Introduction: Surgical management of benign prostatic hyperplasia (BPH) has evolved, including techniques that can be used with the growing population of anticoagulated patients. We evaluated current trends in procedure utilization amongst American urologists.

Methods: A 90-item on-line survey was sent via email to: American Urological Association; Veterans Administration; Society for Government Service Urologists; Endourological Society. Data concerning utilization of 12 BPH surgical techniques were analyzed and compared to surgeons' demographics using categorical data analysis.

Results: 600 urologists replied; 570 currently perform BPH surgery. Table 1 shows procedure utilization. Urologists' age, year of residency completion, and region of country had no influence on technique utilization, except in Northeastern (less monopolar TURP, p=0.04) and New York Sections (less PVP, p=0.01). Academic versus private settings were different, with the former having more use of monopolar TURP and HoLEP, whereas low volume surgeons are more likely to perform monopolar and bipolar TURP; whereas low volume surgeons are more likely to perform PVP, HoLEP, and HoLEP.

Conclusions: Change in technology has altered urologists' surgical approach to BPH. OP and monopolar TURP are still the most utilized procedures, however, bipolar and laser therapies are becoming more common. Lower volume surgeons appear to perform more laser techniques. Academic programs did not influence preference in technique except with robotic surgery and Button.

### Table 1

<table>
<thead>
<tr>
<th>Surgical technique</th>
<th>Percentage of respondents who utilize the procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open prostatectomy</td>
<td>50%</td>
</tr>
<tr>
<td>Monopolar transurethral resection of prostate (TURP)</td>
<td>75%</td>
</tr>
<tr>
<td>Photoselective vaporization (PVP)</td>
<td>95%</td>
</tr>
<tr>
<td>Thulium laser enucleation of prostate (HoLEP)</td>
<td>95%</td>
</tr>
<tr>
<td>Bipolar TURP</td>
<td>20%</td>
</tr>
<tr>
<td>Holmium laser ablation of prostate (HoLEP)</td>
<td>10%</td>
</tr>
<tr>
<td>Electrosurgical resection of prostate (PVP)</td>
<td>8%</td>
</tr>
<tr>
<td>Diode laser vaporization</td>
<td>8%</td>
</tr>
<tr>
<td>Thulium laser ablation of prostate</td>
<td>4%</td>
</tr>
<tr>
<td>Robotic simple prostatectomy</td>
<td>0%</td>
</tr>
<tr>
<td>Laparoscopic simple prostatectomy</td>
<td>0%</td>
</tr>
<tr>
<td>Thulium laser ablation of prostate</td>
<td>0%</td>
</tr>
</tbody>
</table>

Prostate Atypia: Repeat Biopsy Results Within One Year of Diagnosis

Cory D. Harriss, Stuart Kesler3, Joseph R. Wagner1
1University of Connecticut, Farmington, CT; 2Harford Hospital, Hartford, CT; 3Hartford Hospital, Hartford, CT

Introduction: Atypical glands suspicious but not diagnostic for malignancy (atypia) is a descriptive term found in pathology reports of prostate needle biopsies. Prior reports suggest this finding carries a 40% risk of prostate cancer on subsequent biopsies. We investigated the incidence of atypia on biopsy specimens and pathologic findings on repeat biopsy.

Methods: We retrospectively reviewed our database of prostate needle biopsies performed from November 1987 to March 2011. 10,720 patients underwent 15,595 biopsies. 567 of the 10,720 patients (5.3%) had at least one biopsy with atypia; 623 patients undergoing a repeat prostate biopsy within one year of a diagnosis of atypia. 103 patients (36%) were found to have prostate cancer. Rates of prostate cancer, atypia, high grade prostatic intraepithelial neoplasia, and benign histology are shown in Table 1. Pathologic results in 4 patients were unavailable.

Conclusions: Unlike high grade prostatic intraepithelial neoplasia, a significant number of men with atypia are found to have prostate cancer on repeat biopsy within one year. Immediate repeat biopsy should be recommended in this patient population.

### Table 1

<table>
<thead>
<tr>
<th>Pathology Results on Repeat Biopsies for Atypia</th>
<th>Total Number of Biopsies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>135 (33.8%)</td>
</tr>
<tr>
<td>Atypia</td>
<td>56 (14.8%)</td>
</tr>
<tr>
<td>HPIN</td>
<td>18 (4.5%)</td>
</tr>
<tr>
<td>Benign</td>
<td>128 (33.7%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>4 (1.3%)</td>
</tr>
</tbody>
</table>

A Prospective Single-Center 3 Year Study of the Efficacy and Safety of the GreenLight Laser HPS in Men with Clinical BPH

Greg Eure
Eastern Virginia Medical School, Virginia Beach, VA

Introduction: To demonstrate safety and efficacy of treatment with the 532 nm KTP (120 watt) laser for patients with male lower urinary tract symptoms (LUTS) and clinical benign prostatic hyperplasia (BPH) in a prospective single surgeon study under a unified protocol.

Materials & Methods: A prospective, single-arm study with a single surgeon conducted in the US. Thirty-five consecutive patients were enrolled and 33 underwent treatment with the KTP 532 nm laser. The study included subjects aged 45 years who were indicated for surgical intervention for obstructive BPH. Subjects are followed at 3 months, 6 months, 1 year, and annually through 5 years. Mean age was 65.6±7.7 years.

Results: All actively participating subjects have completed at least 2 years of follow-up. Length of stay was 3.9±4.4 hrs, length of catheterization 21.7±3.2 hrs, procedure time was 35.9±23.4 min, and total energy used 189±84.8 kJ. The table shows baseline and follow-up data with mean±SD.

<table>
<thead>
<tr>
<th>Baseline</th>
<th>3 mo</th>
<th>6 mo</th>
<th>12 mo</th>
<th>24 mo</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPSS</td>
<td>23.6±4.7</td>
<td>7.8±4.5</td>
<td>6.1±4.6</td>
<td>6.6±4.5</td>
</tr>
<tr>
<td>QoL</td>
<td>4.4±1.2</td>
<td>1.3±1.3</td>
<td>1.0±1.5</td>
<td>0.9±1.0</td>
</tr>
<tr>
<td>Qmax (ml/s)</td>
<td>12.4±4.9</td>
<td>9.1±0.8</td>
<td>8.9±0.7</td>
<td>8.1±0.9</td>
</tr>
<tr>
<td>PVR (ml)</td>
<td>100±60.3</td>
<td>66±31.3</td>
<td>69±25.7</td>
<td>72.2±26.6</td>
</tr>
<tr>
<td>TRUS (cc)</td>
<td>62±31.5</td>
<td>34±22.8</td>
<td>32±14.8</td>
<td>34±17.2</td>
</tr>
<tr>
<td>PSA</td>
<td>2.5±1.6</td>
<td>2.2±1.2</td>
<td>2.7±1.2</td>
<td>2.5±1.7</td>
</tr>
</tbody>
</table>

Conclusions: Unlike high grade prostatic intraepithelial neoplasia, a significant number of men with atypia are found to have prostate cancer on repeat biopsy within one year. Immediate repeat biopsy should be recommended in this patient population.
Neurophysiologic Intraoperative Monitoring of Somatosensory Evoked Potentials to Detect Neurologic Injuries Due to Patient Positioning
Marc D. Manganiello, Jay Shils, Carl Borromeo, Jill C. Buckley
Lahey Clinic, Burlington, MA

Introduction: To determine if intraoperative somatosensory evoked potential (SSEP) monitoring could detect and prevent peripheral neurologic changes in high risk urologic patients.

Materials & Methods: 64 patients underwent urethral reconstruction and intraoperative neuromonitoring by a single surgeon from March 2009 through August 2010. Electrodes were placed at the wrist to stimulate peripheral nerves. The SSEPs were recorded at the brachial plexus, cervical spine, and cortex. The functional integrity of the pathway was monitored using the characteristic SSEP waveform parameters (amplitude and latency) from the various recording sites. When significant waveform changes occurred, the patient was re-positioned. Patients were assessed postoperatively for neurologic deficits.

Results: 9 of the 64 patients experienced significant intra-operative SSEP changes. 8 of these SSEP reductions were detected within ten minutes of the beginning of the case and returned to baseline with repositioning of the affected extremity. In these 9 patients, there were no postoperative events. 2 of the 64 patients awoke with neurologic symptoms that were not detected intraoperatively. One experienced transient bilateral forearm numbness and hand extensor weakness. The second patient experienced right upper extremity sensory motor weakness requiring extensive neurologic assessment and prolonged physical therapy with 95% resolution of symptoms at 3 months.

Conclusions: SSEP is a useful monitoring tool to detect common position related neuropathies. SSEP monitoring may help avoid positioning related neuropathies in high risk patients. Detection of potential peripheral nerve damage largely occurred within the first ten minutes after positioning with resolution after re-positioning and no post-operative events.

A Contemporary Study of Renal Cysts in a Representative US Population
Steve Dong, Neesha Patel, Chandan Kundavaram, Deborah Glassman, Demetrius Bagley
Thomas Jefferson University, Philadelphia, PA

Introduction: With the rise of imaging studies, incidental findings of renal cysts are frequent. Primary care physicians refer patients to urologists to question their prevalence and significance. Contemporary data is sparse when attempting to answer this common question.

Methods: We evaluated 466 patients who underwent renal imaging. The presence of renal cysts in each patient was correlated to their demographics and associated urologic findings. Films of studies that did not mention the presence of cysts were reviewed.

Results: The incidence of renal cysts increased with age (Graph 1). They more often occurred unilaterally (62.3% versus 37.4%). There is no correlation with nephrolithiasis, however cysts are negatively correlated with hydronephrosis in high risk patients. Detection of potential peripheral nerve damage largely occurred within the first ten minutes after positioning with resolution after re-positioning and no post-operative events.

Conclusions: Renal cysts prevalence increases with age and is inversely associated to hydronephrosis. Radiologists often omit notations of renal cysts because they are considered benign, thus leading to underreporting. Bosniak classification is infrequently used, but could help define the clinical significant cysts.

Prevalence of Renal Cyst with Age

Primary Spermatic Cord Tumors: Disease Characteristics, Prognostic Factors and Treatment Outcomes
Dayron Rodriguez1, Aria F. Olumi2
1Harvard Medical School and Harvard School of Public Health, Boston, MA; 2Department of Urology, Massachusetts General Hospital, Boston, MA

Introduction: Experience with management of spermatic cord tumors (SCT) is uncommon. Therefore, in order to better elucidate the disease characteristics of SCT we utilized a large population-based cancer registry to characterize the demographic, pathological, treatment characteristics and outcomes.

Materials & Methods: The Surveillance, Epidemiology, and End Results (SEER) database (1973-2007) was queried.

Results: 362 patients were identified with SCT. The annual incidence of SCT was 0.5 cases per 1,000,000, and did not change over time. The most common histologic types were liposarcoma (46%), leiomyosarcoma (25%), histiocytoma (13%), and rhabdomyosarcoma (9%). The median age for diagnosis of rhabdomyosarcomas was (26.3yrs), while for other SCT was (64.7yrs) (p< 0.001), suggesting a different biologic behavior in rhabdomyosarcomas than other SCT s. On multivariate analysis, a worst outcome was associated with an undifferentiated tumor grade, distant stage, positive lymph nodes, and leiomyosarcoma or histiocytoma cell history. Radiotherapy improved survival in patients with lymph node metastasis (median 81.5 months vs. 120.4, p-value = 0.043), but not in patients without metastasis. Lymphadenectomy made no difference in survival in patients with or without lymph node involvement.

Conclusions: This series represents the largest cohort of SCT studied to date. While liposarcoma is the most common, leiomyosarcoma and histiocytoma histologic subtypes are the most aggressive. Radiotherapy improves survival in patients with lymph node metastasis; however, lymphadenectomy does not significantly affect survival.

Exploring the Volume-Outcomes Relationship for Adrenal Surgery
Jay Simhan1, Marc C. Smaldone1, Daniel Counter1, Fang Zhu2, Russell Starkey1, Karyn B. Stitzenberg1, Robert G. Uzzo3, Alexander Kutikov3
1Fox Chase Cancer Center, Temple University School of Medicine, Philadelphia, PA; 2University of North Carolina Hospitals, Chapel Hill, NC

Introduction: Although centralization of surgical procedures to high volume centers has been described previously, patterns of care for adrenal surgical care are unknown. We investigated trends in regionalization of care for patients undergoing adrenalectomy using hospital discharge data from 3 Northeastern states.

Materials & Methods: Using 1996-2009 hospital discharge data from NY, NJ and PA, all patients >=18 years undergoing adrenalectomy were identified. Hospital volume status was assigned by quintiles based on number of procedures performed on a per-hospital basis in 1996 and divided as very low volume hospital (VLVH), low (LVH), moderate (MVH), high (HVH) and very high (VHVH). Outcome variables were examined by volume status over time using logistic regression models.

Results: From 1996 to 2009, 8,338 patients underwent adrenalectomy with a shift towards regionalization to VHVHs (17 to 42%, p<0.001). For each successive year, odds of having surgery performed at a VHVH increased by 9% (OR 1.09 [CI 1.08-1.10]). There were significant differences in patient age, race, geographic location, and payer group (p<0.0001) comparing VLVHs to VHVHs. Patients at VHVHs were less likely to be >=55 years (OR 0.76 [CI 0.72-0.80]), insured through Medicaid (OR 0.59 [CI 0.40-0.85]), or be uninsured (OR 0.30 [CI 0.21-0.43]). Controlling for year treated, patients were less likely to die in the hospital if treated at a VHVH (OR 0.38 [CI 0.19-0.75]).

Conclusions: These data demonstrates centralization of adrenalectomy to VHVHs since 1996 with improved clinical outcomes. Inequities in access to care to higher volume centers appear to exist and require further investigation.
Men with Hereditary Prostate Cancer Have Improved Outcomes after Radical Prostatectomy in the PSA Era

John B. Eifler, Jr., Mispoh Han, Sally Isaacs, Elizabeth Humphreys, William Isaacs, Patrick C. Walsh
Brady Urological Institute, Baltimore, MD

Introduction: The impact of PSA testing on stage and oncologic outcome in men with hereditary prostate cancer (HPC) remains unknown.

Results: In the pre-PSA era cohort, no statistically significant difference was found in pathologic stage, biochemical recurrence-free survival (BRFS), or disease-specific survival (DSS) between patients with HPC and those with SPC (Table 1). In the PSA era cohort, men with HPC presented at a younger age than men with SPC (p<0.001), had lower mean PSA (p=0.0016), were more likely to have organ-confined disease (p=0.001) and less likely to have a pathologic Gleason score greater or equal to 7 (p=0.011). Men with HPC had higher 10-year BRFS than men with SPC (p=0.0034) and a trend towards higher DSS (p=0.06).

Conclusions: Men undergoing RP who meet the criteria for HPC in the PSA era have less advanced disease and are less likely to recur.

Interventions for Urinary Morbidity Long Term after Prostate Cancer Treatment

Peter Chang, Meredith M. Regan, John T. Wei, Larry A. Hembruff, Chris Saigal, Jeff M. Michaels, Eric Klein, David P. Wood, Jr., Martina’s Sanna, The PROCT-QA Study Group
1Beth Israel Deaconess Medical Center/Berryridge and Women’s Hospital, Boston, MA; 2Dana Farber Cancer Institute, Boston, MA; 3University of Michigan School of Medicine, Ann Arbor, MI; 4Institute for Public Policy and Social Research, Michigan State University, East Lansing, MI; 5UCCLA Center for Health Sciences, Los Angeles, CA; 6Washington University School of Medicine, St. Louis, MO; 7Glickman Urological and Kidney Institute, Cleveland Clinic, Cleveland, OH; 8Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA

Introduction: Urinary medication usage and/or procedural interventions to manage post-treatment urinary morbidity - concrete and clinically relevant endpoints - have not been previously compared after primary PCa treatment.

Results: The number of XRT patients using urinary medications pre-treatment (n=53; 22%) remained unchanged post-treatment (n=56; 26%). BT patients required more urinary medications from pre- (n=50; 19%) to post-treatment (n=109; 46%; p<0.0001). Conversely, RP patients used significantly fewer urinary medications from pre- (n=76; 14%) to post-treatment (n=32; 6%; p<0.0001). Urinary medication usage at 2 years was lower after RP and XRT than after BT (p<0.001), whereas procedural interventions were similar after XRT, RP, and BT, respectively (5%, 7%, and 10%; p=0.20). The number of patients experiencing moderate to severe overall urinary bother from pre- to post-treatment was unchanged in XRT (24 to 23), increased in BT (20 to 27), and decreased in RP (8 to 38).

Conclusions: Long-term medical intervention for urinary problems was more common after radiotherapy, especially brachytherapy, than after prostatectomy, suggesting that the previously underappreciated burden of obstructive urinary problems after radiation is paramount to the accepted burden of incontinence after prostatectomy.

Denosumab Treatment for Prolonging Bone Metastasis-Free Survival in Men with Castrate-Resistant Prostate Cancer

Paul Sieber, Matthew Smith, Fred Saad, Robert Coleman, Neal Shore, Kartim Pizzazz, Bertrand Tombal, Kurt Miller, Lawrence Karas, Ronaldo Damiao, Teyo Tammela, Blair Egede, Hendrik Van Poppel, Joseph Chin, Juan Morote, Tomasz Borkowski, Zuhuan Ye, Amy Kopyc, Roger Dansey, Carsten Goessl
1Urological Associates of Lancaster, Lancaster, PA, USA; 2Massachusetts General Hospital Cancer Center, Boston, MA, USA; 3University of Montreal Hospital Center, CRHMD, Montreal, Quebec, Canada; 4Weston Park Hospital, Sheffield, UK; 5Canadian Urological Research Center, Myrtle Beach, SC, USA; 6Institut Gustave Roussy, University of Paris Sud, Villejuif, France; 7Université Catholique de Louvain Cliniques Universitaires Saint Luc, Brussels, Belgium; 8Charité Berlin, Berlin, Germany; 9The Urology Center of Colorado, Denver, CO, USA; 10Hospital Universitario Pedro Erneato, Rio de Janeiro, Brazil; 11Tampere University Hospital, Tampere, Finland; 12Urology Associates-Urological Medical Research, Kitchener, ON, Canada; 13Vanderbilt University School of Medicine, Nashville, TN, USA; 14Washington University, St. Louis, MO; 15Virginia Commonwealth University, Richmond, VA; 16Medical University of Warsaw, Szpital Oszczatych Jezus, Warsaw, Poland; 17Umeå University, Umeå, Sweden; 18King’s College, London, UK; 19John B. Eifler, Jr.

Introduction: Men with castrate-resistant prostate cancer (CRPC) are at increased risk for developing bone metastasis, which can result in pain and bone-related complications called skeletal-related events. This study assessed the ability of denosumab to prolong bone metastasis-free survival in men with CRPC at increased risk of developing bone metastasis.

Methods: Adult men with non-metastatic CRPC at high risk for developing bone metastasis (PSA value ≤ 20 ng/mL and/or PSA doubling time ≥ 10.0 months) and total serum testosterone of ≤ 50 ng/dL were randomized 1:1 in a blinded manner to receive subcutaneous injections of denosumab 120 mg or placebo monthly. Calcium and vitamin D supplements were advised. The primary endpoint of bone metastasis-free survival was determined by time to first bone metastasis or death from any cause. This trial was event driven. The first patient enrolled in February 2006.

Results: A total of 1432 subjects enrolled. Denosumab significantly improved bone metastasis-free survival compared with placebo (hazard ratio [HR] 0.85; 95% CI: 0.73, 0.98; P<0.05; median increase of 4.2 months), and significantly improved time to first occurrence of bone metastasis. Overall survival was similar between treatment groups. Overall rates of adverse events (AEs) and serious AEs were similar between groups, with the exception of ONJ and hypocalcemia.

Conclusions: In patients with CRPC, denosumab significantly prolonged bone metastasis-free survival by delaying time to bone metastasis.

Radical Perineal Prostatectomy: A Viable Minimally Invasive Option for Treatment of Localized Prostate Cancer

Thomas K. Huisman, Robert M. Chiaramonte, Burkhardt H. Zorn
Southern Maryland Hospital Center, Clinton, MD

Introduction: Although a proven technique for over 100 years, Radical Perineal Prostatectomy (RPP) has recently fallen out of favor as a surgical procedure of choice for treatment of localized prostate cancer. We report our experience with RPP and compare our results with contemporary data for other surgical treatments.

Materials & Methods: A retrospective review of 300 consecutive RPP patients in a single institution was performed. Patient demographics, hospital stay, perioperative morbidity, and postoperative complications were compared.

Results: Demonstrates: Average patient age was 61.5 years (range 36-76). Mean pre-op Gleason sum was 6 (4-6). Average PSA was 6.3 (1.4-25.7). Average OR time was 100 minutes. Average EBL was 354 cc. Only 4/300 patients needed transfusion (1.3%). Average hospital stay was 1.3 days, but for the last 250 cases all patients have been discharged on POD 1. Average length of catheterization 7 days. Overall continence 91.4% (dry-no pads) and 96% (minimal 1 pad). 64% of bilateral nerve sparing patients have spontaneous erectile function.

Conclusions: RPP is a well-tolerated and effective treatment for clinically localized prostate cancer. It is associated with less morbidity, shorter hospital stays and quicker recovery times than traditional retropubic prostatectomy. It compares favorably to robotic prostatectomy and may represent a cost-effective alternative, especially in specific patient populations, including morbidly obese patients, patients with renal transplant or history of extensive prior abdominal surgeries. These findings are increasingly relevant as the rising cost of health care delivery continues to come under intense scrutiny.
Comparison of Positive Surgical Margin Rates in High Risk Prostate Cancer
Niall J. Harty1, Spencer Kozman1, Jessica DeLong1, David Canes1, Andrea Sorcini1, Jason Gee, Mark Silverman1, Robin Ruthazer2, John Libertino1, Ali Moinzadeh1
1Lahey Clinic, Burlington, MA; 2Tufts Medical Center, Boston, MA

Introduction: High risk prostate cancer (HRCaP) represents a complex disease entity. We compared positive surgical margin (PSM) rates for patients with HRCaP who underwent open radical retropubic (RRP), robotic (RALP), and laparoscopic (LAP) prostatectomy.

Materials & Methods: We performed a retrospective review of prostate cancer patients at our institution that underwent RRP, RALP, or LAP between January 2000 and March 2010. Patients were considered to have HRCaP if they had biopsy or final pathologic Gleason score ≥8, PSA ≥20, or pathologic stage of T3a or higher. PSM was defined by the presence of tumor at the inked surface of the specimen. Patients who received neoadjuvant hormonal therapy and those who underwent a perineal prostatectomy were excluded.

Results: We identified 513 patients with HRCaP. Sixty-eight patients were excluded. Of the 445 patients, surgical technique was RRP (n=153), RALP (n=152), and LAP (n=140). No age difference was noted between the three groups. Overall PSM was 52.9% for RRP, 50% for RALP, and 41.4% for LAP. The PSM rate did not differ between the three groups nor when comparing RRP to RALP and LAP combined. There was no statistical difference between the three groups in terms of the number of patients with a pathologic stage of T3 or higher. A higher preoperative PSA value was associated with a positive margin (p=0.04).

Conclusions: In patients with HRCaP, the PSM rate does not differ based on the surgical approach. Patients with a higher preoperative PSA value were more likely to have a PSM.

Prospective Study of Testosterone Suppression and Recovery after 6 months of Androgen Deprivation Therapy and Radiation for Clinically Localized Prostate Cancer
Adam R. Metwalli1, Aref N. Dajani2, Robert Brookland1, Heather Thomas3, Ronald F Tutrone1
1Chesapeake Urology Associates, Baltimore, MD; 2Independent Statistical Consultant, Greenwich, MD; 3Chesapeake Urology Research Associates, Baltimore, MD

Introduction: Testosterone suppression and recovery is not uniform among men who have received LHRH Agonist therapy for the treatment of prostate cancer. We prospectively measured testosterone levels before, during, and for 12 months after cessation of LHRH therapy in men undergoing radiation for clinically localized prostate cancer.

Materials & Methods: From 2001 to 2003, 29 patients with T1c-T3 prostate cancer undergoing definitive radiation combined with 6 months of Eligard 22.5 mg were enrolled in a 12 month open label study of Testosterone suppression and recovery. Patients were followed at Months 1, 3, 7, 9 and 12 with serum Testosterone and PSA.

Results: Median time to Castrate testosterone as defined by Testosterone less than 20ng/dl was 3 months with a mean of 2.68 months and 25 of 29 achieved at least one value at that level. Only 13 (44.8%) patients had sustained suppression of testosterone less than 20ng/dl for the entire 6 month intended duration of therapy. Only 9 of the 29 subjects had returned to within 90% of their baseline testosterone level by 12 months. Median time to recovery of 90% of baseline testosterone was 15 months with a mean of 13.8 months.

Conclusions: Testosterone suppression with standard LHRH agonist therapy may require as long as 3 months to achieve testosterone levels equivalent to surgical castration. Less than half have sustained suppression of testosterone for the full duration of therapy. ADT also results in prolonged testosterone suppression that may persist more than a year after therapy has been discontinued.

Predictors of Positive Surgical Margins after Radical Prostatectomy: Analysis of a Contemporary Single Institution Series
Thomas Jefferson University Hospital, Philadelphia, PA

Introduction: Positive surgical margins (PSM) after radical prostatectomy (RP) are an important adverse pathologic feature associated with increased risk of disease recurrence. A contemporary single-institution series of RP was examined in order to analyze multiple factors and their relationship with PSM.

Methods: A retrospective review of 1,300 patients in an institutional IRB-approved RP database was performed. Factors assessed included: age, obesity, pre-operative PSA, prostate, EBL, perineal invasion (PNI), and prostate weight. Prostate specimens underwent whole mount step sectioned pathologic analysis and confirmatory second level review at a multidisciplinary genitourinary pathology conference. Multivariate logistic regression analysis was performed.

Results: Recognized factors associated with higher PSM included: surgical Gleason score (p=0.0025, pathologic stage (pt3/4 vs. pt2) (OR=6.23, p<0.001), SVI (OR=4.99, p<0.001), PNI (OR=4.65, p<0.001), preoperative PSA (OR=1.11, p<0.0001), and obesity (OR=1.06, p=0.0022). Younger patient age (OR=0.98, p=0.05) and larger prostate weight (OR=0.98, p<0.001) were associated with a lower chance of PSM.

