BLUE LIGHT CYSTOSCOPY FOR DIAGNOSIS OF UROTHELIAL BLADDER CANCER: RESULTS FROM A PROSPECTIVE REGISTRY.
Soroush T. Bazargani M.D., Swar H. Shah M.D., Hooman Djaladat M.D., M.S., Anne K. Schuckman M.D., Siamak Daneshmand M.D.: Los Angeles, California (Presentation to be made by Soroush T. Bazargani)

Objectives: Studies have shown blue light cystoscopy (BLC) using hexaminolevulinate (Cysview) can improve the detection of non-muscle invasive bladder cancer (NMIBC) compared to white light cystoscopy (WLC) alone. We report on our experience using results from the prospective Blue Light Cystoscopy with Cysview® Registry.

Methods: Under IRB approval, we prospectively enrolled consecutive patients undergoing transurethral resection of bladder lesions into the registry. Patients received Cysview® one hour prior to surgery. Clinicopathologic data were collected including intraoperative findings with white light (WL) and blue light (BL), lesion characteristics (flat versus papillary), location and size. Patients who refused catheter insertion, had pure upper tract or prostatic urethral lesions or were lost to follow up were excluded from the study.

Results: A total of 320 separate lesions were identified from 133 BLC procedures on 112 patients between April 2014 and May 2015. Mean age was 70 with 81% being male. There were 193 (60%) WL positive, 253 (79%) BL positive and 186 (58%) malignant lesions. Using final pathology as the reference standard, the sensitivity of WL, BL and the combination for any malignant lesion was 74%, 90%, 99% respectively. The addition of BL to standard WL cystoscopy increased our detection rate in papillary lesions from 89% to 99% (Table 1). This detection improvement was 9% for low-grade lesions, 16% for high-grade ones and 42% for CIS (from 57% to 99%) with the addition of BL. Within the WL negative cystoscopy, additional 46 lesions were detected only with addition of blue light (sensitivity 48%). Within the WL negative and BL positive group (94), 48 (51%) were benign (false positive). 41 (36%) of patients received BCG at least 6 weeks prior to BLC, with comparable sensitivity (90%) specificity (50%) for malignant lesions. There were no complications attributable to Cysview instillation. 22 (7%) patients eventually had a cystectomy, all of whom had WL and BL positive tumors.

Conclusions: Our experience with a prospective registry confirms the advantages of BLC using Cysview. BLC significantly increases detection rates of CIS and high grade lesions as well as low grade papillary lesions compared to WL cystoscopy alone. Prior BCG therapy appears to have no effect on BLC accuracy.

Table 1- Detection rate of different bladder lesions using white and blue light cystoscopy.

<table>
<thead>
<tr>
<th>Detection rate (sensitivity)</th>
<th>Any malignancy</th>
<th>Any T stage</th>
<th>Low Grade papillary</th>
<th>High Grade papillary</th>
<th>CIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>White light only</td>
<td>74%</td>
<td>89%</td>
<td>88%</td>
<td>84%</td>
<td>57%</td>
</tr>
<tr>
<td>Blue light only</td>
<td>90%</td>
<td>88%</td>
<td>73%</td>
<td>93%</td>
<td>92%</td>
</tr>
<tr>
<td>Either white or blue light</td>
<td>99%</td>
<td>99%</td>
<td>97%</td>
<td>100%</td>
<td>99%</td>
</tr>
</tbody>
</table>

Funding: Photocure Inc.
**VIRTUAL 3D BLADDER RECONSTRUCTION FROM WHITE LIGHT CYSTOSCOPY**
Dimitar V. Zlatev M.D., Kristen L. Lurie* M.S., Roland Angst* Ph.D.,
Sydney Li*, Jiyang Gao*, Kathleen E. Mach* Ph.D.,
Audrey K. Ellerbee* Ph.D., and Joseph C. Liao M.D., Stanford, CA
(Presentation to be made by Dr. Dimitar Zlatev)

**Introduction:** Bladder cancer has a high recurrence rate that requires lifelong surveillance to detect mucosal lesions. Examination with white light cystoscopy (WLC), the standard of care, is inherently subjective and data storage limited to clinical notes, diagrams, and still images. A visual history of the bladder wall can enhance clinical and surgical management. To address this clinical need, we developed a tool to transform in vivo WLC videos into virtual 3-dimensional (3D) bladder models.

**Methods:** Patients scheduled to undergo transurethral resection of suspected bladder tumor were recruited under an IRB-approved protocol. A standard rigid cystoscope was used to systematically image the bladder. WLC videos were recorded at a resolution of 1280 x 720 pixels and 30 Hz frame rate, followed by immediate camera calibration to control for cystoscope-based image distortions. Video data were fed into an automated structure-from-motion algorithm that generated a 3D point cloud followed by 3D mesh to approximate the bladder surface. The highest quality cystoscopic images were projected onto the approximated bladder surface to generate a virtual 3D bladder reconstruction.

**Results:** WLC videos were obtained from 36 patients. Regions imaged included normal mucosa, inflammation, and low- and high-grade bladder cancer. Approximately 25% of the frames from a video were required for an adequate reconstruction. Optimal reconstruction was achieved from WLC images depicting well-focused vasculature, when the bladder was maintained at constant volume with minimal debris, and when regions of the bladder wall were imaged multiple times. A representative 3D reconstruction of the bladder is shown in the Figure.

**Conclusion:** We demonstrated 3D bladder reconstructions from intraoperative WLC videos in patients with suspected bladder cancer. A significant innovation of this work is the ability to perform the reconstruction using video from a clinical procedure collected with standard equipment, thereby facilitating potential clinical translation. Envisioned uses of the reconstructions include the creation of longitudinal visual medical records to enhance perioperative management and long-term surveillance of patients with bladder cancer, and the development of an objective cystoscopy evaluation tool for resident physician education.

**Figure:** Virtual 3D bladder reconstruction
PERIOPERATIVE OUTCOMES FOLLOWING NEOADJUVANT CHEMOTHERAPY AND RADICAL CYSTECTOMY: IS THERE ROOM FOR IMPROVEMENT?
Neil Pugashetti, Thenappan Chandrasekar, Robert Lurvey, Blythe Durbin-Johnson, Marc A. Dall’Era, Christopher P. Evans, Ralph W. deVere White, Stanley A. Yap: Sacramento, CA
(Presentation to be made by Neil Pugashetti)

Objectives: To identify the impact of neoadjuvant chemotherapy (NAC) prior to open radical cystectomy (RC) on perioperative outcomes using an institutional database. We evaluate the impact of NAC on perioperative outcome with the goal of identifying actionable areas for improvement.

Materials and Methods: Impact of NAC on perioperative outcomes after RC for muscle-invasive bladder cancer from 2003 to 2014 was assessed using an institutional database. Individual outcomes (venous thromboembolism, surgical site infection, cardiac event) and a composite score using Clavien-Dindo classification were identified. Univariable and multivariable logistic regression models were used to identify predictors of perioperative complication and 30-day readmission rates. Propensity scores were included as a covariate in the model of the effect of NAC on each outcome.

Results: 241 patients were included; 175 received RC alone (72.6%) and 66 received NAC and RC (27.4%). 30-day readmission rate for the NAC cohort was 30.5% compared to 17.2% for RC alone. Multivariable logistic regression analysis identified NAC as an independent predictor of 30-day readmission (OR 3.47, p=0.01). Adjusting for propensity score, patients receiving NAC had higher odds of 30-day readmission (OR 2.14, p=0.06). Of NAC patients readmitted within 30 days, 72.2% were readmitted with infections. All other outcomes were not significantly associated with NAC.

