participants in the top 10 and bottom 10 groups (displayed in the table).

Results: Comparatively, the top 10 show a greater breadth of laparoscopic experience, in the lab and in the OR. All members of the top 10 reported access to a laparoscopic simulator, compared to only 6 of the bottom 10.

Conclusions: Based on the ranked outcomes of standard laparoscopic skills tests, predictive trends for technical ability can be identified. Superior technical performance is clearly related to laparoscopic experience, both in the lab and in the operating room. These findings support the value of simulation and favor continued emphasis in training models.

Robotic Surgery Ability: Born to Operate?
Amy Burns4, Lauren Wood3, Chad Tracy4, Jennifer Davila-Aponte4, Tracey Kruzska3, Craig Peters1, Noah Schenkman3
1Children’s National, Washington, DC; 2Cedars-Sinai, Los Angeles, CA; 3University of Iowa, Iowa City, IA; 4University of Virginia, Charlottesville, VA

Introduction: We sought to identify factors that predict urology resident performance and technical ability during an inanimate da Vinci Si robot surgery task.

Materials & Methods: Twenty-two urology residents, 17 male and 5 female, attending the 2010 AUA Basic Sciences Protocols. Following a survey about training experience, hobbies, and demographics, residents attempted reapproximation of a 2 centimeter cut Penrose drain with 2 Knots and a running suture. Maximum time was 10 minutes. Two fellowship trained laparoscopic urologists scored deidentified task videos on a 0-15 scale based on efficiency, accuracy, precision, and knot quality. Individual performance scores for each participant were averaged to compute a total score (TS).

Results: Mean TS for all participants was 7.8 (range 2.5-13.5, SD 3.14). Mean year of post-graduate training was 2.6 (range 1-4 years) and residents had completed an average of 1.2 years of general surgery. We compared the top 11 and bottom 11 performers. Training experience, hobbies, and demographics were similar between groups.

There was a statistically significant improvement in the mean TS in those with >1 year of general surgery (p=0.03), prior console experience (p=0.015), and prior laparoscopic experience as first/teaching assistant (p=0.02). There was no statistically significant difference in TS when considering other factors.

Conclusions: Factors which predicted better technical ability include prior console experience, more general surgery training, and prior laparoscopic experience.

Similar Oncologic Outcomes, but Worse Overall Survival, for Octogenarians Following Radical Cystectomy
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Hospital of the University of Pennsylvania, Philadelphia, PA

Introduction: The increasing elderly demographic means more patients ≥80 will likely present for radical cystectomy (RC) in upcoming years. However, RC in the elderly is associated with greater morbidity and mortality, which is commonly attributed to increased co-morbidity. The purpose of this study was to explore the effect of advanced age on oncologic outcomes and overall survival (OS) following RC.

Materials & Methods: We reviewed our RC database and dichotomized patients into two groups; ≥80 or <80. Peri-operative characteristics, pathological outcomes, recurrence free survival (RFS), and OS were compared.

Results: Of the 571 patients in our RC database, 38 (7%) patients were ≥80. The groups did not differ by gender, race, smoking history, co-morbidity, or perioperative chemotherapy. No difference was seen for EBL, LOS, and time in ICU. Pathologic outcomes regarding stage, node status, margins, CIS presence, and lymphovascular invasion, were similar between the groups. Elderly patients were more likely to have a non-continent diversion (p=0.001) and a lower BMI (24.7±27.6 p=0.001). Differences in RFS were not significant (HR=1.67 95%CI=0.92-2.99). However, OS was significantly worse for ≥80 (2 year OS 29.8% v. 64.7%; HR=2.38 95%CI=1.4-3.6).

Conclusions: RC provides similar oncologic outcomes for ≥80 and <80. However, OS was worse for ≥80 than <80 despite similar perioperative characteristics, including co-morbidity. Future investigations will need to focus on better understanding physiologic age. Although, chronologic age should not be a contraindication for RC, elderly patients should be counseled regarding the potential for worse overall survival compared to younger patients.

The Impact of Surgeon Volume and Surgical Approach on Post-Radical Prostatectomy Morbidity in Maryland Hospitals
Jeffrey K. Mullins, Elain S. Hyams, Zhanyong Feng, Phillip M. Piernozarzo, Bruce Trock, Mohamad E. Allaf, Brian R. Matlaga
The Johns Hopkins Medical Institutions, Baltimore, MD

Introduction: Investigations of a similar relationship for minimally invasive approaches. The institutional and nationwide analysis of radical retropubic prostatectomy (RRP) outcomes has identified a relationship between surgeon volume and improved postoperative outcomes. However, there have been limited investigations of a similar relationship for minimally invasive approaches. The objective of this study was to explore the impact of surgeon volume and surgical approach on post-RRP morbidity.

Materials & Methods: The Maryland Health Service Cost Review Commission database was queried for men undergoing RRP or robotic-assisted laparoscopic radical prostatectomy (RALRP). Patient demographic and metrics of postoperative morbidity were compared between those undergoing surgery by high and low volume surgeons. Multivariable logistic regression analysis was performed to assess the relationship between operative approach, surgeon volume, and prolonged length of stay (LOS).

Results: From 2008 - 2011, 4,064 men underwent RRP or RALRP. A total of 12 high volume surgeons performed 1,860 (45.8%) RRP's and 901 (22.2%) RALRP's. Men undergoing RRP by a high volume surgeon were less likely to have a prolonged LOS or 30-day readmission. Men undergoing RALRP by a high volume surgeon were less likely to have a prolonged LOS. Multivariable regression analysis demonstrated that high volume surgeons were significantly protective against prolonged LOS for men undergoing RRP (OR: 0.23, p=0.0002) but not RALRP (OR: 0.87, p=0.809).

Conclusions: Surgeon volume is independently associated with a decreased risk of prolonged LOS for RRP. When considering statewide data, surgeon volume improved post-operative morbidity for RRP but not RALRP.
Revisiting the Clinical Significance of “Close but Negative” Surgical Margins in Radical Prostatectomy
Eugene J. Pietrzak, III, PhD, Philip Mucksavage, Keith Van Arsdalen, Alan J. Wein, S. Bruce Malkowicz, Thomas J. Guzzi
1Hospital of the University of Pennsylvania, Philadelphia, PA; 2Temple University, Philadelphia, PA
Introduction: A positive surgical margin (PSM) is an independent predictor of biochemical recurrence (BCR) after Radical Prostatectomy (RP). However, tumor distance from the surgical margin does not appear to be related to BCR. Despite this, genitourinary pathologists may occasionally report a surgical margin as being “close but negative” to communicate concern. To-date, no study has looked at the rate of BCR in patients who are reported as having “close but negative” margins.

Materials & Methods: We retrospectively reviewed our RP database from 1991 to 2001 when the pathology-reporting sheet allowed for free text. 1,189 patients were stratified by margin status into PSM, negative margin, and “close but negative” margin, according to their pathology report. Clinical and pathological characteristics were compared for BCR at 5, 10, and 15-years. Kaplan-Meier curves and cox proportional hazard ratios were also calculated.

Results: 79.8% of patients had negative surgical margins, 18.8% had PSM, and only 1.4% were reported as “close but negative”. PSM patients had greater risk of BCR compared to negative margin (HR=2.95; 95%CI=2.19-3.96). No statistical difference was seen between negative margins and “close but negative” margins (HR=1.03; 95%CI=0.58-1.82). No statistically significant difference was achieved between PSM and “close but negative”, likely from the small number of patients in the “close but negative” group (HR=0.39; 95%CI=0.12-1.22).

Conclusions: Reporting a negative surgical margin as “close but negative” offers no additional prognostic information, but can result in unwarranted anxiety and fear over prostate cancer recurrence for patients. It also potentially puts patients at risk for unnecessary adjuvant therapies.

The Effect of Fatigue on Simulated Robotic Surgical Skills Performed by Urology Residents
James R. Mark, Douglas Kelly, Edouard J. Trauburi, Patrick Shenot, Costas Lallas
Thomas Jefferson University, Philadelphia, PA
Introduction: Urology trainee work hours are restricted by the ACGME, yet no studies have been conducted on the effect of fatigue on residents in our specialty. This study reports on the effect of fatigue on Urology residents using the daVinci surgical skills simulator (dVSS).

Materials & Methods: Seven Urology residents performed selected exercises on the dVSS while pre and post call. Prior to each session, Epworth Sleepiness Scale (ESS) was used to measure fatigue. The performance of each resident was evaluated using the metrics available in the dVSS software. Non-parametric statistical analysis was performed to compare overall score, number of critical errors, and individual metric scores provided by the trainer.

Results: Residents slept a median of 4 hrs (min 2.5, max 6) while on call and a median of 5 hrs while not on call (min 3, max 7, p= 0.1459). On call residents were significantly more likely to be identified as fatigued by the Epworth Sleepiness Score than off call residents (min 3, max 7, p=0.06). Based on standard brachytherapy inclusion criteria, 8 of 9 patients who progressed and 8 of all 55 patients (15%) were no longer candidates for this therapy.

Conclusions: Fatigue and sleep duration may be useful in predicting disease progression for patients on AS. Patients should be counseled that brachytherapy may not be a treatment option if disease progression warrants definitive treatment.

Table 1. Differences in Overall Score and Critical Errors for Selected Exercises

<table>
<thead>
<tr>
<th></th>
<th>Not Fatigued</th>
<th>Fatigued</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tubes Overall</td>
<td>95 (35, 78)</td>
<td>70 (31, 86)</td>
<td>0.0342</td>
</tr>
<tr>
<td>Tubes Critical Errors</td>
<td>0 (0, 3)</td>
<td>2 (1, 6)</td>
<td>0.001</td>
</tr>
<tr>
<td>Match Board 2 Overall</td>
<td>89 (73, 95)</td>
<td>70 (46, 86)</td>
<td>0.0433</td>
</tr>
<tr>
<td>Match Board 2 Critical Errors</td>
<td>0 (0, 2)</td>
<td>2 (1, 5)</td>
<td>0.0775</td>
</tr>
<tr>
<td>Total Critical Errors</td>
<td>2 (1, 11)</td>
<td>6 (1, 17)</td>
<td>0.0289</td>
</tr>
</tbody>
</table>

MR-guided Trans-urethral Prostate HIFU in a Preclinical Model
Nitin Yerram, An Hoang, Ari Partanen, Dmitri Volkin, Jeffrey Nix, Annerleim Walton Diaz, Baris Turkyev, Peter Choyke, Bradford Wood, Aradhana Venkatesan, Peter Pinto
1National Institutes of Health, Bethesda, MD; 2Philips USA, Briarcliff Manor, NY
Introduction: There has been a paradigm shift in the treatment of prostate cancer toward minimally invasive options that may achieve good oncological efficacy with minimal morbidity. We present our results using a novel trans-urethral high intensity focused ultrasound (HIFU) device in canine prostates.

Materials & Methods: A MR-compatible HIFU prototype was developed in collaboration with Philips Medical Systems. Approved by the Animal Care and Use committee, two canines were treated with 3.4 ablations each. A perineal urethrostomy was performed to allow for direct advancement of the device to the level of the prostate. In-gantry MRI thermometry were provided by the software. Subsequently, the animals were euthanized for specimen procurement which was stained with Cytokeratin-6 and H&E.