No statistical difference was appreciated regardless of surgical approach (open, laparoscopic, robotic-assisted, or conversion), surgeon, EBL, or PNI.

Conclusions: PSM after RP are associated with multiple demographic, operative, and pathologic factors. In this series, it was also observed that younger patients and larger prostates had lower PSM. Furthermore, obesity was associated with higher rates of PSM; the cause and implication of this association are unclear, but are consistent with the finding that obesity is related to worse prostate cancer outcomes.

Too Few or Too Many Prostate Biopsies? Results from an Academic Center
Benjamin J. King, Brian H. Irwin, Thomas D. Trainer, Mark K. Plante, Samuel J. Trotter, Scott D. Ferrazza
University of Vermont College of Medicine, Burlington, VT

Introduction: Given the variability in indications for cancer detection rates from trans-rectal ultrasound (TRUS)-guided biopsy, we evaluated the prostate cancer (PCa) detection rate in males undergoing 12-core needle biopsies at a single academic center. We then identified the proportion of men with PCa who met the criteria for active surveillance (AS).

Materials & Methods: A retrospective analysis of 603 consecutive patients undergoing TRUS-guided biopsies after meeting standard-of-care criteria including at least one of the following: abnormal digital rectal exam, PSA>4ng/mL, PSA velocity >0.7ng/mL and/or positive family history in 1st degree relative were identified within an IRB-approved pathologic database. Klotz and Nam criteria (PSA<10ng/mL, clinical stage T1-T2a, Gleason score ≤6, ≤3 cores involved, <50% of a single core involved) were used as determinants for AS candidacy. AS candidacy and PCa detection rates were calculated.

Results: Two-hundred eighty-five of the 603 (47.3%) prostate biopsies resulted in a diagnosis of PCa with 75 (26.3%) of those patients meeting Klotz and Nam criteria for AS. The remaining 73.7% of PCa diagnoses were classified as intermediate/high-risk cases.

Conclusions: The cancer detection rate at our center of 47.3% is well-above the rate reported in the PLCO screening trial of 36.8% as well as the rates seen in other large-scale PCa screening trials. Given the fact that favorable-risk PCa nationally represents ~30-60% of new diagnoses, further research should be done to clarify strict biopsy indications in order to help eliminate the variability in PCa detection rates between centers. With appropriate biopsy indications, we may see increased detection of intermediate/high-risk PCa as seen in this study.
**P1**

**Sphingosine Kinase-2-Deficient Mice Exhibit Diminished Renal Inflammation/ Renal Fibrosis in Response to Unilateral Ureteral Obstruction**

Shobha Thangada1, Timothy Hla2, Renal Fibrosis in Response to Unilateral Ureteral Obstruction

Introduction: The objective of this study is to investigate the role of sphingosine kinase-2 in modulating renal injury induced by unilateral ureteral obstruction (UUO). Congenital Urinary tract obstruction is an important cause of renal injury and failure in children. While many aspects of the obstructive injury cascade are understood, this has not translated into therapeutic benefit. Sphingosine Kinase-2 (Sphk-2) is a metabolizing enzyme responsible for production of the bioactive lipid Sphingosine-1-Phosphate (SIP), which plays a major role in regulating the immune system, tissue injury and regeneration. Because of this, multiple Sphk inhibitors are under development and in the future Sphk inhibitors may see broad clinical use.

**Materials & Methods:** Genetically engineered Sphk-2 deficient and wild type mice were used in UUO model experiments. Contralateral kidneys served as control. Evaluation time points were 1.5 and 10 days. The renal pathology was examined by light microscopy. Expression levels of alpha-smooth muscle actin, TGF-b and Collagen type 1 were analyzed by RT-PCR, immuno-histochemistry and western blotting.

**Results:** Wild type and Sphk-2 knock out mice showed significant differences. Mice expressing sphingosine kinase-2 showed extensive renal damage characterized by thickened cortical lesions, interstitial fibroblastic proliferation, focal interstitial hemorrhage, necrosis in lining of tubular epithelium and atrophic tubules. Sphk-2 knock out mice did not demonstrate this pattern of injury. Alpha smooth muscle actin and TGF-b expression levels were elevated in wild type obstructed kidneys when compared to knock out mice.

Conclusions: Our initial studies show that Sphk-2 -SIP pathway is implicated in the pathogenesis of obstructive renal injury.

---

**P2**

**Regulation of Kinetochore Protein Expression by COX-2 Signaling in Prostate Cancer Cells**

Jared Bieniek, Chandra Childress, Wannian Yang

Geisinger Medical Center, Danville, PA

Introduction: Kinetochore anchor microtubules to chromosomes during mitosis and without proper attachment, cell division is arrested at the mitotic checkpoint. In vitro prostate cancer cell viability assays have revealed a cell growth arrest phenomenon following treatment with cyclooxygenase-2 (COX-2) inhibitors. We hypothesized that treatment of prostate cancer cells with COX-2 inhibitors will arrest cell growth at mitosis through regulation of kinetochore proteins.

**Materials & Methods:** LNCaP and PC3 prostate cancer cells were cultured and treated with a COX-2 inhibitor, celecoxib, a highly-selective COX-2 inhibitor, CAY10404, and a celecoxib analogue without COX-2 inhibition, OSU03012. Cells were lysed at 48 hours and probed for kinetochore proteins: CENP-A, PK1, and ZWINT. Immunofluorescence (IF) was performed using antibodies to CENP-B, DNA, and tubulin in treated and untreated cells. Additional cells were treated with COX-2 inhibitors and kinase inhibitors to investigate the mechanism of action.

**Results:** Inhibition of COX-2 by celecoxib and CAY10404 induced a dramatic downregulation of the kinetochore proteins in LNCaP cells. ONU3012 had no effect. IF staining showed that treatment with COX-2 inhibitors diminished kinetochore structure and blocked mitosis in LNCaP cells. Mixed results from co-treatment with COX-2 inhibitors and MAP kinase inhibitors suggest a complex mechanism involving MAP kinase pathways.

**Conclusions:** COX-2 inhibition of prostate cancer cells down-regulates kinetochore protein levels leading to mitotic arrest. These results correlate with recent epidemiologic studies showing a reduced incidence of prostate cancer among men taking COX-2 inhibitors. Further studies are needed to determine the chemopreventive and chemotherapeutic potential of celecoxib in human prostate cancer.

---

**P3**

**Comparison of Intraprostatic Ethanol Diffusion Using a Microporous Hollow Fiber Catheter versus Standard Needle**

Benjamin J. King1, Mark K. Plante1, Masatoshi Kida1, Travis K. Man-Gow1, Rick Odland1, Peter Zvara1

1University of Vermont, Burlington, VT; 2Twin Star Medical, Minneapolis, MN

Introduction: Transurethral intraprostatic ethanol chemoablation of the prostate has demonstrated promising preliminary clinical results for treatment of BPH with some variation in clinical outcomes. This is likely due to injectable backflow along the needle tract with uneven prostatic distribution. The objective of this study was to compare tissue diffusion of an intraprostatic injection using a new microporous hollow fiber catheter (MiHFC) to that of a standard needle.

**Materials & Methods:** The prostates of eight mongrel dogs (weighting 70 - 88 lbs) were exposed and a single injection of 99% ethanol was delivered into each lobe using the MiHFC and a standard needle. The prostates were harvested and fixed en block in 10% formalin. The lesions were traced on scanned hematoxylin & eosin histology sections. Three dimensional reconstructions were performed using 2.5 mm step-sections. The volume of each ethanol-induced prostatic lesion was calculated using stereology.

**Results:** Ethanol-induced tissue changes were seen bilaterally in seven of eight prostates injected. One prostate was harvested without injection, acting as a negative control. Statistical analysis of data compiled from all treated prostates showed significantly larger histological changes (p ≤ 0.01) on the side injected by the MiHFC (Figure).

**Conclusions:** The use of a MiHFC consistently resulted in larger ethanol-induced tissue lesions. The advantage shown with the MiHFC indicates its potential for developing into a new method to treat prostate disease.

---

**P4**

**Inhibition of Inflammatory and Apoptotic Mediators Improves the Bladder Dysfunction that is Associated with Type 2 Diabetes**

Zongwei Wang1, Zhiyong Cheng2, Vivian Cristofaro3, Xingyuan Xiao1, Rongbin Ge1, Pablo Gomez2, Edward Gong3, Klemen Sterle1, Aria F. Olumi1

1Massachusetts General Hospital, Boston, MA; 2Howard Hughes Medical Institute, Children's Hospital Boston, Boston, MA; 3VA Boston Healthcare System, Boston, MA; 4Children's Hospital Boston, Boston, MA

Introduction: To evaluate the molecular pathways associated with bladder dysfunction in type 2 diabetes (T2D), we used a genetic mouse model with hepatocyte-specific double knockout of Insulin Receptor Substrates 1 & 2 (DKO) that develops T2D.

**Materials & Methods:** Bladders from different age DKO/foxed control mice were harvested and functional alterations were evaluated by muscle strip experiment ex vivo and cystometric experimentation in vivo. Affymetrix mouse gene chip was employed to evaluate the expression of 45,000 genes in bladder. Cytokines in serum were determined using the Multiplex kit. Cultured Bladder Smooth Muscle Cell (BSMC) contraction in vitro was assayed by collagen gel retraction. The presence of macrophages, extent of apoptosis and expression of specific proteins were assessed with IHC and Western blot respectively.

**Results:** Young DKO mice exhibited hyperactive bladders (higher amplitudes of tension and frequency of contraction), while older mice demonstrated hypoviscosity. Over 20 inflammatory genes were upregulated in the bladder of diabetic mice, most of which belonged to the TNF superfamily. Metabolic (ATFase, Rho GTPase, Rho kinase) and apoptotic-related (Caspa-3) genes were also upregulated. TNF-alpha was significantly upregulated in serum, and it stimulated the contraction of BSMC in culture. Systemic treatment with neutralizing TNFR1 in DKO mice corrected the diabetic cystopathy without affecting serum glucose.

**Conclusions:** The bladder of T2D mice transition from a hyperactive to a hypoviscous state. Inflammatory/apoptotic mediators are upregulated in diabetic bladder dysfunction, and targeted systemic inhibition of TNFR improves bladder function without alteration of serum glucose.
Concurrent Poster Session I: Basic Science
10:50 am-12:15 pm

P5

A Non-invasive Mirna Based Assay to Detect Bladder Cancer in Cell-free Urine
Jessica DeLong, Spencer Kozinn, Niall Harty, Kelly Summerhayes, Ian Summerhayes, Antonia Holway, Kimberly Rieger-Christ
The Lahey Clinic, Burlington, MA

Introduction: MicroRNAs (miRs) are small, non-coding segments of regulatory RNA that are powerful biomarkers of disease severity and prognosis. Previous work from this group indicated the potential for identification of miRNAs that play a role in urothelial carcinoma of the bladder (UCB). In this study we isolated RNA from cell-free urine to identify a miRNA profile that could be used as a non-invasive diagnostic assay to detect the presence of UCB and provide a discriminatory signature for different stages of progression.

Materials & Methods: Total RNA was isolated from cell-free urine of patients with UCB and controls. Samples were grouped according to grade and stage. MiRNAs were profiled by qRT-PCR array on pooled samples within each group. Validation of miRNAs was performed on individual samples using qRT-PCR.

Results: 236 miRNAs were detected in at least one pooled sample; the number of miRNAs detected correlated with disease progression. The control group and the >=T2 group expressed 8 and 228 miRNAs, respectively. Of miRNAs present in both cancer and non-cancer groups, 13 had significantly higher levels in the cancer group. Statistical analysis adjusted for multiple comparisons demonstrated differences between groups based on microRNA expression levels including a panel of miRNAs that discriminated between cancer and cancer-free patients with high sensitivity and specificity.

Conclusions: We demonstrated successful isolation of miRNAs from cell-free urine. Utilizing this non-invasive assay, we identified miRNAs capable of discriminating between cancer-free patients and patients with UCB, providing evidence that miRNA profiling holds promise for the development of valuable clinical tools.

P7

Impact of Endothelin Axis Modification in Cancer Immunotherapy and Transplantation in Murine Model
Jeffrey P. Wolters, P. Joseph Yannie, Ekaterine Goladze, Maryellen Dolat, Georgi Guruli
Virginia Commonwealth University, Richmond, VA

Introduction: The aim of this study was to determine if modification of the endothelin axis would alter the growth of murine prostate cancer as well as murine skin graft survivalability.

Materials & Methods: One group of mice were injected with RM1 (prostate cancer) cells subcutaneously. Modified dendritic cells (DC) were injected into the contralateral flank. We used TNFa, BQ788 (ETa receptor antagonist) and RM1 cell lysates for DC modification. In transplant experiments, Balb/C mice received an allogenic skin transplant from C57B/6 mice and were treated either with BQ(25/ETa, receptor antagonist) or water. Grafts were considered dead when complete separation was noted.

Results: In the prostate cancer experiment the mice were treated with DC alone (1), DC+TNFa(2), DC+RM1 lysate (3), DC+TNFa+ BQ788 (4), and TNFa+BQ788+RM1 lysate (5). By day 28, mean tumor size reached 1824.0±229.86 mm^3 in the Group 1, 1845.4±302.34 mm^3 in the Group 2, 1502.6±367.13 mm^3 in the Group 3, 1400.1±188.88 mm^3 in Group 4, and 92.5±80.98 mm^3 in Group 5. Difference in tumor sizes between Groups 1 and 5 was statistically significant (P=0.002). In the transplant experiment graft survival was 11.0±0.7 days in control group and 15.8±1.1 days in the group treated with BQ23 (P=0.001).

Conclusions: We have shown for the first time that modification of the endothelin axis on dendritic cells might alter immune response and prolong graft survival. Further, ETa receptor blockade seems to stimulate proinflammatory immune response, a feature that may be useful in the treatment of malignant tumors.

P6

The In Vitro Anti-tumor Activity of Docetaxel in Combination with Inositol Hexaphosphate (IP-6) in Castrate-Resistant PC3 and DU-145 Prostate Cancer Cell Lines
Adam Luchey, Can Talug, Dale Riggs, Barbara Jackson, Dana Point, Stanley Zaslau, Stanley Kandzari
West Virginia University, Morgantown, WV

Introduction: Inositol Hexaphosphate (IP-6) regulates the cell cycle, apoptosis, and cellular proliferation in prostate cancer lines in vitro. We hypothesized that when combined with Docetaxel (DOC), IP-6 results in an additive reduction in cellular proliferation in castrate-resistant prostate cancer cell lines (CPCL), PC3 and DU-145, thereby increasing effectiveness and minimizing toxicity of DOC.

Materials & Methods: PC3 and DU-145 CPCL were cultured using standard techniques and incubated with IP-6 (0.25 and 0.5mM/well) and/or DOC (2.5 and 5mM/well). Cell viability was measured by MTT at 24, 48 and 72 hours thereafter. Statistical analysis was performed by ANOVA, with individual comparisons made by the Tukey test.

Results: Significant reductions (P<0.001) in cellular growth were noted in both cell lines and at all time frames with the combination of DOC and IP-6 compared to control. At 24 hours with DU-145, there was significance in kill rate with the combination of DOC 5mM/IP-6 0.5mM versus each agent alone (P<0.001), but not with PC3. At 48 and 72 hours with PC3, but not DU-145, the combinations of DOC 2.5mM/IP-6 0.25mM produced significantly higher kill rates than DOC 5mM (P<0.001).

Conclusions: When combined, DOC and IP-6 exhibited an additive reduction in cellular proliferation in both CPCL. IF-6, when combined with DOC 2.5mM, achieved a significant reduction in cellular proliferation equal to that observed with DOC 5.0mM. These results indicate that a lower dose of DOC with IP-6 could potentially lead to a more effective and less toxic treatment for castrate-resistant prostate cancer and warrants further investigation.

P8

Molecular Profiling of Erlotinib Resistance in an In-Vitro Bladder Cancer Model
William C. Faust, Marc Mangamello, Justin Zberezyn, Christy Dahlennians, Jason Lee, John Libertino, Antonia Holway, Kimberly B. Christ
Lahey Clinic, Cambridge, MA

Introduction: We previously reported differential sensitivity of 17 urothelial carcinoma of the bladder (UCB) cell lines to the EGFR inhibitor erlotinib where lines displaying EMT characteristics showed greater resistance. In this study we evaluated the correlation between microRNA (miRNA) expression levels and erlotinib resistance in an in-vitro model of UCB.

Methods: Erlotinib sensitivity was determined by clonogenic assay in 46 UCB cell lines randomly divided into training and test sets. MiRNA expression levels were determined by microarray analysis and confirmed by qRT-PCR. Multistage logistic regression analysis and the Random-Forest Algorithm were used to identify microRNAs predictive of sensitivity.

Results: In the training group, 62 miRNAs were significantly different between the 16 sensitive and 14 resistant cell lines. In the resistant group, 38 miRNAs were up-regulated and 24 miRNAs were down-regulated. A predictive model using two miRNAs, resulted in the misclassification of 1 resistant and 2 sensitive lines. Sensitivity and specificity was 93% and 87.5%, respectively; for the detection of resistance while the area under the receiver operator characteristic curve was 0.955. In the test set of cell lines, the classifier had a PPV of 50% and a NPV of 100%.

Conclusions: MiRNAs are a powerful new tool in the molecular diagnosis and treatment of UCB. We have found a group of previously uncharacterized miRNAs that accurately predicts the response of UCB cell lines to erlotinib treatment. Next steps involve bringing this molecular information to the clinic, and using molecular profiles to guide chemotherapeutic treatment decisions in patients with UCB.
A New Method for Objective Analysis of Detrusor Rhythm during the Filling Phase
Ashley B. King, Adam Klaunzer, Samual Robinson, David Rapp, Vikram Sabarwal, John Speich, Harry Koo, Paul Katz.
1Virginia Commonwealth University, Richmond, VA; 2Virginia Urology Center for Incontinence and Pelvic Floor Reconstruction, Richmond, VA.

Introduction: A standardized model for quantitative analysis of detrusor rhythmic contraction currently does not exist. The goal of this study was to develop a computer program for analyzing detrusor rhythm.

Materials & Methods: Seventeen detrusor strips from 12 rats of 3 different strains (Wistar, WKY, and SHR) were used to analyze rhythm. At optimal length, prostaglandin-E2 (PG2) was added in half-log increments from 1 x 10^-9M to 1 x 10^-6M. Then maximum and minimum force values were obtained using KC1 and Ca2+-free solution containing EGTA, respectively. A computer program was developed using DASYLab 10.0 to analyze the effects of PG2 on frequency (contractions/min), amplitude (5mm under the curve), and tone (5mm average) in a step-wise fashion shown in Figure 1. The computer generated frequency count was compared to human assessment.

Results: PG2 induced a concentration-dependent increase in frequency, amplitude, and tone. These effects were documented in a reproducible, consistent way using the computer program, and the frequency count was significantly different from human assessment.

Conclusions: A computer program for rhythm analysis was developed and tested using detrusor strips of rats from different genders and strains. The program analyzed detrusor rhythm in terms of frequency, amplitude, and contractile tone in an objective and reproducible manner. Further testing may allow this program to compare the effects of different agents on rhythmic activity during the filling phase.
**P13**

The Relation between Leptin and Prostate Cancer Cell Line LNCaP

Mohamad W. Salkini, Daile Ruggs, Barbara Jackson

West Virginia University, Morgantown, WV

**Introduction:** Leptin, the adipocyte-derived hormone is associated with an increased risk of multiple cancers including prostate cancer. We hypothesized that leptin would change hormone-dependent prostate cancer cells to hormone-independent cells. Signal transducer and activator of transcription 3 (STAT3) plays a key role in many cellular processes such as cell growth and apoptosis. Increased expression of STAT3 in LNCaP prostate cancer cells precedes the transition into castrate resistance status.

**Materials & Methods:** The androgen dependent human prostate cancer cell line, LNCaP, was exposed to Leptin at different concentrations (0, 20, 30, 40 and 50 ng/ml). Cell viability and STAT3 protein were assayed using MIT and ELISA respectively after 72 hours of exposure to leptin. All data is reported as means ± standard deviation.

**Results:** A gradual increase in LNCaP cellular proliferation was observed and reached statistical significance at concentrations of 30 (8.2% ± 2.0), 40 (17.2% ± 3.2) and 50 ng/ml (7.8% ± 2.0) of Leptin (P<0.001). STAT3 levels increased steadily along with the proliferation and reached statistical significance at 40 ng/ml concentration of Leptin (12.9 ± 7 units/ml, P<0.05). The described changes peaked at concentration 40ng/ml of leptin.

**Conclusions:** Increased Leptin levels induced significant in vitro cellular proliferation and increase STAT3 levels of hormone dependent prostate cancer cells. These findings demonstrate some of the effects of obesity on prostate cancer.

---

**P16**

Multi-Institutional Evaluation of a MicroRNA Expression Profile Defining the Invasive Bladder Tumor Phenotype

Marc D. Manganiello1, William C. Faust1, Justin M. Zbrzezny1, Christina Deliyaniss1, Michelle Waktinn2, Wei Huang3, Jason R. Gee1, John A. Libertino1, Antonia H. Holroyd1, Kimberly R. Christ1

1Loehy Clinic, Burlington, MA, 2University of Wisconsin, Madison, WI

**Introduction:** MicroRNAs (miRNAs) are small, non-coding segments of regulatory RNA that have emerged as powerful biomarkers of disease severity and prognosis. We previously reported a miRNA profile (miR-200c, miR-141, and miR-30b) capable of differentiating invasive from noninvasive urothelial carcinoma of the bladder (UCB) with a sensitivity of 100% and a specificity of 96%. The goal of this project was to validate this profile with an expanded sample pool that includes tissues from an independent institution.

**Methods:** miRNA expression levels in tumor tissue and cell lines were quantified by qRT-PCR. Fifty UCB cell lines and 157 UCB tumors (76 noninvasive and 81 invasive) were evaluated. Downstream targets were assessed via Western blot analysis. RNAi, ChIP, EMSA, hydrodynamic-based-transfection methods were used to validate the findings. A set of additional miRNAs will be evaluated.

**Results:** When evaluated in tumor samples from both institutions, several of these additional miRNAs significantly discriminate invasive from noninvasive UCB, however, the sensitivity slightly reduced sensitivity and specificity. Expansion of miRNA analysis in UCB xenografts were carried out for in-vivo analyses.

**Conclusions:** Differentiating molecular mechanisms between TRAIL-sensitive and TRAIL-resistant cancer cells will improve the efficacy of apoptotic therapies. In this study, we demonstrate that FBXL10 plays an anti-apoptotic role and indicates a novel NF-kB-dependent anti-apoptotic molecule and regulates TRAIL-induced apoptosis through modulating c-Fos/c-FLIP signaling pathway in TRAIL-mediated apoptosis.

---

**P14**

The Effects of Social and Environmental Stimuli in a New Murine Model for Interstitial Cystitis/Painful Bladder Syndrome

Adam Luchey, Dale Biggs, Barbara Jackson, Can Talug, Stanley Kandzari, James Coad, Yara Daus, Dana Point, Morris Jessop, Stanley Zaslau

West Virginia University, Morgantown, WV

**Introduction:** The treatment and etiology of Interstitial Cystitis (IC) is still unclear. The objective was to develop a murine model to elucidate the bladder response to environmental stressors, which have been shown to exacerbate IC symptoms.

**Materials & Methods:** Forty-one BALB/c (6-7 weeks old) were randomized into the Control Group (CG, n=20) and the Chronic Stress Group (CS, n=21) and allowed to acclimatize for two weeks. CS underwent unpredictable, random, chronic stressors daily: successional of light/dark cycles every 15-30 minutes, changes to bedding (removal, being replaced with water, cage tilt), and social stress (cage rotation). After 10 weeks the mice were sacrificed. The bladders were formalin-fixed and paraffin-embedded, then evaluated with light microscopy using H&E, and giemsa and PAS to determine weight, mast cells and urothelial thickness. Statistical significance was determined using the non-parametric Mann-Whitney method.

**Results:** The bladder weight of CG was 39.4±7.41mg compared to CS of 50.08±11.06mg (p<0.001). Results: Stressed (n=21) 1.83 + 1.03 1.40 0.50 4.30 Urothelial Mast Cells (per 200x field; p=0.048) Translated (n=21) 1.04 ± 0.13 0.80 0.10 2.90 Urothelial Thickness (μm) (p<0.001) Control (n=20) 6.2 ± 0.3 6.2 5.7 6.5 Stressed (n=21) 5.6 ± 0.3 5.7 5.3 10.0

**Conclusions:** This study demonstrates a murine model exposed to noxious environmental stimuli to produce the clinical features of IC. This can be used to study the pathogenesis and treatment of the human condition. We hypothesize that stressors may exacerbate IC by thinning the urothelium to the peripheral nerve fibers rather than increasing mast cells. Additional directions include response to reversal of stressors, medications including intravesical agents, and the study of neurogenic and biochemical pathways.

---

**P15**

F-box Protein 10, an NF-kB-dependent Anti-apoptotic Protein, Regulates TRAIL-induced Apoptosis through Modulating c-Fos/c-FLIP

Rongbin Ge1, Zongwei Wang1, Qing Zhang1, Xiaoyin Xu2, Aria Olumi3

1Mass General Hospital, Boston, MA, 2Brigham and Women’s Hospital, Boston, MA

**Introduction:** Tumor necrosis factor-related apoptosis-inducing ligand (TRAIL) holds great promise as an anti-cancer agent, but some tumors develop resistance to TRAIL. Previously, we have shown that the AP-1 family member, c-Fos, is an important modulator of apoptosis. Although FBXL10 has been implicated to regulate an AP-1 family protein, c-Jun, its role in mediating apoptotic pathways has not been previously investigated. Here, we report that FBXL10 is a novel NF-kB-dependent anti-apoptotic molecule and regulates TRAIL-induced apoptosis through modulating c-Fos/c-FLIP.

**Methods:** RT-PCR, Western blot and immunofluorescence assays were applied to evaluate protein expression. RNAi, CHIP, EMSA, hydrodynamic–based transfection were performed to analyze the interaction among FBXL10/c-Fos/NF-kB. Prostate xenografts were carried out for in-vivo analyses.