Conclusion: While NAC administration did not significantly increase perioperative complications, patients receiving NAC had an increased rate of 30-day readmission, with infection being the most common etiology. This increased readmission rate has not been previously identified in this patient population and is an important focus for quality improvement.

Source of Funding: None
ROLE OF NEOADJUVANT CHEMOTHERAPY IN PATIENTS WITH cT4aN0 BLADDER CANCER

Anirban P. Mitra, M.D., Ph.D., Hooman Djaladat, M.D., M.S., Anne K. Schuckman, M.D., Siamak Daneshmand, M.D.: Los Angeles, CA. (Presentation to be made by Dr. Siamak Daneshmand)

Objectives: Neoadjuvant chemotherapy (NAC) provides a survival advantage for patients (pts) with muscle-invasive bladder cancer, especially for those with clinical T3 or nodal disease. However, its value in pts with cT4aN0 disease is less clear. This study interrogated a large institutional cohort to assess the role of NAC in pts with cT4aN0 urothelial carcinoma, with specific focus on oncologic downstaging and prostatic urethral involvement at cystectomy.

Materials and Methods: The population of bladder cancer pts treated at our institution between 1974 and 2014 was reviewed to identify those with cT4aN0 disease who underwent radical cystectomy with curative intent. Pts with urethral or upper tract primaries, distant metastasis at diagnosis, and those who received neoadjuvant radiotherapy were excluded. Categorical associations were computed using $\chi^2$ tests.

Results: 90 male pts met the study criteria, of which 22 (24%) received NAC. In the latter group, pts underwent a median of 4 NAC cycles (range, 1-6); all pts received a platinum-containing regimen. Median age was 68 years. No differences in age, race, body mass index, and incidence of hydronephrosis or lymphovascular invasion were noted between pts who did versus did not receive NAC (all, p>0.30). 14% of pts who received NAC also received intravesical therapy, compared with 38% of pts who did not receive NAC (p=0.032). Pts receiving NAC were noted to experience higher rates of tumor downstaging (64% versus 35%; p=0.019) and lack of nodal upstaging (91% versus 68%; p=0.032). However, no difference in rates of tumor involvement of the urethral margin during intraoperative frozen sectioning was noted between the two groups (p=0.51). In addition, difference in rates of prostatic urethral involvement on final pathology between pts who received NAC versus those who immediately underwent cystectomy did not reach statistical significance (23% versus 44%, p=0.074).

Conclusions: Administration of NAC in pts with cT4aN0 bladder cancer lowers odds of nodal metastasis and can result in tumor downstaging. While this study did not note statistically significant reduction in rate of prostatic urethral involvement by bladder cancer following NAC administration, further studies are needed to exclude selection bias.

Source of Funding: None
**NEOADJUVANT CHEMOTHERAPY FOR MUSCLE-INVASIVE BLADDER CANCER: WHY DO ALL PATIENTS NOT RECEIVE CYSTECTOMY?**
Thenappan Chandrasekar, Neil Pugashetti, Robert Lurvey, Marc A. Dall'Era, Christopher P. Evans, Ralph W. deVere White, Stanley A. Yap: Sacramento, CA (Presentation to be made by Dr. Chandrasekar)

**Introduction and Objectives:** Neadjuvant chemotherapy (NAC) prior to radical cystectomy (RC) for muscle-invasive bladder cancer (MIBC) is considered a standard of care and has demonstrated increasing utilization. Not all patients, however, make it to RC. Through analysis of our institutional database of patients initiating NAC, we aim to clarify the reasons why this subset did not receive definitive surgical resection in order to better understand and select those most appropriate for NAC.

**Methods:** We performed a retrospective review of all patients diagnosed with MIBC referred for NAC from 2002-2014. We identified the subsets of patients who did and did not receive RC after initiating NAC and report rates of the primary reason for not undergoing RC. Univariable and multivariable logistic regression analysis was performed to identify predictors of not undergoing RC. Other analyzed variables included patient demographics, clinical and tumor staging, and individual patient comorbidities.

**Results:** Of 97 patients referred for NAC prior to RC for MIBC, 66 received NAC and RC (68%) and 31 received NAC only (32%). Of those who received NAC only, 21 (67.7%) were no longer surgical candidates after NAC, 9 due to progression of their disease (metastatic or nodal involvement), 9 due to medical comorbidities, and 3 due to unresectable advanced disease. Another 8 patients (25.8%) electively decided against surgery after completing NAC and 2 (6.5%) did not complete their full course of NAC and decided against further therapy. Mean follow-up for the cohort was 26.3 months. Overall survival at 2 years was 74%. Two-year survival for those who did and did not undergo RC was 79% and 62%, respectively. Multivariable logistic regression analysis identified T3/T4 stage (Odds ratio (OR) 4.84, CI 1.40 – 16.75), age >80 years (OR 6.76, 1.10 – 41.92), and prior myocardial infarction (MI) (OR 6.47, 1.64 – 25.59) as independent predictors of failing to receive RC. Patients with clinical evidence of T3/T4 disease underwent RC 47% of the time, compared to 72% among those with suspected T2 disease (p<0.05). Patients >80 years old underwent RC in 29% of cases, compared to 71% among those <80 years old (p<0.05). Patients with a prior MI underwent RC in 33% of cases, compared to 73% among those without prior MI (p<0.05).

**Conclusions:** A significant subset of patients receiving NAC do not undergo RC, primarily due to disease progression or worsening of medical comorbidities rendering them poor surgical candidates. Improved selection and counseling of those potentially eligible for NAC may help limit toxicities related to this treatment while maximizing oncologic outcome.

**Source of Funding:** None
ADJUVANT CHEMOTHERAPY FOR BLADDER CANCER: A DETAILED CHARACTERIZATION OF FACTORS PRECLUDING UTILIZATION
Brian Hu MD, Ian Roy* MD, Hooman Djaladat MD, Anne Schuckman MD, Gus Miranda*, Siamak Daneshmand MD: Los Angeles, CA
Presentation to be made by Brian Hu

Introduction: Adjuvant chemotherapy (AChT) can improve survival in select patients after radical cystectomy (RC), though it remains underutilized. We detail the factors that preclude candidate patients from receiving adjuvant chemotherapy.

Materials and Methods: We retrospectively analyzed the records of patients who underwent radical cystectomy for urothelial carcinoma of the bladder at our institution (2003-2013) using our IRB approved bladder cancer database. Patients with ≥pT3, pN+, and/or positive surgical margins were considered candidates for AChT. Patients who received neoadjuvant chemotherapy were excluded. A systematic review of medical records detailed the cited reasons for patients not undergoing AChT. Cases with low concern based upon pathologic staging were classified as “surgeon discretion.”

Results: A total of 1379 patients underwent RC during this period and 249 (18%) received neoadjuvant chemotherapy. There were 528 (38%) patients who were deemed eligible for AChT. Of these patients, 296 (56%) did not receive AChT, 177 (34%) received AChT, and 55 (10%) had insufficient records for determination of adjuvant treatments. Of the 296 eligible patients who did not receive AChT, there was no documented reason precluding AChT in 83 (28%). In 56 patients (19%) there was more than one reason for not undergoing AChT. The breakdown of cited factors precluding AChT are shown in the figure. The most commonly documented reasons were surgeon discretion based upon pathology, medical co-morbidities, advanced age, poor performance status, and patient preference. The most common medical co-morbidities precluding AChT were renal insufficiency and cardiovascular disease.