Results: Thermal dose volume estimates positively correlated with those determined by histopathological analysis (r2=0.93 cm3 vs. 0.69 cm3, respectively, r2= 0.89, p=0.004). Post-procedural contrast-enhanced MRI demonstrated an improved correlation with histology (0.60 cm3 vs. 0.69 cm3, r2= 0.94, p=0.001). Additionally, a positive correlation between ablated volumes determined by MRI thermal dose and MRI contrast-enhancement was found (2p= 0.88, p=0.057).

Conclusions: This novel prototype allows for precise, targeted treatment of proseluted lesions in canine models. Further, preclinical data is required prior to human trials to demonstrate its safety, oncological control, and functional outcomes.
Disease Specific Survival in Patients Managed with Nephroureterectomy Versus Nephron-Sparing Procedures
Jay Simhan, Marc C. Smallbone, Daniel Canter, Brian L. Egleston, Steven N. Stotius, Anthony T. Corcoran, Serge Cineberg, Robert G. Uzzo, Alexander Kutikov
Fox Chase Cancer Center, Temple University School of Medicine, Philadelphia, PA

Introduction: We compared overall and cancer-specific outcomes between patients with upper tract urothelial carcinoma (UTUC) managed with nephroureterectomy (NTxU) and those managed through nephron-sparing measures (NSM).

Materials & Methods: We used the Surveillance, Epidemiology, and End Results (SEER) registries, patients with a diagnosis of low grade Ta/T1N0M0 UTUC were stratified into two groups: NTxU versus NSM (observation, endoscopic ablation, or segmental ureterectomy). Cancer and non-cancer specific mortality rates were determined using cumulative incidence estimators. We used Cox regressions for overall survival and Fine and Gray regressions for cause-specific mortality analyses.

Results: Of 1,227 patients (mean age 70 2 (SD) yr, 63.2% male), 907 (62.3% male) and 320 (65.6% male) patients underwent NTxU or NSM of low grade, low stage UTUC from 1992-2008. NSM patients were older (mean age 71 6 (SD) yr, p=0.01) with a greater proportion of well differentiated (G1) tumors (28.3% vs. 18.0%, p=0.001). There were no demographically significant differences between groups. While there were differences in other cause mortality between the two groups (p=0.01), cancer-specific mortality trends were similar (Figure). Controlling for grade, demographics, and diagnosis year, patients treated with NTxU had longer non-cancer cause survival (HR=0.78, p=0.089) without a cancer-specific mortality benefit.

Conclusions: Patients with low grade, low stage UTUC managed through NSM have similar cancer-specific survival rates to those managed with NTxU. These data may be useful when counseling UTUC patients with baseline chronic kidney disease or other significant competing comorbidities.

Evaluation of Murine Dendritic Cell Function and Murine Specific Prostate Cancer Cell P1-A Expression after Exposure to 5-Azacytidine and Lenalidomide
Samuel P. Robinson, Alberic Rogman, Paul J. Yannie, Ekaterine Goliadze, Georgi Guruli
Virginia Commonwealth University School of Medicine, Richmond, VA

Introduction: Immunomodulatory drugs are being used with increasing frequency to treat various cancers. Although some of the greatest advancements have been achieved in the treatment of hematologic malignancies, a growing body of evidence exists to suggest a benefit in the treatment of solid organ tumors, including prostate cancer. Though the benefits of therapy have been shown in clinical trials, the underlying immune mechanisms responsible for the outcomes have not been completely elucidated.

Materials & Methods: Murine derived dendritic cells (DCs) and Murine specific prostate cancer cells (RM-1) were exposed to variable concentrations of Lenalidomide (a thalidomide analogue) and 5-AzaC (a DNA methyltransferase inhibitor). Cell proliferation assays were performed on both. RT-PCR and q-PCR was performed on DCs exposed to 5-AzaC for endothelin expression, and RM-1 cells were exposed to both drugs for P1-A expression. Flow cytometry was performed on DCs exposed to Lenalidomide, and ELISA was performed on DCs exposed to 5-AzaC for IL-10 and IL-12 expression.

Results: Although both Lenalidomide and 5-AzaC appeared to be cytotoxic to RM-1 cells and dendritic cells, our results suggest that both upregulate different elements of the immune system and that 5-AzaC increases tumor exposure to the immune system through upregulation of cancer testis antigens.

Conclusions: We are developing a murine model to investigate the role of immunomodulatory drugs in the treatment of prostate cancer and ultimately other GU malignancies by analyzing their effect on tumor cells and on the host immune system so that treatment regimens might be optimized with synergistic intent.

Determining Resident Physician Radiation Exposure during Urologic Surgery Training in a Program with High Volume Endourology Case Load
Christopher T. Yingling, Daoud Dajani, Kedar Dahal, John J. Pahira
Georgetown University Hospital, Washington, DC

Introduction: Objective to determine an estimate of radiation exposure to urology residents during training.

Materials & Methods: For 220 consecutive cases over a 60 day collection period radiation utilization and exposure data were collected. Cumulative air kerma (CAK), as determined by the fluoroscopy table kerma area product (KAP) sensor, was used as a surrogate of emitted radiation dose. Extrapolating CAK to radiation incident upon the operator was accomplished through a series of distance measurements and utilization of established scatter and decay equations. Luxel + optically stimulated luminescent (OSL) dosimeters (Landauer Inc.) at the collar were used throughout the collection period for verification purposes. Resident ACCME case logs were reviewed to estimate annual case load.

Results: CAK for the 3 most common procedures: ureteral stent exchange 16.59mGy (range 2.0-94.0), primary ureteral stent placement 53.5mGy (range 4.2-176.45), and ureteroscopy (URS) 47.42mGy (range 1.3-192.91). Average annual resident case load: stent exchange N=52.5, primary stent placement N=37, URS N=113.5. Total CAK for annual case load =8235.895mGy. Source to skin distance (fixed) =30cm. Average patient to operator distance =60cm. Mathematical estimate of annual CAK = 2.29kGy/m. Estimated OSL exposure = 3.24Gy/year. Average age at the start of urologic training = 28.1 years.

Conclusions: Collected data suggest radiation exposure during urologic surgery training may approach 50% of recommended NCRP91 maximums. Despite being within accepted limits, exposure should be minimized as it occurs at a vulnerable age in a population likely to have considerable continued lifetime dose accumulation.

Intraoperative Frozen Section Analysis at the Time of Partial Nephrectomy: is it Necessary? A Review of 370 Patients
Zachary L. Smith, Marawan El Tayeb, Phillip Mucksavage, Keith Van Arsdalen, Alan J. Wein, S. Bruce Malkowicz, Thomas J. Guzzo
1University of Pennsylvania, Philadelphia, PA; 2Alexandria University, Alexandria, Egypt

Introduction: Intraoperative frozen section analysis (FSA) of tumor margins is common during partial nephrectomy (PN). However, this practice is of questionable benefit as the impact of a positive surgical margin (PSM) on oncologic outcome has been questioned. Our aim was to determine the necessity of intraoperative FSA and its relationship with surgical and pathologic outcome.

Materials & Methods: We reviewed the data of 406 patients who underwent PN between July 1996 and September 2010. Clinical and pathologic data was reviewed to estimate annual case load.

Results: Of 370 patients (91.1%) underwent intraoperative FSA. There was a statistically significant correlation between overall risk of recurrence and PSM (HR 3.7; 1.05-13.2, p=0.042). Patients with low grade, low stage UTUC managed through NSM have similar cancer-specific survival rates to those managed with NTxU. These data may be useful when counseling UTUC patients with baseline chronic kidney disease or other significant competing comorbidities.

Conclusions: Collected data suggest radiation exposure during urologic surgery training may approach 50% of recommended NCRP91 maximums. Despite being within accepted limits, exposure should be minimized as it occurs at a vulnerable age in a population likely to have considerable continued lifetime dose accumulation.
Stromal Microenvironment in Renal Cell Carcinoma
Vivekanand Gupta, Edna Cukierman
Fox Chase Cancer Center, Philadelphia, PA

Introduction: Advanced renal cell carcinoma (RCC) is in need of novel diagnostic and treatment tools. Although renal tumor cells are intercalated within a mesenchymal stromal microenvironment during RCC tumorigenesis and it is well accepted that tumor-stroma plays an important role in tumorigenesis, research in stromal RCC is not profuse. Objective: To study the clinical importance of RCC’s stroma and uncover stromal fibroblast-derived extracellular matrix (ECM) effects in renal tumorigenesis.

Materials & Methods: Using fibroblasts harvested from patient matched normal and tumoral renal tissues obtained from fresh surgical samples, we developed an in vivo-like 3D culturing system.

Results: Using a well annotated tumor micro-array, we observed that stromal palladin expression levels are indicative of poor outcomes in early non-metastatic RCCs and thus propose that palladin may constitute a novel risk marker. Furthermore, using the 3D system we uncovered that tumor, but not normal, ECMs are tumorigenic permissive inducing growth, survival, inhibition of apoptosis and invasion. Results from an unbiased gene expression array, not only confirmed the ECM induction of known RCC pathways, but also uncovered the involvement of specific integrin pathways and asserted connective tissue disorder components in the observed tumor-ECM induced responses. Moreover, preliminary results suggests that the tumor-ECM induced tumorigenic behaviors could be inhibited (i.e., cell growth) or altered (i.e., cell invasion) by integrin blockade.

Conclusions: High expression levels of stromal palladin predict poor clinical outcome in non metastatic RCC patients, while specific integrin activities are responsible for the observed normal ECM restrictive and tumor-activated ECM promoting neoplastic behaviors.

Predictors of Gleason Score Upgrading in a Large Urban Population
Anup A Vora, Tim Large, Andrew Harbin, John Lynch, Gaurav Bandi, Kevin McGaugh, Keith Kowalczyk, Reza Chasemian, Mohan Verghese, Jonathan Hwang
Georgetown University - Washington Hospital Center, Washington, DC

Introduction: Gleason score is important for prostate cancer risk stratification and influences treatment decisions. Gleason scoring upgrade (GSU) between biopsy and surgical pathology specimens has been reported as high as 50% and presents a challenge in counseling low-risk patients. While recent studies have investigated predictors of GSU, populations in these studies have been largely Caucasian. We report our analysis of predictors of GSU in a large urban African-American population.

Materials & Methods: 786 patients with D’Amico low risk prostate cancer underwent radical prostatectomy between January 2007 and December 2011 at our institution. Race, age, PSA, BMI and TRUS biopsy characteristics were analyzed with both univariate and multivariate analysis to identify significant predictors of GSU. (Table 1)

Results: Of the 786 cases, 212 (26.9%) were upgraded on final pathologic specimen. Age, PSA, BMI and TRUS biopsy characteristics were analyzed with both univariate and multivariate analysis to identify significant predictors of GSU. (Table 1)

Conclusions: More than a quarter of low-risk prostate cancer patients were upgraded on final pathology in our series. Advanced age, total number of cores and percent of cores involved were independent predictors of GSU. Individuals with those clinical parameters may harbor occult high-grade disease and should be carefully counseled on treatment decisions.