**Results:** FBXL10 was suppressed and c-Fos was upregulated in TRAIL-sensitive cancers after treatment with TRAIL. However, in TRAIL-resistant cancers, FBXL10 and c-Fos were not affected. Silencing of FBXL10 sensitized resistant cells to TRAIL. Conversely, over-expression of FBXL10 repressed TRAIL-induced apoptosis. To behave as an anti-apoptotic molecule, we found that FBXL10 directly binds and represses c-Fos promoter. In addition, FBXL10 regulates c-FLIP, another anti-apoptotic molecule, by a c-Fos dependent pathway. We also found that expression of FBXL10 is NF-kB-dependent, and TRAIL down-regulate FBXL10 via inhibiting NF-kB signaling. Using CHIP and EMSA assays, we found that NF-kB/p65 directly binds the FBXL10 promoter, and promotes expression of FBXL10.

**Conclusions:** Differentiating molecular mechanisms between TRAIL-sensitive and TRAIL-resistant cancer cells will improve the efficacy of apoptotic therapies. In this study, we demonstrate that FBXL10 plays an anti-apoptotic role and indicates a novel NF-kB/FBXL10/c-Fos/c-FLIP signaling pathway in TRAIL-mediated apoptosis.
Sphingosine-1-Phosphate2 Receptor Induces CCL2 Expression in Neuroblastoma/a Targeted Inhibition Strategy
Mei-Hong Li1, Timothy Hu1, Fernando Ferrer1
1Connecticut Children’s Medical Center/University of Connecticut Health Center, Hartford/ Farmington, CT; 2Well Cornell Medical College/Center for Vascular Biology, New York, NY

Introduction: Neuroblastoma (NB) is the most common extracranial solid tumor of childhood. The bioactive lipid sphingosine-1-phosphate (S1P) and its five specific receptors (S1P1-5) and known to impact tumor growth and progression. Preliminary data derived from human angiogenesis array showed that S1P induced the secretion of angiogenesis-related proteins VEGF and monocyte chemoattractant protein 1(MCP-1; CCL2), an important inflammatory chemokine in NB. Recently, we have shown that S1P/S1P2 signaling mediates VEGF expression and thus promotes NB growth. In the present study, we investigated the mechanism of S1P-induced CCL2 expression in NB.

Materials & Methods: Quantitative real-time PCR detected mRNA levels of S1PRs and CCL2 in NB SK-N-AS cells and tissues. CCL2 ELISA detected CCL2 protein secretion in SK-N-AS cells. Gain and loss of functions studies were performed using S1PR antagonists, adenoviral transduction and siRNA. NB murine xenograft models were used to test the efficacy of a selective S1P3 inhibitor in vivo.

Results: S1PR3 and CCL2 mRNA were abundantly expressed in NB tissues. In NB SK-N-AS cells S1P induced CCL2 mRNA expression and protein secretion in time- and concentration-dependent manners. Antagonism of S1P2 by specific S1P3 antagonist JTE-013 blocked S1P-induced CCL2 mRNA expression and protein secretion. Overexpression of S1P1 by adenoviral transduction into SK-N-AS cells increased CCL2 secretion while knockdown of S1P1 by S1P3 siRNA transfection decreased CCL2 secretion. The S1P3 inhibitor JTE-013 suppressed tumor growth in NB xenograft models.

Conclusions: Taken together, our data demonstrate that S1P induced CCL2 expression in NB cells via S1P3 and maybe a potential therapeutic target.

Increased Alpha 1a and 1b Expression in the Castrated Rat Prostate
Allen D. Seifel1, Michael DiSanto1, Xinhua Zhang1, Rani Sellers2
1Cooper University Hospital, Camden, NJ; 2Albert Einstein College of Medicine, Bronx, NY

Introduction and Objectives: Male aging is accompanied by hypogonadism and worsening LUTS/BPH. The hypogonal state should lead to diminution in LUTS/BPH symptoms. To understand these paradoxical clinical effects, we used a castrate rat model examining contractility and mRNA expression of eNOS, nNOS, PDE5, TGF-β1, ROKi, ROKβ, alpha 1a, 1b, alpha 1d, total myosin, non-muscle myosin and the smooth muscle specific transcriptional factor myocardin.

Methods: Male adult Sprague-Dawley rats (275 to 330 g) were divided into sham, surgical castration, surgical castration with testosterone propionate (T) supplementation. Organ bath contractility studies, competitive and Real-Time RT-PCR, and histological examination were performed.

Results: The castrate model was validated histologically. The prostate and seminal vesicles atrophied. T supplementation reinstated weight. Total myosin immunostaining was essentially unchanged, though the glandular cells changed morphologically: Castration significantly decreased KCl and phenylephrine (PE)-induced prostate strip contraction in a dose-dependent manner. Alpha receptor subtypes 1a and 1b significantly increased by 2-fold. nNOS decreased 5-fold while eNOS increased 2-fold. ROKβ decreased 2-fold while ROKα showed no change. PDE5 was reduced 3.3-fold. TGF-β1 increased 4-fold. Competitive RT-PCR of the control prostate displayed around 50% SMA and 50% SMβ, 85% SMα and 15% SM, 70% Lc17α, 50% Lc17β myosin isoforms. After castration, SMβ, SMα and Lc17β increased by 20%, 15% and 5%, respectively. Total myosin, non-muscle myosin and myocardin significantly decreased 2-fold, 3-fold and 3-fold, respectively.

Conclusions: Castration increases prostate alpha 1a and 1b mRNA expression, possibly accounting for LUTS symptoms seen in the aging male faced with hypogonadism.

Clinicopathological Correlation of Gli1 Expression in a Population Based Cohort of Patients with Newly Diagnosed Bladder Cancer
Einar F. Sverrisson1, Michael Scott Zens2, Alan Schned1, John D. Seigne1, Margaret R. Karagas2
1Dartmouth Hitchcock Medical Center, Lebanon, NH; 2Dartmouth Medical School, Hanover, NH

Introduction: Gli transcription factors are the primary effectors of the Hedgehog signaling pathway which has been involved in several different human tumors including cancers of the skin, brain, colon, prostate, blood and pancreas. We assessed the clinicopathological correlation of Gli1 expression in bladder cancer.

Materials & Methods: Bladder cancer cases were identified from the New Hampshire State Department of Health and Human Services Cancer Registry as histologically confirmed primary bladder cancer diagnosed between January 1st 2002 and July 31st 2004. Immunohistochemistry was performed to detect Gli1 and βH3. We computed Odds ratios and their 95% CI for Gli1 positivity for pathology stage using T code from TNM, invasiveness and grade using both WHO 1973 and WHO ISUP criteria.

Results: A total of 194 men and 67 women were included in the study. No difference was noted in sex, age, smoking status or high risk occupation when stained for Gli1. There was a statistical difference in Gli1 staining when comparing Ta and T1 tumors (OR:0.38, CI:0.21-0.70) and when comparing lower grade tumors (grade 1-2) and high grade tumors (grade 3) (OR: 0.44, CI:0.21-0.85). Invasive transitional cell carcinoma was less likely to stain for Gli1 than noninvasive tumors but on multivariate analysis the difference was not statistically significant (OR:0.61, CI:0.29-1.27).

Conclusions: Gli1 may have a role in transitional cell cancer differentiation. Our data provides additional information on the role of effectors of Hedgehog signaling in the molecular pathogenesis of bladder cancer.

Up-regulation of Transforming Growth Factor-β and the Counter-regulatory Effects of Hepatocyte Growth Factor in Fetal Sheep Bladder Outlet Obstruction
Nora G. Lee1, Hao Fan2, Craig A. Peters1
1Boston University Medical Center, Boston, MA; 2University of Virginia, Charlottesville, VA; 3Children's National Medical Center, Washington, DC

Introduction: Obstructive nephropathy is a major cause of renal insufficiency in children. Transforming growth factor-β (TGF-β1) plays a central role in the pathogenesis of obstructive renal injury. Hepatocyte growth factor (HGF) has been found to reduce fibrosis and tissue injury, but its relationship to TGF-β1 is less defined. We hypothesize that renal TGF-β will be increased in a fetal sheep model of bladder outlet obstruction (BOO) with a coordinate and compensatory increase in HGF.

Materials & Methods: Six fetal sheep underwent partial BOO at 95 days gestation via a metal urethral ring and urachal ligation. These and four age-matched controls were sacrificed at 135 days gestation (term). Kidneys were retrieved, drained, and weighed. Formalin-fixed mid-sagittal kidney sections were obtained. Immunohistochemical localization of TGF-β1, TGF-β1 receptor type 2(TGF-βR2), and HGF was performed and quantified morphometrically.

Results: Obstructed kidneys showed significantly greater TGF-β1 and TGF-βR2 staining compared to controls (p=0.048 and p=0.036 respectively). TGF-β1 was largely localized to tubules and moderately to the interstitium, whereas TGF-βR2 staining was heavily localized to tubules. HGF staining in obstructed kidneys was significantly greater than in controls (p=0.017), and localized to tubules and less so to the interstitium.

Conclusions: TGF-β1 and TGF-βR2 are up-regulated in sheep subjected to BOO with predominantly tubular presence. HGF is coordinately up-regulated and co-localized, likely as a compensatory mechanism to counteract effects of TGF-β1. HGF appears to be an important co-factor in the pathophysiology of congenital obstructive nephropathy and may be useful diagnostically and therapeutically in preventing/attenuating renal injury.
Fluid Intake and Risk of Stress, Urgency, and Mixed Urinary Incontinence

Ying Jura1, Mary Townsends2, Gary Curhans3, Neil Resnicks3, Francine Grodsteins3
1Massachusetts General Hospital, Boston, MA; 2Harvard School of Public Health, Boston, MA; 3Boston Medical Center, Boston, MA

Introduction: Many women with urinary incontinence restrict their fluid intake in an effort to manage their urinary symptoms. Additionally, women without incontinence might limit their fluid intake hoping to prevent incontinence despite the lack of evidence. Because low fluid intake is associated with increased risks of several chronic diseases, more studies are needed. We prospectively investigated the relation between total fluid intake and incident urinary incontinence in the Nurses’ Health Study cohorts.

Materials & Methods: We measured daily fluid intake using food frequency questionnaires among 65,167 women, aged 37-79 years, without incontinence at baseline (2000-2001). Women reported incontinence incidence on questionnaires during 4 years of follow-up. Multivariable-adjusted hazard ratios (HR) and 95% confidence intervals (CI) were calculated using Cox proportional hazards models.

Results: We found no association between total fluid intake and risk of incident incontinence (multivariable-adjusted HR 1.04, 95% CI 0.98-1.10 comparing top to bottom quintile of fluid intake). In analyses of incontinence type, total fluid intake was not associated with risks of incident stress, urgency, or mixed incontinence (HR 0.91, 95% CI 0.77 - 1.06 for stress; HR 1.13, 95% CI 1.08 - 1.44 for urge; and HR 1.12, 95% CI 0.89 - 1.42 for mixed incontinence comparing top to bottom quintile of fluid intake). We also found no associations between specific beverages (e.g. juice, soda, alcohol etc.) and incontinence risk.

Conclusions: No significant risk of incident urinary incontinence was found with higher fluid intake in women. Women should not restrict their fluid intake to prevent incontinence development.

Long-Term Treatment Interval of Percutaneous Tibial Nerve Stimulation: 18 Month Study Results

Jeffrey A. Ranta1, Ken Peters2, Donna Carrioc2
1Greeneville Urological Assoc. P.C., Greeneville, CT; 2William Beaumont Medical Center, El Paso, TX

Introduction: The Sustained Therapeutic Effects of Percutaneous Tibial Nerve Stimulation (STEP) study evaluates long term therapy effectiveness of percutaneous tibial nerve stimulation (PTNS) for OAB. The objective of this review is to evaluate the treatment interval frequency through 18 months of sustained therapy.

Methods: Following treatment success after 12 weekly PTNS treatments, subjects were on a set tapering protocol of PTNS for 3 months and then received ongoing therapy on a Personal Treatment Plan as determined by the investigator and subject to maintain sustained improvement in the subject’s OAB symptoms. Questionnaires were completed every 3 months and voiding diaries were completed every 6 months.

Results: Of the PTNS subjects eligible to continue into the STEP study, 52/60 (87%) were enrolled. The mean treatments/month by follow-up intervals were: 1.9 (3-6 months), 1.36 (9 months), 1.29 (12 months), 1.21 (12-15 months) and 1.11 (15-18 months). Median treatments/month were: 1.8 (3-6 months), and 1.1 (6-9, 9-12, 12-15, 15-18 months). All OAB-q domains and voiding diary parameters at 6, 12, and 18 months were significant for improvement compared to baseline for frequency, incontinence episodes, nighttime voids and moderate to severe urgency episodes (p<0.001).

Conclusions: Sustained significant efficacy of PTNS was demonstrated over 18 months with a mean and median of 1.1 treatments/month following initial success after twelve 30-minute weekly treatments.

Sexual Function Following TVTO Placement: Minimum 12 Month Follow Up

Ashley B. King1, Jeffrey P. Wolters1, Adam P. Klauser2, David E. Rapp2
1Virginia Commonwealth University, Richmond, VA; 2Virginia Urology Center for Incontinence and Pelvic Floor Reconstruction, Richmond, VA

Introduction: The effect of anti-incontinence surgery on sexual function is not clear based on the current literature. The study aim was to examine the impact of TVTO on sexual function and vaginal symptoms.

Methods: This study is a retrospective review of thirty-three undergoing TVTO with a minimum of 12 month follow-up. Outcomes were assessed using validated questionnaires, with focus on the International Consultation on Incontinence Questionnaire-Vaginal Symptoms (ICIQ-VS). The ICIQ-VS is a validated measure assessing impact of vaginal symptoms and associated sexual matters on quality of life and treatment outcome. Incontinence impact questionnaire (IQ-7) was used a secondary measure of quality of life. Quality of life scores were also compared to patient perceived level of improvement.

Results: Mean age was 61.8 years old (+13.6) with average parity of 2.1 children (+1.2). Improvements in ICIQ vaginal symptom (6.7 to 3.8, p<0.01), sexual function (4.1 to 2.7, p<0.03), and quality of life scores (3.2 to 1.6, p<0.01) were seen in comparison of baseline and 12-month questionnaire evaluations. VS QOL scores demonstrate score improvement, stability, and deterioration in 14, 14, and 5 patients, respectively. Pearson’s correlation of QOL outcomes and patient perceived level of improvement demonstrated weak correlations (VS-QOL versus improvement r=-0.37, IQ-7 versus improvement r=0.56, p<0.05, both comparisons).

Conclusions: Anti-incontinence surgery is associated with improvements in validated measures of sexual function and vaginal symptoms. The vast majority of patients reported symptom stability or improvement in these endpoints. Vaginal symptom QOL outcomes and patient perceived improvement were weakly correlated.

Ileal Loop Urinary Diversion for Non-Bladder Cancer Indications - Long-term Outcomes and Complications

Ellen Goldmark, Melissa Hooer, Toby C. Chai
University of Maryland, Baltimore, MD

Introduction: We evaluated complications and patient satisfaction following suprapubic ileal urinary diversion for non-bladder cancer indications.

Materials & Methods: This IRB approved retrospective study was performed in 26 females and 10 males who underwent ileal loop diversion for non-bladder cancer indications by a single surgeon between 1999 to 2010. Charts were reviewed and patients were contacted to assess outcomes, complications and satisfaction following surgery.

Results: Of the 36 patients, indications for urinary diversion were: neurogenic bladder (18), radiation cystitis (11), prostatic brachytherapy complications (3), refractory incontinence (3) and recurrent urethral tract infection (1). All patients were left with their native bladders. Complications occurred in 18 patients (50%) including, UTI (25%), ureteral stenosis (19%), stomal hernia (14%), pyocystis (8%), bowel leak (6%), and nephrolithiasis (6%). Fourteen patients were deceased at time of our review (mean 27 months after surgery). Nineteen of the surviving 22 patients (86%) were interviewed. Their mean age was 62 years and mean time from surgery was 39 months. Patients had a mean overall satisfaction score of 8.63 ± 1.83 on a scale from 0-10 (10 = most satisfied). When asked if they would repeat the surgery 14 (74%) said yes, 2 (11%) said no, and 3 (16%) said they were unsure.

Conclusions: In selected patients, ileal loop diversion can be used to manage recalcitrant lower urinary tract complications. Despite a relatively high complication rate, long-term patient satisfaction remains high. The bladder may be left in place given the low pyocystis rate.
Concurrent Scientific Session I: Stones/Endourology
1:45 pm-2:50 pm

21

Short-term Outcomes of Robotic Assisted Sacrocolpopexy for Pelvic Organ Prolapse
Veronica Triaca, Heidi Hallonquist, Cathy Yi, Katherine Cail
Concord Hospital, Concord, NH

Introduction and Objectives: We present short term surgical and quality of life outcomes in a cohort of patients that underwent robotic assisted sacrocolpopexy (RASCP) for symptomatic pelvic organ prolapse.

Methods: A prospective analysis was performed to evaluate perioperative and quality of life outcomes following RASCP for the treatment of symptomatic POP. All patients underwent multi-disciplinary evaluation including examination with a urologist and gynecologist. Prolapse was graded by the Baden-Walker staging. Candidates underwent RASCP with/without supracervical hysterectomy and urethral sling. Patients were followed postoperatively with physical examination and questionnaires (PFDI, BSI, AUASS, AU/AIDS). Data was available at 3, 6 and 12 months following surgery.

Results: From 4/2010 to 4/2011, 58 patients with POP underwent RASCP. All patients underwent concomitant mid-urethral sling, (8 minarc, 50 PVS), 30 patients underwent concomitant robotic assisted supracervical hysterectomy. Mean patient age was 59.9 years (range 45 - 80). Mean EBL was 50cc. Mean operative time was 156 minutes. Mean operative prolapse stage was 3.2 on Baden-Walker staging (0-4). Mean length of stay was 48hrs. There were no conversions. There was one bowel injury. Mean follow up was 6 months. One patient demonstrated apical recurrence at 6 months postop. Patients demonstrated statistically significant QOL improvement following surgery based on mean scores PFDI (3.6 vs 1.9, p<0.05), ISS (2.2 vs 0.8, p<0.05) and AUASS (3.75 vs 1.5, p<0.05) and AUAQOL ( 4.3 vs 1.2 p<0.05).

Conclusions: RASCP is a safe and highly efficacious treatment option for women with symptomatic POP. Patients reported an improvement in their QOL.

22

Is Complete Cure Necessary for Satisfaction in Patients Undergoing Concurrent Anti-incontinence and Prolapse Surgery?
Jeffrey P. Wolters1, Ashley B. King1, Adam P. Klausner1, David E. Rapp2
1Virginia Commonwealth University, Richmond, VA; 2Virginia Urology Center for Incontinence and Pelvic Floor Reconstruction, Richmond, VA

Introduction: Simultaneous repair of SU1 and prolapse has become increasingly common. In these cases, determinants of patient satisfaction are further complicated by the fact that single surgical success may be achieved in one component but not the other. The study focus was to determine if patients report satisfaction if success is only achieved with respect to a single outcome when concurrent surgeries are performed.

Materials & Methods: We performed a retrospective review of post-operative results on 92 consecutive women undergoing variety of AI procedures and/or prolapse repair. Multiple validated outcome measures were used to evaluate success following AI surgery (ICIQ-FLUTS, SU1 item, pad use, subjective SU1 cure) and prolapse (ICIQ-VS, POPQ stage). Multiple statistical analyses (Pearson’s correlation, Mann-Whitney, and Fischer’s exact) were performed to assess for association between outcome measures and patient satisfaction.

Results: Eighty women (97%) reported satisfaction following surgery with mean follow-up of 12 months. Cure of both prolapse (POPQ stage G) and SU1 (subjective cure) was associated with satisfaction (p<0.05). Satisfaction rates among these dual cure patients were comparable to satisfaction rates in women who had cure of only one entity (prolapse OR incontinence). ICIQ-VS improvement correlated with overall post-operative satisfaction (p<0.05) while the other examined measures did not demonstrate statistically significant correlation with post-op satisfaction.

Conclusions: Not surprisingly, cure of both incontinence and prolapse in the setting of a concomitant procedure was associated with statistically significant satisfaction. Interestingly, these satisfaction rates do not differ greatly from those in patient’s who reported cure of only one problem.

23

Assessment of Radiation Exposure from Diagnostic Imaging in Patients Undergoing Ureteroscopy with Laser Lithotripsy for Upper Tract Stones
Brooke A. Harmisch, Jessica E. Kreshover, Aylin Bilgutay, Richard K. Babayan, David S. Wang
Boston University and Boston Medical Center, Boston, MA

Introduction: Patients with urolithiasis who undergo ureteroscopy (URS) are commonly diagnosed with CT, X-ray, and renal ultrasound. There has been recent concern that these patients are at increased risk for radiation exposure above the annual limit of 50 millisieverts (mSv) due to diagnostic imaging, especially with CT scan. Therefore, we evaluated the number of imaging studies and the amount of radiation exposure to patients undergoing URS for upper tract stones.

Methods: An IRB approved retrospective study was conducted on patients who underwent URS between 2003-2007. Total number of imaging studies was analyzed over 1-14 months. Time period of data collection was determined from the initiating diagnosis of the stone until 6 weeks following completion of URS. Radiation dose was calculated using effective radiation dose standards.

Results: 286 patients were identified. Mean size of stone was 8.71 +/- 4.22 mm. The most common stone location was renal (43%). Patients underwent an average of 1.6 CT scans (range 0 to 6) over an average of 5 months. 124 patients (43%) received >50mSv which is equivalent to a 2 CT scans. Smaller stone size and stone location increased the probability of receiving >2 CT scans in one year (p=0.02). Patient age, stone location, and/or post surgical complications were not significant.

Conclusions: 43% received >50mSv of radiation over one year. Smaller size and mid/distal location of the stone significantly increased the risk of receiving a higher number of imaging studies emphasizing the increased radiation risk to patients with urolithiasis.

24

Ureteral vs Renal Laser Lithotripsy: Are They Really Equal?
Levi A. Deters, Vernon M. Pias, Jr
Dartmouth Hitchcock Medical Center, Lebanon, NH

Objective: The role of ureteroscopic laser lithotripsy (ULL) is well established for the management of ureteral stones and is increasingly accepted for renal stones. However, stone location is not currently differentiated by procedural name or billing code. We hypothesized that these cases are not equivalent in terms of the surgeon’s work as measured by the operating time, and we assessed if significant variations exist within the umbrella of CPT 52353: “ureteroscopic lithotripsy”.

Methods: We retrospectively reviewed records of all patients undergoing unilateral ULL under the care of one fellowship trained endourologist between 2008 and 2010. Patients who underwent simultaneous additional endoscopic procedures, including bilateral ureteroscopy, were excluded. Demographics, operative time, stone size and location, and presence of previously placed stent were assessed and compared. Cohorts were designated according to stone location – ureteral or renal.

Result: Of the total 213 ULL cases reviewed, 115 were ureteral stones and 98 renal stones. Renal stones had a significantly increased mean operative time of 112 minutes versus 70 minutes for ureteral stones (p<0.001). Renal stone size was significantly larger (11.3mm vs 7.7mm, p<0.001), and these cases had a higher preoperative stent rate (55% vs 37%, p=0.0128).

Conclusion: Despite bundling within a single CPT code, ureteroscopic management of renal stones and ureteral stones were markedly different, with a significant increase in operative time for renal stones. Renal stone size was significantly larger, as can be expected. In the same manner as resection of bladder tumors and lithotripsy of bladder stones, CPT differentiation should be considered.
Radiation Exposure during Extracorporeal Shockwave Lithotripsy
Eugene Kramolowsky1, Nada L. Wood1, Susan Taylor2, Ruth Butler1, Matthew Basgian1, Dean Broga1
1Virginia Urology, Richmond, VA; 2Washington and Lee University, Lexington, VA; 1Virginia Commonwealth University, Richmond, VA

Introduction: Efforts should be made to minimize patient radiation exposure during extracorporeal shockwave lithotripsy (ESWL).

Materials & Methods: Fluoroscopic time (FT) and radiation effective dose (Deff) were determined for 422 consecutive ESWL. Standard imaging protocol was applied and adjusted based on clinical situation. Fluoroscopic imaging was done prior to; at 1,000 and 2,000 shocks; and at completion. Patient Deff was calculated using Monte Carlo simulation rendered by PCXMC software.

Results: 422 ESL (259 males; 163 females [79 of child bearing age]) were analyzed. Mean FT was 95.4 seconds (range 21-600); average Deff per patient was 0.847 mSv (range 0.116- 5.878). Digital exposures were not routinely done. FT based on stone size (<25mm2 = 94.1sec; 25-75 mm2 = 95.7 sec; >75 mm2 = 95.9 sec) was not significant. Estimated average Deff for patients was 0.784 mSv (<25mm2); 0.863 mSv (25-75 mm2); and 0.882 mSv (>75 mm2), respectively. No significant difference was noted regarding stone location (ureteral 0.940 mSv); (renal 0.770 mSv). FT for females under age 49 was 94.2 +/- 5.9 sec and mean Deff was 0.785 mSv (range 0.163-4.325). Deviation from the imaging protocol occurred in 36 ESL treatments (8.5%) with mean FT of 258.3 +/- 16.0 sec (range 183-600) and mean Deff of 2.336 mSv.

Conclusions: Radiation exposure during ESWL is comparable to that of a conventional radiograph of the abdomen (KUB) at 0.7 mSv. Implementation of a standard imaging protocol during ESL results in a reliable means to minimize radiation exposure to the patient.

Relationship Between Protein Intake and Urine Composition in Patients With Nephrolithiasis
Brian H. Eiser1, Sonali Sheth1, Stephen P. Dretler1, Benjamin Herrick2, Vernon M. Pain, Jr2
1Massachusetts General Hospital, Boston, MA; 2Dartmouth Hitchcock Medical Center, Lebanon, NH

Introduction: Epidemiologic studies have demonstrated that high dietary protein intake may increase risk of nephrolithiasis. The current study examines the relationship between protein intake and urine composition.

Materials & Methods: A retrospective review was performed. Multivariate linear regression examined the relationship between protein intake and 24-hour urine composition in patients with nephrolithiasis.

