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Trends in Surgical Management of Benign Prostatic Hyperplasia

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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 no different other than RP and Button which occur more often in academics (RP 7% vs 2%, button TURP 28% vs 21%). High volume surgeons are more likely to perform monopolar and bipolar TURP, whereas low volume surgeons are more likely to perform PVP, HoLAP, 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.

Surgical technique	Percentage of respondents who utilize the procedure
Open prostatectomy	78%
Monopolar transurethral resection of prostate (TURP)	73%
Photoselective vaporization (PVP)	58%
TURis button TURP	24%
Bipolar TURP	20%
Holmium laser ablation of prostate (HoLAP)	18%
Holmium laser enucleation of prostate (HoLEP)	8%
Diode laser vaporization	8%
Thulium laser ablation of prostate	4%
Robotic simple prostatectomy	3%
Laparoscopic simple prostatectomy	1%
Thulium laser enucleation of prostate	0%

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Prostate Atypia: Repeat Biopsy Results Within One Year of Diagnosis

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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 13,595 biopsies. 567 of the 10,720 patients (5.3%) had at least one biopsy with atypia; 623 of the 13,595 biopsies (4.6%) contained atypia. Patients undergoing a repeat prostate biopsy within one year of a diagnosis of atypia were identified. Patients with a prior history of prostate cancer were excluded.

Results: 284 patients met these inclusion criteria and underwent 305 sets of prostate biopsies 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.

Pathology Results on Repeat Biopsies for Atypia	
Total Number of Biopsies	305
Prostate cancer	103 (33.8%)
Atypia	56 (18.4%)
HPiN	18 (5.9%)
Benign	124 (40.7%)
Unknown	4 (1.3%)

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Single Dose Intramuscular Ceftriaxone an Effective Alternative to Accepted Transrectal Prostate Biopsy Prophylaxis

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Introduction: Intramuscular Ceftriaxone 1gm given as a single dose immediately prior to transrectal prostate biopsy is an inexpensive, convenient, and effective form of prophylaxis but currently is not included in the AUA Best Practice Statement and National Quality Forum (NQF) Consensus Standards. We report our experience using intramuscular Ceftriaxone in a multi-language, resident clinic where the rate of noncompliance with standard oral prophylaxis has been historically high.

Materials & Methods: Retrospective chart review identified 234 men who underwent prostate biopsy between September 2009 and December 2010. 73 of these men received intramuscular Ceftriaxone prior to biopsy in resident clinic, whereas in private clinics at the same center 104 men received prophylaxis with oral Bactrim plus Ciprofloxacin and 57 men received oral Ciprofloxacin alone. All patients were either seen in follow-up or called one week after biopsy. Infectious and non-infectious complications were determined from the chart.

Results: Of patients who received prophylaxis with oral Ciprofloxacin plus Bactrim and Ciprofloxacin alone, 2 (1.9%) and 1 (1.8%) respectively developed a postoperative febrile infection requiring hospital admission and treatment with intravenous antibiotics. No patients receiving intramuscular Ceftriaxone prophylaxis required admission for any postoperative complication. 1 patient who received Ceftriaxone and 1 patient who received Ciprofloxacin plus Bactrim were treated as outpatients with oral antibiotics for a nonfebrile urinary tract infection.

Conclusions: Bacterial resistance and the potential for noncompliance with patient-controlled prophylaxis may lead to serious infectious complications after prostate biopsy. Intramuscular ceftriaxone offers a provider-controlled alternative equally effective as standard methods of surgical prophylaxis.

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

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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 55.9±23.4 min, and total energy used 189±84.8 kJ. The table shows baseline and follow-up data with mean±SD.

	Baseline	3 mo	6 mo	12 mo	24 mo
IPSS	23.8±4.7	7.8±4.5	5.0±3.2	6.1±4.6	6.6±4.5
QoL	4.4±1.2	1.3±1.3	1.0±1.1	0.9±1.0	1.3±1.0
Qmax (ml/s)	12.4±4.9	21.9±8.9	21.0±8.6	19.9±9.2	18.0±9.0
PVR (ml)	109.8±81.3	60.6±51.3	69.0±52.7	62.7±36.6	64.7±38.7
TRUS (cc)	67.2±31.5		34.7±22.8		
PSA	2.5±1.6		2.2±2.2	2.7±2.2	3.3±2.7

Adverse events were all mild including urgency, dysuria, retrograde ejaculation and hematuria with the exception of 1 bladder neck contracture.

Conclusions: In this single-center prospective single arm study, the 532 nm KTP laser provided 17.2 point (72.3%) improvement in IPSS at 24 mo, with a commensurate QoL improvement, reduction in PVR and improvement in Qmax, while inducing a volume decrease of 48.4%. Observed AEs were as expected for surgical ablation of prostate tissue.

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Neurophysiologic Intraoperative Monitoring of Somatosensory Evoked Potentials to Detect Neurologic Injuries Due to Patient Positioning

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Introduction: To determine if intraoperative somatosensory evoked potential (SSEP) monitoring could detect and prevent peripheral positioning related neuropathies 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 and 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.

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Exploring the Volume-Outcomes Relationship for Adrenal Surgery

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Introduction: Although centralization of surgical procedures to high volume centers has been described previously, patterns of care for adrenal surgery 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.

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A Contemporary Study of Renal Cysts in a Representative US Population

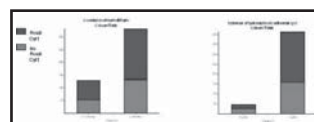
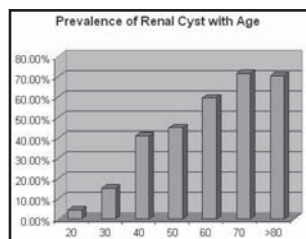
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Introduction: With the rise of imaging studies, incidental findings of renal cysts are frequent. Primary care physicians refer patients to urologists to question their prevalence and significance. Contemporary data is sparse when attempting to answer 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 (Graph 2). In addition, they were more commonly seen in Caucasians than in African or Asian-Americans (59.1% vs. 38.7 and 38.1%, respectively). Reviewing the films revealed 32/212(17%) of reports without mention of cyst, in fact had cysts. Furthermore, 3/4 reports of "complex" cysts or "septations" on cysts were described without Bosniak classification.

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.



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Primary Spermatic Cord Tumors: Disease Characteristics, Prognostic Factors and Treatment Outcomes

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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 (20%), 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 histology. 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.

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Men with Hereditary Prostate Cancer Have Improved Outcomes after Radical Prostatectomy in the PSA Era

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

Materials & Methods: A pre-PSA era cohort of 690 men who underwent radical prostatectomy (RP) by a single surgeon between 1982 and 1989 was compared to a PSA era cohort of 4046 men who underwent RP between 1993 and 2007 and had detailed family history available. Men with sporadic prostate cancer (SPC) were compared to patients with a family history consistent with HPC, defined as a family with 3 generations affected, 3 first-degree relatives affected or 2 relatives affected before age 55.

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<0.0001), had lower mean PSA (p=0.0016), were more likely to have organ-confined disease (p=0.0001) and less likely to have a pathologic Gleason score greater or equal to 7 (p=0.001). 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.

Table 1

Characteristic	Pre-PSA Era			PSA Era		
	Sporadic	HPC	p-value	Sporadic	HPC	p-value
N	511 (74.3%)	15 (2.3%)		2034 (50.1%)	336 (8.2%)	
Mean age	59.8	57.3	p=0.0025	58.4	56.1	p=0.0009
Mean PSA	8.1 (SD 4.1)	6.6 (SD 2.0)	p=0.0016	8.5 (SD 6.4)	5.6 (SD 3.9)	p=0.0016
Median PSA	4.6	7.5	p=0.007	5.4	4.7	p=0.001
RP G7 (%)	46.3	40	p=0.007	43.3	33.7	p=0.001
Pathologic Disease (%)	82.8	88.6	p=0.37	77.3	73.1	p=0.103
BRFS (%)	27.7	31.6	p=0.40	46.8	77.6	p=0.0001
DSS (%)	26.3	31.4	p=0.5	13	11.3	p=0.79
10 yr BRFS	31.6	17.3	p=0.03	47	34	p=0.03
10 yr DSS	44	17	p=0.46	13	6.4	p=0.008
10 yr BRFS	74	74	p=0.78	73	79	p=0.0034
10 yr DSS	95	94	p=0.99	99	100	p=0.004
10 yr BRFS	95	98	p=0.96	96	100	p=0.06
10 yr DSS	94	95	p=0.96	96	100	p=0.06

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Interventions for Urinary Morbidity Long Term after Prostate Cancer Treatment

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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.

Materials & Methods: A multicenter prospective cohort of 1,201 PCa patients who underwent radical prostatectomy (RP, 603), external radiotherapy (XRT, 298) or brachytherapy (BT, 302) from 2003 to 2006 had quality-of-life data collected from pre- to 2 years post-treatment. Treatment group differences in urinary medication usage, procedural interventions, and EPIC-26 overall urinary bother were analyzed using longitudinal logistic regression.

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 37), and decreased in RP (58 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

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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 ≥8.0 ng/mL and/or PSA doubling time ≤10 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=0.03; 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

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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 and postoperative morbidity, postoperative complications and biochemical disease-free survival were reviewed.

Results: Demographics: Average patient age was 61.5 years (range 36-76). Mean pre-op Gleason sum was 6(4-8). Average PSA was 6.5 (1.4-23.7). 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 5% minimal (1 ppd). 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.

Scientific Session II: Uro-Oncology I

10:50 am-12:15 pm

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Comparison of Positive Surgical Margin Rates in High Risk Prostate Cancer
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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 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.

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Prospective Study of Testosterone Suppression and Recovery after 6 months of Androgen Deprivation Therapy and Radiation for Clinically Localized Prostate Cancer

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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.

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Predictors of Positive Surgical Margins after Radical Prostatectomy: Analysis of a Contemporary Single Institution Series

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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, surgeon, EBL, surgical approach, post-operative stage, post-operative Gleason score, extracapsular extension (ECE), seminal vesical involvement (SVI), perineural 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=0.002), 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=0.0002). 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 ECE.

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.

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Too Few or Too Many Prostate Biopsies? Results from an Academic Center

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Introduction: Given the variability in indications for and 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 \leq 10ng/ml, clinical stage T1-T2a, Gleason score \leq 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 ~50-60% 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

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Introduction: The objective of this study is to investigate the role of sphingosine kinase-2 in modulating renal injury induced by unilateral ureteral obstruction (UO). 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 (S1P), which plays a major role in regulating the immune system, tissue injury and re-generation. 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 UO 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 RTPCR, 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 -S1P pathway is implicated in the pathogenesis of obstructive renal injury.

P3

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

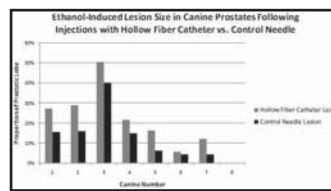
Benjamin J. King¹, Mark K. Plante¹, Masatoshi Kida¹, Travis K. Man-Gow¹, Rick Odland², Peter Zvara¹
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Introduction: Transurethral intraprostatic ethanol chemoablation of the prostate has demonstrated promising preliminary clinical results for treatment of BPH with some variability 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 (weighing 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 ($p \leq 0.01$) 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.



P2

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

Jared Bieniek, Chandra Childress, Wannian Yang
Geisinger Medical Center, Danville, PA

Introduction: Kinetochores 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 kinetochores 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 kinetochores proteins: CENP-A, PIK1, 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 down-regulation of the kinetochores proteins in LNCaP cells. OSU03012 had no effect. IF staining showed that treatment with COX-2 inhibitors diminished kinetochores 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 kinetochores 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 chemopreventative and chemotherapeutic potential of celecoxib in human prostate cancer.

P4

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

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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/floxed control mice were harvested and functional alterations were evaluated by muscle strip experiment *ex vivo* and cystometric experiment *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 hypoactivity. Over 20 inflammatory genes were upregulated in the bladder of diabetic mice, most of which belonged to the TNF superfamily. Metabolic (ATPase, Rho GTPase, Rho kinase) and apoptotic-related (Caspase-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 hypoactive 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
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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 $\geq T2$ 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 miRNA 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

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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 survivability.

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 TNF α , BQ788 (ET $_B$ receptor antagonist) and RM1 cell lysates for DC modification. In transplant experiments, Balb/C mice received an allographic skin transplant from C57B/6 mice and were treated either with BQ123 (ET $_A$ 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+TNF α (2), DC+RM1 lysate (3), DC+TNF α + BQ788 (4), and TNF α +BQ788+RM1 lysate (5). By day 28, mean tumor size reached 1824.08 \pm 229.86 mm 3 in the Group 1, 1845.42 \pm 302.34 mm 3 in the Group 2, 1502.67 \pm 367.13 mm 3 in the Group 3, 1400.16 \pm 188.88 mm 3 in Group 4, and 922.58 \pm 90.86 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 \pm 0.7 days in control group and 15.8 \pm 1.1 days in the group treated with BQ123 (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, ET $_B$ 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 5nM/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 5nM/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 2.5nM/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. IP-6, when combined with DOC 2.5nM, achieved a significant reduction in cellular proliferation equal to that observed with DOC 5.0nM. 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 Manganiello, Justin Zbrzezny, Christina Deliyiannis, Jason Gee, John Libertino, Antonia Holway, Kimberly R. 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. Multilogistic 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 0.9554. 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.