<table>
<thead>
<tr>
<th>Variable</th>
<th>No GSU (n=574)</th>
<th>GSU (n=212)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age (stdev)</td>
<td>62.6 (2.1)</td>
<td>63.8 (6.8)</td>
<td>0.043</td>
</tr>
<tr>
<td>% African American</td>
<td>54.7% (197/354)</td>
<td>55.2% (81/150)</td>
<td>0.706</td>
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<tr>
<td>Mean BMI (stdev)</td>
<td>25.6 (4.7)</td>
<td>28.3 (4.9)</td>
<td>0.006</td>
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<tr>
<td>Mean PSA (stdev)</td>
<td>4.30 (2.55)</td>
<td>4.30 (3.26)</td>
<td>0.023</td>
</tr>
<tr>
<td>Mean % of Positive Core (stdev)</td>
<td>35.2 (26.3)</td>
<td>40.6 (30.8)</td>
<td>0.037</td>
</tr>
<tr>
<td>Mean Final Pathologic Grade</td>
<td>8.00</td>
<td>7.18</td>
<td>0.001</td>
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</table>

The Effect of Prostate Volume on the Detection of Clinically Insignificant Cancer on Repeat Prostate Biopsies
Eugene J. Pietrzak, III1, Matthew J. Resnick2, Philip Mucksavage3, Keith Van Arsdale1, Alan J. Weiss1, S. Bruce Malkowitz1, Thomas J. Giuzio1
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Introduction: Concern about the over-diagnosis of prostate cancer (PCA) secondary to PSA screening has emphasized the need for reliable preoperative predictors of clinically insignificant PCA.

Materials & Methods: We retrospectively reviewed our radical prostatectomy database from 1991 to 2008 to assess the effect of prostate volume on clinical and pathological characteristics in patients with PCAs detected on first prostate needle biopsy, compared to patients who required ≥3 biopsies before PCA was detected. Patients were further stratified into prostate volume <50 cc or ≥50 cc.

Results: The percent of patients with prostates ≥50 cc increased from 16.5% (286/1,608) on first biopsy to 41.3% (62/150) in the ≥3 biopsies group. For patients with ≥50 cc prostates in the ≥3 biopsies group, 72.6% had Gleason scores of ≤6 and 81.6% had an estimated tumor volume of <10% on final pathology, which was statistically significant compared to the other groups (p<0.01). There was no significant difference in the rate of upgrading between any of the groups (p=0.98).

Conclusion: Patients with prostates ≥50 cc are more likely to require multiple biopsies before PCA is detected. Tumors in ≤50 cc glands that required ≥3 biopsies for detection are more likely to be low grade and low volume at final pathology. Men with large prostates who have already had two negative biopsies should be counseled on the risk of detecting clinically insignificant PCAs with additional biopsies. Similarly, men with large prostates diagnosed with PCA after ≥3 biopsies should be counseled about active surveillance.

A New Method for Objective Analyses of Detrusor Rhythmic Contraction
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Introduction: Ambulatory urodynamics indicates that the bladder undergoes spontaneous rhythmic contraction (SRC) during the filling phase, and that SRC is increased in patients with overactive bladder. Strips of detrusor smooth muscle (DMSM) isolated from patients with overactive bladder exhibit greater SRC than controls. We propose a new mathematical approach to analyze SRC focusing on concepts drawn from signal analysis.

Materials & Methods: Strips of DMSM dissected from rabbits were placed between two clips in a muscle bath; one clip was attached to a micrometer for length adjustments, the other to an isometric tension transducer for DSM fiber amplitudes. Tissues were stretched from 0.8-fold to 1.2-fold to 1.5-fold in 0.1-fold increments and allowed to rhythm spontaneously for 20 min. SRC were analyzed using Fourier transforms allowing the data to be represented on a frequency rather than a time spectrum.

Results: Based on Fourier transform plots represented by signal peaks within specific frequency ranges, rabbit SRC are divided into 3 component waveforms defined as A0 + A1B1 + A2B2. A0 = length-dependent baseline tone that increases exponentially; A1B1 = a fast wave with a length-dependent specific amplitude (A1) and length-independent constant frequency (B1) of ~0.2 Hz, and A2B2 = a slow wave with a length-dependent amplitude (A2) and frequency (B2).

Conclusions: Use of Fourier transform revealed, that rabbit SRC consists of 2 frequencies, one that is, and one that is not, length dependent. This method has potential clinical utility in the study of therapies designed to treat urgency occurring during the filling phase.
Residual Fragments Following Ureteroscopic Lithotripsy: Incidence and Predictors in 248 Patients with Post-operative Tomography (CT) Imaging
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Introduction: Residual fragments (RFs) following ureteroscopy (URS) for calculi may contribute to stone growth, symptoms or additional interventions. We reviewed our experience with URS to define the incidence and establish factors predictive of RFs.

Materials and Methods: Records associated with 667 consecutive ureteroscopic procedures for upper tract calculi between April 2007 and May 2009 were reviewed. 265 procedures (40%) had a CT scan between 30 and 90 days following surgery and comprised the study group. RFs were defined as any residual ipsilateral stone > 2mm.

Results: 121 men and 127 women with a mean age of 47 years were included. Mean target stone diameter was 7.6 mm with stone location being 29% kidney, 50% ureter, and 20% in both. RFs were detected on CT following 101 of 265 procedures (40%). On univariate analysis, stone location in the kidney (vs. ureter) (p<0.001), multiple calculi (p=0.003), increasing stone diameter (p<0.001), longer operative duration (p=0.008), and use of only flexible ureteroscope (p=0.029) were associated with RFs. In a multivariate model, only pre-treatment stone diameter > 5mm (OR 2.03, p=0.03 for 6-10mm, and OR 3.74, p=0.003 for >10mm) predicted RFs.

Conclusions: 38% of patients undergoing URS for calculi will have RFs by CT criteria. Pre-treatment stone size is associated with RFs with rates of 24%, 40%, and 58% for stones <5mm, 6-10 mm, and > 10 mm respectively. Such data may guide expectations regarding the success of URS in attaining stone-free status.

Contemporary Evaluation of the National Comprehensive Cancer Center Prostate Cancer Risk Classification
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Introduction: The National Comprehensive Cancer Network (NCCN) prostate cancer guidelines define risk groups based on PSA, Gleason score, and clinical stage. We analyzed these risk groups in a contemporary series of patients treated with radical prostatectomy (RP).

Materials & Methods: We analyzed our institutional RP database, including all patients with localized disease treated between 2000 and 2010. Per NCCN guidelines, patients were classified as low, intermediate, or high risk. Biochemical recurrence (BCR) free survival rates were compared using the logrank test.

Results: 12821 men met the inclusion criteria. 10-year BCR-free survival rates differed significantly by risk group (low-risk 92.1%, intermediate-risk 71.0%, high-risk 38.8%, p <0.01). 80.5% of intermediate risk men met only one intermediate-risk criterion, and 91.2% of high-risk men met only one high-risk criterion. Kaplan-Meier BCR-free survival curves for men meeting a single intermediate or high-risk criterion are shown in the Figure. In both intermediate and high-risk men, BCR-free survival was superior in men with advanced clinical stage, compared to men assigned to the same risk group based on Gleason score or PSA data.

Conclusions: We observed heterogeneous outcomes among patients within the NCCN intermediate and high-risk groups. BCR-free survival rates were superior in men with advanced clinical stage compared to those with advanced Gleason score or elevated PSA. These findings question the use of clinical stage data in assigning NCCN risk group.
**Dutasteride Pretreatment with Contrast-Enhanced Transrectal Ultrasound for Prostate Cancer Detection: A Randomized, Double-Blinded Trial**

**Ethan J. Halper**, Fleming Forberg, Peter A. McCue, Leonard G Comella, Edward J. Trabulsi

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**Introduction:** PSA based prostate cancer screening is controversial because the risks of cancer therapy may outweigh the benefits of treatment among men with indolent cancer. Identification of clinically significant disease is crucial for cost-effective screening. Contrast-enhanced ultrasound (CEUS) detection of increased microvessel density is associated with prostate cancer. Preliminary studies suggest that So-reductase inhibitor pretreatment may improve CEUS targeted biopsy efficiency. This study evaluated prostate cancer detection with CEUS ± short-term pretreatment with dutasteride.

**Materials & Methods:** We enrolled 311 pts in a randomized double blinded placebo controlled trial of oral dutasteride pretreatment followed by CEUS and biopsy. The microbubble agent Definity® (Lantheus Medical Imaging) was used. CEUS findings were graded and directed targeted biopsy (up to 6 cores/prostate). A blinded twelve core systematic biopsy was then performed on every subject.

**Results:** Two hundred seventy two of 311 randomized subjects completed the study. Prostate cancer was detected in 278/3246 (8.5%) of systematic cores and 203/1237 (16.4%) of targeted cores (odds ratio = 2.1, p<0.001). ROC analysis for cancer detection demonstrated improved accuracy of CEUS vs. precontrast imaging (Az =0.74 vs. 0.60, p=0.005). Precontrast and CEUS demonstrated excellent accuracy for high grade cancer (Gleason score ≥7), [Az=0.74 and 0.80 respectively, p=0.0005] and high grade cancer with greater than 50% biopsy core involvement, [Az =0.83 and 0.90 respectively, p<0.001]. Dutasteride pretreatment had no significant impact on detection of prostate cancer (p=0.97).

**Conclusions:** CEUS targeted biopsy provides a significant benefit for the detection of high grade/high volume prostate cancer.

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**Multi-parametric MRI and Subsequent MR/US Fusion Biopsy Increases the Detection of Anteriorly Located Prostate Cancers**

Dmitry Volkin, Nitin Yerram, Baris Turkbey, Jochen Kreuker, W. Marston Linehan, Peter Choyke, Bradford Wood, Peter Pinto

1National Cancer Institute, Bethesda, MD; 2Molecular Imaging Program - NIH, Bethesda, MD; 3Philips North America, Brackifgton Manor, NY; 4Department of Interventional Oncology - NIH, Bethesda, MD

**Introduction:** Anteriorly located prostate cancer is traditionally under-diagnosed using transrectual ultrasound (TRUS) biopsy. We describe the detection rate of these tumors with the addition of MRI/US fusion guided biopsy (FGB) to standard TRUS biopsy.

**Materials & Methods:** Patients with a clinical suspicion of prostate cancer underwent 3T multiparametric MRI and suspicious lesions in the anterior prostate were identified. Patients then received a FGB of all suspicious lesions and a standard TRUS biopsy. We conducted a lesion based analysis comparing detection of anterior targets using FGB versus TRUS cores taken from the same anatomic location in the prostate. Patients with only anterior targets were analyzed separately.

**Results:** Of 499 patients undergoing FGB, 162 patients had a total of 241 anterior lesions. Mean age, PSA, and prostate volume in this group was 62 years, 12.7mg/dL and 57mL, respectively. Results of the lesions based analysis are shown in Figure 1. Twenty-four of 42 patients (57%) having only anterior lesions on mpMRI had cancer on our platform. Six patients were positive on FGB only. Thirteen were positive on both modalities. However, 7 of 13 were upgraded to a higher Gleason score by FGB. All 5 patients positive on TRUS biopsy only were active surveillance candidates.

**Conclusion:** FGB detects significantly more anterior cancers than TRUS biopsy alone and may be an effective tool for this subset of patients.