Results: 460 patients were included in the study. Female:male ratio was 184:276 (i.e. 40% female), mean age was 52.4 years (SD 14.3), mean BMI was 28.7 (SD 6.3). Mean 24-hour urine urea nitrogen was 12.1 g/day (SD 4.5). On multivariate linear regression, dietary protein intake was not significantly associated with urine calcium (β = -23.3, 95% CI -34.8 to -11.8) and pH (β = -0.05, 95% CI -0.17 to 0.07). There was no association between protein intake and urine oxalate.

Conclusions: Among known risk factors for nephrolithiasis, increasing dietary protein intake appears to increase urine calcium and uric acid, while decreasing urine citrate and pH. Restriction of protein intake, therefore, should reduce patient risk for both calcium oxalate and uric acid nephrolithiasis.

Percutaneous Nephrolithotomy in Patients with Neurogenic Bladder Dysfunction
Matthew Mason, Severn Helo, Noah Schenkman
University of Virginia, Charlottesville, VA

Introduction: Patients with neurogenic bladder (NGB) dysfunction are at increased risk of urolithiasis, and frequently develop large renal stones requiring percutaneous nephrolithotomy (PNL). Patients with myelodysplasigenic (MMC) have NGB but typically have abnormal body habitus, making percutaneous access and surgical positioning more difficult. Recent literature suggests that the many patients with NGB possess metabolic rather than infectious stones.

Materials & Methods: We reviewed the medical records of all patients who underwent PNL at our institution from 2001 to 2010. Patients with NGB were selected for this study. Comparison was made between patients with MMC versus other forms of neurologic disease.

Results: A total of 26 patients with NGB underwent 39 PNL procedures between 2001 and 2010. The majority of patients had infectious stones. Major complications were sepsis or bleeding requiring transfusion. There was no significant difference in stone size, peri-operative complications, stone composition, stone-free rate, or radiation exposure between patients with or without MMC.

Conclusions: Our experience failed to confirm recent reports suggesting a high number of metabolic stones, and supports previous findings that this population has a high percentage of infection stones. Despite the abnormal body habitus of most patients with myelodysplasigenic, PNL remains equally effective and safe when compared to other patients with NGB and normal body habitus.
Delayed Ureteral Complications Following Complex Partial Nephrectomy
Jose Reyes, Daniel Caner, Jay Simhan, Marc Smaldone, Ervin Tepes, Alexander Kutikov, David Y.T. Chen, Robert G. Uzzo
Fox Chase Cancer Center, Philadelphia, PA

Introduction: The recent AUA guidelines for management of the clinical T1 renal mass highlight the role of nephron sparing surgery (NSS). As detailed in the recent guidelines, nephron preservation is associated with a higher risk of major urologic complications. Ureteral complications including delayed ureteral stricture (DUS) formation after NSS is an uncommonly reported event. Here we report the incidence of DUS after complex NSS in order to identify the potential risk factors.

Materials & Methods: Using our institutional kidney cancer database, we identified 729 patients who underwent NSS from January 1, 2000 through December 31, 2010 and identified eleven (1.5%) patients with a DUS. Patient and tumor characteristics were reviewed.

Results: Median tumor size and R.E.N.A.L. Nephrometry score were 4.1 (2.7-2) cm and 10p (ap-1p), respectively. Eighty percent of tumors were located in the mid or lower pole of the kidney. Eight (72.7%) patients with DUS experienced a postoperative urinary leak. Two (18.2%) patients experienced a postoperative retroperitoneal hemorrhage with one of these patients requiring selective embolization. All ureteral strictures were in the upper third of the ureter and were diagnosed at a minimum of 10 weeks postoperatively (median 154 days, range 70-400).

Conclusions: Ureteral stricture formation is an uncommon and under reported event following complex NSS. Risk factors include tumor complexity, imperative indications, mid or lower pole location, postoperative urinary leak and hemorrhage. Although uncommon, postoperative DUS can occur after NSS for complex renal masses, necessitating patient counseling and diligent postoperative surveillance.

Comparing Post-operative Complication rates between Neoadjuvant Chemotherapy and Chemotherapy Naïve Patients who undergo Cystectomy for Bladder Cancer
Jack W. Lambert, III, Stephen Riggs, Matthew Ingham, Bethany Barone, Eastern Virginia Medical School, Norfolk, VA

Introduction: Although it may appear implicit that patients who receive neoadjuvant chemotherapy (NC) for bladder cancer would have higher complication rates post-operatively, there has been sparse literature published on this subject. Our single institution study compares complication rates between NC and chemotherapy (CT) naïve patients who underwent radical cystectomy (RC).

Methods: We performed a retrospective review from our bladder cancer database of 208 patients and we included any patient from 2004-2011 who underwent cystectomy for bladder cancer. 13 patients were excluded from analysis because they died prior to cystectomy. Immediate post-operative and 90 day complication rates were recorded for all patients.

Results: Interestingly, 60.5% of patients in the NC group and 71.3% in chemotherapy naïve group had at least one complication. The Clavien-Dindo classification scores were 2.39 and 2.55 for the NC and CT naïve groups, respectively. There was a total of 347 post-operative and 90 day complications recorded in 208 patients, or 1.73 complications per patient.

Conclusions: Patients who underwent NC had a 10.8% lower post-operative complication rate than CT naïve patients. Therefore, in our single institution study NC does not confer an increased complication risk and the potential risk for complications should not deter urologists from the pursuing this option for patients.

Durable Oncologic Outcomes after Radiofrequent Ablation for T1 Renal Cell Carcinoma in Poor Surgical Candidates
Sarah P. Psutka, Francis J. McGovern, Peter Mueller, W. Scott McDougall, Debra Gervais, Adam S. Feldman
Massachusetts General Hospital, Boston, MA

Introduction: Long-term oncologic outcomes for radiofrequency ablation (RFA) of renal cell carcinoma (RCC) are limited.

Methods: Between 1998 and 2008, 311 biopsy-proven RCC were treated with RFA in 274 patients. Exclusion criteria included history of prior RCC or known metastatic RCC at time of RFA (n=92). 26 were lost to follow-up prior to their 6-month imaging study. We retrospectively reviewed the long-term oncologic outcomes for 193 patients. Mean follow-up was 4.6 yrs (range 1-12, SD 2.3).

Results: Mean age was 71 years. Mean Charlson Score was 5.46. Tumor size averaged 3.1cm (SD 1.3cm) and 64 (33%) were endophytic. Tumor breakdown by stage was T1a: n=153 (79%), T1b: n=97 (52%), and T2: n=3 (2%). Initial treatment success rate was 92%. There were 6 local recurrences (3%) in 4 patients with T1b disease and 2 patients with T2 disease with an average time-to-recurrence of 2.9 years (SD 0.7). 95% of patients with T1a RCC were disease free at last follow-up, in comparison to 81% of those with T1b and 33% of those with T2 disease (p=0.008). At last follow-up 178 (92%) patients were disease-free. 16 (8.2%) developed metastatic disease and 4 patients (2%) died of RCC. Mean disease-free survival was 4.3 years (SD 2.4).

Conclusions: In patients who are poor surgical candidates, RFA results in durable local control and a low risk of disease recurrence in T1 RCC. Higher stage, however, correlates with a lower disease free survival and should be considered when evaluating treatment options.
Concurrent Poster Session II: Oncologic Diseases
3:20 pm-4:00 pm

**P25**

**Modifying Utilization of Urine Cytology Testing During Follow-up for Patients with Urothelial Carcinoma**
Mohammad M. Siddiqui, Aria F. Ofumi
Massachusetts General Hospital, Boston, MA

**Introduction:** Urine cytology is routinely used at initial diagnosis and during follow-up of patients with urothelial carcinoma (UC). We hypothesized that urine cytology results at time of initial diagnosis in UC is representative of the urine cytology when patients recur.

**Materials & Methods:** A retrospective review of patients newly diagnosed with stage Ta or T1 bladder UC in 2004-2005 was performed. Data were collected from January 2004 to March 2011 regarding demographics, urine cytology, pathology, bladder UC recurrence, and follow-up. 161 patients were evaluated of whom 43 were excluded due to loss to follow-up (17) or unavailable initial cytology in the medical record (26).

**Results:** 118 patients were evaluated with a mean follow-up of 61.8 months. Positive urine cytology was seen in 46/118 (39%) of patients at initial diagnosis. A total of 76/118 (64%) had recurrent bladder UC with a mean recurrence time of 16 months. In patients with recurrent disease, cytology evaluation had a sensitivity of 76% for detection of recurrence amongst patients who had a history of positive cytology with their initial tumor. However, amongst patients with a history of negative cytology with their initial tumor, cytology only had a sensitivity of 17% during recurrence. Cytology result remained a significant predictor of positive cytology results with tumor recurrence in multivariate analysis when controlling for grade, tumor size, and multifocality (p<0.0001).

**Conclusions:** Urine cytology is a useful diagnostic test for follow-up of patients with UC only in those who have a positive result during the first diagnosis of UC.

**P26**

**Surgical Outcomes of Non-hilar Clamping Partial Nephrectomy: An Updated Twenty Year Experience**
Justin M. Zbrzezny1, William C. Faust1, Marc D. Mangiello1, Matthew F Wszolek1, Yoojin Lee2, John A Liberto1
1Lahey Clinic Medical Center, Burlington, MA; 2Institute for Clinical Research and Health Policy Studies, Tufts Medical Center, Boston, MA

**Introduction:** Non-clamping partial nephrectomy has superior renal outcomes and equivalent oncologic outcomes compared to hilar clamping partial nephrectomy in initial investigations. Potential hindrances to widespread acceptance include concerns over technical difficulty and the associated learning curve. Our purpose is to demonstrate durable renal, perioperative and oncologic outcomes from a multi-surgeon, single institution experience over the past twenty years.

**Methods:** 69% non-clamping partial nephrectomies were performed at our institution between 1990 and 2010. 469 patients with inadequate follow up, familial renal cancer syndrome, solitary kidney, or benign pathology were excluded. Patient demographics, operative data, complications, oncological outcomes, and percent change of early and late glomerular filtration rate (GFR) of the remaining 226 patients were analyzed. Patients were placed into 3 chronological groups (1st third, 2nd third, 3rd third) based on date of surgery, and the above parameters were compared using Student’s T-test to investigate changes over time.

**Results:** Patient demographics, operative outcomes, complications, surgical margins, local recurrence, overall and disease specific survival, and percent change in eGFR were statistically similar among the three groups. Loss of renal function among the early and late time points was not observed. Over time more partial nephrectomies were performed for bilateral tumors (p<0.05), less were performed for advanced disease (p<0.05), and length of hospital stay decreased (p<0.05).

**Conclusions:** Over 20 years experience, non-clamping partial nephrectomy has durable and consistent outcomes in regards to postoperative renal function, perioperative complications and disease specific survival. This supports an acceptable learning curve and potential widespread application of this technique.

**P27**

**Pyeloperfusion as a Protective Mechanism for Radiofrequency Ablation of Renal Carcinoma Contiguous to the Ureter: Technique, Results and Complications**
Jairam R. Eswara1, Debra Gervais1, Peter Mueller1, Ron Arellano1, Colin Cantwell2, Raul Uppot3, Francis McGavern1
1Massachusetts General Hospital, Boston, MA; 2St. Vincents, Dublin, Ireland

**Introduction:** Radiofrequency-ablation (RFA) is an effective means of renal tumor ablation. Ablation of masses adjacent to the ureter risks ureteral injury/stricture. Placement of a ureteral catheter and pyeloperfusion with dextrose 5% in water (DSW) has been used as a method of reducing the risk of ureteral injury/stricture.

**Materials & Methods:** Between November 2005 and July 2010, 46 patients (52 ablations) required pyeloperfusion to protect the ureter. Patients were selected for retrograde-pyeloperfusion during RFA if the tumor was located within 1.5cm of the ureter. Pyeloperfusion was performed via a 5 Fr ureteral catheter and retrograde instillation of DSW. Tumors were classified as central, exophytic, or mixed according to the Gervais classification system. All procedures were performed under CT-guidance.

**Results:** 52 RFAs with pyeloperfusion were performed with an 87% success rate. Median tumor diameter was 3.3 cm. 14/45 (31%) patients had major complications according to the Society of Interventional Radiology classification, but 2 patients (4%) developed a ureteral stricture managed with stenting. 5 patients (10%) had significant hematuria, 2 (4%) had urinomas requiring IR-drainage, and 1 had pseudoneurocrine requiring angioembolization. 2 patients (4%) had delayed abscesses: 1 patient underwent IR-drainage of the abscess, 1 underwent nephrectomy for possible recurrent tumor, but was found to be an abscess with no evidence of malignancy.

**Conclusions:** RFA for renal masses is well-tolerated. Pyeloperfusion for ablations adjacent to the ureter led to only 2 ureteral strictures but also 2 delayed abscesses. Our rate of complications is slightly higher than that of other contemporary RFA series.

**P28**

**Masses Treated by Thermal Ablation Are Low or Moderately Complex as Measured by the R.E.N.A.L.-Nephrometry Scoring System**
Jose Reyes, Daniel Canster, Jay Simhan, Marc Smaldone, Ervin Teper, Alexander Kutikov, Rosalia Viterbo, David Y.T. Chen, Richard E Greenberg, Robert G. Uzzo
Fox Chase Cancer Center, Philadelphia, PA

**Introduction:** Despite the AUA Guidelines listing thermal ablation (TA) as a treatment option for the clinical T1 renal mass, treatment decision-making for renal lesions remains subjective. The R.E.N.A.L.-Nephrometry scoring system (NS) was introduced to objectify salient renal mass anatomy and standardize academic reporting. Preliminary reports have evaluated its utility in terms of surgical decision-making and predicting post-operative complications. In this study, we characterize our experience with renal lesions undergoing TA using NS.

**Materials & Methods:** We queried our prospectively maintained kidney cancer database of 2,312 patients and identified 39 patients who underwent TA with available Nephrometry scores. Patient clinical, tumor, peri-operative, and oncologic characteristics were reviewed.

**Results:** Median patient age, serum creatinine, estimated glomerular filtration rate, and Charlson Comorbidity Index were 71 (range=57-86) years, 1.39 (range=0.7-3.5) mg/dl, 97.5 (range=23-39.8) ml/min, and 2 (range=0-5), respectively. Chronic kidney disease stage III or higher was present in 56% of patients. Median NS was 6 (4-10). Low (NS=4-6), moderate (NS=7-9), and high (NS=10-12) complexity tumors were observed in 20 (51%), 17 (44%), and 2 (5%) patients. Minor (Clavien I-II) and major (Clavien III-IV) complications occurred in 4 (10%) and 1 (3%) patients, all of whom had moderate complexity tumors. Five (13%) patients had a recurrence, 4 of whom had moderate complexity tumors.

**Conclusions:** In our institutional experience, 95% of lesions undergoing TA are low or moderate complexity as measured by the R.E.N.A.L.-Nephrometry scoring system. There appears to be a direct relationship between increasing tumor complexity and the incidence of peri-procedural complications and disease recurrence.
Renal Oncocytoma Diagnosed by Percutaneous Biopsy Can Be Safely Followed but Must Not Be Forgotten

Sameer M. Deshmukh, Brian F Chapin, Brian H. Eisner, Jairam Esvara, Francis J. McGovern, W. Scott McDougall, Peter Mueller, Anthony Samir, Adam S. Feldman
Massachusetts General Hospital, Boston, MA

Introduction: Percutaneous needle biopsy is emerging as an option for identifying benign renal neoplasms. The natural history of in situ renal oncocytooma has not been well characterized. We present radiographic and clinical outcomes of patients diagnosed with oncocytooma by a percutaneous needle biopsy.

Materials & Methods: We performed a retrospective review of 899 patients who underwent percutaneous core biopsy of a renal mass at our institution from 1997-2010. We excluded patients with ≤ 12 months follow-up, leaving 40 patients who were diagnosed with oncocytooma by dedicated genitourinary pathologists. Follow-up and treatment outcomes were assessed.

Results: 38/40 patients underwent active surveillance with serial cross-sectional imaging. Median follow-up time was 26.0 months. Median tumor size was 2.5 cm. Median growth rate was 0.1 cm/year. 1 patient underwent delayed intervention (radical nephrectomy) due to an increase in lesion size from 6.6 cm to 7.1 cm over a 9 month period. Surgical pathology confirmed oncocytooma. 2/40 patients received immediate treatment via radical nephrectomy (1) or RFA (1).

Conclusions: Renal oncocytooma is a slow growing lesion which, in our series, had a median growth rate of 0.1 cm/year. The biopsy diagnosis of oncocytooma may allow patients to avoid the need for intervention; however, our data highlight the need for close follow-up with serial imaging.

Role of Tumor Location and Provider Specialty in Selecting Patients for Percutaneous Versus Surgical Cryoablation of the Small Renal Mass

Christopher J. Long,1 Daniel J. Canter,2 Marc C. Smaldone,2 Ervin Teper,2 David Y.T. Chen,2 Richard Greenberg,2 Rosalia Viterbo,2 Robert G. Uzzo2, Alexander Kutikov1
1 Temple University Hospital, Philadelphia, PA; 2 Fox Chase Cancer Center, Philadelphia, PA

Introduction: To determine how tumor location and provider specialty effect selection of tumors for surgical (SCA) and percutaneous (PCA) cryoablation of small renal masses (SRMs).

Materials & Methods: MEDLINE search was performed of the published literature in which cryoablation was used as therapy for localized renal masses. Tumor location was recorded amongst three categories: (1) anterior, posterior, and lateral; (2) upper, mid, and lower pole; and (3) endo-, meso-, and exophytic. Reports were stratified by medical specialty, defined as Urology, Radiology, or both.

Results: 46 studies, encompassing 1,955 lesions treated by surgical (n=29) or percutaneous (n=17) cryoablation were analyzed. Reporting rates for SCA versus PCA are 25% (10/29) vs. 47% (7/17) for anterior/posterior lesions. SCA was performed in 40% of reported anterior lesions, compared to PCA in 75% of posterior lesions. Reporting rates for Urologists were 31% for SCA and 60% for PCA. Radiologists reported location in 20% of their reports. The combined approach report rates were SCA 67% and PCA 50%.

Conclusions: While efficacy does not differ between SCA and PCA, health care cost and patient morbidity significantly favors PCA. Tumor location is classically the primary determinant in selection of SCA vs. PCA, yet data regarding tumor location is vastly under reported in the literature. Moreover, over 30% of lesions treated with surgical cryoablation appear to be posterior lesions. These findings raise significant quality of care issues, since some of the most co-morbid urologic patients appear to be exposed to unnecessary risks with SCA.

R.E.N.A.L. Nephrometry Score is a Surrogate for Surgical Difficulty

Tom S. Floyd, Jr.1, Jennifer Davila-Aponte1, Kasey Morrison1, Lorna Herbert1, Noah Shenkman1, Tracey L. Krupski1
1 University of Virginia, Charlottesville, VA; 2 UC LA, Los Angeles, CA

Introduction: As health care costs increase, so does the demand for comparative efficacy studies. Surgical efficacy studies are problematic as technical complexity is difficult to quantitate. The RENAL nephrometry score (NS) is a standardized system for describing kidney tumors attempting to quantify surgical complexity. Aside from one observational report, these methods have not been externally evaluated. We tested the hypothesis that higher NS correlates with surgical difficulty during partial nephrectomy (PN).

Materials & Methods: Using a retrospective database of laparoscopic or open PN performed from 2005-2010 containing patient demographic data, operating details and post-operative glomerular filtration rate (eGFR). CR or MRI scans were used to generate RENAL NS. Surgical difficulty was defined by blood loss, operating room time, ischemia time (IT) and length of stay, while eGFR was considered indicative of post-operative renal function. Univariate and multivariate analyses identified associations among the measured characteristics. All statistical analysis used SAS 9.2.

Results: In 139 patients, higher NS correlated with IT in both univariate (p = 0.0002) and multivariate analysis (p = 0.0010) when controlling for potential confounders. NS also correlated significantly with post-operative eGFR in univariate analysis (p = 0.0303) and displayed a trend in multivariate analysis (p = 0.0824). NS was not correlated with other surrogates for surgical complexity.

Conclusions: Surgical clamp time is a logical surrogate for technical difficulty. Higher RENAL NS strongly predicted surgical clamp time during PN suggesting it serves as substitute for clinical judgment. NS may also reflect long term outcome of PN, as reflected by its correlation with post-operative GFR.

Short-term Complications after Cystectomy in Patients Treated with Neoadjuvant Chemotherapy is Only Associated With Comorbidity

Sarah P. Psilka, Adam S. Feldman, Richard J. Lee, Aria F. Otumi
Massachusetts General Hospital, Boston, MA

Introduction: We wished to evaluate the complication rates after cystectomy in patients who received neoadjuvant chemotherapy for treatment of muscle-invasive urothelial carcinoma (MI-UC).

Methods: We evaluated patients with MI-UC who received neoadjuvant chemotherapy cisplatin and gemcitabine between January 2003 and February 2011 (n=32). Patients were excluded if they also received neoadjuvant radiation therapy (n=15). Any complication within 90 days of surgery was graded using the Clavien-Dindo system.

Results: Median patient age was 70 years with a median American Society of Anesthesiologists (ASA) score of 3. Patients received a median of 3 cycles of chemotherapy a median of 119 days prior to RC. Ileal conduits were performed in all except for 3 cases, in which orthotopic neobladders were performed. Pelvic lymphadenectomy was aborted in 2 cases due to extensive fibrosis. Median operative time was 9.5 hours with median EBL of 900cc. 25 complications were identified in 10 patients (59%). Complications were classified as grade 1 in 6% (1), grade 2 in 41% (7), grade 3 in 12% (2) and grade 4 in 6% (1). Increased risk of complication was associated with ASA Score ≥ 3 (p=0.03), whereas number of cycles of neoadjuvant GC, duration between CG and RC, type of urinary diversion, BMI, or preoperative hydrophropenia did not (p>0.05).

Conclusions: The early complication rates in patients treated with neoadjuvant GC before cystectomy is associated with ASA score, while the number of cycles of chemotherapy, type of urinary diversion or interval between chemotherapy and RC do not affect morbidity.
**P33**

Pathologic Upstaging Following Complete Transurethral Resection and Early Cystectomy for Clinical Stage T1 Bladder Cancer
Sheaumei Tsai, John A. Libertino, Andrea Sorcini, Karim J. Hamawy, Ali Moinzadeh, David Canes, Jason R. Cee
Lahey Clinic, Burlington, MA

**Introduction:** Early cystectomy is advocated for clinical stage T1 (cT1) bladder cancer with frequent pathologic upstaging in recent multicenter studies. However, details such as timing, tumor size and completeness of resection prior to cystectomy may be difficult to obtain and were noted as potential confounding variables. Herein we evaluate these factors in a contemporary single institution analysis of cT1 bladder cancer patients undergoing radical cystectomy.

**Materials & Methods:** From 2000-2011, 120 patients underwent early cystectomy for cT1 disease. Inclusion criteria consisted of documented evidence of visibly complete TURBT and uninvolved muscularis propria in the TUR specimen. Estimated tumor size at TUR and time interval from initial T1 diagnosis to cystectomy were correlated with final pathologic stage.

**Results:** Of 120 cT1 patients undergoing early radical cystectomy, 51 (42%) satisfied the inclusion criteria. Sixteen (31%) of 51 were upstaged to pT2 (n=6), pT3 (n=7) or pT4 (n=3) disease. Occult nodal metastases were identified in 4 (8%) patients. The mean interval from initial T1 diagnosis to cystectomy was 10.3 months in the non-upstaged group, versus 6 months in the upstaged group (p=0.15, t-test). No significant difference in upstaging was observed on the basis of tumor size (p=0.69, Fisher's).

**Conclusions:** In our series, pathologic upstaging of cT1 bladder cancer occurred in 31% of patients despite visibly complete TURBT. Neither the interval from diagnosis to radical cystectomy nor tumor size at TUR correlated significantly with pathologic stage. Better preoperative staging modalities are needed in assigning cT1 patients to radical cystectomy versus other treatment.

---

**P34**

Smoking Knowledge Assessment and Cessation Trends in Patients with Bladder Cancer Presenting to a Tertiary Referral Center
Mark S. Hockenberry1, Thomas J. Guzzo1, Phillip Mucksavage2, Trinity J. Bivalacqua3, Mark P. Schoenberg3
1University of Pennsylvania School of Medicine, Philadelphia, PA; 2University of California, Irvine, CA; 3Johns Hopkins School of Medicine, Baltimore, MD

**Introduction:** Smoking is the leading risk factor for bladder cancer (BC) in industrialized nations. Little information is available regarding BC patients' knowledge of smoking’s risks and the role of their urologists in initiating smoking cessation at the time of diagnosis.

**Materials & Methods:** A smoking knowledge and cessation questionnaire was administered to 71 patients referred to a tertiary referral center for BC from April 2008 to June 2009. The questionnaire captures data on demographics, BC history, smoking status and history, risk factor knowledge, and cessation patterns.

**Results:** The mean age of the cohort was 65.1 (range: 42-86) years and 72% were male. At the time of referral, 71 (100%) patients knew smoking was a risk factor for lung cancer compared to 61 (86%) for that of BC. Only 36 (51%) patients knew smoking was the leading risk factor for BC. Of the 17 (24%) patients smoking at the time of their BC diagnosis, 12 (71%) were counseled by their referring urologist to quit smoking, however the significant majority (76%) were not offered any specific intervention.

**Conclusions:** The association between smoking and BC was not as well known as that of lung cancer in our cohort of patients. Most current smokers were advised to stop smoking by their primary urologist; however few were offered any intervention to aid cessation. Urologists should assume a more active role both in educating patients regarding smoking’s link to BC and in initiating smoking cessation.

---

**P35**

Perioperative Systemic Chemotherapy Confers a Cancer-Specific Survival Benefit in T3 Urothelial Carcinoma of the Renal Pelvis
Mohammad Minhaj Siddiqui, Richard J. Lee, Shulin Wu, Chin-Lee Wu, Adam S. Feldman
Massachusetts General Hospital, Boston, MA

**Introduction:** Limited and conflicting data are available regarding adjuvant and neoadjuvant chemotherapy in patients with locally advanced upper tract urothelial carcinoma (UTUC) of the renal pelvis. Here we present our experience with treatment of patients with T3 UC of the renal pelvis.

**Methods:** Patients diagnosed with UTUC at the Massachusetts General Hospital between January 1993 and March 2011 were reviewed. Forty-one patients with T3 disease of the renal pelvis on pathology were included. Ten patients received neoadjuvant (n=3) or adjuvant (n=7) chemotherapy. The mean follow-up was 41 months.