P9

A New Method for Objective Analysis of Detrusor Rhythm during the Filling Phase
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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 (PGE2) was added in half-log increments from 1.0x10⁻⁹M to 1.0x10⁻⁶M. Then maximum and minimum force values were obtained using KCl and Ca²⁺-free solution containing EGTA, respectively. A computer program was developed using DASyLab 10.0 to analyze the effects of PGE2 on frequency (contractions/5min), amplitude (5min area under the curve), and tone (5min average) in a step-wise fashion shown in Figure 1. The computer generated frequency count was compared to human assessment.

Results: PGE2 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.

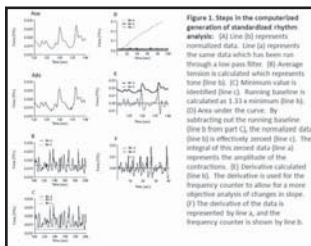


Figure 1. Steps in the computerized generation of standardized rhythm analysis: (a) Line (b) represents normalized data. Line (c) represents the same data which has been run through low pass filter. (d) average function is calculated which represents tone (line d). (e) Minimum value is identified (line e). Starting baseline is calculated as 1.33 a minimum (line f). (g) Area under the curve. By subtracting out the running baseline (line f from part c), the normalized data (line h) is effectively reset (line g). The integral of this reset data (line a) represents the amplitude of the contractions. (h) Derivative calculated (line h). The derivative is used for the frequency counter to allow for a more objective analysis of changes in slope. (i) The derivative of the data is represented by line i, and the frequency counter is shown by line i.

P11

Gene Expression Signature of High BMI Prostate Cancer Patients Identifies the Statin Target Gene SCD1
Patrick Parker
CPDR/WRAMC/USUHS, Rockville, MD

Introduction: Obesity is one of the largest medical challenges in the USA. Recent studies highlighted the association of obesity with prostate cancer aggressiveness. However, obesity-associated gene expression alterations need to be better understood. The objective of this study was to evaluate elevated BMI-associated prostate cancer gene expression signatures.

Materials & Methods: Prostate cancer cells and matching non-adjacent normal epithelial cells were selected by laser capture microdissection from frozen radical prostatectomy specimens of patients with normal- and high BMI. Gene expression analyses were performed by using HG-U133A Affymetrix microarrays. Tumor-over-normal gene expression ratios were calculated and data were further analyzed by applying a three-fold cutoff. To pinpoint central regulatory nodes of gene expression alterations knowledge-based pathway analysis, gene ontology and comparative meta-analysis of obesity related independent datasets were performed.

Results: Bioinformatic analyses revealed associations of high BMI with cholesterol and lipid metabolism associated genes within fatty acid synthesis and oxidation-reduction pathways. The identified high BMI-associated genes were tightly connected to genes involved in lipid metabolism, cholesterol homeostasis, and tumorigenesis. The analysis highlighted the association of stearoyl-CoA desaturase (SCD1) with elevated BMI.

Conclusions: Our study revealed that SCD1, a known target of atorvastatin, may play a mechanistic role in the recently noted beneficial effects of statin treatment in reducing biochemical recurrence of prostate cancer.

P10

Improved Detection of Prostate Cancer by the Combined Application of ERG and AMACR Immunohistochemical Stainings in Prostate Biopsy Specimens
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CPDR/WRAMC/USUHS, Rockville, MD

Introduction: Biochemical markers, such as AMACR and p63 have improved diagnostic precision of prostate cancer. Recently, recurrent *TM67SS2-ERG* genomic fusion has been demonstrated in half of prostate cancers. We have developed a monoclonal anti-ERG antibody that demonstrated 99.9% specificity in detecting the protein product of recurrent *ERG* fusions. Previously we have shown that when *AMACR* and *ERG* mRNA expression were examined together, 96.4% of cases were positive for at least one of the two markers. We reasoned that by combining ERG with AMACR immunohistochemical staining, diagnostic sensitivity and specificity can be improved in prostate biopsy specimens.

Materials & Methods: In a retrospective set of 88 patients undergoing prostate biopsies, prostate cancer was identified in 44 patients. Ten of these patients subsequently underwent radical prostatectomy. We evaluated 385 slides from the 88 biopsy sets by IHC with 350 stained for ERG only and 35 stained for both ERG and AMACR.

Results: AMACR was detected in 28 of 31 (90.3%) and ERG in 37 of 70 (52.8%) of tumor positive biopsies evaluated. Of the three biopsies with benign tissue only, one had AMACR positive glands. However, in six other biopsies, both neoplastic and benign glands were positive for AMACR. ERG positivity in benign glands was detected in only 1/280 (0.4%) of biopsies (specificity >99%). Of the three slides with AMACR negative tumors, two were positive for ERG.

Conclusions: Our findings highlight that detection of ERG oncoprotein when combined with AMACR has potential to improve diagnostic sensitivity and specificity in prostate biopsy specimens.

P12

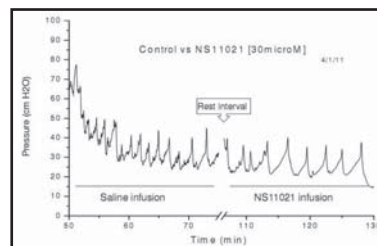
NS11021, a BK Channel Opener, Effects Significant Changes on Mouse Urinary Bladder Function During Urodynamics
Hagop Sarkissian, Tom Heppner, Peter Zvara, Mark Plante, Mark Nelson
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Introduction: Large conductance Ca²⁺ activated potassium (BK) channels are ubiquitous throughout excitable and non-excitable tissues. BK knockout mice exhibit urinary frequency and urinary leakage. Their bladders show increased intravesicular pressures, increased excitability and spontaneous contractions. Therefore, the current project sought to investigate a novel BK channel opener, NS11021, and examine its effect on bladder function in partially obstructed (pBOO), overactive and normal controls.

Materials & Methods: Bladder domes of pBOO and normal, C57BL/6 mice, were implanted with polyethylene tubing. Subsequently, conscious, continuous cystometry was performed. CMG had three separate phases: control/saline infusion (0.75mL/hr), an established rest period, then, continuous intravesicular infusion phase of 30microM of NS11021 solution.

Results: In mice with pBOO or with overactivity on CMG (n=5), NS11021 infusion improved CMG parameters significantly. Quantitatively, a 43% increase in threshold pressure (p<0.001), an 82% increase in intermicturition interval (p<0.001), a 32% decrease in filling pressure (p<0.001) and a 9% decrease in peak pressure. In normal mice, i.e. those without overactivity, NS11021 had no effect.

Conclusions: In mice with pBOO and overactivity, intravesicle infusion of NS11021, seemed to effect significant functional changes in bladder characteristics on CMG, including marked decreases of phasic, non-voiding contractions. These results may have translational implications in the future for the treatment of bladder overactivity in certain patient populations.



P13

The Relation between Leptin and Prostate Cancer Cell Line LnCaP

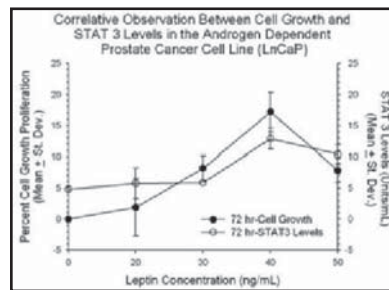
Mohamad W. Salkini, Dake Ruggs, Barbara Jackson
West Virginia University, Morgantown, WV

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 STAT 3 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 MTT 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 ± 1.7 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 STAT-3 levels of hormone dependent prostate cancer cells. These findings demonstrate some of the effects of obesity on prostate cancer.



P15

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

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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.

P14

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

Adam Luchey, Dale Riggs, Barbara Jackson, Can Talug, Stanley Kandzari, James Coad, Yara Daous, Dana Point, Morris Jessop, Stanley Zaslau
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Introduction: The treatment and etiology of Interstitial Cystitis (IC) is still unclear. The objective was to develop a murine model to evaluate 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: succession 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, 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).

		Mean ± Std Dev	Median	Min	Max
Urothelial Mast Cells (per 200x field; p=0.048)	Control (n=20)	2.57 ± 1.28	2.40	1.00	5.00
	Stressed (n=21)	1.83 ± 1.03	1.40	0.50	4.30
Detrusor Mast Cells (per 200x field; p=0.928)	Control (n=20)	1.02 ± 0.67	0.90	0.00	2.63
	Stressed (n=21)	1.04 ± 0.74	0.80	0.10	2.90
Urothelial Thickness µm (p<0.0001)	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.

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 Deliyannis¹, Michelle Waknitz², Wei Huang², Jason R. Gee¹, John A. Libertino¹, Antonia H. Holway¹, Kimberly R. Christ¹
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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 is to validate this profile with an expanded sample pool that includes tissues from an independent institution.

Materials & 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.

Results: On multi-institutional analysis, the original miRNA panel remained capable of distinguishing between invasive and non-invasive UCB, however, the sensitivity and specificity were both reduced to 82%. To address this we identified additional miRNAs that were correlated with invasive potential in a screen of 50 cell lines. When evaluated in tumor samples from both institutions, several of these additional miRNAs were significantly different between invasive and non-invasive tumors.

Conclusions: Multi-institutional analysis of our panel of miRNAs capable of defining the invasive bladder tumor phenotype was confirmed albeit with a slightly reduced sensitivity and specificity. Expansion of miRNA analysis in UCB cell lines resulted in the identification of additional miRNAs with differentiating potential, several of which were found to significantly discriminate invasive from non-invasive tumors. Improvements in specificity and sensitivity with these additional miRNAs will be evaluated.

P17

Sphingosine-1-Phosphate2ReceptorInducesCcl2ExpressioninNeuroblastoma/a Targeted Inhibition Strategy

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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 S1P₂R inhibitor *in-vivo*.

Results: S1PR₁₋₃ 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 S1P₂ antagonist JTE-013 blocked S1P-induced CCL2 mRNA expression and protein secretion. Overexpression of S1P₂ by adenoviral transduction into SK-N-AS cells increased CCL2 secretion while knockdown of S1P₂ by S1P₂ siRNA transfection decreased CCL2 secretion. The S1P₂R 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 S1P₂ and maybe a potential therapeutic target.

P19

Increased Alpha 1a and 1b Expression in the Castrated Rat Prostate

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Introduction and Objectives: Male aging is accompanied by hypogonadism and worsening LUTS/BPH. The hypogonadal 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, TGFβ1, ROKα, ROKβ, alpha 1a, alpha 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. TGFβ1 increased 4-fold. Competitive RT-PCR of the control prostate displayed around 50% SMA and 50% SMB, 85% SM1 and 15% SM2, 70% LC17a and 30% LC17b myosin isoforms. After castration, SMB, SM1 and LC17b increased by 20%, 15% and 5%, respectively. Total myosin, non-muscle myosin and myocardin significantly decreased 2-fold, 5-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.

P18

Clinicopathological Correlation of Gli1 Expression in a Population Based Cohort of Patients with Newly Diagnosed Bladder Cancer

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Introduction: Gli transcription factors are the primary effectors of the Hedgehog signaling pathway which has been linked to 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 TP53. 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 were 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 0.21-0.93) and when comparing lower grade tumors (grade 1-2) and high grade tumors (grade 3) (OR 0.44, CI 0.21-0.93). 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.

P20

Up-regulation of Transforming Growth Factor-β and the Counter-regulatory Effects of Hepatocyte Growth Factor in Fetal Sheep Bladder Outlet Obstruction

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Introduction: Obstructive nephropathy is a major cause of renal insufficiency in children. Transforming growth factor-β1 (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-β receptor type2 (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=0.026 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.

Scientific Session III: Female Urology, Neurourology and Voiding Dysfunction

1:45 pm-2:25 pm

17	19
<p>Fluid Intake and Risk of Stress, Urgency, and Mixed Urinary Incontinence Ying Jura¹, Mary Townsend², Gary Curhan³, Neil Resnick⁴, Francine Grodstein³ ¹<i>Massachusetts General Hospital, Boston, MA;</i> ²<i>Harvard School of Public Health, Boston, MA;</i> ³<i>Brigham and Women's Hospital, Boston, MA;</i> ⁴<i>University of Pittsburgh Medical Center, Pittsburgh, PA</i></p> <p>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.</p> <p>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.</p> <p>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 0.88 - 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.</p> <p>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.</p>	<p>Sexual Function Following TVTO Placement: Minimum 12 Month Follow Up Ashley B. King¹, Jeffrey P. Wolters¹, Adam P. Klausner¹, David E. Rapp² ¹<i>Virginia Commonwealth University, Richmond, VA;</i> ²<i>Virginia Urology Center for Incontinence and Pelvic Floor Reconstruction, Richmond, VA</i></p> <p>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.</p> <p>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 (IIQ-7) was used a secondary measure of quality of life. Quality of life scores were also compared to patient perceived level of improvement.</p> <p>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=0.13), 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), IIQ versus improvement (r=0.36), p<0.05, both comparisons).</p> <p>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.</p>
18	20
<p>Long-Term Treatment Interval of Percutaneous Tibial Nerve Stimulation: 18 Month Study Results Jeffrey A. Ranta¹, Ken Peters², Donna Carrico² ¹<i>Greenwich Urological Assoc. P.C., Greenwich, CT;</i> ²<i>William Beaumont Medical Center, El Paso, TX</i></p> <p>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.</p> <p>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.</p> <p>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), 1.3 (6-9 months), 1.2 (9-12 months), 1.2 (12-15 months) and 1.1 (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).</p> <p>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.</p>	<p>Ileal Loop Urinary Diversion for Non-Bladder Cancer Indications - Long-term Outcomes and Complications Ellen Goldmark, Melissa Heuer, Toby C. Chai <i>University of Maryland, Baltimore, MD</i></p> <p>Introduction: We evaluated complications and patient satisfaction following suprapubic urinary diversion for non-bladder cancer indications.</p> <p>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.</p> <p>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 urinary 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.</p> <p>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.</p>