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**Pelvic MRI with Surface Body Coils to Assess Local Extent of Disease for Patients with Localized Prostate Cancer Undergoing Radical Prostatectomy**

Thomas Clements, Kathleen Lehman, Lalaisha Brown, Carl Reese, Matthew Krug, Edward Dagen, Frank Malcom, Lewis Harpster, Nabeel Sarwani, Jay Raman

Million S. Hershy Medical Center, Hershey, PA

**Introduction:** The role of magnetic resonance imaging (MRI) to characterize the extent of disease for localized prostate cancer remains unclear. Surface body coil imaging obviates patient discomfort attributable to endorectal coils. We evaluated the ability to assess extent of disease prior to surgery.

**Materials & Methods:** Patients with localized prostate cancer underwent a surface body coil 1.5T pelvic MRI with gadolinium prior to prostatectomy. Patients were stratified into 3 groups based on the D’Amico criteria. All studies were reviewed by a single radiologist. MRI findings were correlated with final pathology.

**Results:** 110 men with a pre-treatment PSA of 7.78mg/mL were included. Stage distribution was cT3a-1, cT1c-70 and cT2-39, and Gleason sum scores ranged from 6-10. Risk stratification was low/intermediate, 49%, and high-26. On final pathology, 32 men had EPE and 7 had SVI. Overall sensitivity, specificity, PPV, and NPV for preoperative MRI to predict EPE was 41%, 83%, 90%, and 72%, respectively. Regarding SVI, the results were 53%, 95%, 64%, and 92%, respectively. In high risk patients, we observed improved sensitivity and PPV of MRI for both EPE and SVI while maintaining specificity and NPV.

**Conclusions:** Surface body coil MRI may be a useful imaging modality to characterize extent of disease prior to prostatectomy. This appears particularly true for high risk patients whereby MRI had a sensitivity of 58% and NPV of 78% for EPE.

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**Multiparametric Magnetic Resonance Imaging (mpMRI) and mpMRI/US Fusion Biopsy Accurately Detect and Localize Recurrent Prostate Cancer**

An N. Hoang, Jeffrey Nix, Nitin Yerram, Dmitry Volkin, Baris Turkbey, Marston Linehan, Peter Choyke, Bradford Wood, Adam Metwally, Peter Pinto

1National Cancer Institute, NIH, Bethesda, MD; 2Molecular Imaging Program, Bethesda, MD; 3NIH Center for Interventional Oncology, Bethesda, MD

**Introduction:** The difficulty in accurately detecting and locating prostate cancer (CaP) local recurrence after definitive treatment still exists today. Correct staging has significant clinical implications in the determination of whether patients should undergo salvage treatment. We present our initial experience using mpMRI and mpMRI/US fusion biopsy to detect and localize recurrent CaP.

**Materials & Methods:** Between 2010-2011, 22 patients who had undergone definitive treatment for CaP underwent screening with mpMRI (T2-weighted, diffusion-weighted, MR-spectroscopy, and dynamic contrast-enhanced sequences) for suspicion of recurrences. Patients with suspicious lesions identified on mpMRI subsequently underwent mpMRI/US targeted fusion biopsy. Data was retrospectively analyzed.

**Results:** Eleven patients underwent radical prostatectomy, while the remaining patients underwent either HIFU (4), cryotherapy (3), radiotherapy (3), or brachytherapy (1). Six patients received multiple prior therapies. DRE failed to reveal abnormalities in any of these patients. mpMRI detected local suspicious lesions in 75% (16/22) of patients. Thirteen of these patients underwent fusion biopsies, confirming local recurrence in 8 patients (62%). MpMRI failed to detect cancer in two patients, among 6 with negative mpMRI; as they ultimately underwent salvage prostatectomy based on prior outside biopsies. MpMRI also detected incidental bladder cancer in two patients.

**Conclusions:** MpMRI accurately detects the majority of the local recurrences. The utilization of mpMRI and mpMRI/US fusion platform should be considered for patients with biochemical recurrence.
Treatment of Adolescent Interstitial Cystitis
Jessica Hamnett, Sean Corbett, Tracey Krupski
University of Virginia, Charlottesville, VA

Introduction: Interstitial cystitis (IC) is a syndrome characterized by urinary urgency and frequency, dysuria, nocturia, and suprapubic pain. Patients are often difficult to treat due to the phenotypic heterogeneity of the disease and the limited efficacy of the treatment options. Treatment regimens must be individualized and tailored through a process of trial and error. We sought to determine if adolescent symptoms respond to adult treatment regimens.

Materials & Methods: A systemic chart review of adolescent patients diagnosed with IC was performed to analyze successful treatment regimens. Patients were included if they presented with pelvic pain symptoms prior to the age of 18 and diagnostic workup discerned no discrete etiology.

Results: Four patients met criteria and were analyzed based on their treatment regimens. All four patients were initially treated with behavioral modifications, stress management, amitriptyline, and an anticholinergic with failure to control symptoms in all. Two patients required the addition of bladder instillations of heparin, bacitracin, and lidocaine in order to alleviate their symptoms. One patient responded to the addition of diazepam vaginal suppositories, while the patient with the most severe symptoms and cystoscopic evidence of Hunner’s ulcers required the addition of pentosan polysulfate sodium, prednisone, and a topical anticholinergic gel.

Conclusions: IC remains a challenging syndrome to diagnose and manage in adolescents. This chart review demonstrates that one management strategy is unlikely to suffice. Practitioners must have the knowledge to diagnosis IC in an adolescent, and the perseverance to continue trying different treatment options until a successful option is found.

Ureteroureterostomy in Children with Duplicated Systems Using the Robotic-Assisted Laparoscopic Approach
Amy Burns1, George Bailey1, Craig Peters1
1Children’s National, Washington, DC; 2University of Virginia, Charlottesville, VA

Introduction: We report on the safety, efficacy and outcomes of robotic-assisted laparoscopic ureteroureterostomy (RUU) in children.

Materials & Methods: A retrospective chart review was employed for all patients with duplicated systems undergoing RUU performed by a single surgeon from June 2006-March 2009 for treatment of ureterocoele (1) or ectopic ureter (9).

Results: Ten female children underwent RUU. Surgery was performed on 11 renal units (5 right; 4 left; 1 simultaneous bilateral). Patients presented with urinary tract infection (UTI) (2), incontinence (3), UTI and incontinence (3), ureterocoele (1), and prenatally detected hydronephrosis (1). Mean age at surgery was 4.4 years (range 7.6 months-16.6 years). Mean weight was 20.7 kg (7.6-70.2 kg). All patients underwent a three-port, transperitoneal, upper-to-lower pole RUU using a spatulated, watertight, end-to-side anastamosis. The anastomosis was proximal in 9 patients and distal in 1 patient who underwent bilateral procedures. Mean operative time was 153 minutes (109-196 minutes) from incision to port closure. No patient required open conversion. There were no intraoperative complications. Double J stents were placed antegrade in 1 patient and retrograde in 9 patients. Mean length of stay was 1.9 days (1.4-3.5 days). Mean length of follow-up was 22.8 months (range 1.0-51.7 months). In 6 patients with preoperative hydronephrosis, 5 had complete resolution and 1 improved. All patients had complete resolution of their hydronephrosis.

Conclusions: RUU is safe and effective and no patient has required further operative intervention. Excellent results were achieved in all children in terms of symptom resolution and improved imaging results.

Factors Influencing the Decision to Pursue a Pediatric Urology Fellowship: A Survey of Urology Residents
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1Children’s National, Washington, DC; 2Unaffiliated, Arlington, DC; 3University of Iowa, Iowa City, IA; 4University of Virginia, Charlottesville, VA

Introduction: Among urology residents who were likely to pursue a fellowship (F), we sought to elucidate factors that make pediatric urology (PU) less appealing.

Materials & Methods: During the 2010 and 2011 AUA Basic Sciences, residents completed a 90-item survey querying subspecialty interest and private practice versus academic medicine (AM) or F.

Results: 364 urology residents attended, and 240 participated. 102 (43%) indicated they “were more likely than not to pursue AM or F,” 66 (66%) were male, 36 (35%) were female, and most were in year 3 (46%) or 2 (36%) of training. When rating interest in 6 subspecialties, respondents ranked PU 4th. Of those who rated their subspecialty interest, 20 (19%) were “very” and 20 (19%) were “moderately” interested in PU. For those with “no,” “minimal” or “moderate” interest in PU, the 3 highest rated factors of 13 making PU less likely were preference for adult urology, disinterest in interacting with parents, and lack of desire to do a dedicated research year. AM/F bound residents rated 11 factors influencing F pursuit from 0-to-3 3-strong influence. For those with no/minimal interest in PU (n=62), intellectual stimulation (mean=2.13), lifestyle (1.77), and mentor encouragement (1.63) were most influential. For moderate/strong interest in PU, intellectual stimulation (2.21) and mentor encouragement (2.15) were most influential.

Conclusions: Among respondents, PU is a less appealing subspecialty. Preference for adult urology and disinterest in working with parents were the highest rated reasons making PU less attractive. Mentor encouragement may be an important factor in increasing PU interest.

Modified Sleeve Technique for Second Stage Hypospadias Repair
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Introduction: Second stage hypospadias repair has historically been done using the Thiersch Duplay technique. Issues with high complication rates and proper placement of the neourethra into the distal most glans have prompted us to develop a novel procedure incorporating the principle of the sleeve technique.

Materials & Methods: Ten boys with proximal hypospadias ages 9 months to 22 months (mean 15.9 months) underwent a second stage modified sleeve procedure as an outpatient. All patients received preoperative depotestosterone intramuscularly and were stented postoperatively for 7 days. Instead of tubularizing the glans as is done with the Thiersch Duplay, the ventral shaft skin was found to be sufficient to develop the neourethra above the level of the distal glans. The neourethra was mobilized proximally for enough distance to easily allow for proper length. The glans was split in the midline and spongiosum tissue cored out to allow placement of the neourethral meatus deep within the glans at the orthotopic location. A secondary vascularized layer was placed over the neourethra in each instance.

Results: Follow-up ranged from 2 weeks to 68 months (mean 28.5 months). One patient was lost to follow-up after 6 months and one patient did not return after the two week visit but the primary care giver saw no complications at 6 years. Complications included 1 fistula and 1 urethral diverticulum, both of which were repaired successfully.

Conclusions: Preliminary data shows the modified sleeve procedure as a promising adjunct to second stage hypospadias repair with an acceptable complication rate.
Length-dependent Regulation of Detrusor Smooth Muscle Myosin Light Chain Phosphorylation and Tone During Bladder Filling

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Introduction: Strips of mammalian bladder display low amplitude, rhythmic contractions, independent of nervous input, and those isolated from patients with OAB display enhanced rhythmic contraction. Most stretch-sensitive afferent nerves within the bladder behave as tension receptors in-series with detrusor smooth muscle (DSM), and afferents display burst activity associated with rhythmic contractions, independent of nervous input, and those isolated from patients with OAB display enhanced rhythmic contraction. Previous studies have suggested that crush during ATV rollovers or striking the handlebars place these patients at highest risk for renal injury.

Results: Stretching strips from 0.8-fold Lref to 1.2-fold Lref increased urothelial tone by ~2.5-fold. The level of MLCp at 1.2-fold Lref was ~5-fold that at 0.8-fold Lref, but when stretched further to 1.3-fold Lref then released back to 1.2-fold Lref, MLCp was only ~3-fold that at 0.8-fold Lref.

Conclusions: These data indicate that length regulates the biochemical activation of DSM, and the degree of tone during blader filling. Pathological increases in the sensitivity of this mechanism may accentuate bladder tone during filling, suggesting a relationship to OAB.