**Results:** The mean age 69 years old and 56% of the patients were female. There was no significant difference between the chemotherapy and control groups in age (66.2 vs 69.7 years, p=0.3), gender (60% vs 55% Female, p=0.8), high grade (84% vs 80%, p=0.8), lymphohvascular invasion (50% vs 69%, p=0.4), N+ status (33% vs 32%, p=0.9), and positive margins (10% vs 97%, p=0.9). No significant difference in survival was seen amongst patients with parenchymal versus peri-hilar fat invasion (p=0.3). A significant difference in five-year disease-specific survival was seen between the group who received perioperative chemotherapy (5-yr survival 70%) and the group who did not receive any chemotherapy (5-yr survival 36%). When adjusted for age in a multivariate analysis, the use of perioperative chemotherapy significantly improved survival (HR 3.9).

**Conclusions:** Adjuvant or neoadjuvant chemotherapy confers a survival benefit in patients with T3 UTUC of the renal pelvis. Further prospective studies are warranted to validate these results.

---

**P36**

The Impact of Tumor Size on the Rate of Synchronous Metastasis and Survival in Renal Cell Carcinoma Patients. A Population Based Study
Johann F. Ingimarsson1, Sverrir Hardarson1, Vigdis Petursdottir2, Eirikur Jonsson2, Gudmundur V Einarsson2, Tomas Gudjartsson2
1Dartmouth-Hitchcock Medical Center, Lebanon, NH; 2Landspitali University Hospital, Reykjavik, Iceland

**Introduction:** Complete or partial nephrectomy has been the predominant treatment for small incidentally diagnosed renal cell cancers (RCC). Some authors have suggested active surveillance as a treatment option, especially among patients with higher peri-operative risks, arguing that patients with small tumors have lower metastatic rates and better survival. The aim of the study is to test that argument for a nationwide population registry.

**Materials & Methods:** 791 histopathologically confirmed RCCs with known tumor size were diagnosed in Iceland between 1971 and 2005. Histological material and TNM staging were centrally reviewed. Synchronous metastases (SM) were recorded. Cancer-specific survival was calculated. Cubic-spline analysis compared size and metastatic rate. Multivariate analysis was applied to compare size to other known prognostic factors. Median follow-up was 6.7 years.

**Results:** With increased tumor size, synchronous metastasis (SM) rate increases in a non-linear fashion (10.6, 25.3, 35.2 and 49.6%) and five year survival decreases (86.1, 71.8, 53.0 and 32%) for tumors ≤4, 4.1-7.0, 7.1-10.0 and >10 cm, respectively. In multivariate analysis, size was a significant independent prognostic factor for synchronous metastasis (OR=1.08, p=0.01) and cancer specific survival (OR=1.09, p<0.01), while TNM stage was the strongest predictor of cancer specific survival (OR=2.58, p<0.01).

**Conclusions:** Size dose affect rates of SM and cancer related mortality. Size may aid in prognostication, but the TNM stage proves a superior marker. The relatively high (10.6%) propensity of tumors ≤4 cm to metastasize should be kept in mind when advising active surveillance.
The Impact of the Learning Curve on Robot Assisted Pelvic Lymph Node Dissection during Radical Prostatectomy: An Update on the Brown University Experience
George A. Turini, III, Simone Thavaseelan, Michael S. Lasser, Joseph F. Renzulli, II, Gyane Parrik, George E Haleblian
Brown University, Providence, RI

Introduction: Pelvic lymph node dissection (PLND) provides important staging and prognostic information. In 2009, our institution reported on the yield of Robot-Assisted Laparoscopic PLND (RALPN) in comparison to an age-matched cohort undergoing open PLND. Hilar vessel clamping was utilized in the majority of HALPN versus the majority of RALPN. One may consider HALPN for its benefit of decreased technical difficulty, tactile feedback, shorter operative and room times, decreased need for hilar clamping and similar complication rate.

Results: Of 69 patients, 47 underwent HALPN (2008-2010) and 21 underwent RALPN (2008-2010). Exclusion criteria included concurrent laparoscopic cholecystectomy (n = 4 HALPN) and conversion to open (n = 2 RALPN). Table 1 shows number of cases, mean age, tumor size, operative time, room time, EBL, LOS, change in Cr, proportion clamped, and complications for each group.

Conclusions: Our data reveals that while LOS is significantly longer for RALPN, operative and room times were significantly shorter for HALPN. There was a non-statistically significant decreased complication rate associated with HALPN, with no conversions to open procedure in the HALPN cohort. Hilar vessel clamping was utilized in the majority of HALPN versus the majority of RALPN. One may consider HALPN for its benefit of decreased technical difficulty, tactile feedback, shorter operative and room times, decreased need for hilar clamping and similar complication rate.

TABLE 1. Comparison between HALPN and RALPN

<table>
<thead>
<tr>
<th></th>
<th>HALPN</th>
<th>RALPN</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Cases</td>
<td>42</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Tumor Size</td>
<td>2.5 cm (1.4)</td>
<td>2.5 cm (1.2)</td>
<td>0.94</td>
</tr>
<tr>
<td>Estimated Blood Loss</td>
<td>136 ml (71)</td>
<td>173 ml (249)</td>
<td>0.54</td>
</tr>
<tr>
<td>Surgery Time</td>
<td>149 min (53)</td>
<td>212 min (53)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Room Time</td>
<td>203 min (42)</td>
<td>273 min (47)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Length of Stay</td>
<td>4.2 days (1.0)</td>
<td>3.5 days (0.6)</td>
<td>0.44</td>
</tr>
<tr>
<td>Proportion with Hilar Vessel Clamping</td>
<td>3 of 42 (7.1%)</td>
<td>17 of 19 (89.5%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Change in Cr (last Cr -0.004 -0.025)</td>
<td>0.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complication Rate</td>
<td>5 of 42 (11.9%)</td>
<td>4 of 19 (21%)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Conclusions: We previously published data documenting lower LN yield during RALPN compared to open PLND. Our current study demonstrates a statistically significant improvement in LN yield as robotic experience has gained. While patients with high-risk disease may benefit from open PLND during a program’s early robotic experience, with time, RALPLND can provide LN yields similar to open dissection.
Concurrent Poster Session II: Oncologic Diseases
3:20 pm-4:00 pm

P41

Direct Prostate Biopsies Utilizing Contrast-Enhanced Ultrasound with Flash Replenishment Imaging
Xiaolong S. Liu1, Ethan J. Halpern2, Fleming Forsberg2, Leonard G. Comella3, Edward J. Trabulsi4
1Thomas Jefferson University, Department of Urology, Philadelphia, PA; 2Thomas Jefferson University, Department of Radiology, Philadelphia, PA

Introduction: To evaluate the detection of prostate cancer from directed prostate biopsies with contrast-enhanced ultrasound using flash replenishment with maximum intensity projection (MIP) MicroFlow Imaging (MFI) compared to systematic biopsy.

Materials & Methods: 259 patients underwent pre and post-contrast enhanced transrectal ultrasound (TRUS) evaluation of the prostate using MFI (Toshiba America Medical Systems, Tustin, CA). Contrast enhanced images were obtained while infusing Definity®, an encapsulated liposomal suspension of perfluoropropane microbubbles. MFI is an imaging technique that utilizes high power flash pulses to destroy contrast microbubbles followed by lower power pulses to show contrast replenishment. Up to 6 MFI guided prostate biopsies were taken per patient followed by a standard systematic 12 core biopsy protocol.

Results: Prostate cancer was found in 110/259 (42%) patients. 249/3108 (8%) of the systematic cores were positive for cancer. In 12 patients prostate cancer was detected only in targeted biopsy. Among patients with a positive biopsy, the odds ratio for a positive core with targeted biopsy versus systematic biopsy was 3.1 (95% CI: 2.4-4.4, p<0.001). Mean percentage of biopsy core involvement was 32% among patients with a positive targeted core, compared with 15% among patients who were not detected by targeted biopsy (p<0.001). Higher grade cancer (Gleason score > 6) was more common among patients with a positive targeted biopsy (53% versus 18%, p<0.001). Grade upgrading from Gleason 6 to Gleason 7 was more common among patients undergoing targeted biopsy (20.3% from 1999-2005 vs 32.% after 2005, p<0.001). However, patients with pathological Gleason 7-10 disease were more likely to have PSA between 0 and 4 ng/ml (20% vs 14%, p<0.001). Since 2005, patients are more likely to present with intermediate to high grade disease. However, these patients are more likely to have a low PSA and organ-confined disease than in previous eras.

P42

Changes in Pre-operative and Pathologic Characteristics in Patients Undergoing Radical Prostatectomy by Era
John B. Eifer, Jr, Elizabeth B. Humphreys, Alan W. Partin, Misso Han
Brady Urological Institute, Baltimore, MD

Introduction: In 2005, the International Society of Urological Pathology (ISUP) modified the Gleason scoring system to reduce interobserver variability. We sought to evaluate the recent trends in stage and grade for patients presenting for radical prostatectomy at a single high-volume center.

Materials & Methods: A total of 18,743 men underwent radical prostatectomy from 1982-2010. We compared the distribution of pathologic stage and grade at presentation according to 5 different eras of prostate cancer management.

Results: A higher proportion of men undergoing RP presented with PSA 0-4 since 2005 than from 1999-2005 (p<0.001). Since 2005, more patients underwent radical prostatectomy for biopsy Gleason 7-10 prostate cancer (23.6% from 1999-2005 vs 36.0% after 2005, p<0.001), in patients being upgraded from Gleason 6 to Gleason 7 at RP (20.3% from 1999-2005 vs 26.7% after 2005, p<0.001). However, patients with pathological Gleason 7-10 disease were more likely to have PSA between 0 and 4 ng/ml (20% vs 14%, p<0.001) and organ-confined disease (54% vs 50%, p<0.005) in the era after 2005 than from 1999-2005.

Conclusions: Since 2005, patients are more likely to present with intermediate to high grade disease. However, these patients are more likely to have a low PSA and organ-confined disease than in previous eras.

P43

Long-term Prognostic Significance of Close Prostatectomy Margins
Gregory J. Wirth, Jian Lu, Shulin Wu, Aria Ohumi, Chin-Lee Wu
Massachusetts General Hospital, Boston, MA

Introduction: Current guidelines state that close prostatectomy margins (<0.1 mm from the inked margin) should be reported as negative on pathology reports. However, this recommendation remains controversial and relies on little evidence. The aim of this study is to evaluate the impact of close margin status on the long-term risk of biochemical recurrence following radical prostatectomy.

Materials & Methods: Eight-hundred ninety-four consecutive patients who underwent radical prostatectomy for localized prostate cancer at Massachusetts General Hospital between 1993 and 1999 were identified. Associations between margin status, Gleason score, pathological stage, pre-operative PSA, prostate weight, age with the risk of biochemical recurrence were examined.

Results: Negative prostatectomy margins occurred in 644 of 894 cases (72%). Of these patients, 100 (15.5%) had close margins. Overall, median time to recurrence was 3.5 years, median follow-up of patients in remission 9.9 years. Cumulative recurrence-free survival differed significantly among the three types of margins (p<0.001). On multivariate analysis, close margin status constituted a significant independent predictor of recurrence (HR 2.23, 95%CI 1.08 - 4.99). Subgroup analysis showed the same impact on prognosis in low-risk tumors. Gleason score and positive margins were the strongest predictors of recurrence.

Conclusions: In this study, margin closeness constituted an independent prognostic factor. However, it was clearly subordinated to Gleason grade and frank positive margins. Our findings reaffirm the need of regular long-term postoperative follow-up, in particular of patients otherwise considered to be at low-risk.

P44

Validation in CaPSURE of Predicted Sexual Outcome after Primary Prostate Cancer Treatment by PROSTQA
Mehrdad Alemozaffar1, Meredith M. Regan2, Natalia Sadetsky3, Peter Carroll4, Martin G. Sanda1, Matt Cooperberg5
1Beth Israel Deaconess Medical Center, Boston, MA; 2Dana Farber Cancer Institute, Boston, MA; 3University of California San Francisco, San Francisco, CA

Introduction: Patients with localized prostate cancer undergoing radical prostatectomy (RP), external radiation therapy (XRT), or brachytherapy (BT) are often concerned about erectile function (EF) following treatment. We developed models for individualized sexual outcome expectations following prostate cancer treatment at academic centers and sought to validate them in a community-based cohort.

Methods: The PROSTQA cohort was utilized to create models predicting the likelihood of EF at 2 years following therapy for localized prostate cancer with RP, XRT, or BT (N=1027), based on pre-treatment patient, disease, treatment and HRQOL characteristics. CaPSURE participants (N=1931), were used for validation by AUC from fitting univariable logistic regression of reported 2-year EF on model-predicted probability, and calibration by examining model-predicted probability vs. observed EF at 2 years.

Results: The PROSTQA models performed well in predicting EF at 2 years following treatment with AUC's of 0.76, 0.81, and 0.89 for men undergoing RP, XRT, and BT, respectively. Calibration showed that predicted rates of EF based on the PROSTQA-derived models corresponded to the observed outcome in the CaPSURE cohort across a broad range of predicted probabilities. Table 1

Conclusion: Validation in a community-based cohort of predictive models for recovery of EF following treatment of localized prostate cancer with RP, XRT, and BT at academic centers based on pretreatment EF and various patient and treatment characteristics suggest that these models are generalizable.

<p>| Table 1. PROSTQA Outcomes and Observed CaPSURE Erectile Function recovery at 2 years |
|----------------------------------------|-------------------------------|----------------------------------------|</p>
<table>
<thead>
<tr>
<th>Treatment type</th>
<th>N</th>
<th>Mean PROSTQA-estimated 2 yr erectile recovery</th>
<th>Observed proportion 2 yr erectile recovery in CaPSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prostatectomy</td>
<td>1108</td>
<td>0.22</td>
<td>0.23</td>
</tr>
<tr>
<td>External radiation therapy</td>
<td>240</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>Brachytherapy</td>
<td>350</td>
<td>0.22</td>
<td>0.27</td>
</tr>
</tbody>
</table>
Nationwide Comparison of Operative Outcomes for Robotic, Laparoscopic, and Open Radical Prostatectomy

Mohammad Almeozaffar1, Martin G. Sanda1, Derek Vickers1, Meir J. Stampfer1, Stacey A. Kenfield1
1Beth Israel Deaconess Medical Center, Boston, MA; 2Boston University Medical School, Boston, MA; 3Harvard School of Public Health, Boston, MA

Introduction: Multi-center, community-based evaluations of robot-assisted laparoscopic prostatectomy (RALP) and radical retropubic prostatectomy (RRP) are lacking. We sought to evaluate perioperative and oncologic outcomes of RALP and RRP for prostate cancer in a nationwide cohort.

Methods: The Health Professionals Follow-up Study (HPFS) cohort of 51,529 men was interrogated to evaluate outcomes of men who underwent RALP (N=172) and RRP (N=573) from 2000 to 2009.

Results: Tumor severity was slightly greater among RRP than RALP patients (Table 1). RRP patients were more likely than RALP to undergo lymphadenectomy (85.4% vs. 46.5%, respectively, p<0.0001), experienced greater mean estimated blood loss (858.9 vs. 206.0 ml, respectively, p<0.0001), were more likely to receive blood transfusions (26.3% vs. 4.7%, respectively, p<0.0001), and had longer mean hospital stays (2.9 vs. 1.9 days, p<0.0001) (Table 2). Oncologic outcomes between RRP and RALP revealed no difference in pathologic stage, Gleason score, positive surgical margins, or PSA-specific survival (Table 3).

Conclusions: In this nationwide, community-based cohort RALP was associated with shorter hospital stay and less blood loss than RRP while yielding similar oncologic outcomes.

Table 1. Preoperative Tumor Characteristics

<table>
<thead>
<tr>
<th>Pathologic T-Stage</th>
<th>RALP (N = 172)</th>
<th>RRP (N = 573)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>48.9%</td>
<td>77.3%</td>
<td>46.5%</td>
</tr>
<tr>
<td>T2</td>
<td>31.0%</td>
<td>22.7%</td>
<td>33.5%</td>
</tr>
<tr>
<td>T3</td>
<td>0.1%</td>
<td>0.2%</td>
<td>0.2%</td>
</tr>
<tr>
<td>T4</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

PSA

<table>
<thead>
<tr>
<th>Median (ng/dl)</th>
<th>RALP (N = 172)</th>
<th>RRP (N = 573)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biopsy Gleason Score</td>
<td>68.9%</td>
<td>77.3%</td>
<td>46.5%</td>
</tr>
<tr>
<td>6</td>
<td>58.1%</td>
<td>59.3%</td>
<td>0.01</td>
</tr>
<tr>
<td>7</td>
<td>29.9%</td>
<td>37.1%</td>
<td>27.6%</td>
</tr>
</tbody>
</table>

Transitions

<table>
<thead>
<tr>
<th>Percentage</th>
<th>RALP (N = 172)</th>
<th>RRP (N = 573)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>3.5%</td>
<td>3.6%</td>
<td>4.0%</td>
</tr>
<tr>
<td>7</td>
<td>46.5%</td>
<td>55.7%</td>
<td>41.9%</td>
</tr>
<tr>
<td>8</td>
<td>46.5%</td>
<td>36.4%</td>
<td>41.9%</td>
</tr>
<tr>
<td>9</td>
<td>4.3%</td>
<td>4.3%</td>
<td>4.3%</td>
</tr>
<tr>
<td>10</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Introduction: Minimally invasive radical prostatectomy (MIPR) with and without robotic-assistance has been rapidly adopted. However the relative influence of tumor, patient, surgeon, and hospital characteristics driving its use over conventional open radical prostatectomy (ORP) remains poorly characterized.

Materials & Methods: Using Surveillance, Epidemiology and End Results-Medicare linked data, we identified 1,428 MIPR and 5,452 RRP during 2003-2005. We assessed the relative contribution of pathologic, demographic, surgeon and practice characteristics on utilization of MIPR vs. RRP.

Results: In multivariable models for men undergoing prostatectomy, surgeon factors accounted for 87.9% of variance in the receipt of MIPR versus RRP. Hospital factors accounted for 77.9% of the variance. In partitioned multivariable models, unmeasured surgeon (76%) and patient (78%) factors explained largest amount of variance in the use of MIPR that was attributable to each. Surgeon age explained 15.4% of variance. Surgeons less than 40 vs. over 60 years of age were more likely to use MIPR (OR, 25.9; 95% CI, 3.2-209.8; p<0.002). Surgeon volume comprised only 0.07% of surgeon variance. Hospital bed size accounted for 10.9%. Demographics were the largest patient contributors to variance in MIPR use (6.1%) while tumor characteristics contributed very little.

Conclusions: While increased utilization of MIPR is primarily driven by surgeon and hospital factors rather than patient demographic or tumor characteristics, young surgeon age was a major contributor while surgeon volume contributed very little to use of MIPR, which is worrisome given that higher surgeon volume and experience are associated with better radical prostatectomy outcomes and lower costs.

Predictors of Positive Retroperitoneal Lymph Nodes in Patients with High Risk Testicular Cancer

Ravi Kacker, Stephen Williams, Graeme S. Steele, Jerome P. Richie Brigham and Women’s Hospital, Boston, MA

Introduction: Percent of embryonal carcinoma and lymphovascular invasion (LVI) in the primary tumor are risk factors for occult retroperitoneal metastatic disease. High risk patients with clinical stage I and II A non-seminomatous germ cell tumor who underwent primary retroperitoneal lymph node dissection (P-RPLND) were identified to discern any other risk factors for metastatic disease.

Materials & Methods: Patients who had undergone RPLND at our institution from 1993 to 2009 were identified and clinical charts reviewed. Ninety patients with orchiectomy specimens containing greater than 30% embryonal carcinoma who underwent P-RPLND were identified and peri-operative data was obtained.

Results: 90/353 (25%) patients had greater than 30% embryonal carcinoma and underwent P-RPLND. Of these, 45 (50%) had combined LVI. Median follow-up time was 1.1 years. Positive lymph nodes identified at RPLND were noted in 30 (46%) and 15 (50%) of patients with CSI vs. CSH disease. On univariate analysis embryonal carcinoma (OR 1.02, 95% CI 1.00-1.04) and LVI (OR 3.52, 95% CI 1.43-8.67) were associated with positive lymph nodes at P-RPLND. The positive predictive value for 100% embryonal carcinoma was 65.5% although the negative predictive value for 30% embryonal carcinoma was 85.7%.

Conclusions: Embryonal carcinoma and LVI were significantly and independently associated with risk for occult retroperitoneal metastatic disease. These results should be taken into consideration when counseling patients about appropriate treatment options.
Erythrocytosis and Testosterone Therapy: The Influence of Treatment Modality and Body Composition

Ravi Kacker1, William Comners2, Abraham Morgentaler1
1Brigham and Women’s Hospital, Boston, MA; 2Men’s Health Boston, Boston, MA

Introduction: Erythrocytosis may be the most common complication of testosterone therapy (TTh) and guidelines recommend intervention for HCT over 54. Few clinical studies have examined the risk of erythrocytosis during TTh and the influence of treatment modality and body composition is not known.

Materials & Methods: Retrospective chart review identified 171 men who underwent TTh with topical gel, injections, or pellets and 146 men maintained a single treatment modality. Linear regression modeling was used to determine factors that correlate with changes in HCT for 76 men with adequate lab and body composition data.

Results: During the first year of therapy, 2 (7.4%) and 0 of 27 patients on topical therapy developed HCT ≥ 50 and 54 respectively compared to 21 (29.2%) and 3 (4.2%) of 72 on injections (p=0.03; 0.56) and 13 (27.7%) and 2 (4.3%) of 47 on pellets (p=0.041; 0.53). For those without erythrocytosis during the first year, 4 (3.8%) patients subsequently developed HCT over 54. Increased age (p=0.0238), pelvic (p=0.0411; 0.53), and increased baseline fat percentage is associated (3.8%) patients subsequently developed HCT over 54. Increased age (p=0.0238), pelvic (p=0.0411; 0.53), and increased baseline fat percentage (3.8%) patients subsequently developed HCT over 54. Increased age (p=0.0238), pelvic (p=0.0411; 0.53), and increased baseline fat percentage (3.8%) patients subsequently developed HCT over 54. Increased age (p=0.0238), pelvic (p=0.0411; 0.53), and increased baseline fat percentage (3.8%) patients subsequently developed HCT over 54. Increased age (p=0.0238), pelvic (p=0.0411; 0.53).

Conclusions: Topical therapies have a lower risk of erythrocytosis compared to other modalities. Older and obese patients may be a greater risk for erythrocytosis. Until the clinical implications of erythrocytosis are better understood, HCT should be monitored during the duration of testosterone therapy.

Complications of Salvage Cystectomy after Failed Bladder-Sparing Therapy for Muscle-Invasive Bladder Cancer

Jairam R. Esvara, Jason Edathatiou, Niall Heney, Jonathan Faly, Donald Kaufman, W. Scott McDougall, Francis McGovern, William Shipley
Massachusetts General Hospital, Boston, MA

Introduction: Radical cystectomy has been the gold standard for muscle-invasive bladder cancer. Combined-modality-therapy (CMT) involving transurethral resection of bladder tumor (TURBT), external-beam radiation, and chemotherapy is an effective alternative to cystectomy in selected patients. Salvage cystectomy is reserved for those failing CMT. We characterized complications associated with salvage cystectomy.

Materials & Methods: From 1986-2007 of 285 patients undergoing undergoing bladder-sparing therapy, 91 patients (32%) underwent salvage cystectomy at our institution following CMT for T2-T4NxM0 bladder cancer. Patients underwent TURBT followed by chemoradiation (40Gy). Early assessment was performed by cystoscopy/rebiopsy. Patients with complete response continued with consolidation chemoradiation (total dose 64Gy). Immediate salvage cystectomy (50/91) was performed for persistent disease, while delayed salvage cystectomy (41/91) was performed for an invasive recurrence. Medical records were reviewed classifying complications using the Clavien system.

Results: Median age was 69.4yrs (27.5-88.9), median follow-up was 24mos (0-252). 99% (90/91) underwent ideal diversion, 69% (63/91) had complications of any grade within 90 days. 16% (15/91) experienced major complications <90 days. 21% (19/91) required readmission <90 days. 90-day mortality was 2.2% (2/91). Significant cardiovascular/hematologic complications [PE, MI, DVT, transfusion] <90 days were more common in the immediate cystectomy group (19% vs. 5%, p=0.02). Tissue-healing complications [fascial dehiscence, wound infection, ureteral structure, anastomotic stricture, stoma/loop revisions] were more common in the delayed group (35% vs. 12%, p=0.05).

Conclusions: Salvage cystectomy is associated with acceptable morbidity, though complication rates are slightly higher than for other cystectomy series. Immediate cystectomies have more CV/hematologic complications, while delayed cystectomies have more tissue-healing complications.

Accelerated Gastrointestinal Recovery with Use of Alvimopan after Radical Cystectomy with Urinary Diversion

Anup A. Vora1, Jonathan Hwang1, Mohan Verghese1, Ravi Kacker1
1Brigham and Women’s Hospital, Boston, MA; 2Men’s Health Boston, Boston, MA

Introduction: Radical cystectomy, while being the gold standard treatment for muscle-invasive cancer, is associated with significant morbidity, with rates of gastrointestinal complications being reported as high as 20%. Alvimopan is a peripherally-acting, mu-opioid receptor antagonist that has been shown in randomized-control trials to accelerate gastrointestinal recovery in patients undergoing bowel resection with primary anastomosis.

Materials & Methods: From 1/2008 to 3/2011, 41 consecutive patients underwent radical cystectomy with urinary diversion performed by a single surgeon. The first 25 patients in our study did not receive alvimopan and were kept on nasogastric-decompression until return of flatus. The latter 16 patients received perioperative alvimopan and were without postoperative nasogastric-decompression.

Results: Time to first flatus (5.2 vs 5.6 days, p=0.01) and bowel movement (3.7 vs 6.0 days, p=0.01) were significantly shorter in those patients who received alvimopan. Additionally, initiation of clear liquid (4.2 vs 6.3 days) and regular diet (5.9 vs 7.3 days p=0.01) were accelerated in the alvimopan cohort. There were no incidences of prolonged ileus in those patients who received perioperative alvimopan (0% vs 24%, p=0.03).