Conclusion: Over half of eligible patients did not undergo AChT after RC with a wide range of cited reasons as justification. These variables should be considered when planning the optimal treatment regimen (e.g. neoadjuvant chemotherapy) for patients with advanced bladder cancer.
IMPACT OF TRAINEE INVOLVEMENT ON POST-OPERATIVE OUTCOMES AFTER RADICAL CYSTECTOMY: AN ANALYSIS UTILIZING THE NATIONAL SURGICAL QUALITY IMPROVEMENT PROGRAM

Seth P. Olcese M.D., Raffaella DeRosa M.D, Sean Q. Kern M.D., Alexander J. Ernest M.D., Michael Lustik M.S., Leah P. McMann, M.D., Joseph R. Sterbis, M.D: Honolulu, HI

(Presentation to be made by Dr. Seth P. Olcese)

Objectives: Short-term perioperative outcomes of patients undergoing cystectomy for bladder cancer have been extensively reviewed, however, the influence of trainee involvement on these outcomes has not been examined. We sought to determine the impact of trainee involvement during cystectomy with incontinent diversion (IC) or continent diversion (CD) with regard to post-operative outcomes utilizing the National Surgical Quality Improvement Program.

Methods: A retrospective multi-institutional study was performed using the NSQIP database to compare pre-operative risk factors, 30-day post-operative complications, prolonged length of stay (pLOS), and 30-day readmission rates between radical cystectomies performed with or without trainee involvement.

Results: A total of 3,454 patients undergoing radical cystectomy from 2006-2013 were retrospectively identified, with data regarding trainee involvement available for 1140 patients. Risk adjusted analysis demonstrated greater serious morbidity when a trainee was involved (p=0.007), despite a greater risk of pLOS when no trainee was involved (p=0.036). There was no difference in mortality, overall morbidity, Clavian 4 complications, or 30-day readmission. Subgroup analysis revealed greater overall morbidity for the PGY 6-9 subgroup compared to the PGY 3-5 subgroup (p=0.044). Mean operative times were longer for cases involving trainees compared to attendings alone. Comparing differences in post-operative complications with respect to trainee involvement between IC and CD demonstrated no differences.

Conclusions: Trainee involvement is associated with longer operative times. Overall morbidity is worse for cases involving more senior level trainees. We suspect that the increase in morbidity likely reflects a combination of oncologic demographics and greater surgical responsibility given to upper level residents which is not quantified in the NSQIP data.

Source of Funding: None
Introduction and Objectives: Hernia is a common complication following radical cystectomy (RC) and urinary diversion (UD). We investigated the clinical and radiological evidence and risk factors for parastomal (PH) and incisional hernias (IH) in a large cystectomy cohort.

Materials and Methods: Using an IRB-approved prospective database, we reviewed 1,101 patients who underwent open RC from 2003-2013. 670 patients had complete follow-up (median 18 months). 92/670 (14%) underwent an ileal conduit diversion (all Turnbull stomas, median follow-up 34 months). Patients were followed meticulously with CTs postoperatively, per protocol (every 4 months for 2 years, every 6 months for the third year, and annually afterward). We defined PH as any significant fascial defect (>1cm) or protrusion of abdominal contents through the abdominal wall around the stoma, and IH as through the incisional site. Imaging was reviewed with an expert radiologist. Multivariate logistic regression (MVR) was used to identify independent predictors.

Results: PH was identified in 21/92 patients (23%, mean diagnosis age 76.5). IH developed in 125/670 patients (18.7%, mean diagnosis age 68.6). 5 had both. Males comprised 11 (53%) of PH and 111 (88.8%) of IH. Mean BMI was 27.5 and 27.3 in PH and IH, respectively. Mean PH and IH defect sizes were 3.8 cm and 2.4 cm, respectively. 18 (85%) patients with PH were clinically and radiologically evident, 5 were symptomatic, and 2 underwent repair. Of IH patients, 51 (41%) were clinically and radiologically evident, 34 symptomatic, and 48 underwent repair. MVR showed significant associations between IH and age, gender (male), UD (orthotopic > heterotopic), and BMI. PH had no significant association.

Conclusions: Hernia after RC and UD is common, with IH displaying independent risk factors (age, gender, BMI, and UD), while PH does not. Standardized diagnosis and surveillance criteria are necessary. Multi-institutional prospective studies may better identify high-risk patients.

Source of Funding: None.
Introduction: To evaluate the prevalence of postoperative weight loss (WL) following radical cystectomy (RC) and its association with mortality. Nutritional status is recognized as a potential modifiable risk factor for postoperative complications following RC for bladder cancer. The American Society for Parenteral and Enteral Nutrition and the Academy of Nutrition and Dietetics recognize WL as a diagnostic measure for malnutrition.

Methods: Seventy-one patients underwent RC for bladder cancer between July 2008 and July 2013 for whom peri-operative weights were documented regularly. The primary predictor variable was substantial WL defined as ≥ 10% WL by postoperative month 1. Survival was estimated using Kaplan-Meier analysis; logistic regression was used for multivariate analyses.

Results: Mean postoperative WL at 2 weeks was 9.5 lbs (-5.2 %), 14.3 lbs (-7.8%) at 1 month, 16.9 lbs (-9.0%) at 2 months, 12.6 lbs (-6.9%) at 3 months, and 8.9 lbs (-4.6%) at 4 months. Forty-two percent of patients met criteria for substantial WL. At 19-month median follow-up, the overall mortality rate was 31% (22/71), which rose to 64% (14/22) in patients who experienced substantial WL (p <0.05). Substantial WL trended towards significance on multivariate analysis (p = 0.07). There was a significant decrease in 5-year survival in patients with ≥ 10% WL (log rank p < 0.05).

Conclusions: Patients experience WL following RC, which may be indicative of malnutrition. Substantial WL may predict for poor overall survival. Prospective studies are needed to determine whether nutritional optimization can prevent significant WL and improve outcomes.
IS PATHOLOGIC DOWNSTAGING AT RADICAL CYSTECTOMY FOR CLINICALLY ORGAN CONFINED BLADDER CANCER ASSOCIATED WITH A BETTER OUTCOME?
Daniel Furlong B.A.*, Soroush T Bazargani M.D.*, Jie Cai M.S.*, Gus Miranda B.S.*, Siamak Daneshmand, M.D., Hooman Djaladat, M.D., M.S.: Los Angeles, CA
(Presentation to be made by Dr. Hooman Djaladat)

Purpose: There is limited data on the outcome of patients whose bladder cancer (BC) has pathologically downstaged at the time of radical cystectomy (RC) from initial TURBT (clinical staging). This would have important implications in the management and counseling of patients who undergo RC for clinically organ confined BC. The aim of this study is to see if these patients’ oncologic outcomes are different when their pathology is downstaged at cystectomy time.

Materials and Methods: Using our IRB approved BC database, we reviewed 1133 clinically organ confined (≤cT2N0) urothelial BC patients who underwent radical cystectomy between 1971-2010. Comparing primary clinical with pathological stage, the cohort sizes were broken up into downstaged, persistent-staged and upstaged (Table 1). Through stepwise selection, multivariable Cox proportional hazard models were used to evaluate whether the pathologic downstaging is an independent prognostic factors for recurrence free survival (RFS) and overall survival (OS). Kaplan-Meier plots were used to estimate the probabilities of RFS and OS since RC. All p-values reported are 2-sided and p<0.05 is considered statistically significant.

Results: 491 total patients were pathologically downstaged at the time of RC. Their median age was 65 years, with 81% male. Univariate analysis showed statistically significant difference in RFS (p=0.052) and OS (p<0.001) in patients who were pathologically downstaged compared to persistent-staged or upstaged (Figure 1 and 2). Multivariable cox regression modeling showed no significant difference in RFS for downstaged BC, as compared to persistent-stage BC after controlling for clinical stage, lymphovascular invasion, presence of CIS, multifocal disease, sex, age, hydronephrosis, neoadjuvant and adjuvant chemotherapy (p=0.41). However, pathological downstaging was significantly associated with improved OS after controlled for aforementioned factors (p=0.036, HR=0.82, 95% CI: (0.68, 0.99)).