Genomic Study of Prostate Cancer Disparities between African American and Caucasian American Populations

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Introduction: Research demonstrates Prostate Cancer (PCa) health disparities in which the African American (AA) population exhibits higher incidence and mortality rates compared to Caucasian Americans (CA). Evidence suggests that widespread microRNA deregulation may play crucial role in cancer development, yet the relationship between population-specific microRNAs and PCa disparities remains largely unknown.

Materials & Methods: We applied a systems biology approach by combining microRNA expression profiling, mRNA profiling and microRNA target searches to characterize the genetic portraits of PCa in AA and CA populations. Affymetrix human exom ST1.0 arrays and Agilent human miRNA V2 arrays were used to analyze the global mRNA and microRNA expression profiles in AA and CA prostate tissue samples.

Results: A 4-way statistical analysis (t-test with 10% FDR; AA normal vs. CA normal, AA cancer vs. CA cancer, AA cancer vs. AA normal, and CA cancer vs. CA normal) has identified 275 to 987 genes with differential expression. Pathway analysis revealed that the mis-regulated testosterone metabolic pathway, activated inflammatory response and up-regulated oncogenic pathways are associated with the biological differences when comparing AA normal to CA normal, AA cancer to CA cancer and AA cancer to AA normal. A microRNA/mRNA-regulated network, generated by integrating microRNA-targeted mRNAAs and miRNA profiling data, suggested that the population-specific microRNAs may contribute to differential cell-cycle control, protein synthesis and cell apoptosis in AA and CA prostate cancers.

Conclusions: Our study demonstrates that differential gene-network regulation, driven by the population-specific mRNA and microRNA expression, may explain some biological differences between AA and CA prostate cancers.
Genome-wide Effect of Prostate Cancer on Dendritic Cells in the Murine Model

Introduction: The apoptotic and suppressive effects of prostate cancer on immune-competent cells are well known. Gene arrays were performed to evaluate genome-wide effects on dendritic cells (DC) in a murine prostate cancer model.

Materials & Methods: Dendritic cells were compared to DC incubated with RM-1 murine prostate cancer cells. Affymetrix Mouse 430 v2 Array was used for analysis containing 45000 probes. Quantitative polymerase chain reaction (qPCR) was performed to validate some results. RNAs from murine prostate cancer and normal murine prostate were also compared.

Results: There was a significant increase in cell death inducing genes in DC incubated with prostate cancer cells and decreased expression of genes encoding for several interleukins and interferons. Change in the expression of endothelin axis was noted in DC. When used qPCR to further evaluate the condition of the endothelin axis in DC under prostate cancer influence. There was a significant decrease in the expression of ET-1 (4.50±1.33 fold) and ETA receptor (2.67±0.13), which are involved in DC survival and pro-inflammatory function. There was also an increase in the expression of ETB receptor (3.42±0.14) involved in DC apoptosis. Comparison of RNAs derived from murine prostate cancer and murine prostate demonstrated decreased expression of apoptotic genes by prostate tumor.

Conclusions: Prostate cancer induces a wide variety of changes in DC including decreased expression of genes responsible for pro-inflammatory function and survival. Alterations of the endothelin axis may be one reason why tumor escapes immune monitoring.

Contrast Enhanced Transrectal Ultrasound (CE-TRUS) Prostate Cancer Detection: Comparison to Whole Mount Prostatectomy Specimens

Introduction: To determine the accuracy of prostate cancer (CaP) detection using CE-TRUS targeted biopsies.

Materials & Methods: Comparison between CE-TRUS and whole mount prostatectomy specimens.

Results: CE-TRUS had a higher detection rate of intensive lesions of interest, 80% were positive on MRI targeted biopsy. In addition 33% of patients had disease detected on MRI targeted biopsy, majority of patients having multifocal disease. At the distal apical side, 25 (66%) did not. Of those patients 21 (55%) had undergone a median number of 2 prior negative biopsies. Twenty-two patients (58%) were positive on biopsy for CaP. For the surveillance protocols, 25 (66%) did not. Of those patients 21 (55%) had undergone a median number of 2 prior negative biopsies. Twenty-two patients (58%) were positive on biopsy for CaP.

Conclusions: CE-TRUS demonstrates greater diagnostic accuracy than baseline imaging and how the geometric distribution of biopsy cores may affect the physician's ability to target the gland according to the biopsy schema. However, it is unknown how accurately the freehand, TRUS-guided biopsy cores are placed within the prostate and how the geometric distribution of biopsy cores may affect the prostate cancer (PCa) detection rate.

Materials & Methods: To determine the geometric distribution of cores, we developed a biopsy simulation system with pelvic mockups and an optical tracking system. Mockups were biopsied in a freehand manner by five urologists and by our TRUS Robot that can support and move the TRUS probe. We compared the 1) biopsy targeting error; 2) accuracy and precision of repeat biopsies; and 3) estimated “significant” PCa (≥0.5cm3) detection rate using a probability-based model.

Results: The urologists biopsied cores in clustered patterns and under-sampled a significant portion of the prostate. The robot closely followed the predefined biopsy schema. The mean targeting error of the urologists and the robot was 9.0 mm and 1.0 mm, respectively. Robot assistance reduced repeat biopsy errors significantly with improved accuracy and precision. The mean “significant” PCa detection rates by the urologists and the robot were 36% and 43%, respectively (p<0.0001).

Conclusions: Systematic biopsy with freehand TRUS guidance does not closely follow the sextant schema and may result in suboptimal sampling and cancer detection. Repeat freehand biopsy of the same target is challenging. Robot-assistance can potentially improve targeting, precision and accuracy. Optimized biopsy schemas are needed to further improve PCa detection rates.

Very Distal Apical Prostate Cancer: Identification on Multiparametric MRI at 3 Tesla

Introduction: Apical prostate cancer (CaP) can be difficult to detect in TRUS biopsy. Therefore it may be missed before treatments such as HIFU or surgery. We describe an undescibed “very distal” apical CaP at multiparametric MRI (mpMRI).

Materials & Methods: From January 2011 to December 2012, 210 patients underwent mpMRI with endorectal coil and previously described MRI/ultrasound image-fused, directed TRUS biopsies. Patients also underwent standard TRUS biopsies. Inclusion criteria required at least one distal apical prostate lesion on mpMRI and targeted for biopsy as seen in Figure 1.

Results: Thirty-eight men (median age & PSA 62, 7.8ng/dl) were identified having distal apical CaP on mpMRI. Thirty patients (94%) had prior diagnosis of cancer and on active surveillance protocols. Twenty-five (80%) were positive on biopsy for CaP. For positive patients, 17 (77%) were positive on TRUS biopsies and 21 (95%) were positive on MRI targeted biopsies, majority of patients having multifocal disease. At the distal apical lesions of interest, 80% were positive on MRI targeted biopsy. In addition 33% of patients were upgraded on MRI targeted biopsy at the distal lesion.

Conclusions: Very distal apical CaP can be accurately detected and sampled with mpMRI and subsequent MRI-US fusion biopsy. This may aid decision making for therapeutic modalities.
Outcomes and Significance of Positive Periprostatic Lymph Nodes at the Time of Radical Prostatectomy
Jack W. Lambert, III, Greg Chesnut, Bethany Barone Gibbs, Stephen Riggs, Robert Given, Raymond Lance
EVMS, Norfolk, VA

Introduction: Some literature suggests that a positive periprostatic (PP) lymph node metastasis is associated with increased risk of disease recurrence and mortality. However, few studies have assessed the clinical significance of positive PP lymph nodes identified at surgery for prostate cancer. Although local recurrence is associated with regional lymph node involvement, recent data suggest that even patients with negative pelvic lymph nodes may develop recurrence due to occult PP involvement.

Materials & Methods: We performed a retrospective chart review of 1125 patients who underwent radical prostatectomy since 2007, all of which had positive PP nodes sent as a separate pathologic specimen. Of these 965 had sufficient data for inclusion.

Results: Of the 965 patients, 7 (0.8%) had isolated PP lymph node metastasis and 5 had biochemical recurrence (BCR) requiring adjuvant therapy. Overall, 59 (6.2%) patients had a lymph node found within the anterior fat pad. Of the patients with a positive PP node, 62% had Gleason disease (p = 0.001) and 67% had a positive surgical margin (p = 0.005).

Conclusions: Our data suggests similar BCR-free survival amongst patients who have positive PP lymph nodes when compared to those with positive PLNs. Thus, we should consider positive PP nodes as a pN1 stage and these patients would likely benefit from adjuvant therapy.

Shear-Wave Elastography Detection of Prostate Cancer as Compared to Conventional Transrectal Ultrasound
Ethan J. Halpern, Flemming Forsberg, Ruth C. Birbeck, Peter A. McCue, Leonard G. Gomella, Edouard J. Trabulsi
Thomas Jefferson University, Philadelphia, PA; Kimmel Cancer Center, Thomas Jefferson University, Philadelphia, PA

Introduction: To compare shear-wave elastography with conventional biopsy for prostate cancer detection.

Materials & Methods: Twenty-three patients referred for prostate biopsy were evaluated with conventional gray-scale, color and power Doppler as well as shear-wave elastography using an end-fire probe. Quantitative measurements of tissue elasticity were recorded in each sextant of the prostate. Six or less targeted core biopsy specimens were taken from areas of abnormal gray scale, Doppler or elastography, as well as 12 systematic biopsy cores from each patient. Gray scale and Doppler findings were graded on a 1-5 scale representing normal-abnormal.

Results: Prostate cancer was detected in 8/23 patients (35%) and 16/138 sextants (12%). The AUC (Az) for prostate cancer was 0.56 for grayscale, 0.57 for color Doppler, 0.58 for power Doppler and 0.64 for elastography (test for inequality - not significant, p=0.2). Using a threshold of 25 kPa, elastography detected 13/16 (81%) cancerous sextants (specificity = 60/122 (49%)). With a higher threshold (30 kPa), sensitivity drops to 12/16 (75%) (specificity = 73/122 (60%)). On a per-patient basis, a threshold of 25 kPa detected 7/8 (88%) prostate cancers, while a threshold of 30 kPa detected 6/8 (75%).

Conclusions: Shear-wave elastography is a promising technology for detection of prostate cancer. The diagnostic accuracy of elastography was greater than that of conventional grayscale and Doppler imaging, but the sample size was insufficient to demonstrate a significant difference.
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P3

Robotic Assisted Laparoscopic Simple Prostatectomy in Men with Bladder Outlet Obstruction: Improving Perioperative Outcomes.

Anup A. Vora, Sameer Mittal, Andrew Harbin, Hannah Nissim, Gaurav Bandi, Reza Ghasemian, Mohan Verghese, Jonathan Hwang
Georgetown University - Washington Hospital Center, Washington, DC

Introduction: Robotic assisted laparoscopic simple prostatectomy (RALSP) is a feasible option in men with markedly enlarged prostates and urinary obstruction. Since January 2011, we have modified our surgical method in hope of further improving perioperative outcomes related to RALSP. Herein, we report our initial experience utilizing a novel urinary reconstruction technique.

Materials & Methods: 9 patients underwent modified suprapubic RALSP for symptomatic BPH in 2011. All but one patient were in urinary retention preoperatively. Upon removal of the obstructing prostate adenomas, a circumferential anastomosis was completed by advancing and approximating the bladder neck to the prostate urethral stump with 8 to 10 interrupted 2-0 vicryl sutures, similar to that of the urethral-vesical anastomosis during radical prostatectomy. 6 patients who underwent a standard RALSP with bladder trigonization only between August 2009 and December 2010 served as our control.

