Moderated Poster Session I: Oncology
Thursday, September 29, 2016
10:15 am – 12:00 pm

P1
Is there a measurable association of epidural use at cystectomy and postoperative outcomes? A population-based study

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Background: Thoracic epidural analgesia (TEA) is commonly used to manage postoperative pain and facilitate early mobilization after major intra-abdominal surgery. Evidence also suggests that regional anesthesia/analgesia may be associated with improved survival after cancer surgery. Here, we describe factors associated with TEA at the time of radical cystectomy (RC) for bladder cancer and its association with both short- and long-term outcomes in routine clinical practice.
Methods: All patients undergoing RC in the province of Ontario between 2004 and 2008 were identified using the Ontario Cancer Registry (OCR). Modified Poisson regression was used to describe factors associated with epidural use, while a Cox proportional hazards model describes associations between survival and TEA use.
Results: Over the five-year study period, 1628 patients were identified as receiving a RC, 54% (n=887) of whom received TEA. Greater anesthesiologist volume (lowest volume providers RR=0.85, 95% CI 0.75–0.96) and male sex (female sex RR 0.89, 95% CI 0.79–0.99) were independently associated with greater use of TEA. Improved short-term outcomes were not associated with TEA use. In multivariate analysis, TEA was not associated with cancer-specific survival (HR 1.02 [95% CI 0.87–1.19]; p=0.804) or overall survival (HR 0.91 [95% CI 0.80–1.03; p=0.136]).
Conclusions: In routine clinical practice, 54% of RC patients received TEA in routine and its use was associated with anesthesiologist provider volume. After controlling for patient, disease, and provider variables, we were unable to demonstrate any effect on either short- or long-term outcomes at the time of RC.

P2
A Canadian prostate cancer electronic library for improved function post-treatment (eLIFT)

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Background: The TrueNTH program is a Movember-funded, Canadian initiative to develop a comprehensive patient-centered online platform in English and French that will cover a full spectrum of prostate cancer survivor needs. Through the support of Prostate Cancer Canada, the TrueNTH-PCC-eLIFT resource, as part of the TrueNTH program, is being developed by a multidisciplinary team of urologists, radiation oncologists, gastroenterologists, researchers, nurses, and survivors at two Canadian pilot sites. This online portal (eLIFT) will address urinary and bowel side effects that may be experienced after curative intent treatment by external beam radiation therapy (EBRT), brachytherapy (BT), combined EBRT + BT or radical prostatectomy (RP). This comprehensive online portal will be a global resource for all patients to access.
Methods: eLIFT includes a didactic electronic library, symptom assessment tool and content tailored to treatment or symptoms experienced. A sequential prospective cohort study is underway to evaluate the impact of the resource. A baseline cohort of eighty patients per site receiving standard of care has finished recruitment. A second cohort of eighty patients per site is open to receive the eLIFT intervention. To assess the impact of intervention, Expanded Prostate Cancer Index Composite for Clinical Practice (EPIC-CP), Cancer Behavior Inventory (CBI-B), EQ-5D-5L and International Prostate Symptom Score (IPSS) are used. The study will also measure patient self-efficacy, knowledge, Health Related Quality of Life (HRQoL), urinary and bowel function, health resource usage, and satisfaction.
Results: eLIFT content, with a total of 22 video modules is complete. We have begun screening and recruitment of baseline cohort patients at both sites. Results from the first cohort of patients, receiving standard care, confirm a need for a reliable, online resource they can access. Patients note that the oral information provided by their oncologist at their preliminary consultation, while informative, is not easily retained. Information provided as print varied and was often outdated. Further, patients deem websites outside of Canada as the most reliable and helpful, which may not reflect Canadian recommendations.
Conclusions: eLIFT will provide a unique and scalable centralized resource that will allow for expansion to an international level and increase access to a scientifically sound library of information with the goal of improving the quality of care for prostate cancer patients globally.

P3
A pilot study of high-arginine nutritional supplementation prior to radical cystectomy