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<p>Short-term Outcomes of Robotic Assisted Sacrocolpopexy for Pelvic Organ Prolapse Veronica Triaca, Heidi Hallonquist, Cathy Yi, Katherine Cail <i>Concord Hospital, Concord, NH</i></p> <p>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.</p> <p>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, ISS, AUASS, AUAQOL). Data was available at 3, 6 and 12 months following surgery.</p> <p>Results: From 4/2010 to 4/2011, 58 patients with POP underwent RASCP. All patients underwent concomitant mid-urethral sling, (8 miniarc, 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).</p> <p>Conclusions: RASCP is a safe and highly efficacious treatment option for women with symptomatic POP. Patients reported an improvement in their QOL.</p>	<p>Assessment of Radiation Exposure from Diagnostic Imaging in Patients Undergoing Ureteroscopy with Laser Lithotripsy for Upper Tract Stones Brooke A. Harnisch, Jessica E. Kreshover, Aylin Bilgutay, Richard K. Babayan, David S. Wang <i>Boston University and Boston Medical Center, Boston, MA</i></p> <p>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.</p> <p>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 initial diagnosis of the stone until 6 weeks following completion of URS. Radiation dose was calculated using effective radiation dose standards.</p> <p>Results: 286 patients were identified. Mean size of stone was 8.71 +/- 4.2 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, stent placement, and/or post surgical complications were not significant.</p> <p>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.</p>
22	24
<p>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</p> <p>Introduction: Simultaneous repair of SUI and prolapse has become increasingly common. In these cases, determinants of patient satisfaction are further complicated given the fact that complete 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.</p> <p>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, SUI item, pad use, subjective SUI 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.</p> <p>Results: Eighty women (87%) reported satisfaction following surgery with mean follow-up of 12 months. Cure of both prolapse (POPQ stage <2) and SUI (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-op satisfaction (p<0.05) while the other examined measures did not demonstrate statistically significant correlation with post-op satisfaction.</p> <p>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.</p>	<p>Ureteral vs Renal Laser Lithotripsy- Are They Really Equal? Levi A. Deters, Vernon M. Pais, Jr. <i>Dartmouth Hitchcock Medical Center, Lebanon, NH</i></p> <p>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".</p> <p>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.</p> <p>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).</p> <p>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.</p>

Concurrent Scientific Session I: Stones/Endourology

1:45 pm-2:50 pm

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Radiation Exposure during Extracorporeal Shockwave Lithotripsy
 Eugene Kramolowsky¹, Nada L. Wood¹, Susan Taylor², Ruth Butler¹, Matthew Bassignani¹, Dean Broga³
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Introduction: Efforts should be made to minimize patient radiation exposure during extracorporeal shockwave lithotripsy (SWL).

Materials & Methods: Fluoroscopy time (FT) and radiation effective dose (Deff) were determined for 422 consecutive SWL. 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 0.165-4.325). Deviation from the imaging protocol occurred in 36 ESL treatments (8.5%) with mean FT of 258.3 +/- 16.0 sec (range 185-600) and mean Deff of 2.336 mSv.

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

Nationwide Trends in Imaging Utilization during the Emergency Department Evaluation of Flank Pain, 2000-2008

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Introduction: Patients with acute flank pain are most commonly evaluated in the emergency department (ED) with computed tomography (CT). At present, however, our understanding of radiographic practice patterns in the emergency evaluation of flank pain is limited. Therefore, we performed a study to characterize the utilization of conventional radiography (CR), ultrasound (US), and CT in the ED evaluation of patients with acute flank pain.

Materials & Methods: A retrospective cross-sectional analysis of ED visits using data from the National Hospital Ambulatory Medical Care Survey (2000-2008) was performed. Specific visits for a complaint of either flank pain or kidney pain were further analyzed.

Results: Over the time period studied, there was a significant increase in the utilization of CT (p<0.0001), a significant decline in the use of CR (p=0.0156), and the utilization of US remained stable (p=0.3012). Over that same time period, the proportion of patients with flank pain who were diagnosed with a kidney stone remained stable, at approximately 20% (p=0.4441).

Conclusions: Between 2000 and 2008, there was a significant increase in the utilization of CT in the emergency evaluation of CT utilization, but the proportion of patients with flank pain who were diagnosed with a kidney stone remained stable.

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Relationship Between Protein Intake and Urine Composition in Patients With Nephrolithiasis

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Introduction: Epidemiologic studies have demonstrated that high dietary protein intake may increase risk of nephrolithiasis. The current study examines the relationship between dietary protein intake and 24-hour urine composition in patients with nephrolithiasis.

Materials & Methods: A retrospective review was performed. Multivariate linear regression examined the relationship between protein intake and 24-hour urine composition. Regression models adjusted for known risk factors for stone disease. Urine urea nitrogen was used as a surrogate for dietary protein intake.

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, increasing dietary protein intake was significantly associated with increasing urine calcium ($\beta = 4.53$, 95% CI 0.51 to 8.54), uric acid ($\beta = 0.012$, 95% CI 0.007 to 0.018), sodium ($\beta = 1.45$, 95% CI 0.85 to 1.96), and volume ($\beta = 0.073$, 95% CI 0.04 to 0.10). Increasing dietary protein was also significantly associated with decreasing urine citrate ($\beta = -23.3$, 95% CI -34.8 to -11.8) and pH ($\beta = -0.05$, 95% CI -0.07 to -0.04). 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

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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 myelomeningocele (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.

Results:

	MMC	Non-MMC	All NGB patients	p-value
Patients (#)	11	15	26	
Stone procedure episodes (#)	18	21	39	
Avg peri-op decrease in Hct (%)	5.3	4.1	4.6	0.53
Avg peri-op change in GFR (mL/min)	-6	-15	-11	0.17
Major peri-op complications	11%	5%	8%	0.46
Avg initial stone area (mm ²)	423	580	513	0.31
Patients with infectious stones	80%	88%	84%	0.57
Stone free at 3 months	64%	56%	59%	0.62
Avg fluoro dose (mGy)	1031	901	959	0.71

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 myelomeningocele, PNL remains equally effective and safe when compared to other patients with NGB and normal body habitus.

P21

Delayed Ureteral Complications Following Complex Partial Nephrectomy
 Jose Reyes, Daniel Canter, Jay Simhan, Marc Smaldone, Ervin Teper, Alexander Kutikov, David Y.T. Chen, Robert G. Uzzo
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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 720 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 was 4.1 (2-7.2) cm and 10p (4p-11p), 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.

P23

Durable Oncologic Outcomes after Radiofrequent Ablation for T1 Renal Cell Carcinoma in Poor Surgical Candidates
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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=37 (19%), and T2: n=3 (2%). Initial treatment success rate was 89%. 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.

P22

Comparing Post-operative Complication rates between Neoadjuvant Chemotherapy and Chemotherapy Naïve Patients who undergo Cystectomy for Bladder Cancer
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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 complications 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 in 208 patients, or 1.73 complications per patient.

	Neoadjuvant	CT naïve
Number of patients	50	158
Age (years)	65.7	68.1
Gender	41M/9F	131M/27F
EBL (mL)	1214	898
Length of stay (days)	10	11.7
Follow up (months)	20.8	27.5
OR time (minutes)	422	402
ASA score	2.78	2.77
Preoperative albumin	3.87	2.01

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.

P24

Comparing Outcomes in Elderly Patients after Laparoscopic Radical Nephrectomy, Open Partial Nephrectomy and Cryoablation for Renal Masses
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Introduction and Objectives: There is minimal research comparing morbidity and mortality in elderly patients undergoing various types of treatment for renal cell carcinoma (RCC). This study compares open partial nephrectomy (OPN), laparoscopic radical nephrectomy (LN) and cryoablation (CA) in patients 70 years or older and evaluates outcomes between these cohorts.

Methods: We performed a retrospective review using our RCC database of 500 patients from 2001-2009. Inclusion criteria were any patient older than 70 years of age who underwent OPN, LN, or CA. 101 patients were identified of which 28, 38 and 35 had OPN, LN, or CA, respectively.

Results: Recurrence free survival (RFS) for the entire cohort was 98.0%, overall survival (OS) was 88.1%, and cancer specific survival (CSS) was 98.0%. The average follow up was 25.3 months. Only one patient (in the LN cohort) required hemodialysis (HD). The mean percentage decrease from pre to post-operative glomerular filtration rate (GFR) for OPN, LN and CA were 7%, 33%, and 10.7% respectively. The complication rates were 78.6%, 36.7%, and 31.4% in the OPN, LN, and CA cohorts, respectively.

Conclusions: Our data suggests that patients 70 years or older who undergo partial nephrectomy experienced increased morbidity given their higher complication rate. Only one patient in the LN cohort went on to require HD, questioning the ultimate benefit of nephron sparing surgery in this age group.

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

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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.

P27

Pyeloperfusion as a Protective Mechanism for Radiofrequency Ablation of Renal Carcinoma Contiguous to the Ureter: Technique, Results and Complications

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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 (D5W) 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 D5W. 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 pseudoaneurysm 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.

P26

Surgical Outcomes of Non-hilar Clamping Partial Nephrectomy: An Updated Twenty Year Experience

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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: 695 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.

P28

Masses Treated by Thermal Ablation are Low or Moderately Complex as Measured by the R.E.N.A.L.-Nephrometry Scoring System

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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, 57.5 (range=23.3-93.8) 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.

P29

Renal Oncocytoma Diagnosed by Percutaneous Biopsy Can Be Safely Followed but Must Not Be Forgotten

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Introduction: Percutaneous needle biopsy is emerging as an option for identifying benign renal neoplasms. The natural history of *in situ* renal oncocytoma has not been well characterized. We present radiographic and clinical outcomes of patients diagnosed with oncocytoma 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 oncocytoma 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 oncocytoma. 2/40 patients received immediate treatment via radical nephrectomy (1) or RFA (1). Tumor sizes were 4.3 cm and 2.6 cm, respectively. Indications for treatment were baseline size and imaging characteristics (1) or patient preference (1). In 1 patient (4.3 cm tumor) who underwent immediate surgery, surgical pathology revealed papillary RCC, Fuhrman Grade 2.

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

P31

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

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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 35% (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.

P30

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

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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). CT 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=0.0302) 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.

P32

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

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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 hydronephrosis did not (P>0.05).

Conclusions: The early complication rates in patients treated with neoadjuvant CG 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.

Concurrent Poster Session II: Oncologic Diseases

3:20 pm-4:00 pm

P33

Pathologic Upstaging Following Complete Transurethral Resection and Early Cystectomy for Clinical Stage T1 Bladder Cancer
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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 6.8 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.

P35

Perioperative Systemic Chemotherapy Confers a Cancer-Specific Survival Benefit in T3 Urothelial Carcinoma of the Renal Pelvis
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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 (3) or adjuvant (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), lymphovascular invasion (50% vs 69%, p=0.4), N+ status (33% vs 32%, p=0.9), and positive margins (10% vs 9.7%, 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 36.5%). 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.

P34

Smoking Knowledge Assessment and Cessation Trends in Patients with Bladder Cancer Presenting to a Tertiary Referral Center

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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.

P36

The Impact of Tumor Size on the Rate of Synchronous Metastasis and Survival in Renal Cell Carcinoma Patients. A Population Based Study

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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 in 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.

P37

Hand Assisted versus Robotic Assisted Laparoscopic Partial Nephrectomy; Comparison of Short-Term Outcomes

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Introduction: Robotic assisted laparoscopic partial nephrectomy (RALPN) may offer superior outcomes compared with laparoscopic partial nephrectomy (LPN). However, no previous analysis compared RALPN to hand assisted laparoscopic partial nephrectomy (HALPN). Herein, we compared our experience with RALPN and HALPN.

Materials & Methods: The records of LPN from 2006 to 2010 were reviewed. Patient age, tumor pathology, grade, stage, size of tumor, estimated blood loss (EBL), hospital length of stay (LOS), and change in creatinine were noted. Comparison was performed by Student's t-test.

Results: Of 69 patients, 47 underwent HALPN (2006-2010) 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 shorter 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 minority 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

	HALPN	RALPN	p-value
Number of Cases	42	19	
Tumor Size	2.5 cm (1.4)	2.5 cm (1.2)	0.94
Estimated Blood Loss	136 ml (151)	178 ml (249)	0.54
Surgery Time	149 min (39)	212 min (53)	<0.001
Room Time	203 min (42)	275 min (47)	<0.001
Length of Stay	4.2 days (1.4)	3.5 days (0.6)	0.44
Proportion with Hilar Vessel Clamping	1 of 42 (2.38%)	17 of 19 (89.47%)	z=6.6**significant**
Change in Cr (last Cr obtained in hospital minus pre-op Cr)	0.004	-0.025	0.44
Complication Rate	5 of 42 (11.9%)	4 of 19 (21%)	z=0.54**not significant**

P39

Radical Prostatectomy Outcomes in Men Aged 70 or Older with Low-Risk Prostate Cancer

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Introduction: A recent study of SEER data considered men aged ≥ 70 years with moderately differentiated prostate cancer (PCa) as having lower-risk disease (Miller et al, JNCI 2006). This study also concluded that a significant portion of these men were overtreated with radical prostatectomy (RP) or radiation therapy. We examined the proportion and outcomes of men aged ≥ 70 years who underwent RP with low-risk disease at our institution over the past three decades.

Materials & Methods: Our institutional RP database with more than 19,000 men was queried for elderly men aged ≥ 70 years with low risk PCa (PSA ≤ 10 ng/ml, biopsy Gleason ≤ 6 , and clinical stage T1c/T2a). Pathologic and survival outcomes were assessed.