Conclusions: Urinary diversion status post radical cystectomy is associated with significant gastrointestinal morbidity. In our experience, the use of alvimopan perioperatively significantly accelerates the rate of GI recovery and reduces the incidence of post-operative ileus.

Objective Measures of Renal Mass Anatomic Complexity Predict Rates of Major Complications Following Partial Nephrectomy

Fox Chase Cancer Center, Temple University School of Medicine, Philadelphia, PA

Introduction: We evaluated whether increasing tumor complexity, quantitated by Nephrometry score (NS), is associated with increased complication rates following PN using the Clavien-Dindo classification system (CCS).

Methods: We queried our prospectively maintained kidney cancer database for patients undergoing PN for whom NS was available from 2007 to 2010. Tumors were categorized into low (NS 4-6), moderate (NS 7-9), and high (NS 10-12) complexity lesions. Complication rates within 30 days were graded (CCS I-IV), stratified as minor (CCS I-II) or major (CCS III-V), and compared between groups.

Results: 390 patients (mean age 58.0±11.9yrs, 66.9% male) undergoing PN (44.6% open, 55.4% robotic) for low (28%), moderate (55.6%) and high (16.4%) complexity tumors (mean tumor size 3.7±4.2cm) from 2007-2010 were identified. Tumor size, EBL, and ischemia time all significantly differed (p<0.0001) between groups, while patient age, BMI, and operative time were comparable. Stratified by CCS, minor and major complication rates for all patients were 26.7% and 11.5%. Minor complication rates were comparable (26.6 vs. 24.9 vs. 32.8%, p=0.45), while major complication rates differed (4.3 vs. 21.9%, p=0.009) among tumor complexity groups. Controlling for age, gender, BMI, tumor size, operative time, and tumor complexity, prolonged operative time (OR 3.4, CI [1.6-7.1]) and high NS (OR 3.9, CI [1.4-10.9]) were associated with the postoperative development of a major complication.

Conclusions: Increasing tumor complexity is associated with the development of major complications after PN. This association should be validated externally and integrated into the decision-making process when counseling patients with complex renal tumors.

<table>
<thead>
<tr>
<th>Without Alvimopan</th>
<th>With Alvimopan</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>70.1</td>
<td>69.7</td>
</tr>
<tr>
<td>BMI</td>
<td>29.7</td>
<td>28.0</td>
</tr>
<tr>
<td>Length of Hospital Stay (days)</td>
<td>9.6</td>
<td>8.7</td>
</tr>
<tr>
<td>Length of Nasogastric Decompression (days)</td>
<td>5.5</td>
<td>0</td>
</tr>
<tr>
<td>Time to First Flatus (days)</td>
<td>5.6</td>
<td>3.16</td>
</tr>
<tr>
<td>Time to First Bowel Movement (days)</td>
<td>6.0</td>
<td>3.6</td>
</tr>
<tr>
<td>Time to Initiation of Clear Liquid Diet (days)</td>
<td>6.3</td>
<td>4.2</td>
</tr>
<tr>
<td>Time to Initiation of Regular Diet (days)</td>
<td>7.4</td>
<td>5.9</td>
</tr>
<tr>
<td>Incidence of Prolonged Postoperative Ileus</td>
<td>24%</td>
<td>0%</td>
</tr>
</tbody>
</table>

5971

2011 Joint Annual Meeting Abstracts
Ability of Ureteroscopic Biopsy to Accurately Grade and Stage Upper Tract Urothelial Carcinoma Lesions: Results from a Multi-institutional Cohort of Patients

Thomas Clements, Jamie Messer, Jay Raman
Milton S. Hershey Medical Center, Hershey, PA

Introduction: We present a multi-institutional cohort of patients with UTUC who underwent surgical resection to characterize the association of ureteroscopic biopsy and final pathology.

Materials & Methods: Preoperative URS biopsy data was available in 238 patients at 5 academic medical centers. URS biopsies were performed using either a brush biopsy kit or a mechanical biopsy device. The association between URS biopsy and final pathologic data was determined.

Results: 154 men and 84 women, with a median age of 70 years were included. On URS biopsy, 88 (37%) patients had a positive brush, 140 (59%) were staged as non-MI, and 10 (4%) had MI disease. In addition, 140 (59%) biopsies were low grade while 98 (41%) were high grade. RNU pathology, demonstrated non-MI tumors in 140 (59%) patients, MI UTUC in 98 (41%), and high-grade disease in 150 (63%), positive LN in 10 (4%). Univariate analysis, high URS biopsy grade was associated with high RNU grade (p<0.01), MI UTUC (p<0.01), and LN positive UTUC (p=0.02) on RNU pathology. Conversely, URS biopsy stage was only associated with final UTUC disease grade (p=0.005), but not stage (p=0.16) or LN positivity (p=0.24). In a multivariate model that controlled for gender, age, and tumor location, URS grade (but not stage) was associated with high RNU grade (p=0.0001) and MI UTUC (p=0.0001).

Conclusions: Results from a contemporary large multi-institutional cohort of patients further supports that URS biopsy grade, but not stage, is associated with final pathology. Such information may play a valuable role for risk stratification regarding ablative versus extirpative therapies for UTUC.
Oncologic Outcome of Laparoscopic and Open Radical Prostatectomy
Gregory J. Wirth, Sarah P. Psutka, Shalin Wu, Chin-Lee Wu, Douglas M. Dahl
Massachusetts General Hospital, Boston, MA

Introduction: Pelvic lymph node dissection (PLND) during radical prostatectomy (RP) has prognostic and possible therapeutic benefits. We assessed whether an extraperitoneal minimally-invasive RP(MiRP) allows for standard-template PLND comparable to transperitoneal MiRP+PLND.

Methods: A retrospective clinicopathologic study of 914 consecutive patients who underwent MiRP (laparoscopic or Da Vinci® robot-assisted laparoscopic) with bilateral PLND by one surgeon (CPP) from 2001-2010 was performed. Those with intermediate and high-risk disease generally received a standard PLND (external iliac nodes) when PLND was performed. Patients were stratified into groups based on operative approach (extraperitoneal vs. transperitoneal) for most analyses.

Results: Overall, 192 patients had transperitoneal MiRP+PLND, and 377 had extraperitoneal MiRP+PLND. The extraperitoneal group had higher BMI (p=0.03), a higher percentage of low-risk (p=0.003) and a lower percentage of intermediate-risk disease (p=0.006). Estimated blood loss (EBL), blood transfusions, operative time, positive surgical margins (PSM), and urinary and sexual function were compared.

Conclusions: The extraperitoneal MiRP approach does not compromise the oncologic efficacy or safety of routine PLND.
Microvascular Arterial Bypass Surgery: Prospective Outcomes Study Using Validated Instruments
Christopher E. Graziano, Ricardo Munarriz
Boston Medical Center, Boston, MA

Introduction: Penile microarterial bypass surgery may be the only treatment capable of restoring normal erectile function without the necessity of chronic use of vasoactive medications or placement of a prosthesis. Lack of standardization in patient selection, hemodynamic evaluation, surgical technique and limited long-term outcome data using validated instruments have resulted in this surgery being considered experimental. In this study we report long-term outcome data using validated instruments.

Materials & Methods: A retrospective study of a pre-existing prospectively collected quality improvement database was performed. All patients who underwent robotic radical prostatectomy or robotic nephrectomy by a single surgeon between August 2008 and August 2010 were identified. We compared patients operated after November 2009 in whom aspirin had been administered the day of surgery with those who underwent surgery before November 2009 in whom aspirin had been held. Kruskal-Wallis tests or 2-sample T-tests were used to compare continuous variables.

Results: We identified 44 patients who underwent prostatectomy without recent aspirin and 51 who received preoperative aspirin. There were no significant differences between the 2 groups in baseline characteristics. Operative time (182 vs 174 min, p=0.19), median blood loss (175 vs 100 mL, p=0.12), and length of hospital stay (1 vs 1 day, p=0.08) were similar between the 2 groups. In the nephrectomy cohort, 12 patients had not received aspirin and 14 had. Again, there were no differences in median blood loss (65 vs 50 mL, p=0.96), median operative time (176 vs 140 min, p=0.14), or median hospital stay (2 vs 2 days, p=0.74).

Conclusions: Continuing aspirin in patients undergoing robotic radical prostatectomy and radical nephrectomy appears to be safe.
Concurrent Scientific Session II: Impotence / Peno-Scrotal Surgery
9:20 am-10:10 am

46

VED Registry in Men Treated for Prostate Cancer: Initial Results of a Prospective, Multi-institutional Dataset
Edward J. Trabulsi1, John C. Rewcastle2, Gerry Brock3, Craig Donatucci4, Run Wang5, John Mulhall6
1Kimmel Cancer Center, Thomas Jefferson University, Philadelphia, PA; 2University of Southern California, Los Angeles, CA; 3University of Western Ontario, London, ON, Canada; 4Duke University, Durham, NC; 5University of Texas Medical School at Houston, Houston, TX; 6Memorial Sloan-Kettering Cancer Center, New York, NY

Introduction: The VED Registry is an IRB approved prospective multicenter database for men prescribed a Vacuum Erection Device (VED). We report initial data collected from men who have undergone prostate cancer (PCa) treatment.

Materials & Methods: Patients were sent questionnaires to be completed and returned at the time of receipt of the VED and at 3, 6 and 12 months. Baseline questionnaires consisted of a brief history including information on (PCa) diagnosis and treatment (Tx), the IIEF and an ED treatment inventory. Follow-up questionnaires included the full IIEF, ED treatment inventory and a VED questionnaire. Only PCa patients are included in this analysis.

Results: In 12 months, 395 questionnaires were returned 210 from PCa patients. Baseline SHIM scores are summarized in the table, below are some of the treatment details. Similar dissection protocols were observed for both prostatectomy and radiation therapy. The IIEF and VED questionnaire at baseline were compared to post prostatectomy ED knowledge. Supported by Firma Medical Co.

<table>
<thead>
<tr>
<th>Preoperative</th>
<th>Postoperative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td>Median</td>
</tr>
<tr>
<td>IIEF</td>
<td>IIEF</td>
</tr>
<tr>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>p-value</td>
<td>p-value</td>
</tr>
<tr>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Conclusions: The data is embryonic but the ability to collect large amounts of patient data has been demonstrated and it is anticipated the VED Registry will contribute significantly to postprostatectomy ED supported by Firma Medical Co.

47

Urethral Reconstruction Outcomes Using Patient Reported Preoperative and Postoperative Questionnaires in Combination With Uroflowmetry
Jessica DeLong, Jill Buckley
The Lhey Clinic, Burlington, MA

Introduction: There is a paucity of data regarding self-reported outcomes following urethral reconstruction. We compared preoperative and postoperative AUASS symptom score (AUASS), quality of life (QOL), erectile function, flow rate (FR), and post-void residual (PVR) in patients undergoing urethral reconstruction for complex stricture disease.

Materials & Methods: Under an IRB-approved chart review, 86 patients were identified with complete pre and postoperative data, and an additional 20 patients with only postoperative data. All cases were performed at our institution over a 2.5-year period. Patient demographics, type of surgery, AUASS, QOL score, IIEF, FR and PVR were collected for all patients. Patients were followed at 3 and 6 months postoperatively, then yearly with questionnaires, FR and PVR. Flexible cystoscopy (17Fr) was performed at 6 months. Statistical analysis was performed using the Wilcoxon signed rank test.

Results: Average patient age was 46.8 (range 17-81) years. Twenty-two anastomotic, 73 onlay and 11 fasciocutaneous flap urethroplasties were performed. The median individual change when comparing pre and postoperative data in our cohort was an improvement of 12 for AUASS, 4 for QOL, and no change in IIEF (table 1).

Conclusions: Patients undergoing urethral reconstruction for complex stricture disease experienced a significant improvement in self-reported outcomes that correlated with functional uroflow results. Patients can expect to maintain their erectile function. This data may be helpful when counseling patients prior to surgical intervention.

Table I. Median preoperative and postoperative patient reported and diagnostic data

<table>
<thead>
<tr>
<th>AUASS symptom score</th>
<th>Preoperative</th>
<th>Postoperative</th>
<th>Median Change</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>QOL</td>
<td>5</td>
<td>2</td>
<td>-2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>IIEF</td>
<td>23</td>
<td>24</td>
<td>1</td>
<td>0.105</td>
</tr>
<tr>
<td>FR</td>
<td>9</td>
<td>23</td>
<td>14</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>PVR</td>
<td>66</td>
<td>66</td>
<td>-2</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

48

Post-Operative Complications of the Exaggerated Lithotomy Position
Mary H. James, Paul D. McAdams, Britton E. Tisdale, Gerald H. Jordan, Kurt A. McCammon
Eastern Virginia Medical School, Norfolk, VA

Introduction: The exaggerated lithotomy position provides excellent exposure to the perineum during urethral surgery. Recent studies have reported a high complication rate for this position suggesting that its use should be limited. We present our experience with the exaggerated lithotomy position.

Methods: Data was retrospectively reviewed on 105 patients who underwent surgery in the exaggerated lithotomy position at a single institution. Positioning-related complications and time in exaggerated lithotomy position were collected.

Results: All patients except one underwent urethral reconstruction. Average time in the exaggerated lithotomy position was 172 minutes (105-230 minutes). Twenty-three patients (21.9%) had complications felt to be positioning related, the majority of which resolved without additional treatment or sequelae. The most common findings were paraphrenias of the lower extremity seen in 20 patients (19.5%) and musculoskeletal back pain in 4 patients (3.8%). All but 3 of these patients (87%) had spontaneous resolution of these symptoms prior to discharge. Average time to resolution was 2.3 days. The symptoms in the remaining 3 patients continued to improve at time of discharge and did not warrant further intervention. A single patient (0.9%) had a pulmonary embolus. Medical work-up revealed the presence of lupus anticoagulants, an additional risk factor for thrombosis. No patients had neuropathy, rhabdomyolysis or compartment syndrome.

Conclusions: The exaggerated lithotomy position provides unequalled access to the perineum for urethral reconstruction. With appropriate equipment and attention to proper positioning, there is a relatively low risk of even minor, self-limited complications and is therefore our position of choice.

49

“Never Events” - The Incidence and Cost Implications of “Preventable” Complications in an Academic Urology Practice
Elias Hyams, Brian Mattlaga
Brady Urological Institute, Johns Hopkins School of Medicine, Baltimore, MD

Introduction: In 2008, the Center for Medicare Services enumerated a list of “preventable” adverse events and began restricting payments for associated costs. These included certain unambiguous preventable errors like wrong site surgery, but also certain medical/surgical complications that might result from non-modifiable risk factors. In this study, we investigated the incidence of current or proposed “never events” during a one year period in a tertiary level academic urology practice. Also we sought to quantify inpatient costs directly attributable to these events.

Methods: We reviewed a prospectively maintained database of patient morbidity and mortality in our urology department from July 2009-June 2010. Incidence of current and proposed “never events” were collated. Inpatient billing records for infection-related events were specifically reviewed.

Results: Table 1 demonstrates the incidence of various current and proposed “never events.” Infection-related events generated hospital costs of $168,428.28 (mean $7655.83/patient; range $1.26-70,151.94).

Conclusions: While “never events” are relatively rare in an academic urology practice, they can generate substantial cost burden if reimbursement is strictly limited. For high risk patients, it may be impossible to determine whether specific events are preventable even when best practices are followed. Furthermore, determining which costs are directly attributable to an event during a complex hospital course may not be routinely feasible. Health care policy that seeks to incentivize quality care needs to recognize these methodological issues.

Table 1. Event

<table>
<thead>
<tr>
<th>Event</th>
<th>Overall Incidence (SBS cases)</th>
<th>Adult Incidence (4032)</th>
<th>Pediatric Incidence (1275)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. difficile infection (6)</td>
<td>0.11% (6)</td>
<td>0.12% (5)</td>
<td>0.08% (1)</td>
</tr>
<tr>
<td>Surgical site infection (12)</td>
<td>0.23% (12)</td>
<td>0.17% (7)</td>
<td>0.39% (5)</td>
</tr>
<tr>
<td>Catheter-associated UTI (8)</td>
<td>0.15% (8)</td>
<td>0.17% (7)</td>
<td>0.08% (1)</td>
</tr>
<tr>
<td>Infected device (1)</td>
<td>0.02% (1)</td>
<td>0.03% (1)</td>
<td>0.00% (0)</td>
</tr>
<tr>
<td>Hospital acquired pneumonia (4)</td>
<td>0.08% (4)</td>
<td>0.10% (4)</td>
<td>0.00% (0)</td>
</tr>
<tr>
<td>Deep venous thrombosis/ pulmonary embolism (17)</td>
<td>0.02% (1)</td>
<td>0.03% (1)</td>
<td>0.00% (0)</td>
</tr>
<tr>
<td>Hip fracture (1)</td>
<td>0.06% (3)</td>
<td>0.05% (2)</td>
<td>0.08% (1)</td>
</tr>
<tr>
<td>Anesthesia-related (3)</td>
<td>0.09% (5)</td>
<td>0.12% (5)</td>
<td>0.00% (0)</td>
</tr>
<tr>
<td>Positioning-related (5)</td>
<td>0.04% (2)</td>
<td>0.00% (0)</td>
<td>0.16% (2)</td>
</tr>
</tbody>
</table>
Influence of Surgeon and Hospital Volume on Radical Prostatectomy Costs

Stephen B. Williams, Channa A. Amarasekera, Xiangmei Gu, Stuart R. Lipsitz, Paul L. Nguyen, Keith J. Kovalczyk, Jim C. Hua
Brigham and Women's Hospital, Boston, MA

Introduction: While higher radical prostatectomy (RP) hospital and surgeon volume is associated with better outcomes, the effect of provider volume on healthcare costs remains unclear.

Materials & Methods: We used SEER-Medicare data to identify 5,964 men who underwent RP from 2003-2005. We categorized hospital and surgeon RP volume during the study period into quartiles (low, intermediate, high, very high). Costs from inpatient, outpatient, and physician services were assessed from RP until 90 days postoperatively.

Results: Higher surgeon volume was associated with lower RP costs (low $11,925; intermediate $11,668; high $11,649; very high $10,384, p=0.001) while higher hospital volume was associated with greater costs (low $10,910; intermediate $11,006; high $11,696; very high $12,132, p=0.001). In adjusted analyses, the cost savings of an additional RP by hospital volume was $6.8 (95% CI: 4.4-9.6, p=0.001) while the marginal cost for an additional RP by hospital volume was $6.8 (95% CI: 4.4-9.6, p=0.001). Moreover, RP costs were higher for single vs. married men ($383.9, 95% CI: 138.4-629.4, p=0.002) and Black ($599.0, 95% CI: 296.7-901.3, p<0.001) and Hispanic ($417.2, 95% CI: 221.8-612.6, p<0.001). Moreover, RP costs were higher for single vs. married men ($383.9, 95% CI: 138.4-629.4, p=0.002) and Black ($599.0, 95% CI: 296.7-901.3, p<0.001). Moreover, RP costs were higher for single vs. married men ($383.9, 95% CI: 138.4-629.4, p=0.002) and Black ($599.0, 95% CI: 296.7-901.3, p<0.001). Moreover, RP costs were higher for single vs. married men ($383.9, 95% CI: 138.4-629.4, p=0.002) and Black ($599.0, 95% CI: 296.7-901.3, p<0.001).

Conclusions: Higher RP surgeon volume leads to significant savings; however, higher RP hospital volume increased costs. These findings should be considered when balancing health care reform initiatives to improve quality while reducing health care expenditures.

Impact of Poverty Level and Education on 24-hour Urine Composition in Patients with Nephrolithiasis

Brian H. Eisner1, Senali Sheth1, Stephen P. Dretler1, Benjamin Herrick2, Veronica M. Paus, Jr.3
1Massachusetts General Hospital, Boston, MA; 2Dartmouth Hitchcock Medical Center, Lebanon, NH; 3Dartmouth Hitchcock Medical Center, Lebanon, NH

Introduction: Socioeconomic status and education level have been shown to affect health outcomes. We examined the relationship between poverty level, education level, and 24-hour urine composition in patients with nephrolithiasis.

Materials & Methods: A retrospective review was performed. Poverty level and education level for each zip code were determined from US Census Bureau Data. Multivariate linear regression examined the relationship between poverty level, education level, and 24-hour urine composition. Regression models adjusted for known risk factors for stone disease.

Results: 435 patients were included in the study. Female:male ratio was 173:262 (i.e. 40% female), mean age was 52.5 years (SD 14.4), mean BMI was 28.6 (SD 6.5). On multivariate linear regression, increasing poverty was associated with significant increases in urine calcium (B = 1.51, 95% CI 0.16 to 2.86). There were no other associations between poverty level and any urine constituents or supersaturations. Increasing level of education was associated with significant decreases in urine calcium (B = -1.26, 95% CI -2.42 to -0.10), supersaturation of calcium oxalate (B = -0.04, 95% CI -0.09 to -0.00), and supersaturation of calcium phosphate (B = -0.013, 95% CI -0.03 tp -0.002). There were no other associations between education level and any urine constituents or supersaturations.

Conclusions: In this study of stone formers, increasing poverty and lower education level were both associated with increased urine calcium. Further studies are important to elucidate the mechanisms underlying these findings.

© The Canadian Journal of Urology™; 18(5); October 2011
Measurement of Spatial Distribution in Prostate Biopsy
Misop Han, Chunwoo Kim, Doyoung Chang, Hyungju Kim, Doru Petrisor, Dan Stevanovic
Johns Hopkins Medical Institutions, Baltimore, MD

Introduction: Prostate biopsy is typically performed freehand with transrectal ultrasound (TRUS) guidance. However, it is difficult to determine the accuracy of the spatial distribution of TRUS-guided biopsy.

Materials & Methods: A simulation model was built to accurately measure in vitro biopsy locations. This model consists of (1) a gelatin-based pelvic mockup with precisely defined geometry of a prostate and rectal cavity; (2) an optical tracking system (Polaris®, NDI, Ontario, Canada) to measure the relative locations, (3) TRUS ultrasound (TRUS) guidance. However, it is difficult to determine the accuracy of the spatial distribution of TRUS-guided biopsy.

Results: Results from a simulated biopsy are shown in Figure 2. The simulated biopsy cores were often clustered and a large portion of the prostate gland was undersampled. The average error distance was 8.86 mm.

Conclusions: TRUS-guided prostate biopsies may not closely follow sextant biopsy distribution. An alternate targeting method may be needed for uniform sampling during TRUS-guided prostate biopsy.

Bladder Compliance in Men with Lower Urinary Tract Symptoms
Kristina Wittig1, Jerry Blaivas1, Jeffrey Weiss3, Georgia Panagopoulos4
1University of Connecticut Health Center, Farmington, CT; 2Well Cornell Medical Center, New York, NY; 3SUNY Downstate, Brooklyn, NY; 4Lenox Hill, New York, NY

Introduction: To determine whether there is a relationship between bladder compliance in men with lower urinary tract symptoms (LUTS) and the degree of urethral obstruction, prostate size, detrusor overactivity, and age.

Materials & Methods: Retrospective observational study of consecutive men 18 years of age or older, identified from our database, who underwent evaluation for persistent LUTS. All patients underwent history & physical examination, voiding diary, urinalysis & urine culture, cystoscopy & videourodynamic analysis. Exclusion criteria: urethral stricture, prostate cancer, prostate surgery, active bladder cancer, neurogenic bladder. Urethral obstruction was defined by the Schafer bladder outlet obstruction nomogram (grades obstruction 0-6). Prostate size was defined as b+4 (0 = smaller than normal, 1 = normal, 2 = 4+ = increasing prostate size).

Results: Of 314 patients screened, 229 were excluded because of one or more exclusion criteria. The remaining patients ranged in age from 31-99 yrs (mean = 63, SD = 13). An inverse correlation was found between bladder compliance & Schafer obstruction grade (Spearman’s rho = -0.27, p<0.01). No correlation was noted between bladder compliance and prostate size (Spearman’s rho=0.07, p=0.50), detrusor overactivity (Spearman’s rho=0.17, p=0.33) or age (Spearman’s rho=0.01, p=0.93).

Conclusions: Since low bladder compliance is an important risk factor for the development of upper urinary tract disease, proactive treatment and careful monitoring of patients with high degrees of urethral obstruction should be considered.

Bladder Compliance Measures and Bladder Diary in Patients with Urinary Incontinence
Ashley B. King1, Jeffrey P. Wolters1, Adam P. Klausner1, David E. Rapp2
1Virginia Commonwealth University, Richmond, VA; 2Virginia Urology Center for Incontinence and Pelvic Floor Reconstruction, Richmond, VA

Introduction: We performed a retrospective review of 120 women evaluated for urinary incontinence. Statistical analysis assessed for a relationship between bladder diary parameters and two previously reported urodynamic derivatives (First Sensation Ratio (FSR))/Bladder Urgency Velocity (BUV). Subset analysis was performed in patients without stress urinary incontinence (SUI) to isolate patients with urgency symptoms. Analysis was also performed to identify a relationship between these parameters and the presence/absence of detrusor overactivity (DO).

Results: No association was demonstrated between bladder diary parameters and FSR/BUV. However, subset analysis demonstrated an association between DO and BUV, with a lower BUV identified in patients without DO (p=0.05). Subset analysis of patients without SUI demonstrated a weak association between voiding frequency and FSR (r=0.39) and between daily incontinence episodes and BUV (r=0.35). However, these failed to demonstrate statistical significance.

Conclusions: No association between bladder diary and FSR/BUV was seen. This is not unexpected since bladder diary may reflect numerous pathologies including not only sensory dysfunction but also SUI and DO. However, weak associations identified in patients without SUI suggest that further investigation is needed to assess the utility of FSR/BUV in characterizing sensory dysfunction in patients with urge-predominant symptoms.
Concurrent Poster Session III: Non-Oncologic Diseases
11:20 am-12:15 pm

P50

Predictive Factors for Patient Satisfaction with Sacral Neuromodulation in Chronic Voiding Dysfunction
Michelle L. Ramirez, Michelle L. Persun, Phillip C. Ginsberg, Richard C. Harkaway
Albert Einstein Medical Center, Philadelphia, PA

Introduction: Sacral neuromodulation is an FDA-approved treatment for a variety of voiding dysfunctions that are refractory to conservative treatment. Studies have shown success rates of up to 80%; however, more than 20% of patients who undergo a successful test stimulation period, defined by at least 50% improvement in symptoms, fail to respond. We sought to identify other predictive factors for successful treatment of lower urinary tract symptoms with InterStim® neuromodulation.