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Background: Supplementation with high-arginine nutritional shakes prior to surgery for gastrointestinal malignancy has been shown to decrease the risk of postoperative infectious complications by improving the immunometabolic host response. The purpose of this study was to assess the feasibility of administering a high-arginine supplement to patients undergoing radical cystectomy for bladder cancer and to compare postoperative outcomes with a cohort of matched controls.
Methods: We prospectively recruited patients to begin supplementation with a high-arginine nutritional shake (Impact: Advanced Recovery [Nestle, Vevey, Switzerland]) prior to radical cystectomy. Subjects were instructed to consume four shakes per day for five days prior to surgery and complete a log of their intake. Adverse events, tolerability, and adherence to the supplementation regimen were assessed. Additionally, postoperative outcomes (hospital length of stay and 90-day overall and infectious complications) were retrospectively compared between supplemented patients and a cohort of non-supplemented controls individually matched by surgeon and year of surgery.
Results: A total of 20 patients were recruited and provided high-arginine nutritional shakes prior to radical cystectomy by one of three surgeons. There were no serious adverse events during supplementation. Three patients (15%) reported a minor adverse event, including nausea (n=2) and bloating (n=1). Fourteen patients (70%) consumed all prescribed shakes. Demographics and clinicopathologic characteristics, including age, gender, Charlson comorbidity index, and pathologic stage, were not significantly different between supplemented and non-supplemented patients. Hospital length of stay was similar between groups (6 days [IQR-6-8] vs. 7 days [IQR: 6-9]; p=0.33). Supplemented patients were significantly less likely to experience an infectious complication than controls (15% vs. 50%;

p=0.02). There was no difference in overall complications between groups (35% vs. 65%; p=0.11).
Conclusions: Preoperative supplementation with a high-arginine nutritional shake was well tolerated in a cohort of patients undergoing radical cystectomy. This study suggests that immunonutrient supplementation may decrease the risk of postoperative infectious complications and highlights the need for a randomized controlled study to further investigate this finding.

P4

Antibiotic prophylaxis protocol for TRUS-guided prostate biopsy based on local organism resistance patterns

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Background: Increasing microbial resistance has led to an overall increased incidence of infections following prostate transrectal ultrasound (TRUS)-guided biopsies. Based on local resistance patterns, an antibiotic protocol was instituted across all out patient offices to prevent an increase in infection incidence after TRUS-guided prostate biopsies.
Methods: The local antibiogram resistance patterns were reviewed for common organisms causing infection after TRUS biopsies, with review every six months to monitor resistance patterns. Antibiotics chosen for prophylaxis were ciprofloxacin 500 mg by mouth and ceftriaxone 1 g intermuscular; penicillin allergic patients received gentamicin IM 2.5mg/kg. Antibiotics were administered at least 30 minutes prior to biopsy. Data were reviewed retrospectively for 2351 patients who underwent TRUS prostate biopsy between July 2012 and December 2015. In August 2014, protocol prophylaxis was implemented. Prior to this, there was no standard prophylaxis. Organisms considered resistant were those not susceptible to antibiotics used traditionally for their treatment (ex. fluoroquinolone-resistant *E.coli*). Univariable statistical analyses were performed with Fisher's exact/chi-squared or Wilcoxon-Mann-Whitney where appropriate. Logistic regression was used for multivariable analyses.
Results: There were 799 biopsies performed after protocol implementation. The protocol group had more patients with chronic kidney disease (CKD), larger prostate volume, greater number of biopsies during the procedure, and cancer in remission; other baseline demographics were similar. The rate of post-biopsy emergency department (ED) visit was low, 1.7% for non-protocol patients and 0.6% for protocol patients (p=0.027). Likewise, the overall rate of post-biopsy inpatient admissions was 1.35% for non-protocol patients and 0.4% for protocol patients (p=0.026). Organisms resistant in blood and urine decreased from 20.7% (n=23) in the non-protocol group to 7.4% (n=4) in the protocol group (p=0.030). All positive blood cultures occurred in the non-protocol group, all of which were *E. coli* resistant to ciprofloxacin. After adjusting for prostate volume, CKD, cancer in remission, and enema type with multivariable logistic regression, patients requiring admission were 8.8 (95% CI 1.58–49.12) times more likely to have resistant organisms cultured (p=0.004).
Conclusions: Using local organism resistance directed prophylaxis for a TRUS-guided prostate biopsy antibiotic protocol helps keep post-procedural ED visits and inpatient admissions low.

P5

Associations between omega-3 and quality of life of patients with prostate cancer under active surveillance