Results: Between 1983 and 2010, 169 elderly men with low risk PCa (0.88%) underwent RP. Gleason score at RP was ≥ 7 in 55 (32.5%). Pathologic stage was pT2 in 119 (70.4%), pT3a in 43 (25.4%), pT3b in 6 (3.6%), and N1 in 1 (0.6%). Actuarial 5- /10-yr biochemical recurrence-free survival, PCa-specific survival, and overall survival probability following RP were 88%/ 77%, 98% /87%, and 87% /63%, respectively.

Conclusions: Less than 1% of men undergoing RP at our institution were elderly men with low risk PCa. However, many of these men were found to have higher risk disease after RP. These cancers may be life-threatening in men with few comorbidities. Treatment recommendation in elderly men with low risk PCa should made after careful consideration of life expectancy based on comorbidities and potential adverse outcomes from the treatment.

P38

The Impact of the Learning Curve on Robot Assisted Pelvic Lymph Node Dissection during Radical Prostatectomy: An Update on the Brown University Experience

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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 (RALPLND) in comparison to an age-matched cohort undergoing open PLND. Herein, we assess our continued experience with RALPLND to determine if LN yield has improved as our robotics program has matured.

Materials & Methods: 178 patients underwent radical prostatectomy with PLND between 2006 and 2010. Open PLND was performed in 78 and RALPLND in 100. Data was collected through an IRB approved blinded prospective database by an independent third party committee. Final pathology reports were retrospectively reviewed. Standard template dissection was carried out in both cohorts.

Results: Both cohorts had similar age and Gleason grade (p>0.05). Mean yield for open and RAL PLND were 6.9 and 4.1, respectively (p<0.001). Within the RAL cohort, 3.2 nodes were collected on average in the first 50 cases, compared to 5.5 in the most recent 50 (p<0.001). While there was a significant difference between LN yield of our open cohort and that of the first 50 robotic cases, there was no significant difference when compared to our most recent 50 cases (p=0.114).

Conclusions: We previously published data documenting lower LN yield during RALPLND compared to open PLND. Our current study demonstrates a statistically significant improvement in LN yield as robotic experience is 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.

P40

Should Anterior Prostatic Fat during Radical Prostatectomy Undergo Pathological Examination?

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Introduction: Dissection of the anterior fat overlying the prostate allows for visualization during robotic prostatectomy. However, this fat is usually not sent for pathologic analysis. One study has demonstrated that anterior prostatic fat (APF) can harbor lymph nodes involved with prostate cancer. Therefore, the purpose of this study was to evaluate APF and the incidence for positive nodes.

Methods: An IRB approved retrospective study was conducted on patients who underwent robotic prostatectomy and had APF sent for pathologic analysis. Clinical and pathological data was analyzed.

Results: 101 patients were identified. Mean age was 57 +/- 8.3 years. 9/101 patients (8.9%) had APF lymph nodes. A total of ten lymph nodes were found (range 1-2). Overall, 2/101 patients (2%) had positive APF nodes despite negative lateral nodes. The pre-operative biopsy Gleason score and prostate specific antigen was 4+3 and 5.5 ng/ml for patient 1 and 4+3 and 2.6 ng/ml for patient 2. BMI didn't differ among patients with and without APF nodes 27.8 \pm 2.4 vs. 27.9 \pm 3.6 (kg/m² \pm SD). Final pathological data is summarized in Table 1.

Conclusions: APF lymph nodes were positive for metastatic prostate cancer in 2% of patients despite having negative lateral pelvic lymph nodes. Ultimately, this finding lead to pathological upstaging stressing the importance of examining this specimen.

TABLE 1. Final pathological data for patients with positive APF nodes

	Seminal vesicle invasion	Extraprostatic extension	Perineural invasion	Lymphovascular invasion	Positive lateral pelvic lymph nodes	Pathological staging
Patient one	(-)	(-)	(+)	(-)	No	pT3a N1Mx
Patient two	(-)	(-)	(+)	(+)	No	pT2c N1Mx

P41

Directed Prostate Biopsies Utilizing Contrast-Enhanced Ultrasound with Flash Replenishment Imaging

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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 compared to 187/1175 (15.9%) of the directed 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: 2.4-4.0, 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).

Conclusions: Targeted biopsy of the prostate using contrast-enhanced TRUS MFI may selectively detect higher grade cancers as compared with systematic 12 core biopsy.

P43

Long-term Prognostic Significance of Close Prostatectomy Margins

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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.

P42

Changes in Pre-operative and Pathologic Characteristics in Patients Undergoing Radical Prostatectomy by Era

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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.

	Era					Total
	1982-1988	1989-1993	1994-1998	1999-2005	2006-2010	
Clinical Stage						
T1a/b	125 (240)	63 (79)	40 (132)	25 (13)	12 (43)	261 (240)
T1c	19 (2)	94 (11)	2459 (55)	5639 (73)	3890 (75)	12105 (64)
T2a	340 (42)	240 (13)	3095 (24)	3375 (18)	852 (26)	7609 (23)
T2b	240 (29)	230 (28)	637 (14)	402 (3)	270 (5)	1759 (9)
T2c	68 (8)	75 (10)	177 (4)	56 (1)	40 (1)	416 (2)
T3	16 (2)	40 (5)	51 (1)	20 (1)	17 (1)	144 (1)
Median PSA						
≤4	154 (43)	206 (29)	803 (18)	1839 (14)	1511 (28)	4553 (25)
4-10	140 (21)	275 (39)	2531 (57)	4789 (64)	3183 (61)	10299 (60)
>10	78 (12)	159 (22)	1466 (33)	1969 (15)	282 (5)	10222 (52)
≥20	37 (6)	71 (10)	226 (5)	134 (1)	78 (1)	546 (3)
ISUP Gleason score						
6	268 (24)	200 (28)	356 (8)	37 (1)	2 (1)	463 (3)
7	374 (47)	320 (44)	3364 (70)	5735 (76)	3821 (68)	12910 (69)
8	133 (14)	154 (21)	809 (18)	1044 (20)	1540 (28)	4384 (22)
9	37 (5)	44 (6)	164 (4)	235 (3)	100 (1)	480 (4)
Pathological stage						
OC	305 (37)	224 (31)	2534 (56)	5550 (74)	3729 (72)	12322 (64)
PCa, N0, P0	200 (24)	138 (17)	895 (13)	863 (6)	304 (6)	2046 (11)
PCa, N0, P1	140 (18)	101 (17)	913 (20)	884 (13)	889 (17)	3155 (17)
PCa, N1, P0	79 (10)	44 (6)	213 (5)	243 (3)	181 (3)	760 (4)
PCa, N1, P1	49 (6)	67 (9)	152 (3)	93 (1)	71 (1)	452 (2)
	810	724	6491	9726	5142	26903

P44

Validation in CaPSURE of Predicted Sexual Outcome after Primary Prostate Cancer Treatment by PROSTQA

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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.

Table 1. PROSTQA Outcomes and Observed CaPSURE Erectile Function recovery at 2 years

Treatment type	N	Mean PROSTQA-estimated 2 yr erectile recovery	Observed proportion 2 yr erectile recovery in CaPSURE
Prostatectomy	1058	0.22	0.23
External Radiotherapy	240	0.13	0.15
Brachytherapy	350	0.22	0.27

P45

Nationwide Comparison of Operative Outcomes for Robotic, Laparoscopic, and Open Radical Prostatectomy

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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

	Total (N = 745)	RALP (N = 172)	RRP (N = 573)	p value
Clinical T-Stage				
T1	68.9	77.3	66.5	0.01 (T1 vs T2+)
T2	31.0	22.7	33.3	
T3	0.1	0	0.2	
T4	0	0	0	
PSA				
Median (ng/dl)	5.5	5.2	5.7	0.04
Biopsy Gleason Score				
<6	3.5	1.2	4.2	0.04
6	59.1	55.9	60.1	
7	29.9	37.1	27.8	
8+	7.4	5.9	7.9	

Table 2. Perioperative Outcomes

	Total (N = 745)	RALP (N = 172)	RRP (N = 573)	p value
Nerve-Sparing				
Bilateral	69.4	71.6	68.8	0.82
Unilateral	14.7	14.2	14.8	
None	15.9	14.2	16.4	
Seminal Vesicle Removal				
% Patients	97.1	97.6	97.0	
Lymph Node Dissection				
% Patients	77.0	47.0	85.6	<0.0001
Hospital Stay				
Mean (days)	2.7	1.9	2.9	0.0001
EBL				
Mean (cc)	712.8	206.0	858.9	<0.0001
Transfusions				
% Patients	26.3	4.7	30.4	<0.0001
Mean Units	2.0	2.8	2.0	0.54

Table 3. Oncologic Outcomes

	Total (N = 745)	RALP (N = 172)	RRP (N = 573)	p value
Pathologic T-Stage				
T2	79.3	79.3	79.3	1.0
T3	20.6	20.7	20.6	
T4	0.14	0	0.2	
Gleason Score				
< or =6	45.2	37.1	47.6	0.07
7	46.5	55.7	43.9	
8	3.9	3.6	4.0	
9+	4.3	3.6	4.6	
Positive Margins				
% Patients	23.1	26.1	23.1	0.47
Extracapsular Extension				
% Patients	23.1	19.8	24.1	0.29

P47

Determinants of the Adoption of Minimally Invasive Radical Prostatectomy in the United States

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Introduction: Minimally invasive radical prostatectomy (MIRP) 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 MIRP and 5,452 RRP during 2003-2005. We assessed the relative contribution of pathologic, demographic, surgeon and practice characteristics on utilization of MIRP vs. RRP.

Results: In multilevel models for men undergoing prostatectomy, surgeon factors accounted for 87.9% of variance in the receipt of MIRP versus RRP. Hospital factors accounted for 77.9% of the variance. In partitioned multilevel models, unmeasured surgeon (78%) and patient (79.3%) factors explained largest amount of variance in the use of MIRP 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 MIRP (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 MIRP use (6.1%) while tumor characteristics contributed very little.

Conclusions: While increased utilization of MIRP 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 MIRP, which is worrisome given that higher surgeon volume and experience are associated with better radical prostatectomy outcomes and lower costs.

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Complications of Pediatric Urologic Minimally Invasive Surgery

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Introduction: The incidence of any complication development with adult laparoscopic surgery is reported to be between 3.5 and 9.3%. To our knowledge, there are no large-scale, prospective published reports concerning the incidence of complications with Pediatric Urologic Minimally Invasive Surgery (PUMIS). We present our experience with complications in PUMIS.

Materials & Methods: We prospectively followed 600 minimally invasive cases performed at our institution. We described complications as any deviation from normal postoperative course, and categorized our complications according to the Clavien system.

Results: Median age was 3.2 yr. (0.4 - 18.8). Median follow-up was 29 months (12-83.4). There were 1895 port sites analyzed in the 600 cases. The 600 cases comprised of 116 testicular; 267 renal/ureteral; 209 bladder; 6 retroperitoneal lymph node dissections; and 2 pelvic cases for removal of Mullerian remnants. There were 7 port site complications (3 umbilical hernias and 4 lateral site superficial infections). Four children had intra-abdominal urinary leakage (1 nephroureterectomy; 1 pyeloplasty with stent migration; 1 nephrectomy; 1 ureteral reimplant). One ureteral reimplantation had a blood loss of 150 cc while the remaining cases were negligible for blood loss. There were 7 Clavien I and 5 Clavien IIIb complications in the 600 cases.

Conclusions: Incidence of complications with PUMIS was 2.0% overall which is slightly lower than the published incidence in adults undergoing minimally invasive surgery. Although it appears safe to perform PUMIS, we must continue to carefully monitor our outcomes in this evolving sub-specialty.

P46

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

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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 IIA 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 (60%) of patients with CSI vs. CSII disease. On multivariate 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 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.

Scientific Session IV: Resident Prize Essay Competition

8:00 am-9:20 am

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Erythrocytosis and Testosterone Therapy: The Influence of Treatment Modality and Body Composition

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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=0.0411;0.53). For those without erythrocytosis during the first year, 4 (3.8%) patients subsequently developed HCT over 54. Increased age (p=0.0238), low baseline HCT (p=0.0034), and elevated T during therapy (p=0.5463) correlate with greater increases in HCT. Increased baseline fat percentage is associated with maximum HCT during therapy (p=0.048) but a response in terms of body composition is not related to a response in HCT.

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.

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

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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 bladder-sparing therapy, 91 patients (32%) underwent salvage cystectomy at our institution following CMT for T2-T4aNxM0 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 20mos (0-252). 99% (90/91) underwent ileal 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 (37% vs. 15%, p=0.02). Tissue-healing complications [fascial dehiscence, wound infection, ureteral stricture, 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.

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

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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. We report our experience with gastrointestinal recovery for patients undergoing cystectomy with urinary diversion treated with alvimopan.

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 with nasogastric-decompression until return of flatus. The latter 16 patients received perioperative alvimopan and were without postoperative nasogastric-decompression.

Results: Time to first flatus (3.2 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.

Pre- & Postoperative Comparison Between Patients With & Without Alvimopan

	Without Alvimopan	With Alvimopan	p-value
Age	70.1	69.7	0.90
BMI	29.7	28.0	0.64
Length of Hospital Stay (days)	9.6	8.7	0.55
Length of Nasogastric Decompression (days)	5.5	0	<0.01
Time to First Flatus (days)	5.6	3.16	<0.01
Time to First Bowel Movement (days)	6.0	3.6	<0.01
Time to Initiation of Clear Liquid Diet (days)	6.3	4.2	<0.01
Time to Initiation of Regular Diet (days)	7.4	5.9	0.09
Incidence of Prolonged Postoperative Ileus	24%	0%	0.03

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

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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-V), 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 3.74±2.4cm) 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 (6.4 vs. 11.1 vs. 21.9%; p=0.009) amongst 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.