Conclusions: Pathologic downstaging in clinical organ confined BC who underwent radical cystectomy is independently associated with improved OS, but not RFS.

<table>
<thead>
<tr>
<th>Clinical Stage (Time of TURBT)</th>
<th>pT2</th>
<th>pT1</th>
<th>pTcis, pTa</th>
<th>pT0</th>
</tr>
</thead>
<tbody>
<tr>
<td>cT2</td>
<td>245</td>
<td>111</td>
<td>96</td>
<td>85</td>
</tr>
<tr>
<td>cT1</td>
<td>98</td>
<td>189</td>
<td>132</td>
<td>44</td>
</tr>
<tr>
<td>cTis, cTa</td>
<td>13</td>
<td>29</td>
<td>75</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 1. Oncologic outcomes in patients with clinical organ confined BC who received radical cystectomy.
Introduction and Objectives: Urinary diversion surgery (conduit or continent catheterizable pouch) may be used to treat complications of radiation therapy (XRT) for prostate cancer (CaP). In this group of men, there is limited data on patient characteristics, morbidity, and outcomes following urinary diversion. We hypothesized that specific patient characteristics will predict complications after urinary diversion in patients treated for prostate cancer.

Methods: Patients who underwent urinary diversion were identified by surgeons at participating institutions in the Trauma and Urologic Research Network of Surgeons (TURNS). TURNS consists of 12 academic referral centers across the United States with fellowship trained reconstructive urologists. A total of 52 patients undergoing urinary diversion surgery (conduit or continent catheterizable pouch) to treat complications following XRT for CaP were identified at seven of the twelve centers in TURNS from 2009-2014. Data collected included: demographics, Charlson Comorbidity Index (CCI), types of CaP treatments, previous surgeries, Clavian-Dindo grading of complications, re-admission rates, and long-term surgical complications. The data was summarized using descriptive and inferential statistics.

Results: The mean age of our cohort was 71.4 years (range: 51-89 yrs). The median duration from XRT treatment to diversion and mean number of operations for XRT complications prior to urinary diversion was 8 years and 4.1 operations. Forty-three (83%) patients had dual therapy consisting of prostatectomy with adjuvant XRT or dual forms of varying radiation therapy. Nine (17%) patients underwent a continent catheterizable pouch and forty-three (83%) patients underwent a conduit. Grade 3a or greater Clavian-Dindo complications within three months following urinary diversion occurred in 15 (29%), including 3b in six (reoperation), 4a (single organ dysfunction requiring ICU) in five, 4b (multi-organ dysfunction requiring ICU) in one, and 5 (death) in three. Readmission within 6 weeks occurred in 18 (38%) patients. Long-term complications requiring surgical intervention (parastomal hernia, stomal stenosis, ureteral obstruction, fistula) occurred in 16 (33%) patients. Median follow up time was 10 months. None of our covariates, including type of diversion, age, BMI, dual therapy, type of radiation, and CCI predicted severity of complications, readmission, or late onset complications.

Conclusions: Urinary diversion in CaP patients who had prior radiation has a considerable complication rate. The population is elderly with very high rate of comorbidities. Complications of urinary diversion are difficult to predict based on preoperative patient characteristics.

Source of Funding: None
MORBIDITY OF POST-CHEMOTHERAPY RETROPERITONEAL LYMPH NODE DISSECTION FOR TESTIS CANCER IN PRIVATELY INSURED PATIENTS

(Presentation to be made by Dr. Rajanahally)

Objectives: Post-chemotherapy retroperitoneal lymph node dissection (PC-RPLND) is standard care for residual radiographic masses ≥1cm (non-seminoma) and positron emission tomography (PET) avid masses ≥3cm (previously treated seminoma), but is more morbid than primary RPLND. We characterize the increased morbidity of PC-RPLND in terms of concomitant adjunctive procedures, using Marketcan®, a contemporary national database of insured patients.

Methods: Current procedure terminology (CPT) and international classification of diseases 9th edition (ICD-9) codes identified men with testis cancer undergoing P-RPLND and PC-RPLND in Marketcan® (2007-2012). Multivariable logistic regression assessed factors associated with receipt of an adjunctive procedure (i.e. nephrectomy, major vascular reconstruction) during index hospitalization, prolonged hospitalization (>9 days) and 90-day readmission.

Results: 559 patients had claims for RPLND (205 PC-RPLND). Among the men (median age 31), 19% of the PC-RPLND group underwent an adjunctive procedure compared to 1.4% among P-RPLND (p <0.001). Among PC-RPLND, the nephrectomy rate was 10% and the vascular reconstruction rate was 8%. On multivariable analysis, compared to P-RPLND, PC-RPLND was associated with a receipt of adjunctive procedure (OR 41.9, 95% CI 11.7, 150) and prolonged hospitalization (OR 2.54, 95% CI 1.18, 5.51). On unadjusted analysis (but not multivariable) PC-RPLND was associated with discharge to other than home (multivariable OR 1.46, 95% CI 0.76, 2.82). PC-RPLND was not associated with 90-day readmission (OR 1.34, 95% CI 0.80, 2.28).

Conclusions: PC-RPLND is associated with increased adjunctive procedures and longer hospitalization. This analysis characterizes morbidity rates useful for establishing quality benchmarks and informing pre-operative discussions. Efforts are needed to predict PC-RPLND complexity and describe trends in hospital variation.
OUTCOMES OF URETHROPLASTY IN PATIENTS WITH URETHRAL STRICTURE RESULTING FROM ARTIFICIAL URINARY SPHINCTER EROSION

Jason C. Chandrapal M.D. M.S., Joshua A. Broghammer, M.D., Sean P. Elliot, M.D., M.S., Nejd F. Alsikafi, M.D., Thomas G. Smith, M.D., Bryan B. Voelzke, M.D., M.S., Jeremy B. Myers M.D.: For the Trauma and Urologic Reconstruction Network of Surgeons (TURNS), Salt Lake City, UT

(Presentation to be made by Dr. Jason Chandrapal)

Objectives: During artificial urinary sphincter (AUS) erosion, disruption of the adjacent urethra and surrounding tissue may lead to urethral stricture. We hypothesized that urethroplasty followed by replacement of AUS is a viable treatment strategy.

Materials and Methods: We identified patients using the Trauma and Urologic Reconstruction Network of Surgeons (TURNS) database from 2009-2015. TURNS consists of 12 reconstructive urology tertiary referral centers within the Unites States. Inclusion criteria were patients with a history of urethral stricture that arose from AUS erosion. Information reviewed included: patient demographics, characteristics of initial AUS placement, stricture and, urethroplasty specifics, AUS replacement, and subsequent follow-up. Data was analyzed using descriptive statistics.