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Background: Consumption of omega-3 fatty acids (Ω3) appears to have a protective effect against prostate cancer (PCa). We have not found data describing the relationship between the consumption of Ω3 and quality of life (QoL) of men with PCa. The objective of this study is to identify the relationship between indicators of QoL and Ω3 consumption using a transversal study design.
Methods We completed recruitment of 189 men with low-grade PCa who chose active surveillance to determine the effects of a dietary intervention, aiming to increase the Ω3 intake and decrease Ω6 intake, on the prostate tissue and QoL. We used the following tools to measure QoL during the preliminary visit: Inventory of Sexual Health for men (SHIM), the Expanded Prostate Cancer Index Composite EPIC-26 (hormonal, urinary, digestive, and sexual domains), and the International Prostate Symptom Score (IPSS). We measured dietary intake by a computerized food frequency questionnaire validated specifically in this population. Logistic regression was used to evaluate associations between consumption Ω3 and QoL.
Results: The median age of patients was 63 years (IQR 11), the median body mass index (BMI) was 27.08 kg/m^2 (IQR 5.20), 68% had a Gleason score ≤6 and the median prostate-specific antgen (PSA) level was 4.60 ng/mL (IQR 3.05). The median of the Ω6/Ω3 ratio was 6.52 (IQR 2.80) and the median of the Ω3 consumption was 1.68 g/day (IQR 0.90). The multivariable logistic regression models show that men categorized in the highest level of the Ω6/ Ω3 ratio had a bad QoL in the urinary irritative and incontinence domains than men categorized in the lowest level (OR 4.216; 95% CI 1.310–13.570; p=0.01; OR 2.953; 95% CI 1.190–7.329; p=0,02, respectively). Men categorized in the highest level of the Ω3 and ALA consumption had a best QoL in the urinary irritative domain than men categorized in the lowest level (OR 0.343; 95% CI 0.133–0.881; p=0.03; OR 0.339; 95% CI 0.130–0.883; p=0,03, respectively).
Conclusions: We observed a positive association between high dietary intake of Ω3 and better QoL in the urinary domain. This suggests that Ω3 diet influences, in a beneficial way, QoL of patients with PCa. The specific effects of dietary intervention to increase Ω3 intake on QoL are still unknown, but future study is warranted.

P6

Biopsy perineural invasion in prostate cancer patients who are candidates for active surveillance by liberal and conservative criteria

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Background: Although the presence of perineural invasion (PNI) on prostate biopsy is not considered in established criteria for active surveillance (AS), it has been shown to influence selection of patients for AS in the clinical setting. The objective of this study was to evaluate the association of biopsy PNI with adverse pathological findings on radical prostatectomy in patients who would have been candidates for AS.
Methods: Using a prospectively populated database of 3042 men who underwent open radical prostatectomy by a single surgeon between November 1999 and July 2015, candidates for AS by liberal (University of Toronto) and conservative (Johns Hopkins) criteria were identified. The presence of adverse pathologic features at radical prostatectomy was compared between those men with and without biopsy PNI.
Results: Of 597 men who met conservative criteria for AS, 16 (2.7%) had PNI identified on prostate biopsy. In the conservative AS cohort, there were no differences in adverse pathologic features at radical prostatectomy between those with and without PNI. Of 1197 men who were candidates for AS by liberal criteria, 102 (8.5%) had PNI identified on prostate biopsy. Men with biopsy PNI in the liberal AS cohort were more likely to have extracapsular extension (23% vs. 10%; p<0.001) and pathological upgrading (63% vs. 49%; p=0.01) at prostatectomy. In addition, they had larger dominant nodules (1.5 cm vs. 1.1 cm; p<0.001), and cancer comprised a greater percentage of their prostate glands (10% vs. 5%; p<0.001). There was no difference in the proportion with positive margin between the two groups (4% vs. 3%; p=0.77).
Conclusions: Biopsy PNI was rare in patients who met conservative criteria for AS. Among those men who met liberal criteria, PNI was associated with adverse pathologic findings upon prostatectomy. The presence of biopsy PNI may have a role in further risk stratifying patients who meet liberal criteria for AS.

P7

Development of a urine-based inflammatory test for prostate cancer

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Background: Chronic inflammation is a potential causal factor of prostate cancer (PCa). However, a non-invasive test assessing prostatic inflammation does not existent. The aim of this project is to develop a non-invasive, urine-based inflammatory test to measure prostatic inflammation and stratify risk of PCa. Specifically, we sought to identify inflammatory-related proteins particularly present in urine after prostate digital rectal examination (DRE).

Methods: We collected urine samples before and after DRE from consenting men presenting for a prostate needle biopsy. The urine samples were analyzed using discovery label-free quantification (LFQ) mass spectrometry protocols. First, we optimized conditions in order to specifically analyze secreted prostate-specific proteins. Then, we compared global secreted protein expression of pre- and post-DRE urine samples (total 18 samples) of nine patients (three of each: Gleason (G) 8, G6, and without cancer groups) to discover cancer-specific biomarkers of inflammation. Proteins abundance were compared using the Welch t-test with p-values <0.1 declared significant.