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Expanded Prostate Cancer Index Composite for Clinical Practice (EPIC-CP): Development and Validation of a Practical Health-Related Quality of Life Instrument for Use in the Routine Clinical Care of Prostate Cancer Patients

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Introduction: Measuring prostate cancer patient HRQOL in routine clinical practice is hindered by lack of instruments enabling efficient real-time, point-of-care scoring of multiple HRQOL domains. We sought to develop an instrument for this purpose.

Materials & Methods: The EPIC for Clinical Practice (EPIC-CP) is a one-page, 16-item questionnaire to measure urinary incontinence, urinary irritation, bowel, sexual, and hormonal HRQOL domains that we constructed by eliminating conceptually overlapping items from the 3 page EPIC-26, and revising the questionnaire format to mirror the AUA Symptom Index, thereby enabling practitioners to calculate HRQOL scores at point of care. We administered EPIC-CP to a new cohort of PCa patients in community-based and academic oncology, radiation, and urology practices to evaluate the instrument's validity and ease of use for clinical practice.

Results: 175 treated and 132 untreated PCa subjects completed EPIC-CP (N = 307). EPIC-CP domain scores correlated highly with respective domain scores from longer versions of EPIC ($r > 0.92$ for all domains). EPIC-CP showed high internal consistency (Cronbach's alpha = 0.64-0.84) and sensitivity to PCa treatment-related effects ($p < 0.05$ in each of 5 HRQOL domains). Patients completed EPIC-CP efficiently (96% in <10 minutes, and 11% missing items). It was deemed 'very convenient' by clinicians in 87% of routine clinical encounters, and clinicians accurately scored completed questionnaires 94% of the time.

Conclusions: EPIC-CP is a valid instrument that enables patient-reported HRQOL to be measured efficiently and accurately at the point of care, and can thereby facilitate improved emphasis and management of patient-reported outcomes.

Bilateral Same-Session Ureteroscopy: Safety and Efficacy

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Introduction: Bilateral same-session ureteroscopy (URS) was initially avoided due to fear of increased morbidity particularly bilateral ureteral injury. However, improvements in endourologic technology and surgeon experience have minimized complications. We sought to evaluate the safety and efficacy of bilateral same-session ureteroscopy at our institution.

Materials & Methods: Retrospective chart review was conducted on all URS cases for renal and ureteral stones performed by a single surgeon from August 2003 through November 2008. Bilateral same-session cases were then isolated. Quantitative and qualitative analysis was performed.

Results: A total of 459 operative cases were identified. Of this, 86 (20%, 172 renal units) were performed as bilateral same-session ureteroscopies. There were no intraoperative complications described in any of the bilateral procedures—no ureteral perforation, episodes of lost access, or aborted cases. Seventy-eight patients (90.7%) had adequate stone clearance after one procedure and 8 (9.3%) required an additional procedure within 1 year. There were two major complications (2.3%) both being post-operative urosepsis. There were 13 (15.1%) minor complications. These included ER visits for post-operative pain and urinary tract infection without fever.

Conclusions: To date, this is the largest series to demonstrate that bilateral ureteroscopy can be successfully performed on patients with renal and/or ureteral stones in the same session. With appropriate patient selection, bilateral same-session ureteroscopy performed by the experienced surgeon is a safe and efficacious treatment for bilateral nephrolithiasis.

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

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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 18(8%). On univariate analysis, high URS biopsy grade was associated with high RNU grade ($p < 0.001$), MI UTUC ($p < 0.001$), 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.

Should Robotic Assisted Radical Prostatectomy Be Extraperitoneal Like Open Surgery?

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Introduction: The standard approach for open radical prostatectomy is extraperitoneal but most robotic surgeons have limited themselves to the transperitoneal approach. We compare our surgical and oncological results for extraperitoneal (EP-RARP) to transperitoneal (TP-RARP) robotic assisted radical prostatectomy.

Methods: We examined our departmental, IRB approved, retrospective database of RARP. Between October 2008 to March 2011, 611 patients underwent RARP of which 382 had EP-RARP.

Results: EP-RARP was comparable to TP-RARP with mean operative times (126 vs. 124 minutes), estimated blood loss was identical at 150mls, similar nodal yield (8.3 vs. 8.5), low positive surgical margin rate (9.8 vs. 9.6%) despite 26% of patients having pT3 disease. Hospital stays were overnight (1.01 vs. 1.04 days). The importance of lymphadenectomy is confirmed by our 9.6% yield. Major complications were only 0.6% with a small bowel obstruction and renal failure in the transperitoneal group (table attached).

Conclusions: The advantage of extraperitoneal approach for open surgery is avoiding bowel complications. An experienced robotic surgeon can perform extraperitoneal radical prostatectomy retaining this advantage without oncological or surgical compromise.

Table 1: EP-RARP vs. TP-RARP data

	Total	Extraperitoneal	Transperitoneal
Number	611	382	229
Age(mean± s.d.)	59.84±7.18	59.49±7.09	60.71±7.38
BMI kg/m ²	28.3 ±4.26	27.2 ±3.31	31.0 ±5.14
Number of pts with BMI> 30kg/m ²	157	89	68
PSA(ng/dl)	5.9 ±5.0	5.9 ±5.1	6.0 ±4.6
Prostate size	49 ±19	49 ±17	50 ±23
OR time (minutes)	125 ±21	126 ±20	124 ±24
EBL(ml) median	150 ±154	150 ±166	150 ±100
Pathologic stage pT3a,pT3b	26%	25.6%	30%
PSM- prostate surgical margins	9.7%	9.8%	9.6%
Lymphadenectomy	188pts	144pts	44pts
Nodal Yield	8.4 ±4.2	8.3 ±3.8	8.5 ±5.3
Node positive	9.6%	6.4%	13.6%
Post operative Complications (Clavien grade 4 number or greater)	0.6% (4pts)	STEMI x2	Small bowel obstruction and renal failure; anastomotic disruption and renal failure
Length of stay	1.03	1.01	1.04

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<p>Oncologic Outcome of Laparoscopic and Open Radical Prostatectomy during Minimally Invasive Radical Prostatectomy Gregory J. Wirth, Sarah P. Psutka, Shulin Wu, Chin-Lee Wu, Douglas M. Dahl <i>Massachusetts General Hospital, Boston, MA</i></p> <p>UNABLE TO BE PUBLISHED</p>	<p>The Impact of Prostate Size, Median Lobe, and Prior Benign Prostatic Hyperplasia Intervention on Robotic-Assisted Radical Prostatectomy: Technique and Outcomes Keith J. Kowalczyk, Andy C. Huang, Nathanael D. Hevelone, Stuart R. Lipsitz, Hua-yin Yu, Blakely A. Plaster, Channa A. Amarasekara, William D. Ulmer, Stephen B. Williams, Jim C. Hu <i>Brigham and Women's Hospital/Harvard Medical School, Boston, MA</i></p> <p>Introduction: Large prostate size, median lobes, and prior benign prostatic hyperplasia (BPH) surgery pose technical challenges during robotic-assisted radical prostatectomy (RARP). We describe technical modifications to overcome BPH sequelae and associated outcomes.</p> <p>Materials & Methods: Retrospective study of prospective data on 951 RARP performed from September 2005 to November 2010. Outcomes were analyzed by prostate weight, prior BPH surgery (n=59), and median lobes >1cm (n=42). Estimated blood loss (EBL), blood transfusions, operative time, positive surgical margins (PSM), and urinary and sexual function were compared.</p> <p>Results: In unadjusted analysis, men with larger prostates and median lobes experienced higher EBL (213.5 vs. 176.5 mL, p<0.001 and 236.4 vs. 193.3 mL, p=0.002), and larger prostates were associated with more transfusions (4 vs. 1, p=0.037). Operative times were longer for men with larger prostates (164.2 vs. 149.1 minutes, p=0.002), median lobes (185.8 vs. 155.0 minutes, p=0.004) and prior BPH surgical interventions (170.2 vs. 155.4 minutes, p=0.004). Men with prior BPH interventions experienced more prostate base PSM (5.1% vs. 1.2%, p=0.018), but similar overall PSM. In adjusted analyses, median lobes increased both EBL (p=0.006) and operative times (p<0.001) while prior BPH interventions also prolonged operative times. However, prostate size did not affect EBL, PSM or recovery of urinary or sexual function.</p> <p>Conclusions: Large prostate size and BPH characteristics pose challenges that increase operative times and EBL during RARP, but do not affect recovery of urinary or sexual function. Technical modifications to overcome median lobes and prior BPH surgeries improve both perioperative and long term outcomes.</p>																								
39	41																								
<p>Comparison of Extraperitoneal and Transperitoneal Pelvic Lymph Node Dissection during Minimally Invasive Radical Prostatectomy Jeffrey K. Mullins, M. Eric Hyndman, Lynda Z. Mettee, Christian P. Pavlovich <i>Johns Hopkins Medical Institutions, Baltimore, MD</i></p> <p>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.</p> <p>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. Low-risk patients generally received a limited dissection (external iliac nodes) when PLND was performed. Those with intermediate and high-risk disease generally received a standard PLND (external iliac and obturator nodes). Patients were stratified into groups based on operative approach (extraperitoneal vs. transperitoneal) for most analyses.</p> <p>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). Lymph node yield (LNY) was higher with extraperitoneal PLND overall (6.5 vs. 5.3, p=0.003). When stratified by risk category, LNY was greater in the extraperitoneal group for patients with low-risk disease only (6.6 vs. 4.9, p=0.008). There was no difference in nodal yield in intermediate/high-risk patients receiving standard PLND by either transperitoneal or extraperitoneal approach (6.0 vs. 5.5, p=0.36 and 8.0 vs. 5.8, p=0.14, respectively). Lymph node involvement was rare overall. Estimated blood loss and complication rates were comparable between operative approaches.</p> <p>Conclusions: The extraperitoneal MiRP approach does not compromise the oncologic efficacy or safety of routine PLND.</p>	<p>Robotic Pyeloplasty in Adults over 50 years-old: Outcomes Compared to a Younger Cohort F. Cameron Hill, Jules P. Manger, Noah S. Schenkman <i>University of Virginia, Charlottesville, VA</i></p> <p>Introduction: Ureteropelvic junction (UPJ) obstruction frequently presents in the pediatric population. With improved life expectancy and increased use of imaging, more patients are presenting with UPJ obstruction after age fifty. We hypothesized that objective measures of surgical outcomes of pyeloplasty would be equivalent in our adult populations older than and younger than 50 years-old.</p> <p>Methods: An IRB-approved retrospective database of surgical management of UPJ obstruction by a single surgeon between November 2006 and October 2010 was created. Of 69 patients, 22 patients (32%) were older than 50 years of age. Diuretic renography and creatinine were obtained pre- and post-operatively and patients were followed for two years postoperatively. Univariate analysis was performed with standard statistics.</p> <p>Results: The two groups were equivalent with regards to age, gender, laterality, and etiology. Postoperatively, patients greater than 50 years-old were found to have a greater increase in ipsilateral differential function on renography than the younger cohort (6.28% vs. 1.05%, p=0.04). There was no difference between the two groups with regards to other postoperative outcomes.</p> <p>TABLE 1. Outcomes pyeloplasty in adults over 50 years old and those younger than 50 years old</p> <table border="1"> <thead> <tr> <th>Outcome</th> <th>< 50</th> <th>> 50</th> <th>p value</th> </tr> </thead> <tbody> <tr> <td>LOS (days)</td> <td>1.95</td> <td>2.00</td> <td>0.88</td> </tr> <tr> <td>Change in eGFR (mL/min)</td> <td>4.95</td> <td>1.41</td> <td>0.25</td> </tr> <tr> <td>Change in differential function (%)</td> <td>1.05</td> <td>6.28</td> <td>0.04*</td> </tr> <tr> <td>Change in t ½ (minutes)</td> <td>-5.85</td> <td>-21.55</td> <td>0.17</td> </tr> <tr> <td>Symptomatic relief (%)</td> <td>87</td> <td>100</td> <td>0.31</td> </tr> </tbody> </table> <p>Conclusions: This is, to our knowledge, the first study to address the surgically relevant outcomes of robotic pyeloplasty in an older cohort. We demonstrated that in those greater than 50 years old, there is a greater improvement in differential function on renography and equivalence of other outcomes, compared to a younger cohort.</p>	Outcome	< 50	> 50	p value	LOS (days)	1.95	2.00	0.88	Change in eGFR (mL/min)	4.95	1.41	0.25	Change in differential function (%)	1.05	6.28	0.04*	Change in t ½ (minutes)	-5.85	-21.55	0.17	Symptomatic relief (%)	87	100	0.31
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The Safety of Aspirin in the Perioperative Period in Urologic Robotic Surgery
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Introduction: Robotic surgery is increasingly performed for radical prostatectomy and nephrectomy. Many patients have significant cardiac histories requiring aspirin and have significant thromboembolic risk when it is held. Our objective is to provide the first evaluation of the safety of aspirin in the perioperative period for robotic prostatectomy and nephrectomy.

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.

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10-year Analysis of Adverse Event Reports to the Food and Drug Administration Related to the use of Phosphodiesterase Type-5 Inhibitors
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Introduction: To ensure public safety all Food and Drug Administration (FDA) approved medications undergo post-approval safety analysis. Phosphodiesterase type-5 inhibitors (PDE5-i) are generally regarded as safe and effective.