Materials & Methods: We retrospectively analyzed 51 patients with chronic, nonobstructive frequency and urgency refractory to medical therapy who were treated with staged placement of the InterStim® device. Two cohorts were identified: those who were satisfied with treatment and those who were not according to a subjective grading scale. Variables were analyzed using paired t-tests.

Results: Of the 51 patients evaluated, 3 patients were excluded secondary to infection. Of the 48 remaining patients, 77% were female. Thirty-nine patients (81%) were satisfied with their improvement in symptoms, while 9 patients (19%) were dissatisfied. Age, sex, weight, the number of anticholinergic medications previously used, and the number of prior urologists sought in treatment were comparable between the two groups (p=0.05). Approximately 18% of patients in satisfied group were using chronic narcotic medication for pelvic pain control compared to 67% in the dissatisfied group (p=0.002).

Conclusions: Sacral neuromodulation is a successful means of treatment for refractory chronic voiding dysfunction. Regardless of undergoing staged placement after a successful stimulation trial, those who use chronic narcotics are less likely to be satisfied with Interstim® therapy.

P52

Recurrent Urinary Tract Infection in Intermittently Catheterized Spinal Cord Injury Patients
Leonard U. Edokpolo, Karen B. Stavras, Harris E. Foster, Jr.
Yale University School of Medicine, New Haven, CT

Introduction: Clean intermittent catheterization (CIC) is widely accepted for neurogenic bladder management in spinal cord injury (SCI). We studied our population of SCI patients for the association of recurrent urinary tract infections (UTI) with the long-term use of CIC for neurogenic bladder management.

Materials & Methods: Retrospective study of 61 SCI subjects. Subjects were selected from patients followed by one physician at our institution between 2000 and 2010. 930 records were generated with diagnosis codes for “neurogenic bladder” and “spinal cord injury.” Initial review of these records identified 210 SCI patients. 51 males and 10 females followed for at least one year were included. Patients with urinary diversion or those not using CIC were excluded. Subjects experiencing recurrent symptomatic UTIs were identified by their use of medical UTI prophylaxis (PRx) with either oral antibiotics or methenamine/vitamin C.

Results: 41 (67%) subjects required medical PRx for recurrent symptomatic UTI’s (8 [80%] females and 33 [66%] males). There was no statistically significant difference between percentage of males and females requiring PRx. Date of initial PRx use was noted in 39 of 41 subjects and the results demonstrate 28 [72%] required PRx within 2 years after initiation of CIC.

Conclusions: Although CIC is believed to have the fewest complications compared with other methods, most SCI patients managed with long-term CIC will require medical PRx for prevention of symptomatic UTI within 2 years after its initiation. This highlights the continued need for advances in bladder management to improve quality of life in SCI patients.

P51

The Association Between Psychological and Lower Urinary Tract Symptoms: A Population Based Study in Finland
Andrew Wine3, Johnson Tsai1, Fernando Cabrera2, Jeffrey P. Weiss1, Kari A. O. Tikkinen2
1SUNY Downstate, New York, NY; 2Helsinki University Central Hospital and University of Helsinki, Helsinki, Finland

Introduction: Our aim in this population based study is to determine if lower urinary tract symptoms (LUTS) are more prevalent in patients with anxiety and/or mood disorders.

Methods: In 2003-2004, questionnaires were mailed to 6,000 randomly selected Finnish people aged 18-79 years. LUTS information was collected by questionnaire using the validated Danish Prostatic Symptom Index with an additional question included items related to mood and anxiety disorder. Patients were grouped into two categories, those with and those without a mood/anxiety disorder. Prevalence and odds ratios of LUTS were calculated for both groups.

Results: Of 6,000 subjects, 3,597(60%) responded, of whom 1,709(48%) were men and 1,888(52%) were women. 300(5%) reported having a mood disorder/anxiety, of whom 116(39%) were males and 184(61%) were females. Prevalence of LUTS between those with and without mood disorder/anxiety is depicted in Table 1.

Conclusions: Among individuals with self-reported anxiety/mood disorders, there is increased prevalence of LUTS. The increased odds ratio for LUTS in these patients suggests a link between mental health and reported LUTS.

P53

A Once-daily Titratable Gel Formulation for Transdermal Oxybutynin Delivery for OAB
David R. Staskin1, Evan Goldfinger2, Kausluk Dave3
1Tufts University School of Medicine, Boston, MA; 2Hudson Valley Urology, Poughkeepsie, NY; 3Antares Pharma, Ewing, NJ

Introduction: A prospective randomized double-blind placebo-controlled trial of a once-daily titrable dose transdermal oxybutynin gel (TTOG) formulation. To date there are no titrable transdermal agents for OAB.

Materials & Methods: 12 week study ages 19-89 years with symptoms of urgency (UUI) and/or mixed UI for >3 months. Inclusion: ~1-2 urge episodes and >8 voids/day. Three treatment arms: 84mg and 56mg TTOG and placebo. Primary: change from baseline in UI frequency and volume voided. Primary analysis: modified intent to treat. Diaries: baseline, and weeks 1,2,4,8, and 12. Statistics: transformation for group comparison (predefined). IRB approved. Gel formulation supplied (Antares) and study funding by Antares Pharma, Inc., Ewing, NJ.

Results: 626 patients (87% female) were included: TTOG 84mg (N=214), 56mg (N=210), and placebo (N=202). Both doses of TTOG were statistically superior to placebo for UUI reduction and volume voided, 84mg dose for urinary frequency (Table 1). AEs:mild to moderate / non-prompted rates of dry mouth n= 26 (12.1%)/84mg and n= 23 (11.0%)/56mg TTOG and n=10 (5.0%)/placebo. CNS AEs were similar between both active arms and placebo group.

Conclusions: This is the first report of a TTOG. Significant improvement noted for OAB symptoms at both doses. Side effects were mild to moderate with low levels of skin reactivity. TTOG provides an additional alternative for managing OAB symptoms.
P54

Presentation and Management of Complications of Male Perineal Slings: Are Complications Under-reported?

Arthur Mourtzinos1, William J. Jaffe2
1Lahey Clinic Medical Center, Burlington, MA; 2Pennsylvania Presbyterian Medical Center, Philadelphia, PA

Introduction: The AdVance and Virtue male slings are treatment options for post-prostatectomy incontinence (PPI), with the goal of reducing urinary incontinence without affecting voiding parameters. A concern of any procedure in treating men with PPI is the presence of significant complications. The purpose of this study was to report the presentation and treatment of complications from this minimally invasive treatment to a tertiary referral practice and to highlight complications reported in the food and drug administration (FDA) device failure database.

Materials & Methods: From January 2008 through March 2011, we reviewed all cases of AdVance and Virtue sling complications that presented to our institutions. The FDA manufacturer and user facility device experience (MAUDE) database was queried for self-reported complications.

Results: A total of 5 patients were referred to the Lahey Clinic and Penn Presbyterian Medical Center with complications following a male perineal sling. Treatments required a combination of surgical exploration, drainage and irrigation with antibiotics, mesh excision, and further surgery to treat the incontinence. The MAUDE database contained 11 major complications out of a total of 61 complications that were reported for the AdVance and Virtue male slings. There were significantly more major complications reported in MAUDE than in published literature.

Conclusions: Although rare, major complications of the male perineal slings are more common than they appear in the literature. Many of these cases may require additional reconstructive surgery and subsequent procedures for treatment of underlying incontinence.

P56

Differential Diagnosis of Overactive Bladder in Women

Brian.A.Marks1,2,3, Eric.C.Blaivas4,5, JohnathanD.F.Tsu6,7, Jeffrey.P.Wei6
15NYU Downstate, Brooklyn, NY; 2Urology, Weill Cornell Medical College, New York, New York, NY

Introduction: The aim of this study is to evaluate the differential diagnosis in women with symptoms of overactive bladder (OAB).

Methods: This is a retrospective study demonstrating the differential diagnosis of women with symptoms of OAB using a previously validated OAB symptom questionnaire (OABSS). All patients underwent history and physical, OABSS questionnaire, 24-hour voiding diary, uroflow, and post-void residual. Cystoscopy and urodynamics were completed when required for diagnosis. Selection criteria were developed to assign patients to the various diagnostic categories.

Results: 125 women (mean age 67) met inclusion criteria for OAB. Cystoscopy and urodynamics were completed in 106 (85%) women and detrusor overactivity was demonstrable in 54 (43.2%). The differential diagnosis for all patients and patients with OABSS>9 is listed in Table 1. 103 (82.4%) patients had an OABSS>9 with a mean OABSS of 15.4 (range 5-27, SD 5.5). The differential diagnosis of this subset of patients is listed in Table 1 along with mean OABSS for each category.

Conclusions: Women who present with OAB symptoms exhibit a differential diagnosis of concomitant urologic pathologies, we believe that OAB should be considered a symptom complex, not a syndrome. This series confirms that up to 79% of women with OAB symptoms have other diagnostic categories, many of which may be remediable to treatment.

<table>
<thead>
<tr>
<th>Differential Diagnosis</th>
<th>All Patients (N=125)</th>
<th>OABSS ≥9 (N=93)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>Percentage (%) Mean OABSS</td>
<td>Number (%) Mean OABSS</td>
</tr>
<tr>
<td>Bladder outlet obstruction</td>
<td>15.7</td>
<td>6</td>
</tr>
<tr>
<td>Neurogenic bladder</td>
<td>15.7</td>
<td>6</td>
</tr>
<tr>
<td>Bladder hypertrophy</td>
<td>15.7</td>
<td>6</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>15.7</td>
<td>6</td>
</tr>
</tbody>
</table>

*Each subject could be represented in more than one diagnostic category.

P55

Effect of Percutaneous Tibial Nerve Stimulation on Fecal Incontinence: Results from a Double-Blind, Randomized, Sham-Controlled Trial for Over Active Bladder

Jeffrey A Ranta1, Ken Peters2, Donna Carriço2
1Greenville Urological Assoc. P.C., Greenville, CT; 2William Beaumont Medical Center, El Paso, TX

Introduction: The objective of this study was to compare efficacy of percutaneous tibial nerve stimulation (PTNS) to validated sham treatment in the subset of overactive bladder (OAB) subjects diagnosed with FI using a seven-level Global Response Assessment (GRA) questionnaire defining responders as those reporting FI symptoms a “moderately” or “markedly” improved.

Materials & Methods: The study was a multi-center trial with 220 OAB subjects of which 25 subjects (13%) experienced FI. Of these subjects, 15 were randomized to PTNS and 13 randomized to a validated sham intervention. Both groups received twelve weekly 30-minute intervention in which the PTNS group received stimulations delivered through a 34-gauge electrode needle inserted near the posterior tibial nerve, and the sham therapy used a placebo needle and a TENS device using sensory and auditory methods to mimic the PTNS treatment without active treatment. Voiding diaries and validated questionnaires were completed at baseline, and after 6 and 12 treatments.

Results: Baseline characteristics were similar across both groups. The GRA for FI symptoms found 30.8% were responders in the PTNS group compared to 18.2% in the sham group after 6 interventions and 45.5% and 18.2 after 12 treatments.

Conclusions: Although PTNS is not FDA cleared for use with those affected by FI in the United States, it suggests this treatment is not due to a placebo effect, is safe and effective, and has great potential for patients with FI.

P57

Does Patient Obesity Impact the Effectiveness of Extracorporeal Shockwave Lithotripsy?

Eugene Kramolowsky1, Nada L. Wood1, Mark Monahan1, Ruth Butler1, Susan Taylor2
1Virginia Urology, Richmond, VA; 2Washington and Lee University, Lexington, VA

Introduction: The incidence of upper tract urinary stones is higher in obese patients with body mass index (BMI) ≥ 30. Does obesity impact stone free rate of SWL? We compared normal and overweight (BMI <30) patients with obese (BMI>30) patients to determine stone free rate.

Materials & Methods: 1975 consecutive SWL procedures done on a Lithotritor by 20 urologists using a consistent protocol for >95% of patients were reviewed. KV and number of shocks delivered were consistent in groups. Age and sex distribution was comparable. To evaluate outcomes, the group was divided into 1095 SWL patients with BMI of <30 (normal and overweight) and 880 for BMI>30 (obese). Size and location of the stones were compared as was stone free status on plain film of the abdomen and pelvis at 4-6 weeks (94% of patients). Statistical differences between groups were determined by Students-t or Chi-square analysis.

Results: Overall stone-free rate for patients with BMI <30 was 66.7% and 57.2% for BMI≥30 (p<0.005). Stone-free rate evaluated by stone location was 62.5% for BMI<30 and 57.2% (p<0.01) for BMI≥30. Stone size analysis showed higher stone free rate in the non-obese patient, particularly for larger stones greater than 75 mm² (52.8% and 39.2%) vs 25 mm² (83.5% and 77.3%)(p<0.005), 25-75 mm² (65.3% and 62.3%) (n.s); for BMI<30 and BMI≥30 respectively.

Conclusions: SWL remains the mainstay of treatments but appears to be less effective in obese patients (BMI≥30).
Risk of Infection Stones in Patients with Non-Obstructing Renal Stones
Boris Gershman, Jairam R. Esware, Dianne E. Sacco
Massachusetts General Hospital, Boston, MA

Introduction: Non-obstructing renal stones are a potential cause of recurrent urinary tract infections. However, there is little clinical data to distinguish infected from uninfected renal stones.

Materials & Methods: We performed a retrospective review of patients who underwent unilateral ureteroscopy for non-obstructing renal stones from 9/2008 - 6/2010. Stone culture was routinely sent if a stone was retrieved. Patients were excluded if they had hydronephrosis, urethral stones, indwelling stent, bilateral procedures, or ipsilateral percutaneous nephrolithotomy or shock-wave lithotripsy in the preceding 12 months. Stone dimensions were independently measured from CT images.

Results: Ureteroscopy was performed in 43 renal units in 41 patients with a mean of 2.3 stones per renal unit. Four (9.3%) renal units had a stone culture with at least one bacteria while 39 (90.7%) had no growth. Stone microbiology included alpha-hemolytic Streptococcus (1 stone), Enterococcus (2 stones), and coagulase-negative Staphylococcus (1 stone). Eight (18.6%) patients had a diagnosis of recurrent UTIs, but only 1 (2.3%) had a stone culture that correlated with at least one prior urine culture. Mean stone size was 7.14 ± 3.16 mm x 5.44 ± 2.24 mm in the axial plane. There was no statistically significant difference in stone length, width, height, axial ellipsoid area, or ellipsoid volume between patients with and without positive stone cultures.

Conclusions: Non-obstructing renal stones have a low but non-negligible incidence of infection in this patient population. Larger studies are needed to identify predictive variables for stone infection to guide patient selection for surgical intervention.
Management of Residual Fragments Following Percutaneous Nephrolithotomy: A Cost Analysis

Michelle J. Semins, Elias Hyams, Brian R. Matlaga
Johns Hopkins Hospital, Baltimore, MD

Introduction: Residual fragments after percutaneous nephrolithotomy (PNL) have historically been managed with second-look flexible nephroscopy. As the utilization of tubeless PNL becomes more widespread, there has been an increased interest in second-look ureteroscopy for patients with residual stone fragments. We performed a cost analysis of immediate second-look flexible nephroscopy and second-look ureteroscopy for patients with residual stones following PNL.

Methods: We reviewed the records of patients who underwent PNL and then required a secondary procedure for the management of residual fragments following the initial PNL procedure. Cost data were obtained from administrative billing records. We defined total costs as operating room and post-anesthesia care unit expenses, as well as laboratory and professional (surgical and anesthesia) fees.

Results: The mean costs for second-look percutaneous nephroscopy were almost twice as high as the mean costs for second-look flexible ureteroscopy: $7690.72 versus $3752.93, p=0.05. We did not include in the analysis the costs of the initial PNL procedure for either group.

Conclusions: Our findings suggest that the costs of second-look PNL are significantly greater than the costs of second-look ureteroscopy for patients with a residual stone burden following PNL. It is important to note that costs are only one metric that are used to evaluate surgical efficacy for stone-removal procedures. However, an emerging surgical paradigm for patients with large or complex stone burdens may be a tubeless PNL procedure followed by flexible ureteroscopy for the management of a residual stone burden.

Baseline Body Mass Index (BMI) has no Effect upon Normalization of Testosterone Concentrations with Testosterone 2% Gel

Adrian Debo1, John McGinty2, Paul Norwood3, Susan Potts4, Errol Gould5
1The Johns Hopkins University, Baltimore, MD; 2Quality of Life Medical and Research Center, Tucson, AZ; 3Valley Endocrine and Valley Research, Fresno, CA; 4Endo Pharmaceuticals, Chadds Ford, PA

Introduction: This post hoc analysis examined the effect of body mass index (BMI) on testosterone (T) replacement therapy (TRT) in hypogonadal males (HM).

Materials & Methods: In a non-comparative trial, 129 HM with serum total T (STT) <250ng/dl or 2 consecutive STT concentrations <300ng/dl received once-daily T2% gel (Fortesta®), a new formulation applied to the front and inner thigh) for 90d. Starting dose was 40mg/day, adjusted on days 14, 35 and 60 if necessary according to predefined criteria in 10mg increments. BMI measurements were collected at baseline. Endpoint were average STT concentration over 24h (Cavg) and maximum STT concentration (Cmax) at 90d. Study objective was to raise STT Cavg 0-24h to a normal range of 300 and ≥1140ng/dl in ≥75% patients.

Results: At baseline, 8 patients (6%) had normal weight (BMI ≤25-29.9 kg/m²); 43 patients (33%) were overweight (BMI ≥25-25.9 kg/m²); and 78 patients (61%) were obese (BMI ≥30 kg/m²). Mean STT levels at baseline were 199.8 ±92.1 ng/dl, 190.3 ±69.4 ng/dl, and 198.5 ±65 ng/dl for BMI ≤25, ≥25-29.9, and ≥30, respectively. STT concentrations at 35d and 90d were compared across treatment groups (Table). TE2% gel was generally well tolerated and most common adverse incidents were application-site reactions (18%) considered mild (19/24; 79%) to moderate (5/24; 21%).

Conclusions: Regardless of baseline BMI, patients responded similarly to T2% gel to maintain STT levels.

Table: Results at 35d and 90d

<table>
<thead>
<tr>
<th>BMI</th>
<th>Normal (n=8)</th>
<th>Overweight (n=43)</th>
<th>Obese (n=78)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STT Cavg</td>
<td>409±152.7</td>
<td>414±153.3</td>
<td>404±66.4</td>
</tr>
<tr>
<td>Cmax</td>
<td>457±15.4</td>
<td>433±17.5</td>
<td>439±16.2</td>
</tr>
<tr>
<td>STT Cmax, ng/dl (mean±SD)</td>
<td>830±315.8</td>
<td>897±448.3</td>
<td>781±637.9</td>
</tr>
<tr>
<td>STT normal range (≥300-1140ng/dl) (%)</td>
<td>75.0%</td>
<td>70.1%</td>
<td>78.2%</td>
</tr>
<tr>
<td>Average daily T2% gel dose, mg (mean±SD)</td>
<td>45±6.5</td>
<td>42±7.3</td>
<td>46±6.4</td>
</tr>
</tbody>
</table>

Penile Prosthesis Placement in Patients with Corporal Fibrosis Secondary to Infection, Peyronie’s Disease, or Priapism: Techniques, Outcomes, and Complications

Vikrant Uebni1, Ricardo Muniz2
Boston University, Boston, MA

Introduction: Corporal fibrosis can make the insertion of a penile prosthesis very challenging. Various methods have been described regarding dilation of the fibrotic corpora. We describe our experience using cavernotomes, sharp corporal excision, or both techniques in conjunction. Our study investigates outcomes and complications of penile prosthesis placement in patients with corporal fibrosis.

Materials & Methods: This is a retrospective study of 20 patients with erectile dysfunction significant corporal fibrosis. Over an 8-year period, these patients underwent insertion of penile prosthesis. Most patients required use of cavernotomes and/or sharp corporal excision for corporal dilation. Charts were reviewed for cause of fibrosis, use of advanced measures of dilation, and outcomes after surgery.

Results: Corporal fibrosis was due to previously infected prosthesis in 8 patients, priapism in 9 patients, extrusion of prior prosthesis in 2 patients, and Peyronie’s disease in one patient. During placement of penile prosthesis, cavernotomes were used in 8 patients, sharp corporal excision in 3 patients, and combination of sharp corporal excision and cavernotomes in 2 patients. Penile prosthesis was successfully placed in all 20 patients. Overall, 16 patients (80%) had no complications to date. Complications included infection in 2 patients, urethral erosion in one patient, and malpositioned prosthesis in another patient. Interestingly, there were no complications in patients who had fibrosis secondary to priapism.

Conclusions: Penile prostheses can safely be placed in patients with significant corporal fibrosis, especially in patients with history of priapism. If dilation is challenging, cavernotomes and sharp corporal excision can be used safely.

Penile Fibrosis and Prior Priapism Can Be Associated with Penile Corporal Fibrosis: An Observational Study

John Norwood1, Michelle Spak2, Gabriel Pacheco3, George Halebian4
1Dalhousie University, Halifax, NS, Canada; 2Brown University, Providence, RI; 3Parkland Health and Hospital System, Dallas, TX; 4Boston University, Boston, MA

Introduction: Corporal fibrosis is a significant cause of erectile dysfunction. This study aimed to investigate the prevalence of penile fibrosis in patients with a history of priapism.

Materials & Methods: Patients with a history of priapism were identified from the electronic medical records. Charts were reviewed for cause of priapism, use of advanced measures of dilation, and outcomes after surgery.

Results: A total of 231 PCNLs were performed from 2006 to 2010. Demographics, age, ASA score, and length of stay (LOS) were assessed. Stone size, clearance, and complications were investigated. Patients over the age of 70y were compared to a stone size matched, age adjusted control group of 20 patients 30-60 years of age. Descriptive statistics and patient’s T-Tests were used.

Results: A total of 32 PCNLs in 28 patients over 70y (n=15 aged 71-79, 9 aged 80-89, 4 aged 90-94) were performed. This cohort’s mean age was 77y, ASA of 2.63, and had 70y were compared to a stone size matched, age adjusted control group of 20 patients 30-60 years of age. Descriptive statistics and patient’s T-Tests were used.

Results: A total of 32 PCNLs in 28 patients over 70y (n=15 aged 71-79, 9 aged 80-89, 4 aged 90-94) were performed. This cohort’s mean age was 77y, ASA of 2.63, and had
Efficacy and Safety Follow-Up Results 3 - 7 1/2 Years after Single Treatment with Transrectal NX-1207 in Multi-Center Prospective Blinded Randomized Controlled Studies of Men with Lower Urinary Tract Symptoms Due to Benign Prostatic Hyperplasia

Neal Shore1, Sheldon Freedman2, Barton Wachs3, Barrett Cowan4
1Carolina Urologic Research Center, Myrtle Beach, SC; 2Sheldon Freedman, MD LTD, Las Vegas, NV; 3Atlantic Urology Medical Group, Long Beach, CA; 4Urology Associates, Englewood, CO

Introduction: NX-1207 is an investigational prostate selective therapeutic protein drug for BPH which causes controlled atrophy of prostate tissue. NX-1207 2.5 mg is injected transrectally bilaterally into the transition zone. In 4 U.S. Phase 1-2 and Phase 2 studies NX-1207 efficacy measures reached statistical significance at 90 days. Subjects from these studies were assessed in blinded follow-up studies to determine long-term efficacy.

Methods: All available unselected subjects and controls were included. AUASI scores were measured at intervals of 7 years (Phase 1-2) and 3-5 years (Phase 2).

Results Obtained: Overall in separate follow up studies at 3 to 7 ½ years after a single dosage of NX-1207, 37 to 58% of subjects required no surgical treatments or medication for their BPH. After 7 ½ years, 58% of available Phase 1-2 subjects had no drug or surgical treatment for their BPH and had a mean improvement of 11.7 points in their AUASI scores. All Phase 2 follow-up study efficacy results reached statistical significance. There were no sexual side effects or significant adverse safety events attributable to study drug.

Conclusions: NX-1207 treatment offers an office based transrectal ultrasound guided injection procedure for the treatment of LUTS due to BPH. Follow-up results after a single treatment indicate significant symptomatic improvement with an acceptable safety profile. This research was supported by Nymox Corp.

Concurrent Poster Session III: Non-Oncologic Diseases

11:20 am-12:15 pm

P66

Outcomes of KTPLAP and TURP in Patients with Impaired Detrusor Contractility
Daniel A. Thorner, Fernando Cabrera, Jerry G. Blaivas, Johnson Tsui, Dmitry Volkin, Jeffrey P. Weiss
SUNY Downstate, Brooklyn, NY

Introduction: We report outcomes in men with impaired detrusor contractility (IDC) treated with KTP laser ablation (KTPLAP) or transurethral resection of the prostate (TURP).

Materials & Methods: This was a retrospective study of consecutive patients with IDC who underwent KTPLAP or TURP. IDC was defined as bladder contractility index <100 or detrusor contraction of insufficient duration to empty bladder. Pre-operative uroflow(Qmax), post-void residual volume(PVR), videourodymanics, and cystoscopy were obtained. Post-operative Qmax, PVR, clean intermittent catheterization (CIC) need, and Patient Global Impression of Improvement(PGII) score were obtained.

Results: 56 men aged 29-91 years (mean=67) were included. Mean preop BCI, BOOI, and PVR for entire cohort was 51 (SD=30), 31 (SD=30), and 670 (SD=559) respectively. Mean preop IPPS and bladder capacity for the entire cohort was 14 (SD=8) and 904mL (SD=605mL) respectively. 5 (96%) subjects were available at 1 year follow-up and 53 (96.5%) subjects completed PGII. 41 (73%) had successful outcomes (PGII score<1 in 20, 2 in 21). 6(11%) had little to no improvement (PGII score=3 in 2, 4 in 4). 6(11%) were worse (PGII score=5 in 1, 6 in 3, 7 in 2) and 11 still required CIC. Pre- and postop data is shown below.