Results: The two groups were similar in regard to age, BMI, preoperative prostate size on ultrasound and comorbidities. None of the patients required transfusion, suprapubic catheter insertion or continuous bladder irrigation peri-operatively. Mean operative time, pathologic specimen weight and catheterization time were comparable between the 2 groups but the average blood loss (100cc vs 330cc, p < 0.05) and hospital stay (1.4 days vs 3.6 days, p < 0.05) were significantly shorter in men who underwent modified RALSP.

Conclusions: Our early experience with the modified RALSP technique (a circumferential anastomosis between the bladder neck and prostate urethra) has been associated with less intra-operative blood loss and shorter hospital stay due to early resolution of gross hematuria.

P4

Incidence of Postembolization Syndrome after Renal Angioplasty: A Single Institution Experience over 4 years

Anup A. Vora, John Nolan, Sathya Ram, Lee Richter, Chris Yingling, Jonathan Hwang, Reza Ghasemian, Mohan Verghese
Georgetown University - Washington Hospital Center, Washington, DC

Introduction: Renal angioplasty (RAI) has been used for various indications in the management of renal tumors including palliation, controlling renal hemorrhage/truma, and facilitating radical nephrectomy. A common impediment to embolization is the development of postembolization syndrome (PES) which has a reported incidence of 30-90%. We report our experience with RAI as a safe palliative and adjunctive procedure over 4 years.

Materials & Methods: From 2008 to 2011, 113 patients underwent RAI at our institution for palliative or adjunctive therapy by an interventional radiologists. Embolization of renal artery was performed by subsegmental injection of polyvinyl alcohol particles with support of gelosia.

Results: All 113 patients underwent successful renal embolization. 48 patients underwent embolization for preoperative adjunctive therapy, 24 patients for palliation of renal mass, 36 patients for trauma/hemorrhage, and 5 patients for renal artery aneurysm. (Table 1) Incidence of PES only occurred in 13 (11.5%) patients. No major complications (Clavian Grade III or above) occurred.

Conclusions: In our experience, renal angioplasty is a safe and reliable procedure for palliation of renal masses, adjunctive procedure for radical nephrectomy, and for management of trauma/hemorrhage. Postembolization syndrome occurred in a relatively few amount of patients with no major complications and should not impede clinical consideration of this procedure.

Table 1. Patient Characteristics (n=113)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean (SD)</th>
</tr>
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<tbody>
<tr>
<td>Age (yrs)</td>
<td>59.1 (12.8)</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>29.6 (5.6)</td>
</tr>
<tr>
<td>Sex (M/F)</td>
<td>61/52</td>
</tr>
<tr>
<td>Clinical Indication</td>
<td>Renal Mass (n=24)</td>
</tr>
<tr>
<td></td>
<td>12.4 (4.6)</td>
</tr>
<tr>
<td>Renal Blood Flow</td>
<td>0.4 (0.2)</td>
</tr>
<tr>
<td>Operative Time</td>
<td>41.6 (22.4)</td>
</tr>
<tr>
<td>Pathological Specimen Weight</td>
<td>500.7 (47.9)</td>
</tr>
<tr>
<td>Postembolization Syndrome</td>
<td>3.8 (2.8)</td>
</tr>
<tr>
<td>Postembolization Syndrome Incidence</td>
<td>11.5%</td>
</tr>
</tbody>
</table>

P5

MRI Assessment of Whole Prostate and Zonal Specific Prostate Volumes: Clinical Correlation with Urinary and Sexual Function

Adumis Vourganti1, Baris Turkbey1, Robert Huang1, Pingkun Yang2, Dagane Daar1, Yolanda McKinney1, Vijay Shah1, Peter Cheyk1, Peter Pinto1
1NIH/National Cancer Institute, Bethesda, MD; 2Center for OptiXtal Imagery Analysis and Learning (OPTIMAL), Shanzu, China; 3VirtualScopics, Rochester, NY

Introduction: Technical advancements in prostate MRI have allowed accurate assessment of whole prostate (WP) and zonal specific volumes (central zone (CZ), peripheral zone (PZ)). We examined associations between volumes and urinary and sexual outcomes.

Materials & Methods: This IRB approved study included 503 men (mean age 60.5y; mean PSA 8.2ng/ml) who had prostate MRI. WP and CZ were contoured on axial T2W images using a semi-automated segmentation tool (see figure). WP, CZ, and PZ volumes were calculated using voxel analysis. Volumes were correlated with patient age, PSA, IPSS, and SHIM.

Results: Age was positively correlated with WP and CZ (p < 0.05), but not PZ. PSA was positively correlated with WP, CZ, and PZ (p < 0.05). IPSS was correlated with WP and CZ (p < 0.05), but not PZ. SHIM was correlated with WP and CZ (p < 0.05), but not PZ. A multivariable model including age, PSA, race, WP and CZ was used to predict IPSS and SHIM. Only age and CZ remained significant predictors of IPSS (p < 0.05). Only age remained a significant predictor of SHIM (p < 0.05). Those with age-adjusted CZ volumes in the tenth decile had significantly worse IPSS outcomes than those in the first decile (IPSS 12.91/8 vs 6.56/2, p < 0.05).

Conclusions: MRI has allowed quantitative assessment of zonal prostate anatomy. As expected, urinary function was principally affected by the central gland volume. Sexual function was not related to whole prostate or zonal volumes.
Radical cystectomy (RC) and urinary diversion is a complex procedure with a significant complication and perioperative mortality rate. It is a common and costly event. The objective of this study was to evaluate the readmission rate in a large university hospital series and assess the relationship of readmission to patient and pathologic characteristics as well as the impact of readmission on long term outcome.

Materials & Methods: A prospectively maintained database of BC patients was evaluated from 1996 to 2007 for complications and readmissions over a 90 day perioperative period. Log rank test and multivariable regression analysis was employed to evaluate the nature of complications and readmission s and patient survival.

Results: 368 patients were evaluated. There were 83 (22%) patient readmissions due to multiple issues but principally dehydration/failure to thrive and urosepsis (34%). There was no association between age, gender, race, or final pathology with readmission. There was no relationship between readmission and cancer specific survival. A readmission within 30 days was associated with all cause mortality OR = 0.28 95% CI [0.023-0.98]. Readmission between 31 and 60 days was associated with all-cause mortality R= 4.8 95%CI 1.02-22.5.

Conclusions: Readmission after radical cystectomy is a relatively frequent event occurring across many patient parameters. It is also associated with all cause mortality. Strategies to decrease readmissions for common causes may aid in decreasing patient discomfort and costs. The impact of readmission on all cause mortality requires further investigation but may be related to innate frailty.

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Outcomes of Minimally Invasive Radical Prostatectomy in Patients with Prior Abdominal or Pelvic Surgery

Adam C. Reese, Lynda Z. Mettee, Christian P Pavlovich
Johns Hopkins Brady Urological Institute, Baltimore, MD

Introduction: Patients with prior abdominal or pelvic surgery may be discouraged from undergoing minimally-invasive radical prostatectomy (MIRP) due to concern for intraoperative technical difficulties. We compared outcomes following MIRP in patients with prior surgery versus those without.

Materials & Methods: We analyzed one surgeon’s MIRP database. Patients with history of prior abdomino-pelvic surgery were included in the “prior surgery” group; all others were included in the “no surgery” group. Disease characteristics and outcomes were compared between groups using t-test and chi-squared analysis.

Results: Of 1023 men, 279 (27%) had “prior surgery” compared to 744 (73%) with no surgical history. Extraprostatic MIRP was performed less frequently in patients with prior surgery compared to those without (86% vs. 79%, p = 0.02). Only 61% of patients with prior bilateral inguinal hernia repair underwent an extraperitoneal approach, compared to 82% of men with other surgeries (p = 0.02). The Table compares pre- and post-operative characteristics between the “prior surgery” and “no surgery” groups. In all outcomes, no significant differences were observed.

Conclusions: Our data demonstrate the feasibility and safety of MIRP in men with a history of prior abdomino-pelvic surgery. While extraperitoneal MIRP may be more difficult in such patients, particularly in those with prior inguinal surgery, the ability to offer both extraperitoneal and transperitoneal MIRP allows for a safe approach in men with prior abdomino-pelvic disease.

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Contemporary Management of Small Renal Masses: Does Practice Environment Matter?

Paul H. Smith, III, Vanessa Elliott, Jay D. Raman
Penn State Hershey Medical Center, Hershey, PA

Introduction: A survey querying practice type (private vs. academic/academic affiliation) was distributed to urologists of the Mid-Atlantic section of the American Urological Association. The survey queried management strategies for three case scenarios (exophytic 2.5cm SRM in a healthy 55 year old, healthy 75 year old, and comorbid 75 year old patient).

Materials & Methods: Of the 287 responding urologists who managed kidney cancer, 92 (33%) practiced in an academic environment, and 189 (67%) were private practitioners. For SRMs in a healthy 55 year old, private practitioners were more likely to perform a partial nephrectomy (6% vs. 0%, p=0.03) and less likely perform a radical nephrectomy (79% vs. 91%, p=0.01) than academic practitioners. Increased use of thermal ablative and observational strategies was noted in older patients with SRMs. Specifically careful consideration of a SRM in our 75 year old patients (healthy or comorbid), private practitioners were more likely to offer thermal ablation when compared to academic urologists (41% vs. 32%, p=0.05).

Conclusions: Over 95% of urologists espouse renal preservation, although private practitioners are still much more likely to offer radical nephrectomy (and less likely partial nephrectomy) in younger patients. While surveillance is an increasingly utilized treatment option for SRMs in the elderly patient, private practice urologists are more likely to recommend active treatment via thermal ablation when compared to academic counterparts.
**Sacral Neuromodulation Implantable Pulse Generator Failures: Impact of Symptomatology and Programming Settings on Battery Life**

Robert Jansen, Chad Hubsher, Stanley Zaslau
West Virginia University, Morgantown, WV

**Introduction:** Sacral neuromodulation is an FDA-approved treatment for refractory urinary frequency/urgency, urge urinary incontinence, nonobstructive urinary retention and fecal incontinence. At our institution, 289 patients have undergone InterStim® placement with 22 requiring battery replacement due to failure. According to the manufacturer (Medtronic, Inc), the InterStim® implantable pulse generator (IPG) should function for 2-4 years. To our knowledge, no data exists regarding IPG life as it pertains to indication for implantation, program settings and the type of stimulation.

**Materials & Methods:** We retrospectively reviewed the 22 battery failures to determine the length of time between implantation and revision due to battery failure, as well as the indication of implantation and polarity settings used.

**Results:** 22/289 patients underwent IPG replacement due to battery failure. 20 of the patients were female (average age 49.5yrs) and 2 were male (average age 41.5yrs). 18 patients had urinary frequency-urgency and/or urge incontinence, while 4 patients had nonobstructive urinary retention. Voltage requirements and time to reimplantation based on symptomatology and settings are listed in Table 1.