Methods: We performed a non-industry sponsored analysis of the reports for sildenafil, tadalafil, and vardenafil to evaluate the overall cardiovascular and mortality events in the past 10 years. Summarized reports of adverse events for each PDE5-i were requested from the Center for Drug Evaluation and Research within the FDA. These data are available under the Freedom of Information Act and document the reports of adverse events entered into the computerized system maintained by the Office of Surveillance and Epidemiology. The data was analyzed for overall number of adverse events (AEs), number of objective cardiovascular events, and reported deaths.

Results: Overall 14818 AEs were reported for sildenafil. Events associated with death numbered 1824 (12.3%) and those associated with cardiovascular adverse events numbered 2406 (16.2%). Tadalafil was associated with 5548 AEs and those associated with cardiovascular adverse events and deaths were 7.8% and 4.3% of these reports respectively. Vardenafil was associated with 6085 events, with cardiovascular adverse events and deaths at 5.3% and 2% respectively. Only 10% of adverse events were reported by the manufacturers.

Conclusions: Adverse events associated with death are concerning and remain above 5% of total reported events. Limitations of this data set exist but it is important that these reports be reviewed outside of the pharmaceutical industry in order to provide due diligence and transparency.

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Microvascular Arterial Bypass Surgery: Prospective Outcomes Study Using Validated Instruments
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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 questionnaires in young men (younger than 55) free of vascular risk factors who underwent microvascular arterial bypass surgery.

Materials & Methods: This is a single institution prospective institutional review board approved study of 38 men (mean age 28.2 ± 8.7 years) who underwent microvascular arterial bypass surgery between 2000 and 2010.

Results: Mean preoperative and postoperative penile rigidity measures without and with phosphodiesterase type 5 inhibitors were 43%, 75% and 77%, 94%. Mean total International Index of Erectile Function score, Erectile Function domain, and question 3 and 4 scores preoperatively and postoperatively were 41.5 ± 17.0, 16.4 ± 8.2, 2.9 ± 1.9 and 2.5 ± 1.8, and 53.5 ± 13.3, 23.7 ± 5.8, 4.2 ± 1.5 and 3.7 ± 1.5. Preoperative and postoperative Center for Epidemiologic Studies Depression Scale scores were 18.4 ± 15.1 and 14.2 ± 13.1. Short-term complications included emesis and dysuria. Long-term complications were loss of penile length and decreased penile sensation.

Conclusions: In patients with no vascular risk factors and pure cavernous arterial insufficiency, microvascular arterial bypass surgery provides long-term improvements in erectile function, depression and overall satisfaction.

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Outcomes of Surgical Management for Perineal Gangrene
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Introduction: Perineal gangrene is a potentially lethal disease whose cure depends on rapid diagnosis and surgical intervention.

Materials & Methods: We identified 36 patients at our institution from 7/95-11/10 diagnosed with Fourniers/perineal gangrene. Fourniers Gangrene Severity Index (FGSI) was used to stratify illness severity. Wound closure was performed by split-thickness skin-graft (STSG), primary-closure, or healing by secondary-intention.

Results: Median age of patients in this series was 54 years (33-91). Median length of stay was 19 days (6-92) and number of surgical procedures was 4 (1-10). 4 patients (11%) were bacteremic at presentation. Median WBC was 18.2 th/mm3 (8.9-37.0), and creatinine was 1.3 mg/dl (0.7-7.4). Median FGSI was 5 (0-16), and follow-up was 19 months (0-99). The most common comorbidities were hypertension (58%), type-2 diabetes (47%), alcoholism (14%), end-stage renal failure (14%), and coronary artery disease (14%). The most common etiologies were GU trauma (25%), perirectal abscess (17%), and GU instrumentation (11%). The most common wound culture pathogens were coagulase-negative Staphylococcus (33%) and beta-hemolytic Streptococcus (28%). Mortality <7 days was 6% (2 pts), <30 days was 9% (3 pts), and <1 year was 9%. 12 patients (33%) underwent STSG, 10 (28%) were closed primarily, and 14 (39%) healed by secondary-intention.

Conclusions: There is a spectrum of severity in patients with perineal gangrene with the most severe form classically referred to as Fourniers. This accounts for the variable mortality reported for this disease. Irrespective of initial presentation the cosmetic and functional results of wound closure were excellent for all those who survived.

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VED Registry in Men Treated for Prostate Cancer: Initial Results of a Prospective, Multi-institutional Dataset

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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; note that some men were unsure of their treatment details. Similar dissatisfactions (scale: 1-5) were observed for post prostatectomy rehabilitation with Viagra (1.0±0.9), Levitra (2.0±1.0) and Cialis (1.7±0.0). The 3-month dataset is small and analysis is premature. However it was noted that VED satisfaction score was 2.0±1.4 and 45.0% of 22 patients reported an increase in the length of their erect penis at 3-months.

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 post prostatectomy ED knowledge. Supported by Firma Medical Co.

Baseline SHIM Scores

	All (n)	Full Gland (n)	Unilateral NS (n)	Bilateral NS (n)	Focal (n)
Prostatectomy (all)	8.9±9.6 (131)	11.6±10.4 (32)	11.6±9.0 (7)	9.4±10.3 (50)	-
Robotic/Lap	8.8±9.4 (107)	11.7±10.6 (21)	9.3±7.4 (6)	8.9±10.3 (45)	-
Open	9.5±10.4 (24)	11.4±10.5 (11)	25±N/A (1)	14.0±10.8 (5)	-
Radiation (all)	13.4±8.3 (23)	-	-	-	-
Cryoablation	3.1±6.7 (28)	3.2±6.9 (14)	(0)	(0)	2.5±6.1 (6)

Post-Operative Complications of the Exaggerated Lithotomy Position

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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 paresthesias of the lower extremity seen in 20 patients (19.0%) 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 neurapraxia, 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.

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Urethral Reconstruction Outcomes Using Patient Reported Preoperative and Postoperative Questionnaires in Combination With Uroflometry

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Introduction: There is a paucity of data regarding self-reported outcomes following urethral reconstruction. We compared preoperative and postoperative AUA 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, IIEFF, 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 IIEFF (table 1).

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

TABLE 1. Median preoperative and postoperative patient reported and diagnostic data

	Preoperative	Postoperative	Median Change	p-value
AUA symptom score	16	2	-12	<0.0001
QOL	5	1	-4	<0.0001
IIEF	23	24	1	0.2155
FR	9	23	12	<0.0001
PVR	66	24	-32	<0.0001

"Never Events" - The Incidence and Cost Implications of "Preventable" Complications in an Academic Urology Practice

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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	Overall Incidence (5305 cases)	Adult Incidence (4032)	Pediatric Incidence (1273)
C. difficile infection (6)	0.11% (6)	0.12% (5)	0.08% (1)
Surgical site infection (12)	0.23% (12)	0.17% (7)	0.39% (5)
Catheter-associated UTI (8)	0.15% (8)	0.17% (7)	0.08% (1)
Infected device (1)	0.02% (1)	0.03% (1)	0% (0)
Hospital acquired pneumonia (4)	0.08% (4)	0.10% (4)	0% (0)
Deep venous thrombosis/pulmonary embolism (17)	0.32% (17)	0.42% (17)	0% (0)
Hip fracture (1)	0.02% (1)	0.03% (1)	0% (0)
Anesthesia-related (3)	0.06% (3)	0.05% (2)	0.08% (1)
Positioning-related (5)	0.09% (5)	0.12% (5)	0% (0)
Narcotic overdose (2)	0.04% (2)	0% (0)	0.16% (2)

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“Academic Ranking Score”: A Reproducible Metric of Thought Leadership in Urology
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Introduction: U.S. News & World Report (USNWR) rankings of hospitals are an integral marketing strategy for healthcare systems. Nevertheless, the methodology utilized appears flawed due to the disproportionate reliance on “reputation”, as determined by querying approximately 125 urologists. In an effort to develop an improved measure of a urology department’s contribution, we have developed the “Academic Ranking Score” (ARS).

Methods: All publications as first or last author from 2005-2010 were identified using an active faculty list for each urology department. The ARS was derived by normalizing the tabulated publications by the Impact Factor of the journal of publication. The 2010 USNWR Top-50 urology hospitals were then re-ranked based on ARS (Table 1).

Results: 6,437 urological publications were indexed to calculate ARS. Two of the top 3 programs in the USNWR rankings dropped out of the top 10. Meanwhile, the top 10 academically ranked programs moved an average of >5 positions (range 0-17). No correlation was seen between programs ranked in the top 10 by USNWR and our ARS method (Spearman’s rho -0.1, p=0.75). When adjusting ARS on a per-FTE basis to eliminate bias of size, the disparity in rank lists persisted (Spearman’s rho -0.33, p=0.23).

Conclusions: ARS departmental rankings determined through quantification of recent academic contribution differs substantially from the USNWR. Our integration of objective measures into an overall ranking system replaces subjective opinions with up-to-date, merit-based assessments.

Hospital	ARS	USNWR 2010 Rank
1. Johns Hopkins	100	1
2. Mayo Clinic	95	2
3. Cleveland Clinic	90	3
4. University of Michigan	85	4
5. University of California	80	5
6. Massachusetts General	75	6
7. University of Washington	70	7
8. University of Texas	65	8
9. University of Wisconsin	60	9
10. University of Colorado	55	10

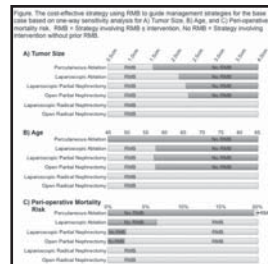
Cost-effectiveness of Percutaneous Renal Mass Biopsy to Guide the Management of Small Solid Renal Masses (≤4cm)
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Introduction: We assessed the cost-effectiveness of percutaneous renal mass biopsy (RMB) to guide management decisions for small solid enhancing renal masses (SRM, ≤4cm).

Materials & Methods: We developed a decision-analytic model estimating the costs and benefits of RMB prior to competing treatments: percutaneous/laparoscopic ablation, laparoscopic/open partial nephrectomy, laparoscopic/open radical nephrectomy. For RMB, we modeled a 10% non-diagnostic rate, 97.5% sensitivity, 91.2% specificity and 0.01% complication rate. Positive or non-diagnostic RMB led to treatment; negative RMB led to active surveillance. Our base case was a healthy 65-year old patient with an asymptomatic unilateral 3cm SRM. Model inputs were estimated from the literature. Outcomes were measured in quality-adjusted life-years (QALY) and 2008 US\$, respectively. We used a societal perspective, lifetime horizon, 3% discount rate, 3-month cycle length, and a \$50,000/QALY willingness-to-pay threshold. The model results and alternative clinical scenarios were tested with sensitivity analysis.

Results: In the base case, RMB was cost-effective prior to radical nephrectomy options for all scenarios. Conversely, for partial nephrectomy or ablation options, management without prior RMB was cost-effective; however, RMB was cost-effective with smaller tumors, younger and less healthy patients (Figure).

Conclusions: For healthy 65-year old patients, RMB is cost-effective to guide management of any SRM prior to radical nephrectomy. It is also recommended for patients with smaller SRM, younger age, and worse health prior to partial nephrectomy or ablative therapies.



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Influence of Surgeon and Hospital Volume on Radical Prostatectomy Costs
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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 \$11,680; 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 surgeon volume was \$10.6 (95% CI: 4.4-16.8, p<0.001) while the marginal cost for an additional RP by hospital volume was \$6.8 (95% CI: 4.1-9.6, 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 (\$500.9; 95% CI: 65.8-936.1, p = 0.024) vs. white men. Finally, there was significant geographic variation, and the RP cost differential between the most and least costly SEER regions was \$3988.4 (95% CI: 3361.6-4615.2, 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
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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 -0.006), and supersaturation of calcium phosphate (B = -0.013, 95% CI -0.03 to -0.0002). 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.

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Predictive Factors for Patient Satisfaction with Sacral Neuromodulation in Chronic Voiding Dysfunction
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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
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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 UTI's 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 (65%) 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
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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 from the American Urological Association Symptom Index. The questionnaire 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 1888(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.

LUTS Symptom	Patients Without Mood Disorder or Anxiety (95% CI)	Patients With Mood Disorder or Anxiety (95% CI)	Odds Ratio (95% CI)
Frequency	5.2% (4.4-5.9%) (n=166)	12.8% (8.0-16.6%) (n=38)	2.7 (1.3-5.9)
Urgency	7.3% (6.4-8.2%) (n=238)	16.8% (12.4-20.9%) (n=48)	2.5 (1.5-3.5)
Dysuria	0.4% (0.2-0.7%) (n=14)	1.3% (0.1-2.7%) (n=4)	3.1 (1.3-6.6)
Nocturia	2.5% (2.0-3.0%) (n=333)	3.4% (1.3-5.4%) (n=54)	1.9 (1.4-2.7)
Weak Stream	0.4% (0.2-0.6%) (n=12)	1.3% (0.1-2.7%) (n=4)	3.7 (1.2-11.3)
Hesitancy	3.6% (3.0-3.9%) (n=102)	10.3% (7.0-14.0%) (n=23)	2.6 (1.5-3.7)
Terminal Dribbling	6.6% (5.7-7.4%) (n=212)	14.3% (10.3-18.3%) (n=42)	2.4 (1.7-3.4)
Incomplete Voiding	3.2% (2.6-3.8%) (n=148)	7.9% (4.8-10.9%) (n=31)	2.4 (1.6-4.1)

¹All odds ratios were significant with p-value<0.05 with the exception of Dysuria, which had a p-value of 0.056.

P53

A Once-daily Titratable Gel Formulation for Transdermal Oxybutynin Delivery for OAB
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Introduction: A prospective randomized double-blind placebo-controlled trial of a once-daily titratable dose transdermal oxybutynin gel (TTOG) formulation. To date there are no titratable transdermal agents for OAB.