Conclusions: 80% of patients with IDC who underwent KTPLAP/TURP had excellent outcomes based upon PGII and objective improvement in PVR, Qmax, and need for CIC. KTPLAP/TURP is viable for properly selected patients with IDC.

P67

Nocturia Reduction after Cooled ThermoTherapy for Symptomatic Benign Prostatic Hyperplasia
Aaron F. Fisman1, Stephen J. Eyre2, Lori B. Lerner2
1Boston University School of Medicine, Boston, MA; 2Brigham, Boston, MA; 3VA Boston Healthcare System, Boston, MA

Introduction: Nocturia is a common complaint in benign prostatic hyperplasia (BPH) patients suggesting clinically significant disease. Cooled ThermoTherapy™ (CTT) is a minimally invasive BPH treatment. We explored how much nocturia improved after CTT and whether or not more than BPH could be contributing.

Methods: Using Urologix maintained data of 796 men from numerous multi-center studies we examined nocturia via American Urological Association Symptom Scores (AUASS), BPH Impact Index (BII), quality of life (QOL), and peak flow (Qmax) at baseline, 6 months, 1, 2, and 4 years post-CTT. Patients were divided into 3 groups by baseline nocturia score: 1) 0-1; 2) 2; 3) >2. One-way analysis of variance, Tukey’s mean separation test, was used to compare groups.

Results: Groups 1 (N=119), 2 (N=228) and 3 (N=449) were similar in baseline prostate volume, body mass index, prostate specific antigen level, and diabetes and cardiac disease prevalence. Group 3 was older than the other groups and saw the greatest nocturia improvement post-CTT. BII, AUASS, QOL, Qmax and nocturia improvement was seen across groups post-CTT and sustained through 4 years. Nocturia improvement positively correlated to QOL, BII and AUASS across groups. Each point reduction in nocturia improved QOL by 0.5 and BII by 1.0. However, other unidentified factors also affected nocturia.

Conclusions: CTT leads to sustained improvements in nocturia, BII, AUASS, QOL and Qmax. QOL, BII and AUASS positively and predictably correlate with nocturia. No co-morbid predictors which correlate with the degree or lack of improvement were identified.

P68

Rapid Ambulatory Pathway Laser Prostatectomy is Safe-Results within the Global Period
Callen Jumper1, Paul Snyder2, Ronald Yap3
1Dartmouth-Hitchcock Medical Center, Lebanon, NH; 2Concord Hospital Center for Urologic Care, Concord, NH

Introduction: Though laser prostatectomy is becoming more commonplace, many patients are admitted postoperatively. We investigated the feasibility and safety of a rapid ambulatory discharge pathway following holmium laser ablation of the prostate (HoLAP) for the treatment of benign prostatic hyperplasia (BPH).

Materials & Methods: Between January 2007 and December 2009, 65 patients underwent HoLAP scheduled as a day surgical case by one surgeon. Patients were discharged from day surgery with a straight drainage catheter in place. Voiding trial occurred on postoperative day 3. Preoperative, intraoperative, and postoperative parameters within the 90 day global period were reviewed. Statistical analysis employed the Student’s t-test with a two-tailed significance level of 0.05.

Results: The mean patient age was 64. Average ASA score was 2.2. Mean operative time was 44 minutes. Mean postoperative time until discharge was 2 hours 29 minutes. There were no readmissions after discharge. Within the 90-day global period, 13 patients described LUTS, 5 patients had post-operative urinary retention, and one patient had a UTI. Average AUA Symptom Score decreased from 21.3 to 7.6 postoperatively (p<0.0001). Average quality of life score decreased from 4.04 to 1.38 (p<0.001) postoperatively. Average post-void residual decreased from 190.2 to 46.4 ml postoperatively (p<0.0005).

Conclusions: In appropriately selected patients, a rapid ambulatory pathway HoLAP can be safely performed with minimal morbidity in the global period.
Northern New England Renal Trauma: How it Differs from the Big City
Elizabeth B. Johnson, Levi A. Deters, Paul A. Merguerian
Dartmouth Hitchcock Medical Center, Lebanon, NH

Introduction: Renal injury occurs in up to 10% of blunt force injuries. Rural populations have a higher rate of trauma and are 50% more likely to suffer a trauma related death than their urban counterparts. We reviewed the mechanism of injury, management and outcomes of patients admitted with renal injury at a single rural level I trauma center. We hypothesize that the mechanisms of injury and the outcomes are different than in published urban data.

Materials & Methods: After institutional review board approval we retrospectively reviewed the charts of all adult patients (>19 years of age) admitted from 2006-2010 with renal trauma. Variables evaluated included age, gender, intoxication status, grade, mechanism of injury, and associated abdominal injuries. Management and outcomes were analyzed.

Results: Of the 104 patients admitted 80 (77%) were male and 24 (23%) female. Mean age was 44 years. Blunt force trauma accounted for the majority of injuries (98%). The most common mechanism of injury was motor vehicle collision (MVC) 36/104(35%), followed by recreation related activities 35/104(34%), falls 16(16%), and motor cycle crash 17/104(16%). Winter related activities accounted for 19/24 (79%) of recreational injuries. Five patients (6%) required embolization and one required emergent nephrectomy. Mortality was 8/104(8%). MVC resulted in significantly more multi intra-abdominal injuries (64% vs 29%, p=0.0173).

Conclusions: Unlike urban setting, our data from a rural center shows that recreational renal injuries were as common as MVCs. MVCs were found to result in significantly more multi organ injuries. Management of renal trauma remains mostly nonoperative.

Prospective Robotic-Assisted Laparoscopic Pyeloplasty Analysis in Pediatrics
Kelly Chiles1, Katherine W. Herbst2, Christina Kim3
1University of Connecticut, Farmington, CT; 2Connecticut Children’s Medical Center, Hartford, CT

Introduction: Dismembered pyeloplasty was historically done with an open incision, but less invasive techniques have taken a more prominent role. Many studies review outcomes in a retrospective fashion. We performed a prospective analysis of pediatric robotically-assisted laparoscopic pyeloplasties (RALP) to further establish the safety and effectiveness of this minimally invasive surgery.

Methods: We retrospectively reviewed 13 patients diagnosed with CP. We evaluated patients’ urinary signs/symptoms and urodynamic (UDS) findings before and after cord untethering.

Results: All 13 with CP having a sacral defect and presacral mass were diagnosed between birth and 6 years (Table 1). 92% had a tethered spinal cord that was surgically detethered between 8 months to 6 years (average 3 years). Four had recurrent urinary tract infections, 2 of whom had bilateral vesicoureteral reflux and both resolved spontaneously. Two had mild unilateral hydronephrosis without reflux. Three others with radiologic imaging were normal. Eleven underwent comprehensive UDS. Three of four with pre- and post-surgery UDS showed improvement (Table 1). Six had only post-surgery UDS, 5 being abnormal with small capacity, poor compliance, detrusor overactivity (DO), sphincter dyssynergy or high voiding pressures. One infant had no spinal surgery and normal UDS.

Conclusions: CS is a rare disorder with few published reports regarding long-term implications. Although UDS parameters improved after surgery, all toilet-trained patients continued to have ongoing voiding issues.

P70 Cost Comparison of Open, Laparoscopic, and Robot-assisted Partial Nephrectomy
Mehdad Alemoazzar1, Steven L. Chang, Maryellen Sun, Ravi Kacker, Andrew A. Wagner1
1Beth Israel Deaconess Medical Center, Boston, MA; 2Brigham and Women's Hospital, Boston, MA

Introduction and Objectives: Laparoscopic and robot assisted partial nephrectomy (LPN and RPN) are increasingly common minimally invasive alternatives to open partial nephrectomy (OPN) in the management of renal tumors. We compared the costs associated with each procedure.

Methods: Hospital variable costs including operating room (OR) time, supplies, anesthesia, inpatient care, radiology, and pharmacy charges were captured for the last 25 patients who underwent OPN, LPN, and RPN at our institution prior to September 2010.

Results: Our results are listed in Table 1. We found similar overall costs for OPN, LPN, and RPN ($5,774 vs. $6,074 vs. $6,374, p=0.116) (Figure 1). OR supplies contributed a greater cost for LPN and RPN than OPN ($2,179 vs. $1,967 vs. $185, p<0.001), while the inpatient stay cost was disproportionately higher for OPN compared to LPN and RPN ($2,418 vs. $1,305 vs. $1,274, p<0.001). Sensitivity analysis demonstrated that RPN and LPN represent less costly alternatives to OPN (if OPN parameters are kept the same) if the average hospital stay for RPN and LPN is <2 days or OR time less than 204 and 196 minutes, respectively.

Conclusions: There were no statistically significant differences among variable costs associated with OPN, LPN, and RPN.

Table 1. Perioperative Outcomes and Costs

<table>
<thead>
<tr>
<th>Variable</th>
<th>OPN</th>
<th>LPN</th>
<th>RPN</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>69.4</td>
<td>68.5</td>
<td>67.3</td>
<td>0.258</td>
</tr>
<tr>
<td>Gender (male)</td>
<td>0.23</td>
<td>0.26</td>
<td>0.23</td>
<td>0.996</td>
</tr>
<tr>
<td>Intoxication status</td>
<td>0.78</td>
<td>0.77</td>
<td>0.77</td>
<td>0.996</td>
</tr>
<tr>
<td>Bladder (positive)</td>
<td>0.58</td>
<td>0.56</td>
<td>0.56</td>
<td>0.996</td>
</tr>
<tr>
<td>NSPT (positive)</td>
<td>0.23</td>
<td>0.26</td>
<td>0.23</td>
<td>0.996</td>
</tr>
<tr>
<td>Bilateral reflux (positive)</td>
<td>0.58</td>
<td>0.56</td>
<td>0.56</td>
<td>0.996</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>OPN</th>
<th>LPN</th>
<th>RPN</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital Costs</td>
<td>64,983</td>
<td>64,402</td>
<td>63,574</td>
<td>0.052</td>
</tr>
<tr>
<td>OR Time (min)</td>
<td>210.5</td>
<td>209.2</td>
<td>207.8</td>
<td>0.996</td>
</tr>
<tr>
<td>EBL (mL)</td>
<td>330.0</td>
<td>326.5</td>
<td>321.8</td>
<td>0.996</td>
</tr>
<tr>
<td>Tumor Size (cm)</td>
<td>3.1</td>
<td>3.1</td>
<td>3.1</td>
<td>0.996</td>
</tr>
<tr>
<td>OR Time (min)</td>
<td>210.5</td>
<td>209.2</td>
<td>207.8</td>
<td>0.996</td>
</tr>
<tr>
<td>EBL (mL)</td>
<td>330.0</td>
<td>326.5</td>
<td>321.8</td>
<td>0.996</td>
</tr>
<tr>
<td>Tumor Size (cm)</td>
<td>3.1</td>
<td>3.1</td>
<td>3.1</td>
<td>0.996</td>
</tr>
</tbody>
</table>

Table 2. Urodynamic Findings and Costs

<table>
<thead>
<tr>
<th>Variable</th>
<th>OPN</th>
<th>LPN</th>
<th>RPN</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>0.23</td>
<td>0.26</td>
<td>0.23</td>
<td>0.996</td>
</tr>
<tr>
<td>Urgency</td>
<td>0.23</td>
<td>0.26</td>
<td>0.23</td>
<td>0.996</td>
</tr>
<tr>
<td>Urinary incontinence</td>
<td>0.23</td>
<td>0.26</td>
<td>0.23</td>
<td>0.996</td>
</tr>
<tr>
<td>Nocturnal bedwetting</td>
<td>0.23</td>
<td>0.26</td>
<td>0.23</td>
<td>0.996</td>
</tr>
<tr>
<td>Recurrent urinary tract infection</td>
<td>0.23</td>
<td>0.26</td>
<td>0.23</td>
<td>0.996</td>
</tr>
<tr>
<td>Dyspsynergy</td>
<td>0.23</td>
<td>0.26</td>
<td>0.23</td>
<td>0.996</td>
</tr>
<tr>
<td>Small capacity, DO</td>
<td>0.23</td>
<td>0.26</td>
<td>0.23</td>
<td>0.996</td>
</tr>
<tr>
<td>No DO</td>
<td>0.23</td>
<td>0.26</td>
<td>0.23</td>
<td>0.996</td>
</tr>
<tr>
<td>No DO</td>
<td>0.23</td>
<td>0.26</td>
<td>0.23</td>
<td>0.996</td>
</tr>
</tbody>
</table>

Post-surgery UDS 6
Post-surgery UDS 6
Post-surgery UDS 6
No surgery UDS 1
Neoadjuvant GC for MI-UC was associated with a 59% PCR rate at ≥ 18 mos. at 28 months post-RC. Pathologic complete response rates were similar whether patients achieved PCR after neoadjuvant GC (p=0.17) or MVAC (p=0.60). In patients who achieved PCR, metastasis-free survival was 21 months (median) for patients treated with GC and 14 months (median) for patients treated with MVAC (p=0.31). Overall survival was similar in patients who achieved PCR with either regimen (p=0.16). Neoadjuvant MVAC resulted in downstaging to pT1 in 22% of patients and was associated with a 15% higher rate of PCR compared to neoadjuvant GC (p=0.022). In conclusion, neoadjuvant GC for MI-UC results in low rates of oncologic failure, and MVAC may provide additional benefit compared to GC despite early clinical evidence of similar efficacy.

**Discussion:**

Local recurrence was rare among patients with PSM after partial nephrectomy. Our RPN experience demonstrates minimal morbidity and acceptable oncologic results with excellent functional preservation in intermediate and high complexity renal tumors.
Concurrent Scientific Session III: Pediatrics
8:40 am-9:45 am

61

Ureteral Stent Placement at the Time of Urinary Diversion Decreases Post-Operative Morbidity
Jeffrey K. Mullins, Thomas J. Guzzer, Mark W. Ball, Phillip M. Pierorazio, John B. Eifler, Thomas W. Jarrett, Mark P. Schoenberg, Trinity J. Bivalacqua
Johns Hopkins Medical Institutions, Baltimore, MD; University of Pennsylvania, Philadelphia, PA; The George Washington University, Washington, DC

Introduction: The objective of this study is to determine the impact of stenting the ureteroureterostomy on post-operative stricture rate and gastrointestinal recovery in continent and non-continent urinary diversion after radical cystectomy.

Materials & Methods: We retrospectively reviewed the clinical and pathologic data on 192 consecutive patients who underwent a radical cystectomy and bilateral pelvic lymphadenectomy from 2003-2007. Patients received either continent (orthotopic ileal neobladder, catherizable reservoir) or non-continent (ileal conduit) urinary diversion with or without stent placement through the ureteroureterostomy. Stricture rate, gastrointestinal recovery (ileus), length of hospital stay, and stricture were analyzed. Study end points were compared between four groups - stented and non-stented continent and stented and non-stented non-continent diversion.

Results: Overall, 36% patients were stented and 64% were non-stented at time of urinary diversion. Mean follow up was 25 months. The total ureteral stricture rate was 9.9%. There was no statistically significant difference in stricture rate (p=0.11) or length of hospital stay (p=0.081) in stented patients compared to non-stented patients. There was a significantly (p=0.014) greater ileus rate in patients who were not stented in both continent and non-continent urinary diversion. Endoscopic management of strictures was attempted in 42.1% of cases and was successful in 12.5% of cases.

Conclusions: Stenting of the ureteroureterostomy in both continent and non-continent urinary diversion has no effect on post-operative stricture rate but is associated with lower rates of post-operative ileus.

63

Incidence of Repeat Dextranomer/Hyaluronic Acid Copolymer Injection among Pediatric Health Information System Hospitals
Katherine Herbst, John H. Makar, Christina Kim, Fernando Ferrer, Anthony Caldamo
Connecticut Children’s Medical Center, Hartford, CT; Connecticut Children’s Medical Center/University of Connecticut Health Center, Hartford/Farmington, CT; Hasbro Children’s Hospital/Brown University School of Medicine, Providence, RI

Introduction: Success rates after single dextranomer/hyaluronic acid (DxHA) injection for vesicoureteral reflux (VUR) are variable. Those failing initial injection are candidates for a 2nd injection. The purpose of this study is to analyze trends in the utilization of repeat DxHA injection among patients treated at hospitals participating in the Pediatric Health Information System Database (PHIS).

Materials & Methods: Billing records for patients who underwent DxHA injection for primary VUR between 1/1/2007 and 4/30/2009 were extracted from the PHIS database. Patient history was reviewed and patients with previous DxHA or ureteral reimplantation were excluded. Patient records with 1 to 3 years follow-up were analyzed to identify additional DxHA injection or reimplantation procedures.

Results: 24,443 hospitals submitted CPT Code level data during the study period. 2,817 patients who received initial injection were identified. 85% of patients were female. Median age at first injection was 5 years (+/- 3.7 yrs). 8% of patients received unilateral injection, 11% bilateral injection. 9% (254) had an additional procedure (9% of unilateral patients, 11% of bilateral patients). 190(7%) of unilateral patients received a 2nd injection, 90(4%) received a 3rd. Among bilateral patients, 8% received a 2nd unilateral injection, 1% received 2nd bilateral injections. 22(0.8%) patients had subsequent reimplantation (20 unilateral, 2 bilateral).

Conclusions: Within the limits of the database, these results suggest that, in patients who have undergone DxHA injection, the rate of repeat DxHA injection is low and open reimplantation is much lower, indicating a trend for continued endoscopic management in this population with VUR.

62

Fetal Closure of Myelomeningocele Does Not Improve Lower Urinary Tract Function
Vikrant Uberoi, Nora G. Lee, Pablo Gomez, Paul J. Koroknowski, Shahram Khoshbin, Stuart B. Bauer, Carlos R. Estrada
Boston University, Boston, MA; Children’s Hospital Boston, Boston, MA; Brigham and Women’s Hospital, Boston, MA

Introduction: Recent data comparing prenatal to postnatal closure of myelomeningocele showed decreased need for vesicouleto-peritoneal shunting (VPS) and improved motor outcomes in patients closed prenatally. Ten patients closed in utero are followed in our Spina Bifida program. We hypothesized that fetal repair of myelomeningocele would improve lower urinary tract (LUT) function.

Methods: Ten prenatally closed patients were matched (age, gender and spinal defect level) with 10 patients closed postnatally. Urologic outcomes were retrospectively reviewed including urodynamics (UDS) data, need for intermittent catheterization, and use of anti-cholinergics and prophylactic antibiotics.

Results: Mean patient ages at UDS for the prenatally versus postnatally closed groups were 6.5 years (range 7-months-12 years) and 6.6 years (range 5-months-13 years) respectively (p=0.87) with mean follow-up being 7.9 years (range 9 days-12 years) and 7.8 years (range 3-months-11 years) respectively. Each group had 5 lumbar and 5 sacral level defects. Urodynamics findings including bladder capacity, detrusor overactivity, detrusor pressure at capacity, and presence of sphincter dyssynergia were not significantly different between the groups. 7 patients in the prenatal group require intermittent catheterization compared with 9 patients in the postnatal group (p=0.58). There was no difference in rates of anti-cholinergic or antibiotic use between the two groups. Interestingly, there was no difference of VPS between the groups in our study.

Conclusions: While fetal closure of myelomeningocele has been shown to decrease rates of VPS and improve motor function, it is not associated with any significant improvement in LUT function when compared to matched patients closed postnatally.

64

Renal Trauma in Children: Mechanism of Injury and Outcomes at a Rural Northern New England Level I Trauma
Elizabeth B. Johnson, Levi A. Deters, Paul A. Merguerian
Dartmouth-Hitchcock Medical Center, Lebanon, NH

Objective: Blunt abdominal trauma results in renal injury in 10% of pediatric cases. The published mechanism of injury is motor vehicle accident (MVA) while recreational injuries are less common. No data is currently available on the mechanism of injury in a rural level I pediatric trauma center. We hypothesize that it is different.

Methods: After approval from the institutional review board, we retrospectively reviewed the medical records of 40 consecutive children with renal trauma between 2006 and 2010. Patients were stratified into two groups (under and over 16 years of age). Parameters reviewed included mechanism of injury, severity of injury, associated injuries, management and clinical outcomes.

Results: Of the 40 patients, 26(64.6%) had recreational related injury. Snow sports was the most prevalent (14/26, 53.8%). MVAs accounted for 11/40 (27.5%) of injuries. Two injuries presented with co-existing renal trauma. Of the 18 children under 16 years of age the mechanism of injury was recreational in 14/18 (77.8%). Of these, 6 (42.9%) were related to winter sports. Only 2/18(11.1%) were related to MVA. Majority of injuries were grade III, two had vascular injuries with poor or no perfusion into the kidney. All patients were managed conservatively with two patients requiring embolization for bleeding.

Conclusions: Recreational sport injuries are the major cause of blunt renal trauma at our rural Level I pediatric trauma center. Most of these injuries were managed conservatively. Due to delay in transfer to our trauma center grade V trauma with renal devascularization resulted in loss of renal function.
Comparing Minimally Invasive Surgery for Vesicoureteral Reflux: Dextranomer Hyaluronic Acid Injection versus Robotically-assisted Laparoscopic Ureteral Reimplantation

Kelly Chiles1, Katherine W Herbst2, John H Makari3, Fernando A Ferrer3, Christina Kim3
1University of Connecticut, Farmington, CT; 2Connecticut Children’s Medical Center, Hartford, CT

Introduction: Two minimally invasive surgical (MIS) options for treatment of vesicoureteral reflux (VUR) are endoscopic Dextranomer Hyaluronic Acid injection (DI) and robotically-assisted laparoscopic ureteral reimplantation (RALUR). We compared outcomes of these MIS operations at our institution.

Materials & Methods: We performed a retrospective case review of our first 17 extravesical RALUR patients and 17 age matched patients who underwent DI. Voiding cystourethrogram was performed on all patients except one RALUR lost to follow up.

Results: Median age was 6 years (RALUR) and 5 years 11 months (DI). A total of 50 ureters were treated. Mean follow-up was twelve and ten months in the RALUR and DI groups, respectively. Preoperatively, there was Grade I-II in 30% of RALUR and 41% of DI groups, Grade III in 57% of RALUR and 59% of DI groups, and Grade IV in 13% of RALUR and none of DI groups. RALUR had a significantly better outcome than DI (p=0.008). RALUR had complete resolution of VUR in 20 ureters (91%) and downgrading in 2 (9%). DI had complete resolution in 16 ureters (59%), downgrading in 5 (19%), and 8 (30%) had no improvement or worsening of VUR. Mean hospital stay for the RALUR group was 1.26 days; all DI patients were discharged the same day. One RALUR and three DI patients developed contralateral VUR.

Conclusions: Although small in volume and retrospective, this series revealed better results with RALUR compared to DI. We are currently enrolling patients prospectively to compare outcomes of DI, RALUR, and open reimplantation.

Evaluation of Urethral Stricture Disease in a Pediatric Population Using Sonographic Voiding Urethography

Luriel I. Smith-Harrison, Jessica Hammett, Sean Corbett, Laurence Watson
University of Virginia, Charlottesville, VA

Introduction: Retrograde urethrography (RUG) is the gold standard for the diagnosis of male urethral stricture disease. This method requires instrumentation of the urethra, radiation exposure and in the pediatric population, general anesthesia. Current ultrasound techniques are able to mimic RUG with a faster and risk-free approach.

Materials & Methods: Prior to voiding, a conventional 7.5 MHz transducer is placed at the perineum. The transducer is aligned along the line of the proximal corpus spongiosum. While angled at the prostate, the patient is instructed to void. The now opened lumen, can be followed distally by adjustments in the angle of the probe. This method allows visualization of a significant length of the urethra, though very distal strictures require an experienced hand.

Results: Our initial series involves four boys with suspected urethral stricture. Chief complaints at presentation included hematuria, dysuria, splayed stream, and retention. All underwent sonographic urethrography (SUG), three underwent RUG; all had direct visualization internal urethrotomy, and two had dilation. Two boys required eventual urethroplasty. Sonographic urethrography was able to characterize strictures in three of the four boys. The ultrasound technique elicited no reports of discomfort.

Conclusions: When presented with a pediatric patient with the suspicion of stricture, sonographic ultrasoundography provides a quick and risk-free technique for diagnosis. This technique is able to characterize the presence and extent of urethral stricture.

Sonographic Voiding Urethography

Joseph Borer2, Sohee Kim2, David Diamond2
1Lahey Clinic, Burlington, MA; 2Childrens Hospital Boston, Boston, MA

Methods: We retrospectively identified consecutive patients undergoing complex hypospadias and chordee in the pediatric population using buccal mucosa grafts.

Results: SEE TABLE 1

A total of 21 patients underwent hypospadias repair with buccal graft. Approximately two thirds had penoscrotal/perineal disease, with the remainder mid-shaft or distal. All patients underwent initial repair in early childhood, and 71% were revised, over half multiple times, prior to undergoing salvage repair using buccal grafts. In 16 patients, a staged approach was utilized with a mean interval of 10.8 months between surgeries, while 5 were completed in a single operation. All but one of the single stage patients required an additional major urethroplasty. Only 4 of the staged cohort necessitated major revision, one of the first stage and 3 of the second. The most common complication was recurrent stricture (8 patients), followed by urethrocutaneous fistulae (3 patients), and diverticulum (one patient).

Conclusions: Hypospadias repair with buccal graft in a staged fashion is a good option for the most complex cases. Many of these patients will require revision, however, to achieve ultimate success. Attempts at single stage tubularized grafts had poor results in this small series.

Table 1

<table>
<thead>
<tr>
<th>Patient Characteristics</th>
<th>n=21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age, yrs (range)</td>
<td>8.9 (1.33-17)</td>
</tr>
<tr>
<td>Indication for Surgery</td>
<td>Repair Breakdown 8 (38%)</td>
</tr>
<tr>
<td></td>
<td>Fistula 4 (19%)</td>
</tr>
<tr>
<td></td>
<td>Diverticulum 4 (19%)</td>
</tr>
<tr>
<td></td>
<td>Stricture/Malrotal Stenosis 13 (62%)</td>
</tr>
<tr>
<td></td>
<td>Chordee 4 (19%)</td>
</tr>
<tr>
<td></td>
<td>Multiple 10 (48%)</td>
</tr>
<tr>
<td>Mean Craft Length, cm</td>
<td>4.3 (1.5-11cm)</td>
</tr>
<tr>
<td>Mean Follow-up, mos</td>
<td>19</td>
</tr>
</tbody>
</table>