Results: Fifteen patients with a history of AUS erosion and subsequent urethral stricture formation were identified. Mean age and BMI were 73 years old (SD±7, range 62-87) and 28kg/m² (SD±5, range 19.2-36.3). Median Charlson Comorbidity Index was 6 (SD±2, range 3-8). All of the patients originally had incontinence from radical prostatectomy for prostate cancer. Five patients (33%) had undergone adjuvant external beam radiation for local recurrence. Median number of previous penile/urethral operations was 3 (range 0-8). These operations included placement / removals of AUS, placement inflatable penile prosthesis, male urethral sling, urethral dilations, and direct visual internal urethrotomy prior to urethroplasty. Median duration of initial AUS was 65.5 months (SD±44, range 12-144) prior to removal for erosion. Mean stricture length was 1.6 cm (SD±0.6, range 0.5-2.5) and found within the bulbar urethra in all cases. Stricture location was subcategorized within the bulbar urethra as proximal (n=5, 33%), middle (n=7, 47%), and distal (n=3, 20%). Excision and primary anastomosis (EPA, n=14, 93%) and augmented anastomotic dorsal buccal onlay (n=1, 7%) urethroplasty were performed. Patients with no anastomotic leakage had their Foley catheter removed at a mean of 21 days (SD±5) after their surgery. Twelve patients (80%) underwent a voiding cystourethrogram (VCUG) to evaluate the integrity of the repair, after urethroplasty, in which 2 patients (17%) were found to have extravasation. Median follow up was 6.5 months (SD±10, range 0.25-28) with 12 men having post-op cystoscopy at a median of 4 months (SD± 5.6, range 2-20). Only two patients (17%) suffered complications from urethroplasty. One patient developed a wound infection and the other a urethral fistula, which resolved with conservative management. Nine men (60%) had AUS replacement, which occurred an average of 6 months (SD±1.4, range 3-7) after urethroplasty, with either transcorporal placement (n=5) or standard placement (n=4). In men with AUS replacement after urethroplasty, median follow up was 7 months (SD± 7.5, range 1-24). Complications include 5 patients that had a mean leakage amount of 1 pad/day. Two patients had erosions from the AUS reimplantation. Both underwent explantation with subsequent AUS implantation in one and repeat urethroplasty in the other. Two patients had pump migration that required surgical revision.

Conclusions: Erosion of an AUS can cause urethral stricture formation. In these patients, urethroplasty provides excellent outcomes with minimal complications. Appropriate and motivated patients can have an AUS replaced successfully after urethroplasty.

Source of Funding: This project was supported in part by a generous reconstructive urology educational grant from American Medical Systems, Inc., Minnetonka, MN.
Objectives: No study to date has specifically assessed urinary urge symptoms in patients with urethral stricture disease before and after anterior urethral reconstruction. The aim of the study is to compare urge symptoms pre- and post-urethroplasty.

Materials and Methods: All patients who underwent anterior urethroplasty between 8/30/2010-10/10/2014 were retrospectively reviewed from seven centers in the Trauma and Urologic Reconstruction Network of Surgeons. The data was collected from a multi-center, prospectively maintained database. Using a validated questionnaire (Core Lower Urinary Tract Symptom Score), patients were asked if they experienced “a sudden strong desire to urinate, which is difficult to postpone”. Responses were graded 0-3. Patients were assessed pre- and at least 2 months post-operatively (mean 4.7 months post-op). Patients taking pre-op anticholinergic medications were excluded (n=38). The impact of surgery type (anastomotic, buccal, augmented anastomotic, nontransecting, perineal urethrostomy), stricture length (<2, 2-4, >4 cm), stricture location (penile, peno-bulbar, bulbar), and stricture caliber (<5Fr, 5-10Fr, >10Fr) in regards to urgency were assessed in an a priori fashion.

Results: 214 patients with a mean age 43.8 years underwent an anterior urethroplasty. An improvement in postoperative urge was noted for all three stricture locations (bulbar, penile, peno-bulbar). Among patients with preoperative urinary urge, there was an improvement following surgery when stratified by surgery type (anastomotic, augmented buccal, buccal graft, nontransecting, and perineal urethrostomy), stricture location (bulbar, penile, peno-bulbar), stricture length (<2, 2-4, >4 cm), and stricture caliber (<5 Fr & 5-10 Fr). Only pre-operative urethral caliber >10Fr was noted to result in worsened urge following surgery (∆ +0.5); however, there were only ten patients with a preoperative stricture >10Fr. Statistically significant improvement in urge (p <0.05) was noted for anastomotic repairs, bulbar strictures, stricture length < 2 cm, stricture length between 2-4 cm, caliber <5Fr, and caliber between 5-10Fr.

Conclusions: There appears to be subjective resolution of urgency symptoms following urethroplasty, with perhaps short bulbar strictures for anastomotic repair faring best. There might be an association between persistent urgency and less constricting urethral strictures. Repeat analysis with a higher number of patients, especially among the less common variables, should be performed to validate our findings.

Source of Funding: None
PERIOPERATIVE IMPACT OF ANDROGEN DEPRIVATION THERAPY ON ARTIFICIAL URINARY SPHINCTER PALCEMENT

George C. Bailey M.D., Brian J. Linder M.D., Marcelino Rivera MD, Daniel S. Elliott M.D.
(Presentation to be made by Dr. George Bailey)

Objective: Artificial urinary sphincter (AUS) placement remains the gold standard for men with stress urinary incontinence after prostatectomy. While, androgen deprivation therapy (ADT) is known to cause genital atrophy, it is unclear if ADT has any influence on immediate postoperative outcomes in men undergoing AUS placement.

Materials and Methods: We retrospectively identified men who underwent AUS placement between 1998 and 2014. Early postoperative AUS outcomes in men with ADT use (GnRH agonist, antiandrogen, or orchiectomy) and ADT naïve men were compared. We also evaluated outcomes based on the timing of ADT exposure including: concomitant ADT with AUS placement, >6 months of ADT use within 2 years before AUS placement or ADT use after AUS placement. Outcomes measured included rates of device explant for infection or urethral erosion, mechanical failure, and urethral atrophy.

Results: From 1998 to 2014 there were 1,263 AUS procedures performed at the Mayo Clinic. Of these procedures, 735 were primary implants and the focus of our study group. 75 primary patients had quantifiable ADT exposure while 660 primary implants were ADT naïve. With regard to ADT exposure, 48 men were on ADT at the time of AUS placement and 50 had >6 months of ADT use within 2 years of AUS placement. Mean age at AUS placement in ADT and ADT naïve patients was 70 and 73 years, respectively (p=0.02). Patients with ADT exposure were also more likely to have had prior radiation therapy (79% vs 30%; p<0.01) and coronary artery disease (35% vs 24%; p=0.05). There were no differences in BMI, hypertension, peripheral vascular disease, or congestive heart failure between the two groups. No significant differences in device explantation rates for infection or erosion, urethral atrophy or mechanical failure were identified. Multivariable analysis of device survival controlling for ADT use, patient age, external beam radiation therapy, and CAD failed to show any variable independently associated with AUS explantations or revisions. Similarly, analysis of ADT use after initial AUS placement as a time dependent covariate failed to show any effect on device replacement, erosion, or urethral atrophy.

Conclusions: Although ADT causes atrophy of genital tissue, this study did not show any evidence supporting differences in adverse operative outcomes between men with AUS placement with ADT use and ADT naïve men. This remained true even when controlling for age, external beam radiation therapy, and cardiovascular disease. Understanding the influence of ADT exposure on AUS outcomes may aid in patient counseling.

Sources of Funding: None
Objectives: Although several studies have reported about the improvement of urinary incontinence after bariatric surgery, scarce reports have focused on the detailed change of voiding characteristics.

Materials and Methods: From August 2012 to December 2012, a total of 67 women agreed to check the voiding dysfunction during their preoperative evaluation and post-operative 1 year using International Prostate Symptom Score (IPSS), Overactive Bladder Symptom Score (OABSS), Sandvick questionnaire for urinary incontinence, and Patient Perception of Bladder Score (PPBS). For statistically analysis, paired t test and Fisher's exact test were evaluated for the change of voiding status.

Results: Among the total of 210 women, a total of 67 women completed the full version of urologic questionnaire. The mean age was 38.66±9.43 and mean BMI was 37.48±5.94. After bariatric surgery of Roux-en-Y Gastric Bypass, BMI showed the significant change after 1 year follow up, which was revealed to be 9.51±3.58. For specific characteristic change of voiding status, the IPSS, OABSS, and PPBS showed the significant improvement as 2.41±3.66, 1.56± 2.30, and 0.54± 0.93, respectively. For stress urinary incontinence (SUI) using Sandvick questionnaire, preoperative evaluation showed the prevalence of SUI to be 40.74%, which showed the improvement of SUI as 18.51%.