Materials & Methods: 12 week study ages 19-89 years with symptoms of urgency (UII) 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) using a 3-day diary. Secondary: change from baseline in urinary 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 (Anturo) 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.

Endpoints	Treatment Group		
	TT-Oxy gel 84mg/day (n=195)	TT-Oxy gel 56mg/day (n=171)	Placebo gel (n=166)
UUI/week, mean			
Baseline	43.6	50.1	45.8
Median Change	-18.7 ^x	-21.0 ^{xx}	-16.3
Micturitions/24 h			
Baseline, mean	11.4	11.7	10.5
Change, mean	-2.9 ^y	-2.2 ^{zz}	-1.9
Mean Voided Volume, mL			
Baseline	196.9	196.2	182.0
Change	29.0 ^z	21.1 ^{zz}	10.4

x - p = 0.033 xx - p = 0.028 y - p = 0.0005 z - p = 0.0499 zz - p = 0.0017

Concurrent Poster Session III: Non-Oncologic Diseases

11:20 am-12:15 pm

P54

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

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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

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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, urinalysis, 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 \geq 9 is listed in Table 1. 103 (82.4%) patients had an OABSS \geq 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 along with mean OABSS for each category.

Conclusion: 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 diagnosable conditions, many of which may be remediable to treatment.

Category	All Patients (N=125)			OABSS 9 (N=103)		
	Number (%)	Mean OABSS	# DO	Number (%)	Mean OABSS	# DO
UTI	16 (13)	13.3	10	15 (15)	13.8	9
Sphincteric incontinence	46 (37)	14.7	25	42 (41)	15.4	23
POP	29 (23)	14.6	18	29 (28)	14.6	18
Neurogenic bladder	15 (12)	15.3	13	14 (14)	16.0	12
Bladder outlet obstruction	6 (5)	15.7	6	6 (6)	15.7	6
Miscellaneous	22 (18)	13.0	14	19 (18)	13.9	13
Idiopathic	26 (21)	13.5	13	21 (20)	15.0	11

*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

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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 28 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 needle electrode 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?

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

Materials & Methods: 1975 consecutive SWL procedures done on a Lithotripter 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 patients with BMI \geq 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 \geq 30 (p<0.005). Stone-free rate evaluated by stone location was 62.5% for renal; 72.1% for ureteral in non-obese and 53.1% for renal; 63.7% for ureteral in obese patients (p<0.005 renal; p<0.010 ureteral). 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%)(p<0.005); <25 mm² (83.5% and 77.3%)(p<0.010); 25-75 mm² (65.6% and 63.2%) (n.s); for BMI <30 and BMI \geq 30 respectively.

Conclusions: SWL remains the mainstay of treatments but appears to be less effective in obese patients (BMI \geq 30).

P58

Risk of Infection Stones in Patients with Non-Obstructing Renal Stones

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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, ureteral 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.

P60

Submillisievert Computed Tomography for the Evaluation of Urolithiasis

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Introduction: We evaluated feasibility of submillisievert computed tomography (CT) examinations reconstructed with iterative reconstruction (IR) techniques in patients with urolithiasis.

Materials & Methods: 26 patients (mean age-38 yrs) with diagnosed urolithiasis, treated and on follow up underwent submillisievert dose unenhanced scan on 64 MDCT (Discovery CT750 HDCT, GE Healthcare) and 128 MDCT (Somatom Definition Flash, Siemens Health care). The scan protocol included 80 kV, auto mA 75-150 or Ref mA - 80, slice thickness 5mm for <200 lbs and 100 kV, auto mA 75-150 or Ref mA - 80, slice thickness 5mm for > 200 lbs. Images were reconstructed using filtered back projection (FBP) and IR [ASIR(GE) 60% & 80% and IRIS (Siemens)]. All images were reviewed for image quality (scale 1-5), noise (scale 1-3), number and size of calculi and reader confidence on PACS work station. Comparison was made with the prior low dose FBP baseline CT scan.

Results: All 34 stones mean size (6.4mm, range 4-15 mm) was confidently diagnosed by two readers, yielding 100% sensitivity and accuracy. In 8 patients, stones had passed/resolved after treatment. In giving a differential diagnosis IR images were rated better than FBP (2.8 vs 1.7). The mean CTDI, DLP and mSv for submillisievert protocol was 1.2, 65.3 and 0.86 in comparison to 10.6, 363.4, and 5.4 for our baseline low dose exam with 82-88% dose reduction (p<0.0013).

Conclusions: Submillisievert unenhanced CT is a clinically feasible for diagnosis of urolithiasis with 82-88% dose reduction compared with standard non-contrast CT.

P59

Contemporary 24-hour Urine Collection Analysis Reveals High Risk Stone Formers May Be at Increased Risk for Recurrence in Summer and Winter Months

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Introduction: Climate and geography have been shown to play a role in stone risk, with populations in warmer climates exhibiting a greater prevalence of nephrolithiasis. None of these studies are from the northeast and many reveal no decrease in urinary volume in the summer. We evaluated high-risk stone formers in our region to determine if a seasonal variation in urine volume exists.

Materials & Methods: 963 24-hour urine specimens from high risk stone formers (2005-2010) were stratified by season (Winter-Dec, Jan, Feb; Spring-Mar, Apr, May; Summer-Jun, Jul, Aug; Fall-Sep, Oct, Nov) and seasonal mean 24-hour urine volume was compared via Student T test.

Results: Of 963 urine studies, 472 (49%) were male and 482 (51%) female. Mean (\pm standard deviation) 24-hour urine volumes (liters) for spring, summer, fall, and winter were 1.9 ± 0.97 , 1.79 ± 0.9 , 2.02 ± 0.87 , and 1.84 ± 0.76 , respectively. Student's T-test was used to compare each season in a round-robin fashion. Significant differences were noted between summer and fall as well as winter and fall with both summer and winter associated with significantly lower volumes than fall (p=.007 and p=0.014, respectively).

Conclusions: High-risk stone formers in the northeast produce lower urine volumes in the summer and winter. Frigid winters may increase exposure to arid indoor heating with similar effects on hydration. Urologists treating high-risk stone formers, in the northeast, should be aware of both of these two seasonal variations to facilitate proper hydration counseling to high-risk stone formers.

P61

The Impact of Body Mass Index Reduction on 24-Hour Urine Parameters

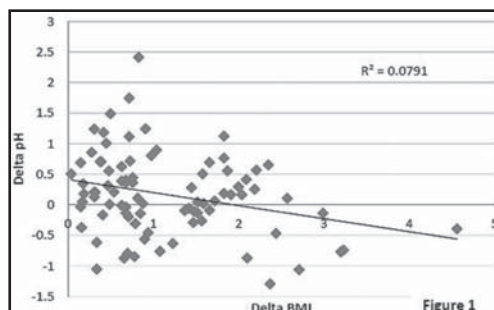
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Introduction: Studies have shown an association between obesity and lithogenic metabolic parameters in stone-forming patients. However, the relationship between obesity and nephrolithiasis is incompletely understood. We assessed the effect of change in body mass index (BMI) on changes in 24-hour urine profiles.

Materials & Methods: 505 consecutive stone-formers completed comprehensive metabolic evaluations between 2006 and 2010. BMI (kg/m²) was measured at successive office visits, and 181 patients completed 24-hour urine collections separated by at least 3 months available for retrospective review. Delta-BMI was compared against 24-hour urine parameters and the correlation coefficients (R²) were calculated.

Results: 140 of the 181 patients (77%) were obese (BMI \geq 25). The mean delta BMI in our population was +0.09kg/cm² (range -5.62 to +4.56) with a mean time between 24-hour urine collections of 8.9 months. Using a linear regression model, no significant correlation was found between delta-BMI and 24-hour urine parameters. In the subset of patients with a positive delta-BMI, there was a trend towards a decrease in urinary pH (R²=0.08, fig 1).

Conclusions: Few studies have investigated the effect of weight loss on metabolic profiles. Our data did not suggest a clear correlation of change in BMI with change in 24-hour urine chemistries. Although weight loss may play a role in the management of stone-forming patients, the approach to stone prevention remains multi-faceted.



Concurrent Poster Session III: Non-Oncologic Diseases

11:20 am-12:15 pm

P62

Management of Residual Fragments Following Percutaneous Nephrolithotomy: A Cost Analysis

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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: \$7609.72 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.

P64

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

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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) < 250 ng/dL or 2 consecutive STT concentrations < 300 ng/dL received once-daily T2% gel (FortestaTM, 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. Endpoints were average STT concentration over 24h (C_{avg} 0-24h) and maximum STT concentration (C_{max}) at 90d. Study objective was to raise STT C_{avg} 0-24h to a normal range of ≥ 300 and ≤ 1140 ng/dL in $\geq 75\%$ patients.

Results: At baseline, 8 patients (6%) had normal weight (BMI ≥ 18.5 – ≤ 24.9 kg/m²); 43 patients (33%) were overweight (BMI ≥ 25 – ≤ 29.9 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 63.1 ng/dL, respectively. STT concentrations at 35d and 90d were comparable across treatment groups (Table). T2% gel was generally well tolerated and most common adverse incidents were application-site reactions (16%) 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

	Normal (n=8)	Overweight (n=43)	Obese (n=78)
STT C_{avg} 0-24h, ng/dL (mean±SD)			
35d	409.1±152.7	414.9±133.3	404.6±166.4
90d	457.8±154.0	433.4±171.5	439.5±160.2
STT C_{max} , ng/dL (mean±SD)			
35d	839.1±351.8	897.5±438.3	781.6±367.9
90d	947.4±269.6	821.8±341.1	818.6±373.6
STT normal range (≥ 300 – ≤ 1140 ng/dL) (% patients)			
35d	75.0%	87.8%	70.1%
90d	75.0%	76.7%	78.2%
Average daily T2% gel dose, mg (mean±SD)	45.4±5.4	42.7±7.3	46.3±7.4

P63

Percutaneous Nephrolithotomy (PCNL) in the Septuagenarian, Octogenarian and Nonagenarian is Safe: Outcomes and Complications

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Introduction: PCNL is the standard of care for large volume upper tract stone disease. Patients presenting in their seventh to ninth decade of life are often considered to be at increased risk of peri-operative complications and poorer outcomes. We aim to compare outcomes of PCNL in septuagenarian, octogenarian and nonagenarians, compared to a younger population matched for stone burden.

Materials & Methods: Records of 231 PCNLs performed from 2006 to 2010 were reviewed. 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 student'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 2.86 comorbidities each. The control group had a mean age of 47y, significantly lower ASA scores of 1.78, and 1.10 comorbidities ($p=0.001$ and $p=0.0001$ respectively). Stone free rate was 63.3% in those >70 y and 74% in the control group, without differences in surgical time or LOS. There was no statistically significant difference in frequency of complications and mean Clavien class between the two groups.

Conclusions: PCNL is safe and effective in patients over 70. Age, alone, should not be an excluding criterion. Concerns regarding anesthesia risk, prone positioning, bleeding and hospitalization should be considered individually.

P65

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

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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 cavernotomies, 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 cavernotomies 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, cavernotomies were used in 8 patients, sharp corporal excision in 3 patients, and combination of sharp corporal excision and cavernotomies in 2 patients. Penile prosthesis was successfully placed in all 20 patients. Overall, 16 patients (80%) have 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, cavernotomies and sharp corporal excision can be used safely.

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Outcomes of KTPLAP and TURP in Patients with Impaired Detrusor Contractility
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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), videourodynamics, 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 IPSS and bladder capacity for the entire cohort was 14 (SD=8) and 904mL (SD=605mL) respectively. 5 (9%) subjects were available at 1 year follow-up and 53/56(95%) 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. TURP/KTPLAP is viable for properly selected patients with IDC.

Table 1: Pre and Post-op Data

	Mean Qmax, mL/sec (SD)	Median Qmax, mL/sec (range)	Mean PVR, mL (SD)	Median PVR, mL (range)	# on CIC
Preop (n=56)	5 (5)	4 (0-23)	670 (559)	547 (0-2500)	27
Postop (n=56)	17 (10)	15 (0-44)	144 (249)	51 (0-1200)	11

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

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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 1/2 years after a single dosage of NX-1207, 37 to 58% of subjects required no surgical treatments or medication for their BPH. After 7 1/2 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.

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Nocturia Reduction after Cooled ThermoTherapy for Symptomatic Benign Prostatic Hyperplasia

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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 multiple comparison test, chi square, Pearson's correlation, and repeated measures regression analyses were performed.

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.

Rapid Ambulatory Pathway Laser Prostatectomy is Safe- Results within the Global Period

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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<0.0001) 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.

Concurrent Poster Session III: Non-Oncologic Diseases

11:20 am-12:15 pm

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Northern New England Renal Trauma: How it Differs from the Big City
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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 patient admitted with renal injury at a single rural level 1 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%), 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 multiple 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.

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Effects of Spinal Cord Detethering on Children with Currarino Syndrome
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Background: Currarino Syndrome (CS) is an inherited disorder involving a triad: anorectal anomalies, sacro-coccygeal defect and presacral mass. Only a few case reports and series discussing this rare condition exist; none report its effects on the genitourinary tract. We present the urologic issues in CS patients and determine how spinal cord untethering affects urinary tract function.

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

Results: All 13 with CS having a sacral defect and presacral mass were diagnosed between birth and 6 years (Table1). 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 (Table1). 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.

Table 1.