**Conclusions:** Sacral neuromodulation patients should expect to undergo IPG battery replacement in 4-5 years. Nonobstructive retention patients may last longer due to a lower voltage requirement to achieve benefit. Bipolar settings, despite high voltage in our group, may provide longer time to reimplantation as well.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>VOLTAGE (v)</th>
<th>TIME TO REIMPLANTATION (mts.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency-urgency/urge incontinence</td>
<td>2.66</td>
<td>33.16</td>
</tr>
<tr>
<td>Nonobstructive urinary retention</td>
<td>2.26</td>
<td>99.75</td>
</tr>
<tr>
<td>Unipolar setting</td>
<td>1.81</td>
<td>34.70</td>
</tr>
<tr>
<td>Bipolar setting</td>
<td>2.54</td>
<td>62.00</td>
</tr>
</tbody>
</table>

**Zero-ischemia: Better Preservation of Kidney Function with Equivalent Oncologic Outcome?**

Matthew Steele1, George C. Bailey, Mark Conaway, Tracey L. Krupski
University of Virginia, Charlottesville, VA

**Introduction:** The type of ischemia and duration applied are considered the primary determinants of renal function following partial nephrectomy. Data from solitary kidney partial nephrectomies suggest preexisting function and volume of tissue excised may be equally important. Widespread adoption of this no-clamp technique has not occurred due to concerns over field visualization with resultant margin status. We sought to define the utility of no clamp partial nephrectomy in preserving GFR while maintaining negative margins.

**Materials & Methods:** An IRB approved retrospective chart review was performed from 2004-2011 for all patients undergoing partial nephrectomy. Kruskal-wallis tests were performed to evaluate changes in creatinine and eGFR by clamp usage. Regression analysis was used to compare surgical margins and eGFR change adjusting for patient and tumor characteristics.

**Results:** Partial nephrectomies were performed on 116 patients with 19 (17%) being no clamp and 97 (83%) clamped. The negative margin rate for the no-clamp technique was 89% compared to 79% for the clamped. There was no association between margin status and clamp technique when adjusted for operative time, pre-operative eGFR, and maximal tumor diameter (p=0.67). The median percent decline of GFR for the no-clamp technique was 8.8% and 18.2% for the clamped technique. When adjusted for preoperative creatinine, age, gender and operative duration, the association between clamp technique and post operative eGFR was significant (p=0.03).

**Conclusions:** Our experience with no-clamp partial nephrectomy suggests equivalent oncologic outcomes with better preservation of renal function. Further definition of the role of no-clamp partial nephrectomy is needed.

**Outpatient Percutaneous Nephrolithotomy: A Comparative Analysis with Laparoscopic Cholecystectomy**

Joel E. Abbott1, Eric Simpson2, Samuel Deem2, Julio G. Davalos3
1St John Providence Health, Madison Heights, MI; 2Charleston Area Medical Center, Charleston, WV; 3Chesapeake Urology Associates, Baltimore, MD

**Introduction:** The purpose of this study is to demonstrate the safety and efficacy of percutaneous nephrolithotomy (PNL) in an outpatient setting when treating individual stones of less than less than 20 mm in a select patient cohort. The evolution of laparoscopic cholecystectomy (LC) to an outpatient setting is used as a comparison to demonstrate that PNL is a viable outpatient procedure.

**Materials & Methods:** A 30 month retrospective review of patients who underwent PNL in a single institution by the same surgeon was performed. Using specific criteria it was determined that a total of 61 patients were candidates for outpatient PNL. Comparisons were made on outcomes between our select group of patients and previously published outpatient LC data using Clavien-Dindo grading.

**Results:** Results are summarized in Table 1. Similar complication and admission rates are noted as compared to LC. Additionally cost analysis demonstrates an average savings of approximately 30% when hospitalization was not required. Outpatient PNL procedure was successfully performed on 100% of patients who met specific criteria.

**Conclusions:** When specific criteria are met, outpatient PNL is safe, effective, and can produce significant savings to the health care industry when treating stones <20mm in size. As the advance of LC has pioneered the way for outpatient surgical procedures, prospective outpatient PNL studies will solidify the era of “same day PNL.”

**Comparative Analysis: Percutaneous Nephrolithotomy and Laparoscopic Cholecystectomy**

<table>
<thead>
<tr>
<th>Clavien-Dindo</th>
<th>Lap Chole</th>
<th>PNL</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>10.5%</td>
<td>11.8%</td>
</tr>
<tr>
<td>II</td>
<td>3.5%</td>
<td>3.28%</td>
</tr>
<tr>
<td>III/IV</td>
<td>0.8%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Unexpected Admission</td>
<td>34.2%</td>
<td>35.29%</td>
</tr>
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</table>
Results of Non-contrast Computerized Tomography in Patients Presenting with Flank Pain in a Community Urology Practice

Eugene Kramolsky, II1, Luke Gergoudis2, Matthew Bassignani3, Nada L. Wood1
1Virginia Urology, Richmond, VA; 2Washington and Lee University, Lexington, VA

Introduction: Patients commonly present to urologists for evaluation of non-acute flank pain. The purpose of this study is to determine the non-contrast CT scan (NCT) findings in these patients.

Materials & Methods: Electronic medical records of 859 patients with NCT were abstracted finding 613 patients presenting with flank pain. Records of these 613 patients were reviewed by an investigator not involved in patient care. Associated findings (hematuria, nausea and vomiting, and stone history) plus age, race and sex were recorded. NCT findings were correlated with patient symptoms.

Results: NCT findings in the flank pain group showed 175 (28.5%) had no stones and 438 (71.5%) had renal or ureteral stones. Only 33 patients had flank pain as their sole symptoms and 6% (2) of these patients had a stone on NCT. Thirty patients (5%) with flank pain had non-stone findings on NCT. No patients with non-stone findings on NCT required emergent medical management.

Conclusions: Diagnosis of urinary calculi on NCT in patients presenting to a community urologist with non-emergent flank pain is influenced by the presence of associated findings (hematuria, nausea or vomiting or a history of stones). NCT community urologist with non-emergent flank pain is influenced by the presence of symptoms in 27% (164) of patients and 86% (141) of these patients had a stone as their sole symptoms and 6% (2) of these patients had ureteral calculi on NCT. Flank pain, nausea or vomiting and previous stone history were the most common group of symptoms in 27% (164) of patients and 86% (141) of these patients had a stone on NCT. Thirty patients (5%) with flank pain had non-stone findings on NCT. No patients with non-stone findings on NCT required emergent medical management.

Overall Survival Benefit with Sipuleucel−T by Baseline PSA: Exploratory Analysis from the IMPACT Trial

Paul Schellhammer1, Gerald Chodak2, James B. Whitmore3, Robert B. Simms3, Phillip W. Kantoff4
1Eastern Virginia Medical School/Urology of Virginia, Norfolk, VA; 2Louis A. Weiss Memorial Hospital, Chicago, IL; 3Dendreon, Seattle, WA; 4Dana-Farber Cancer Institute of Harvard Medical School, Boston, MA

Introduction: In the IMPACT trial, sipuleucel−T reduced risk of death by 22.3% (P=0.032). A predefined subgroup analysis for baseline prognostic variables showed homogenous treatment effects consistently favoring sipuleucel−T. In patients with baseline PSA below vs above the median, there was a trend toward greater treatment effect (HR=0.685 vs. 0.866). In this exploratory analysis, we further sub-divided baseline PSA into quartiles to evaluate potential treatment effect patterns.

Materials & Methods: All randomized IMPACT patients (n=512) were categorized by baseline PSA quartile, ECOG, and other prognostic variables (LDH, PAP, ALP in bone-only disease, Hgb). Median overall survival (OS) and hazard ratio (HR) were estimated using Kaplan–Meier and Cox models, respectively.

Results: Increasing baseline PSA quartile was associated with markers of advanced disease. Although there were no absolute differences in terms of overall survival by the subgroup, there were trends in patients with lower baseline PSA. Some benefit was suggested for other prognostic variables, with the exception of baseline Hgb.

Conclusions: This analysis supports a consistent OS benefit with sipuleucel−T across PSA quartiles, and suggests that patients with less advanced disease may benefit more from treatment with sipuleucel−T.

<table>
<thead>
<tr>
<th>Baseline PSA (ng/mL)</th>
<th>Median OS, mos</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤22.1</td>
<td>&gt;22.1</td>
</tr>
<tr>
<td>(n=128)</td>
<td>(n=128)</td>
</tr>
<tr>
<td>Sipuleucel−T</td>
<td>44.3</td>
</tr>
<tr>
<td>Control</td>
<td>28.3</td>
</tr>
<tr>
<td>Difference</td>
<td>13.0</td>
</tr>
<tr>
<td>HR (95% CI)</td>
<td>(0.51, 0.85)</td>
</tr>
</tbody>
</table>

An Alternative Technique for Bulbar Urethral Stricture Repair: Buccal Mucosal Graft in a Bed of Bulbouspongous Muscle

Ross M. Decter
M. S. Hershey Medical Center of the Pennsylvania State University, Hershey, PA

Introduction: The use of a buccal mucosal graft (BMG) for bulbar urethral strictures requiring urethral augmentation is well accepted. Controversy exists over whether dorsal or ventral graft positioning is superior. Most experts agree that skeletal muscle provides an ideal bed for graft placement. We sought to combine the relative ease of ventral BMG placement with the expectation of excellent graft survival in muscle by affixing the BMG to the bulbouspongous muscle (BSM).

Materials & Methods: 8 patients undergoing bulbar stricture repair had a BMG quilted into the bed of BSM as an element of their repair. The BMGs were ventrally positioned in 7 patients and in 1 patient 2 BMGs were placed. The ventral BMG was employed as a simple onlay in 1 patient in the others, the ventral onlay was combined with stricture excision and dorsal urethral wall approximation. The average age of the patients was 28.5 yr and the average stricture length was 5.5 cm. Mean postoperative follow up is 33.5 months.

Results: All patients experienced symptomatic improvement. Flow rates have a normal contour in patients who had stricture excision combined with BMG placement. There has been no adverse effect on ejaculatory function and post void dribbling has not been problematic. No patient required reoperation.

Conclusions: Bulbar stricture repair using BMG in a bed of the BSM provides excellent initial efficacy with no significant early complications. Further follow up will be required to see if the results are durable.

Early Outcomes of MRI-Guided Prostate Biopsies in a Community-Based Setting for Detection of Prostate Cancer

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1UMDNJ-SOM, Stratford, NJ; 2Sperling Prostate Cancer Center, Carlstadt, NJ; 3Able Imaging, Cherry Hill, NJ; 4Delaware Valley Urology, LLC, Voorhees, NJ

Introduction: Localization of suspicious areas of the prostate by MRI with targeted biopsies is being used in the community setting. No data from community-based facilities is published.

Materials & Methods: A retrospective review of the initial experience of MRI-guided prostate biopsies (MGPB) performed by a single interventional radiologist at a community radiology suite from September 2011-February 2012 was completed. Men with a PSA ≥4.0 ng/mL (≥2.0 on 5-ARI therapy) or a suspicious DRE with at least one negative TRUS biopsy were included. Dynamic contrast enhancement (DCE), diffusion weighted imaging (DWI), and T2 weighted imaging of the prostate were obtained. Post-processing analysis of enhancement kinetics was performed; suspicious areas were graded 1-5, and a cumulative score of 3-15 was assigned. A prostate map and template for biopsy is to be determined.