Conclusions: At 1 year post-operative follow up after bariatric surgery, there were significant improvement in voiding status which were characterized by several standard urologic voiding questionnaire.

Source of Funding: None
TEN-YEAR OUTCOMES OF CYSTOCELE REPAIR USING CADAVERIC FASCIA LATA IN A TERTIARY REFERRAL SETTING
Seattle, WA (Presented by Kevin Gioia, MD)

OBJECTIVES: After the release of the FDA notification on transvaginal mesh, pelvic floor surgeons their patients are considering all treatment options. One method of cystocele repair includes augmentation with cadaveric fascia lata. Utilization of a biograft is theorized to provide reinforcement of pelvic floor support with a non-reactive graft. However, there is a paucity of data describing the long-term outcomes of cadaveric tissue repair. Here we present our 10-year follow-up at a tertiary referral center.

METHODS: We performed a retrospective review of our database between 2000 and 2015 to identify patients that underwent cystocele repair with cadaveric fascia lata with or without concurrent mid-urethral sling (MUS) surgery and had completed relevant follow-up questionnaires assessing patient-reported outcomes at 1 and/or 10 years. The primary outcome was pelvic floor symptom bother measured by the Pelvic Organ Prolapse Distress Inventory 6 (POPDI-6) subscale of the Pelvic Floor Distress Inventory Short Form (PFDI-20). Scores for the POPDI-6 range from 0 to 100, with a higher score indicating a greater symptom burden. A score of less than 13 was considered to be a low degree of burden. In addition, patient-reported satisfaction and improvement were assessed using a graded Likert scale (0% to 100% and -100% to 100%, respectively). Patients were considered to be satisfied or improved if they reported scores greater than or equal to 70%. Follow-up data were censored at the time of any subsequent procedure.

RESULTS: Of the 85 procedures included in this study, 39 were with cadaveric fascia lata only and 46 were with concurrent MUS. Mean patient age was similar among the two groups [69 (SD 9) and 62 (SD 12), respectively]. Mean POPDI-6 scores were similar at 1 and 10 years following both cystocele repair alone [19.1 (range 0-60), n=14; and 14.8 (0-70), n=25, respectively] and cystocele repair with concurrent MUS [15.9 (0-71), n=26; and 11.8 (0-63), n=19, respectively]. In addition, at least half of patients reported low symptom burden (POPDI-6 score <13) at 1 and 10 years following both cystocele repair alone [50% (7/14) and 68% (17/25), respectively] and with concurrent MUS [54% (14/26) and 68% (13/19), respectively]. Following cystocele repair alone, satisfaction rates at 1 and 10 years were similar, at 64% (7/11) and 60% (15/25), respectively, and improvement rates were 64% (7/11) and 48% (12/25), respectively. Finally, following cystocele repair with concurrent MUS, satisfaction rates at 1 and 10 years were similar, at 76% (16/21) and 74% (14/19), respectively, and improvement rates were also similar at 62% (13/21) and 68% (13/19), respectively.

CONCLUSIONS: Following cystocele repair with cadaveric fascia lata, the majority of women maintained subjective symptom improvement and satisfaction at ten years after surgery. In the era of transvaginal mesh litigation, it is important to understand the value of alternative techniques. While our results are limited in that the short- and long-term outcomes are not exclusively from the same patients, they do provide the surgeon with a tool for counseling patients preoperatively based on a target population representative of that which is encountered in a high-volume referral center.
Objectives: There has been renewed interest in mesh-free pelvic organ prolapse repairs due to concerns of mesh complications. Since 2000, we have performed the Cadaveric Prolapse repair with Sling (CaPS) procedure utilizing solvent dehydrated non-frozen cadaveric fascia lata. We present long-term outcomes for the cystocele repair portion of the CaPS procedure.

Materials and Methods: 624 women (average age 65 years, range 30-99) underwent a CaPS procedure from 2000 to 2014. Physical exam and questionnaires in a prospectively maintained database were used to assess prolapse recurrence, patient satisfaction, and sexual function. Failure was defined as recurrent cystocele ≥ grade 2, using the Baden-Walker system. 509 (82%) patients had ≥ 3 months follow-up with physical exam. Mean duration of follow-up exam was 39 months (range 3-188). 119 (23%) patients had at least 5 years follow-up with exam. 514 (82%) patients completed questionnaires. Mean duration of follow-up questionnaire was 55 months (range 4-173). 193 (37%) patients had at least 5-years follow-up with questionnaire.

Results: Prolapse failure occurred in 105/509 (20%) patients at an average of 34 months (range 3-128). 39 (7.6%) patients had cystocele recurrence, 60 (12%) vault prolapse, and 6 (1%) uterine prolapse. 63 (60%) patients chose no intervention. 42 (40%) patients had additional surgery: abdominal sacralcolpopexy (22), transvaginal fascia repair (18), and transvaginal mesh repair (12).

88/514 (17%) patients were sexually active. 25/88 (28%) reported discomfort with intercourse.

At the time of each patient’s last questionnaire, 422/514 (82%) patients would recommend surgery and 422/514 (82%) patients would repeat surgery. 311/514 (60%) patients reported satisfaction ≥8 on a visual analogue scale of 1-10, 10 being extremely satisfied.

The complication rate was 4% (19/509) including: small bowel injury during suprapubic tube placement requiring bowel resection (1), infected vaginal hematoma requiring debridement (1), vaginal mesh erosion (2), ureteral obstruction requiring stent (1), vaginal granulation tissue removed in the OR (10), difficulty with intercourse due to vaginal suture which was removed (1), and wound separation treated with estrogen cream (3).

Conclusions: 80% of patients who underwent the CaPS procedure had no significant cystocele recurrence, with average and maximum follow-up exams of 39 months and >13 years, respectively. There was high patient satisfaction and low morbidity.

Source of Funding: Coloplast
OBJECTIVES: In the era following mesh litigation for prolapse repairs, it is important to understand the value of all available techniques. Two generally accepted methods of rectocele repair include native tissue plication and biograft-augmented repair. Native tissue plication avoids the risks inherent in procedures that utilize any type of graft materials, while cadaveric tissue augmentation attempts to restore support utilizing a non-reactive biological graft. Here we present our 10-year longitudinal follow-up for both approaches at a tertiary referral center.

METHODS: We performed a retrospective review of our longitudinal database between 2000 and 2015 to identify all patients that underwent rectocele repair with cadaveric fascia lata or native tissue repair with midline plication and had completed follow-up questionnaires assessing patient-reported outcomes at 1 and/or 10 years. The primary outcome was pelvic floor symptom bother measured by the Pelvic Organ Prolapse Distress Inventory 6 (POPDI-6) subscale of the Pelvic Floor Distress Inventory Short Form (PFDI-20). Scores for the POPDI-6 range from 0 to 100, with a higher score indicating a greater symptom burden. A score of less than 13 was considered to be a low degree of burden. In addition, satisfaction and improvement were assessed using a graded Likert scale (0% to 100% and -100% to 100%, respectively). Patients were considered to be satisfied or improved if they reported scores greater than or equal to 70%. Follow-up data were censored at the time of any subsequent procedure.