Characteristics	N=13	Frequency
Female to male ratio	9:4	Urgency
Familial to sporadic ratio	8:5	Urinary incontinence
Presacral mass	13	Nocturnal bedwetting
Myelomeningocele	5	Recurrent urinary tract infection
Teratoma	5	Non-toilet trained patients
Lipoma	3	UDS evaluation
Full triad (including anorectal abnormalities)	7	Pre- > post-surgery UDS
Anal stenosis	4	*Normal > normal
Imperforate anus	2	*Dyssynergy > synergy more than dyssynergy
Anal duplication	1	*Small capacity, DO, dyssynergy
Tethered spinal cord	12	> Small capacity, multiple DO with dyssynergy; later normal capacity, no DO with synergy
Surgical history		*DO > no DO
Presacral mass resection	12	Post-surgery UDS
Cord detethering	12	No surgery UDS
Voiding complaints in toilet trained patients	10	

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Prospective Robotically-Assisted Laparoscopic Pyeloplasty Analysis in Pediatrics
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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.

Materials & Methods: After obtaining IRB approval, all patients scheduled for RALP after March 2009 were offered enrollment in our database.

Results: Twenty four of the twenty six enrolled patients have undergone surgery. Mean age is 5.4 years; mean weight is 27.3 kg. Two patients were redo repairs. Mean anesthesia time was 296 minutes, and mean surgical time from first incision to final suture was 188 minutes. Mean hospital stay was 1.4 days. Mean follow up was 8.5 months. Mean narcotic use per patient was 0.4 mg/kg of morphine intravenous equivalent. There were four postoperative complications (16%): two major and two minor. One patient had omental herniation during drain removal, one returned to the emergency room for bladder spasms, and two had repeat surgeries. Postoperative imaging revealed worsened hydronephrosis in two patients (8%). One patient underwent a re-do RALP and the other underwent endoscopic incision of scar tissue.

Conclusions: On this prospective review, we found RALP continues to be a safe and comparable alternative to open UPJ obstruction repair. We will continue with long-term follow up and active recruitment of patients. We hope this helps solidify benchmarks for robotic surgical results in pediatric UPJ obstructions.

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Cost Comparison of Open, Laparoscopic, and Robot-assisted Partial Nephrectomy
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Introduction and Objectives: Laparoscopic and robotic 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.

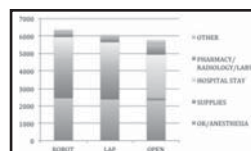
Methods: Hospital variable costs including operating room (OR) time, supplies, anesthesia, inpatient care, radiology, pharmacy, and laboratory charges were captured for the last 25 patients who underwent OPN, LPN, and RPN at our institution prior to September 2010.

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=0.1166) (Figure 1). OR supplies contributed a greater cost for LPN and RPN than OPN (\$2,179 vs. \$1,987 vs. \$1,811, p<0.0001), while the inpatient stay cost was disproportionately higher for OPN compared to LPN and RPN (\$2,418 vs. \$1,305 vs. \$1,274, p<0.0001). 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.

	Robot	Laparoscopic	Open	P-value RPN vs. LPN	P-value LPN vs. OPN	P-value RPN vs. OPN	Kruskal-Wallis analysis
Age (mean years)	55.9 ± 11.7	53.3 ± 13.7	61.9 ± 10.1	0.477	0.054	0.0142	0.0432
Tumor Size (cm)	2.5 ± 1.0	3.3 ± 1.3	3.3 ± 1.4	0.0279	0.0298	0.900	0.0661
RENAL Score	6.68 ± 1.68	7.04 ± 1.70	7.05 ± 1.56	0.05	0.052	0.932	0.0659
OR Time (min)	178 ± 44.2	223.8 ± 43.2	275.4 ± 49.5	0.536	0.804	0.572	0.732
EBL	205.7	154 ± 114.5	170.0	0.613	0.0742	0.0047	0.0079
Length of Hospital Stay (days)	2.48 ± 0.68	2.72 ± 0.67	4.6 ± 1.68	0.353	0.0001	0.0001	0.0001
Overall Cost	6374 ± 1318	6074 ± 758	5774 ± 2420	0.329	0.281	0.557	0.1166
Supply Costs	2178 ± 225	629 ± 125	180 ± 118	0.0001	0.0001	0.0001	0.0001
Hospital Costs	1304 ± 891	3260 ± 469	2418 ± 1501	0.0001	0.0025	0.0101	0.0001



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Multi-Institutional Validation of the Predictive Value of Preoperative Hydronephrosis for Advanced Stage Upper-Tract Urothelial Carcinoma

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Introduction: The presence of hydronephrosis (HN) has been implicated as a predictor of poor outcomes for patients diagnosed with bladder cancer. Smaller reports suggest a similar negative relationship exists for upper-tract urothelial carcinoma (UTUC).

Materials & Methods: 469 pts with localized UTUC from 6 tertiary referral centers who underwent a radical nephroureterectomy (91%) or segmental ureterectomy (9%) without neoadjuvant chemotherapy were integrated into a database. Preoperative HN data variables were available in 408 pts.

Results: 192 pts (47%) had \geq pT2 disease, 145 (36%) had non-organ confined disease and 298 (73%) had high grade disease on final pathology. Forty-six percent of pts had tumors in the renal pelvis, 27% in the ureter, and 27% in both. Preoperatively, 223 pts (55%) had HN (39% low grade and 61% high grade). HN was associated with \geq pT2 stage ($p < 0.001$) and non-organ confined disease ($p < 0.001$). On preoperative multivariate analysis that adjusted for the effects of gender, age, and tumor location, HN was an independent predictor of muscle invasive disease (HR 7.4, $p < 0.001$), non-organ confined disease (HR 5.5, $p < 0.001$), and high pathologic grade (HR 1.6, $p = 0.03$). Even after controlling for ureteroscopic biopsy grade and urinary cytology ($n = 172$), HN remained an independent predictor of muscle invasive stage (HR 12.0, $p < 0.001$) and non-organ confined disease (HR 5.1, $p < 0.001$).

Conclusions: The presence of preoperative HN is a significant predictor for advanced stage UTUC. This imaging modality may improve preoperative risk stratification to guide use of endoscopic versus extirpative surgery and/or the need for neoadjuvant chemotherapy regimens.

Safety and Efficacy of Robot-Assisted Partial Nephrectomy: A Large Single Institution Experience

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Introduction: Although it is an acceptable treatment option for small renal masses, the role of robot-assisted partial nephrectomy (RPN) in complex tumors is not well understood.

Materials & Methods: We provide a large institutional study of demographics, tumor anatomic complexity, perioperative outcomes, pathology, complications, and follow-up data for RPN cases from 2007-2010.

Results: 174 patients (mean age 56.7 ± 12.7 yrs, 63.7% male, mean tumor size 2.95 ± 1.63 cm) with mean follow-up 17.5 ± 9.8 mos underwent RPN during the study period. Lesion complexity stratified by Nephrometry score was low, moderate, and high in 83 (47.7%), 81 (46.6%), and 10 (5.7%) patients. 95 (54.6%) patients had predominantly endophytic or entirely intraparenchymal tumors while 100 (57.5%) had tumors < 7 mm of the renal sinus or collecting system. Mean warm ischemia time was 27.8 ± 11.5 min, and 12.0% ($n = 21$ pts) were performed without hilar clamping. Mean operative time was 203.2 ± 69.0 min, and mean EBL was 118.6 ± 129.6 mL. Transfusions were required in 9 (5.2%) patients. Final pathology was pT1a (85.3%), pT1b (9.6%), pT2 (0.6%), pT3 (4.5%). Histology was malignant in 78.7% of tumors: 68.6% clear cell, 24.8% papillary, 5.9% chromophobe, and 0.7% were undefined. There were 4 (2.3%) positive margins on final pathology. Major (Clavien III-IV) and minor (Clavien I-II) complication rates were 6.8% and 22.7%. Mean change in postoperative GFR was 4.21 mL/min / 1.73 m². Local recurrence was noted in 2 patients (1.1%) and progression in 1 patient (0.6%).

Conclusions: Our RPN experience demonstrates minimal morbidity and acceptable oncologic results with excellent functional preservation in intermediate and high complexity renal tumors.

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Pathologic Down-staging with Gemcitabine and Cisplatin Neoadjuvant Chemotherapy for Muscle-Invasive Urothelial Carcinoma of the Bladder

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Introduction: Neoadjuvant chemotherapy (NC) with MVAC (methotrexate, vinblastine, doxorubicin, and cisplatin) improves survival in muscle invasive urothelial cancer (MI-UC) with patients who achieve pathologic complete response (PCR) following radical cystectomy (RC). Gemcitabine/Cisplatin (GC) NC is increasingly employed due to lower toxicity, however, its effectiveness as neoadjuvant therapy is controversial. We describe pathologic and clinical outcomes following NC and RC.

Methods: We retrospectively evaluated patients with MI-UC who received NC between 2003 and 2011 ($n = 37$). Those who were treated with neoadjuvant radiation therapy ($n = 15$) were excluded. We compared initial clinical stage at surgery to final pathological stage and assessed overall-median progression free-survival.

Results: Twenty-two patients who received NC were included. Seventeen patients (77.3%) were treated with GC, 3 (13.6%) with MVAC, and 2 (9.1%) with other regimens. The mean time from start of NC to RC was 108 days (SD 94). 10 (59%) patients treated with GC achieved PCR (pT0) from clinical stage T2 ($n = 5$), cT3 ($n = 2$) and cT4 ($n = 3$), and 3 (18%) were downstaged to pT1S from cT2. Two patients treated with MVAC were downstaged to pT1. Mean metastasis-free survival was 14 months (SD 0.8). At a mean post-operative follow-up of 24 months (range 2-71, SD 22), 15 (68%) of patients were disease free. 14 of these patients had received GC.

Conclusions: Neoadjuvant GC for MI-UC was associated with a 59% PCR rate at RC and was well tolerated. These data compare favorably with published data on GC and MVAC as NC, and warrant further study.

Positive Surgical Margins after Partial Nephrectomy for pT1 Localized Renal Cell Carcinoma: Local Recurrence and RCC-Specific Survival

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Introduction: In patients undergoing partial nephrectomy for localized Renal Cell Carcinoma (RCC), positive surgical margin (PSM) is thought to increase risk for local recurrence. Our objective is to describe the natural history of PSM following partial nephrectomy for RCC.

Methods: We identified 1044 patients who underwent partial nephrectomy at a single institution from 1988 to 2010. 45 patients had PSM (4.3%) confirmed by single pathologist review. Patients with familial kidney cancer, benign pathology, \geq pT2 disease, or follow up less than 6 months were excluded ($n = 22$). Clinical, pathological, and follow up data were analyzed for the remaining cohort ($n = 23$). RCC-specific survival and local recurrence were calculated.

Results: Mean age at diagnosis was 63 ± 11 years. 82% of cases (19/23) were open while 4 were laparoscopic. 6 patients (26%) had a solitary kidney. 52% (12/23) of patients had vascular clamping. Mean tumor size was 3.2 ± 1.3 cm, and 17/23 (74%) were pT1a. Surveillance imaging was performed every 6 months for two years, and yearly thereafter. Median follow up was 28 months. No patient had elective invasive management of their PSM. Only 1/23 (4.3%) patient developed local recurrence 1.8 years after surgery. This was treated with systemic therapy as the patient had synchronous distant metastases. Among all patients with PSM, 3-year RCC-specific survival was 90%.

Discussion: Local recurrence was rare among patients with PSM after partial nephrectomy for pT1 RCC at 28 months follow up. Post-operative surveillance is reasonable in patients with PSM after partial nephrectomy.

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Ureteral Stent Placement at the Time of Urinary Diversion Decreases Post-Operative Morbidity

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Introduction: The objective of this study is to determine the impact of stenting the ureteroenteric anastomosis 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, catheterizable reservoir) or non-continent (ileal conduit) urinary diversion with or without stent placement through the ureteroenteric anastomosis. 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 ureteroenteric anastomosis 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.

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Incidence of Repeat Dextranomer/Hyaluronic Acid Copolymer Injection among Pediatric Health Information System Hospitals

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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 9/30/2009 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: 24/43 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). 89% 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, 9 (0.4%) 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.

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Fetal Closure of Myelomeningocele Does Not Improve Lower Urinary Tract Function

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Introduction: Recent data comparing prenatal to postnatal closure of myelomeningocele showed decreased need for ventriculoperitoneal 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 urodynamic (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 6.3 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. Urodynamic 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.

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Renal Trauma in Children: Mechanism of Injury and Outcomes at a Rural Northern New England Level I Trauma

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Objective: Blunt abdominal trauma results in renal injury in 10% of pediatric cases. The published mechanism of injury is motor vehicle accidents(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, 26/40(65%) 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 urinary tract anomalies. 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.

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Comparing Minimally Invasive Surgery for Vesicoureteral Reflux: Dextranomer Hyaluronic Acid Injection versus Robotically-assisted Laparoscopic Ureteral Reimplantation

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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 group, 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 3 (11%), 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 Urethrography

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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 ultrasonography provides a quick and risk-free technique for diagnosis. This technique is able to characterize the presence and extent of urethral stricture.

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Repair of Complex Hypospadias Using Buccal Mucosa Grafts

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Introduction: We aim to describe indications and outcomes for repair of complex hypospadias and chordee in the pediatric population using buccal mucosa grafts.

Methods: We retrospectively identified consecutive patients undergoing complex hypospadias repair using buccal mucosa grafts between 1995 and 2010. Demographic and surgical outcomes data was collected on all patients.

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, just 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 fistula (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.

Patient Characteristics	n=21
Mean Age, yrs (range)	8.9 (1.33-17)
Indication for Surgery	
Repair Breakdown	8 (38%)
Fistula	4 (19%)
Diverticulum	4 (19%)
Stricture/Meatal Stenosis	13 (62%)
Chordee	4 (19%)
Multiple	10 (48%)
Mean Graft Length, cm	4.3 cm (1.5-11cm)
Mean Follow-up, mos	19