Results: Sixteen men with an average age of 63 underwent a MGPB from September 2011-February 2012. Mean men with a PSA ≥4.0 ng/mL (≥2.0 on 5-ARI therapy) or a suspicious DRE with at least one negative TRUS biopsy were included. Dynamic contrast enhancement (DCE), diffusion weighted imaging (DWI), and T2 weighted imaging of the prostate were obtained. Post-processing analysis of enhancement kinetics was performed; suspicious areas were graded 1-5, and a cumulative score of 3-15 was assigned. A prostate map and template for biopsy is to be determined.

Conclusions: Unlike published data from large centers, early outcomes of MGPB in a community setting do not support the use of this method to predict a positive biopsy following a negative TRUS-guided biopsy. Whether this discrepancy represents an artifact of sample size, population selection, or imaging variation for biopsy to be determined.

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6526
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P19

Overutilization of Staging Examinations for Prostate Cancer is Associated with Delays in Radical Prostatectomy but Does Not Have a Negative Impact on Pathologic Staging

Albert A. Petrossian1, Baruch M. Grob2, Lance J. Hampton2, Adam P. Klaussner2, Georgi Guraldi2, Vernon Orton2

1Virginia Commonwealth University, Richmond, VA; 2Virginia Commonwealth University, McGuire VA Medical Center, Richmond, VA

Introduction: The McGuire VAMC serves as the principal referral hub for patients with prostate cancer in Virginia and West Virginia. Our goal was to determine what factors are associated with treatment delays and whether these delays had any impact on pathologic outcomes.

Materials & Methods: A retrospective chart review was performed on 71 patients who underwent a radical prostatectomy at the McGuire VAMC between 2010 and 2011. Of these patients, 33 were local while the remaining 38 were referred. The pre-biopsy PSA, Gleason score at biopsy, pathologic stage, interval to surgery, and presence of a metastatic workup were all documented.

Results: The average pre-biopsy PSAs were 6.5 locally and 6.48 in those referred (p = 0.97). The average Gleason score was 7.24 locally and 7.16 in those referred (p = 0.92). Referred patients experienced on average a 278 day delay in their care (134.4 vs. 211.9 days, p <0.0066). There were 5/33 patients with pT3 disease in the local group and 8/38 in the referred (p = 0.26). A greater proportion of referral cases (79%) vs. local cases (4%) had undergone a metastatic workup (p <0.001).

Conclusions: While the delay by decreasing triage time, increasing operating days, and educating our community. This appears in part due to overutilization of staging tests. However, final tumor characteristics were analogous between the groups. We hope to reduce the delay by decreasing triage time, increasing operating days, and educating our referral bases about the appropriate criteria which merits a metastatic workup.

P20

Clinical Outcomes of Renal Cryoablation for Lesions 4 cm or Greater

Sarah Chan, Michael Phelan

University of Maryland, Baltimore, MD

Introduction: To evaluate the efficacy and outcomes of cryoablation on renal lesions 4 cm or greater.

Materials & Methods: We retrospectively analyzed the outcome of percutaneous and laparoscopic renal cryoablation of renal lesions equal to or greater than 4 cm from May ‘06 to Jan ‘10. Cryolesions were evaluated with radiographic imaging by determining its size and presence of enhancement. Renal function was analyzed with serum creatinine concentration and estimated glomerular filtration rate preoperatively, at 3 months, and at most recent follow-up. Re-treatment was defined as requiring a subsequent unplanned ablation.

Results: A total of 15 lesions in 14 patients with renal lesions 4 cm or larger were treated with either percutaneous or laparoscopic cryoablation. The mean tumor size was 5.6 cm (4-10 cm). Mean follow-up was 25 months (8-49). Eleven of 15 lesions (73.3%) demonstrated good ablation of renal lesion following one intervention, and one lesion was staged as 2 procedures given the large preprocedural size of 8 cm and was successfully ablated following the 2nd procedure. Three of 15 (20%) lesions demonstrated persistent enhancement concerning for residual tumor requiring a 2nd cryoablation. Three of 15 lesions demonstrated progression of disease. Mean change in GFR was -1.5 (14 to +7).

Conclusions: Our findings demonstrate that cryoablation can be used to treat larger renal lesions for patients who are poor surgical candidates and short-term outcome is encouraging, including comparable retreatment rates compared to smaller lesions and minimal effect on renal function; however the re-treatment rate is higher than other treatment modalities, especially with larger renal lesions.

P21

Urologic Physician Assistants Can Perform TRUS-biopsies with Equivalent Safety and Cancer Detection Rates as Urologic Residents

Joseph R. Habibi1, Gregory M. Wade1, Dan McPartlin2, Lance Hampton3, Georgi Guraldi3, Adam Klaussner3, Vernon Orton3, B. Mayer Grob4

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Introduction: Transrectal ultrasound-guided (TRUS) prostate biopsy is associated with only rare serious morbidity, including hemorrhage and sepsis. TRUS-biopsy traditionally has been performed by the urologist, but expected shortages in the urologic workforce may alter the roles of the surgeon and non-physician provider. This study compared the cancer detection rate and safety of TRUS-biopsies performed by a urologic physician assistant (PA) to those performed by urologic residents, to determine if biopsies can be safely and effectively performed by non-physician providers.

Materials & Methods: A retrospective chart review was performed, evaluating at least the first eight biopsies performed by two PGY2-residents and one PA. Patients with prior atypia, known prostate cancer, or evidence of advanced or metastatic disease were excluded. All biopsies were performed under direct or indirect supervision of an attending physician at a single institution. Patient demographics, histologic findings, and associated major infectious or bleeding complications were compared.

Results: There was no significant difference in the cancer detection rate (49.1 vs. 43.6%) or major complications (3.7 vs. 1.1%) on biopsies performed by the residents and PA, respectively. Overall, the complication rates are similar to those reported in the literature. The groups did not differ significantly in baseline characteristics of age (64.4 vs. 62.6yrs), PSA (7.6 vs. 7.0) or rate between resident and PA groups, respectively.

Conclusions: TRUS-prostate biopsy can be safely and effectively performed by well-trained physician assistants with appropriate supervision. In the setting of workforce shortages, this may allow the surgeon to focus on more complex patient care.

P22

Incidence and Risk Factors for Corneal Abrasions during Minimally Invasive Pelvic Surgery

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Introduction: Corneal abrasions have been reported as the most frequent ocular event during surgery under general anesthesia occurring in up to 44% of patients without the use of adequate protective measures. In this study, we have evaluated the incidence of corneal abrasions with minimally invasive urologic and gynecologic pelvic procedures.

Materials & Methods: This retrospective cohort study included all patients undergoing robotic or laparoscopic sacral colpopexy (LSC) between 1/06-3/11, and patients undergoing robotic assisted laparoscopic prostatectomy (RALP) in 2010. All of these patients were placed in the Trendelenburg position during surgery. We evaluated corneal abrasions postoperatively for all patients. Corneal abrasions were defined as any case where the patient reported any degree of pain, redness, or discomfort. Statistical analysis was performed using the Fisher’s exact test, Student’s t-tests, and logistic regression.

Results: During the study period 216 women underwent LSC, 103 men underwent RALP, and 197 women underwent VAS. Seven (2.0%) patients developed corneal abrasions in the LSC and RALP group compared to 0% in the VAS group (p=0.0475). Patients undergoing LSC and RALP had longer operating time than VAS (264 min vs. 174 min, p<0.001). There were no significant differences in age, body mass index, preoperative hemoglobin, or IV fluids. All patients had intraoperative eye protection protocol.

Conclusions: There is a strong trend toward more corneal abrasions with minimally invasive pelvic surgery compared to vaginal apical suspension procedures. Possible risk factors for further investigation include the steep Trendelenburg position during minimally invasive pelvic surgery and the prolonged operative time.
Size Does Matter: Prostatic Urethra Size Correlates with Increased Risk of Post Operative Urinary Incontinence Following Robot-Assisted Laparoscopic Prostatectomy

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Introduction: Identify preoperative anatomic factors or surgical techniques which predispose patients to postoperative urinary complications including incontinence following a Robot-Assisted Laparoscopic Radical Prostatectomy (RALP).

Materials & Methods: Using our prospectively collected database we identified 402 patients treated for prostate cancer with a RALP between 2007 and 2012. The influence of surgical technique, as well as patient anatomic characteristics, was compared retrospectively with intent to correlate specific preoperative and surgical parameters to postoperative urinary incontinence. Factors we examined included: use of nerve sparing techniques, extent of lymph node dissection, age, Body Mass Index (BMI), and prostate weight, length, width and diameter. Patients with complaints of urinary incontinence prior to surgery were excluded from the study. Patients were followed for a mean post operative duration of 30.5 months.

Results: The number and percent of patients reporting postoperative complications of urinary incontinence was 168 (45%) and 66 (26%) at 1 and 2 years respectively. Factors resulting in increased risk of urinary incontinence following RALP were lack of nerve sparing surgical technique (p=0.001) and prostatic urethra length (p=0.04). Prostatic Urethral length was further broken down into 1-2.9cm, 3-3.9cm, 4-4.9cm and >5cm in length displaying a risk of 32%, 40%, 52% and 58% for postoperative urinary incontinence after year 1, respectively.

Conclusions: We identified that prostatic urethral length has an association with increased urinary incontinence following RALP. Measurement of prostatic urethral length prior to surgery could be a new tool in an urologist’s armamentarium to inform a patient of their relative risk for post RALP urinary incontinence

Body Mass Index is Not a Reliable Measure for Planning Percutaneous Nephrolithotomy in Patients with Myelomeningocele

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Introduction: Patients with neurogenic bladder (NGB) can develop large renal stones requiring percutaneous nephrolithotomy (PNL). Patients with myelomeningocele (MMC) have NGB and typically abnormal body habitus which can make percutaneous access and surgical positioning difficult. Measures such as body mass index (BMI) may not be reliable for planning percutaneous renal procedures in these patients.

Materials & Methods: We reviewed the medical records of all patients with NGB who underwent PNL at our institution from 2001 to 2010, excluding those without preoperative cross-sectional imaging. Patients with non-MMC forms of NGB were used as a control group with normal body habitus. Shortest skin-stone distance (SSD) at 0, 45 or 90 degrees was analyzed.

Results: 20 patients with NGB underwent PNL with cross-sectional imaging preoperatively. SSD increased with larger BMI in both groups. This was only statistically significant in the non-MMC group. Patients with MMC had wider variability in SSD, presumably due to abnormal body habitus.

Conclusions: SSD may affect surgical difficulty and required equipment. Our experience confirmed that BMI is a valid predictor of SSD in NGB patients with typical body habitus. BMI is not necessarily a useful measure in predicting SSD in patients with MMC, likely due to abnormal body habitus.

<table>
<thead>
<tr>
<th>Skin-to-stone distance and BMI</th>
<th>MMC</th>
<th>non-MMC</th>
</tr>
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<tbody>
<tr>
<td>Patients</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Mean SSD (Std dev) [cm]</td>
<td>8.42(3.75)</td>
<td>8.14(2.42)</td>
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<tr>
<td>Mean SSD for BMI &lt; 25 [cm]</td>
<td>6.42</td>
<td>6.15</td>
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<tr>
<td>Mean SSD for BMI &gt;= 25 [cm]</td>
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<td>9.47</td>
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<tr>
<td>p value (high vs low BMI)</td>
<td>0.24</td>
<td>0.02</td>
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