RESULTS: Of the 105 rectocele procedures included in this study, 51 were with cadaveric fascia lata and 54 were with plication. Mean patient age was similar among the two groups [62 (SD 10) and 64 (SD 10), respectively]. Mean POPDI-6 scores were similar at 1 and 10 years following rectocele repair with both cadaveric fascia lata [11.6 (range 0-58), n=19; and 19.9 (0-70), n=31, respectively] and plication [14.3 (0-100), n=31; and 24.3 (0-100), n=20, respectively]. In addition, at least half of patients reported low symptom burden (POPDI-6 score < 13) at 1 and 10 years following rectocele repair with both cadaveric fascia lata [68% (13/19) and 65% (20/31), respectively] and plication [71% (22/31) and 50% (10/20), respectively]. Following rectocele repair with cadaveric fascia lata, satisfaction rates at 1 and 10 years were 88% (15/17) and 59% (17/29), respectively, and improvement rates were 71% (12/17) and 55% (16/29), respectively. Finally, following rectocele repair with plication, satisfaction rates at 1 and 10 years were 93% (27/29) and 41% (9/22), respectively, and improvement rates were 90% (26/29) and 41% (9/22), respectively.

CONCLUSIONS: While our results are limited in that the short- and long-term outcomes are not exclusively from the same patients, they do provide evidence that rectocele repair with both native tissue and cadaveric fascia provide reasonable levels of success. For the surgeon or patient who is concerned about complications related to mesh, native tissue plication or reinforcement with a biological graft remain viable treatment options.
BILATERAL SACRAL NERVE STIMULATOR SUCCESS RATES: A SINGLE INSTITUTION’S EXPERIENCE  
Amandeeep S. Mahal M.D., Philip V. Barbosa M.D., Craig V. Comiter M.D.: Stanford, CA  
(Presentation to be made by Philip Barbosa)

Objectives: Staged implantation of the sacral nerve stimulator (SNS) with a quadripolar tined lead has become a favored procedure over the office based peripheral nerve evaluation using a monopolar untined lead. Few data exist comparing success rates, of unilateral versus bilateral staged lead placement. We examine and compare our success rates of bilateral versus unilateral SNS lead placement.

Materials and Methods: A retrospective review of 64 cases from a single institution was performed on all SNS lead placements from April 2013 through March 2015. Charts were reviewed through either lead removal or progression to placement of an implantable pulse generator. There were 23 (36%) male and 41 (64%) female patients. Success was defined as a 50% improvement in frequency, incontinence episodes or voided volume, with progression to implantation of the implantable pulse generator. Failure was defined as less than 50% improvement, and explanation of bilateral SNS leads. The decision to perform unilateral or bilateral staged lead placement was based on physician preference.

Results: Average age was 68 years (37-87). Average BMI was 28, and 53 (83%) were Caucasian. 52 patients (81%) underwent bilateral tined lead placement, and 12 (19%) underwent unilateral tined lead placement. Overall success rate was 39/64 (61%). There were no instances of lead infection during the testing phase in either group. For bilateral stage I lead placement success was achieved in 30/52 (58%) and for those having unilateral stage I lead placement, success was achieved in 9/12 (75%). Chi-square analysis demonstrated no statistically significant difference in success rates (p=0.26).

Conclusions: The success rates of unilateral versus bilateral staged lead placement do not appear to differ substantially at our institution. However, our cohort is limited by the the small number of unilateral lead placements. We will embark on a prospective trial of unilateral versus bilateral staged lead placement, and if similar success rates are again realized, then we will no longer recommend bilateral lead placement as our standard procedure.

Source of funding: None
HIGH RATES OF INDADEQUATE URINE VOLUME CAUSE FAILURE IN CLINIC-BASED UROFLOWMETRY FOR MEN WITH LOWER URINARY TRACT SYMPTOMS

Randy C. Bowen M.D., M.S., Jason C. Chandrapal M.D., M.S., Darshan P. Patel M.D., Alvin Le, B.S., James M. Hotaling M.D., M.S., Andrew W. Southwick M.D. Salt Lake City, UT

(Presentation to be made by Dr. Jason Chandrapal)

Objective: Clinic-based uroflowmetry is commonly used in the diagnosis and management of Lower Urinary Tract Symptoms (LUTS). American Urological Association (AUA) guidelines recommend two separate uroflowmetry tests with a voided volume >150 mL for accurate interpretation. We characterized the interpretability of a series of uroflowmetry tests conducted at our institution and hypothesize that a significant number of uroflowmetry tests are non-interpretable because of inadequate urine volumes.

Methods: Uroflowmetry results were collected from male patients at the University of Utah Hospital (UH) and the George Wahlen Veterans Affairs Medical Center (VAMC) urology clinics between 8/31/14-9/30/14. The average time to perform uroflowmetry testing was determined. Uroflowmetry tests ≤150 mL were classified as non-interpretable. The data was characterized using descriptive statistics.

Results: One hundred and sixty nine tests were collected during the study period (104 at UH and 65 at VAMC); 107 (63%) were non-interpretable. An estimated 1452 uroflow tests were performed at UH and VAMC within a 12-month period. The average time to perform a uroflow study by healthcare workers was 7 minutes and 10 seconds. The estimated time loss per year for medical personnel due to non-interpretable uroflow studies was 109 hours (2.7 work weeks).

Conclusion: Over 50% of clinic-based uroflowmetry tests performed at our institution had a voided volume ≤150 mL and deemed non-interpretable per AUA guidelines. Current clinic-based uroflowmetry testing strategies are inefficient and wasteful. Reliable and accurate alternatives to clinic-based uroflowmetry for diagnosis and management of BPH/LUTS, such as home-based testing, should be explored.

Source of Funding: None
COMPARING THE INCIDENCE AND CLINICAL SIGNIFICANCE OF ARTERIAL INJURY DURING VARICOCELE REPAIR USING LOUPES VERSUS A SURGICAL MICROSCOPE

Seth P. Olcese M.D., Mark R. Walker M.D., John E. Musser M.D., Christina M. Belnap M.D., Joseph R. Sterbis M.D., Gregory P. Thibault M.D.: Honolulu, HI
(Presentation to be made by Dr. Seth P. Olcese)

Objectives: Previous studies have reported the arterial ligation rate during varicocelectomy using 2.5X magnification (loupes) to be 5 percent, with prior historical data demonstrating a rate of 1 percent. This study was performed to histologically determine the rate of arterial injury in varicocele ligation surgery using a surgical microscope with 120X magnification and to determine the clinical significance of these arterial injuries.

Methods: Using a prospective, IRB approved trial, 37 men with varicoceles underwent subinguinal microscopic varicocele ligation at Tripler Army Medical Center. Segments from all ligated vessels were histologically examined. The patients were followed prospectively with physical exam and/or testicular ultrasound to determine the effect of arterial injury on testes volume. Data obtained was compared to our previous study using loupe magnification.

Results: A total of 181 vessel segments were examined. Arterial ligation was identified in 5 of 181 specimens (2.76%) and occurred in 4 of 37 patients (10.8%) undergoing microscopic varicocelectomy, compared to 7 of 132 specimens (5.3%) in 6 of 41 patients (12%) undergoing loupe varicocelectomy (p=0.37 and p=0.74, respectively). An average of 4.89 vessels were ligated in each patient during microscopic varicocelectomy versus 3.2 vessels in varicoele repairs performed under loupe magnification. In the patients with arterial injury, post operative recovery was uncomplicated and there was no associated testicular atrophy. Thus there remains no apparent effect of arterial injury on clinical outcome.

Conclusions: Subinguinal varicocelectomy may be performed using microscopic magnification without significant risk of testicular atrophy. Rates of arterial injury are comparable to historical data from cases performed with 2.5X loupe magnification. Overall, arterial ligation appears to have little clinical significance with respect to testis volume.

Source of Funding: None
INCREASED RISK OF INCIDENT CHRONIC MEDICAL CONDITIONS IN INFERTILE MEN: ANALYSIS OF US CLAIMS DATA
Michael L. Eisenberg, M.D., Shufeng Li, M.S.,* Mark R. Cullen, M.D.,* Laurence C. Baker, Ph.D.*
Stanford, CA
(Presentation to be made by Dr. Michael Eisenberg)

Objectives: The extent to which impaired reproductive fitness may portend later health problems for these infertile men is unknown. We sought to determine the incidence of chronic medical conditions in men evaluated for infertility.

Materials and Methods: This is a retrospective cohort study of subjects contained within the Truven Health MarketScan claims database which provides information on insurance claims filed for privately-insured individuals through a participating employer. Male factor infertility was identified through diagnosis and treatment codes. Comparison groups of men who received infertility testing and vasectomized men were identified. The primary outcome was the development of chronic medical conditions.

Results: In all, 13,027 men diagnosed with male infertility were identified with an additional 23,860 receiving only fertility or semen testing. The average age was 33.1 years for men diagnosed with infertility and 32.8 for men receiving testing alone. After adjusting for age, follow up time, obesity, smoking, and health care utilization; men diagnosed with male infertility had a higher risk of developing diabetes (HR 1.30, 95% CI 1.10-1.53), ischemic heart disease (HR 1.48, 95% CI 1.19-1.84), alcohol abuse (HR 1.48, 95% CI 1.07-2.05), and drug abuse (1.67, 95% CI 1.06-2.63) compared to men who only received infertility testing. The association between male infertility and later health outcomes were strongest for men with longer follow up.

Conclusions: In this cohort of patients in a national insurance database, men diagnosed with male factor infertility had a significantly higher risk of adverse health outcomes in the years following an infertility evaluation.

Source of Funding: None
THE EFFECT OF SPERMATOTOXIC MEDICATION USE ON SEMEN PARAMETERS OF SUBFERTILE MEN

(Presentation to be made by Dr. Vera Trofimenko)

Background: Prescription medication use is common among men who present for fertility therapy. Commonly used medications such as serotonin-specific reuptake inhibitors (SSRI), opiate pain medications, tamsulosin, finasteride, testosterone, and antipsychotics, have been linked to spermatotoxicity. We hypothesized that among men presenting for a semen analysis, those who take SSRIs and opiate pain medications may have worse semen quality than those men who are taking no medications. We also sought to test whether a second spermatotoxic agent may have a compounding effect on decreasing semen quality, beyond that which is imparted by taking an SSRI or an opiate alone. To our knowledge, this is the first study to analyze the interaction effect of additional spermatotoxic agents on semen quality.

Materials & Methods: We analyzed retrospectively a cohort of 8,637 subfertile men seen at the University of Utah Andrology Laboratory between the years 2002 and 2013. For each patient, we obtained the age, semen analysis parameters (including ejaculate volume, concentration, total sperm count, progressive motility, total motile count, and total progressive motile count), and a list of medications which the patient was taking at the time of the semen collection. The minimum time for exposure to each medication reported was three months. Linear mixed effects models were used to assess the effect of any spermatotoxic medication, SSRI and opiate, and to test interactions between SSRI or opiate with other spermatotoxic medications, while controlling for patient age.

Results: The mean age of patients undergoing semen analysis in our cohort was 32 (SD 6.5). Among them, 4% were taking SSRIs, 1% were taking opiate pain medications, and 2% were taking other spermatotoxic medications at the time of the semen sample collection. Controls were considered to be men who reported taking no medications at all. Using any spermatotoxic medication (SSRI, opiate or others) was associated with reduced semen quality for all measures except ejaculate volume (all p<0.05). For the patients using any spermatotoxic medications, their sperm concentration was 46.1 (4.3-110), while that for the controls was 64.2 (21.6-121) (P <0.05). The total progressive motile sperm count for patients using any spermatotoxic medications was 7,849 million/ml (1752, 18,224), while that for the controls was 9,493 million/ml (2,705-20,519) (P <0.05). Similarly, progressive motility was also observed to be worse in men taking any spermatotoxic medication, with 44% (26-58) versus 49% (33-62) observed in controls. Using SSRIs alone was positively associated with ejaculate volume only (P<0.05). The ejaculate volume was 3.4 ml (SD 1.8), 2.9 ml (SD 1.4), and 3.1ml (SD 1.6) for the SSRI, opiate and control groups, respectively. There was a significant positive interaction effect between SSRI concurrently with a second spermatotoxic medication on total motile sperm count, with significantly worse count observed in men who take a second spermatotoxic medication in addition to an SSRI, compared to those who are taking an SSRI alone (P<0.05).

Conclusion: Our study confirms the existing notion that the use of spermatotoxic medications by subfertile men adversely affects overall semen quality. It also demonstrates that the use of other spermatotoxic medications together with an SSRI is associated with a decreased total motile sperm count compared to the use of SSRIs alone, suggesting an interaction effect. Among the limitations of this study is the reliance on self-reported medication data as well as uncertain compliance with medications listed. It is possible that this study may be also confounded by the fact that some medications may affect sperm function in parameters not measured by the semen analysis. However, due to the relative frequency of SSRI use within our population of subfertile men, this finding merits further investigation with the aim to delineate the utility of adjusting the classes of medications being taken at the time of conception. Source of Funding: none
HIGH INCIDENCE OF MILD COGNITIVE IMPAIRMENT IN UROLOGY PATIENTS: IDENTIFYING RISK FACTORS FOR BASELINE COGNITIVE IMPAIRMENT IN PATIENTS PRESENTING FOR UROLOGICAL EVALUATION

Gray L. Roberge, BA*, Sharon K. Stortz, BS, MS*, William C. Frankel*, Kirsten L. Greene, MD, MAS, Donna Y. Deng, MD, MS: San Francisco, CA
(Presentation to be made by Gray L. Roberge)

Objectives: Given the number of medications and therapeutic modalities in urology that may cause cognitive impairment, it is important to know if patients have undiagnosed baseline diminished cognitive status. This study measured baseline mental status in adults presenting for urologic evaluation and evaluated which external factors were most likely to cause diminished cognitive status in an adult patient population perioperatively.

Materials and Methods: We enrolled patients >18 years of age presenting to a large, urban tertiary care center. Cognitive status was determined by the Montreal Cognitive Assessment (MoCA) screening test. A score of 26-30 on the MoCA is considered cognitively normal, while <26 indicates mild cognitive impairment (MCI). Patients were also administered the Geriatric Depression Screen, a tool validated to evaluate probable depression in adults of all ages. Patient charts were reviewed for urologic chief complaint, anticholinergic use, education, smoking history, and comorbidities. A backwards-stepwise multivariable regression was then run to compare MoCA scores with potential risk factors.

Results: A total of 197 patients were included. For patients age 18-64, 42 of 101 (42%) had a MoCA score of <26. For patients age 65+, 65 of 96 (68%) had a MoCA score of <26. For patients in age group 18-40 (n=33), the factor most associated with a decreased MoCA score was hypertension (p=.003). For patients in age group 41-64 (n=68), a stone disease-related complaint was associated with a higher MoCA performance than cancer, urinary, or sexual dysfunction chief complaints (p=.02). For patients in age group 65+ (n=96), notable associations with decreased scores included a cancer-related visit (p<.0001), increased age (p<.0001), an increased possibility of depression (p=.02), and a four-year degree (p=.05), or no four-year college degree (p=.002), when compared to those with a postgraduate degree.

Conclusions: These initial data show higher than the reported 10-20% prevalence of MCI in adults over age 65, and a striking incidence of MCI in younger patients. The results demonstrate that MCI is a widespread issue in the urologic population. We also have for the first time catalogued different risk factors that may be associated with baseline MCI in a urology population. Potential confounders that may artificially lower MoCA scores include patient anxiety and variation in MoCA administration. Once further explored, this knowledge will help us to identify risk factors for baseline MCI prior to a patient encounter, and permit better communication with patients to allow tailored, customized pre- and post-operative instructions to increase patient safety and improve outcomes.

Source of Funding: None