Results: The conditions of optimization process defined our protocol to use of 5 µg of protein for a two-hour run duration from undepleted urine samples. We identified 74 proteins greater than two-fold more abundant in post-DRE urine as compared with pre-DRE urine. We identified six proteins that were more expressed (upregulated), while 55 were down-regulated in the post-DRE urine of low-grade PCa vs. patients without cancer. We identified six upregulated proteins, while nine were down-regulated post-DRE urine of high-grade PCa vs. patients without cancer. Some of them have been already identified as candidate markers for PCa, supporting our analytical approach.

Conclusions: Post-DRE urine is enriched with prostatic secretion proteins, indicating that it is a suitable sample type for developing a non-invasive test for PCa. We identified candidate protein signatures of low-grade and high-grade PCa. These must be validated in larger cohorts. As none of LFQ identified proteins are known as key players in inflammatory pathways, targeted proteomics assay (MRM: multiple reaction monitoring) need to be included to measure low abundant inflammatory-related cytokines.

P8

Functional status after prostate cancer treatment among Medicare advantage beneficiaries

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Background: There are several effective treatments for prostate cancer. The extent to which treatment affects a patient's functional status is understudied. We sought to examine the relationship between treatment and subsequent functional status among older men with prostate cancer.

Methods: Using Surveillance, Epidemiology, and End Results-Medicare Health Outcomes Survey (SEER-MHOS) data, we identified men 65 years or older diagnosed with prostate cancer between 1998 and 2009, who were treated with conservative management, surgery, or radiation. Our primary outcome was functional status as measured by activities of daily living (ADLs). Secondary outcomes included the physical component summary (PCS) score and the mental component summary (MCS) score. We performed propensity score analyses to match cancer patients 1:5 with noncancer controls. We matched for age, race, marital status, 12 medical comorbidities, education, household income, who completed the survey, geographic region, and month and year of the survey. Generalized linear mixed effects models were used to analyze the matched data, accounting for the clustering due to medical insurance plan.

Results: We identified 1323 prostate cancer patients who completed a survey within one year of treatment of whom 477 (36%) underwent conservative management, 229 (17%) underwent surgery, and 617 (47%) underwent radiation. Mean differences in ADL scores were not significantly different between treatment groups and matched controls (all p>0.05). Compared with matched controls, mean difference in the PCS score for conservative management, surgery, and radiation were -2.1 (95% CI -3.3, -0.9), -1.0 (95% CI -2.6, 0.5), and -2.2 (95% CI -3.2, -1.2), respectively. Mean differences in the MCS score for conservative management, surgery, and radiation were -0.7 (95% CI -1.7, 0.3), -1.0 (95% CI -2.2, 0.3), and -1.2 (95% CI -2.0,-0.3), respectively.

Conclusions: After treatment, patients had similar ADL scores as their non-cancer peers. While surgery patients experienced no changes in any functional status measurements, radiation patients had both lower PCS and MCS scores compared with matched controls.

P9

High frequency of incidental bone lesions on prostate mpMRI in low-risk subjects

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Background: Multiparametric magnetic resonance imaging (mpMRI) has been recommended for risk stratification and disease characterization in prostate cancer (PrCa) diagnosis. As the utilization of imaging increases, secondary findings may be identified which may raise suspicion for distant PrCa, prompting further workup. Differentiating benign vs. metastatic lesions and planning for an appropriate workup will be crucial in such situations. The goal of this report is to describe our institution's experience with incidental bone lesions on prostate MRI.

Methods: This retrospective review includes data from 187 consecutive patients who underwent a pelvic mpMRI prior to an MRI-US guided biopsy from September 2013 to August 2015 at our institution. Demographics, pre-biopsy prostate-specific antigen (PSA) levels, and PrCa status at mpMRI were captured. Images of the prostate were obtained with a 3-Tesla MRI with endorectal and surface coil capturing T1/T2W, DWI, and DCE sequences. Chi square and Fisher exact tests were used for categorical variables; t-tests were used for discrete variables.

Results: Among 187 subjects, 8% had incidental bone lesions noted on imaging. The average bone lesion was 1.1cm, 80% were in the iliac bones, and 53% demonstrated enhancement. No significant differences in age, race, PSA, or clinical stage were found between men with bone lesions (BL+) and without (BL-). Indication of MRI was significantly associated with BL+, with lesions noted in 40%, 9%, 2%, and 0% of men with assessment of recurrence, prior negative biopsy, active surveillance, and initial biopsy, respectively (p<0.05). The number of suspicious lesions on MRI, overall MRI suspicion level, and prostate volume were not predictive of bone lesions. Workup for bone lesions included subsequent bone scan (33%), computed tomography (CT) scan (27%), and bone biopsy (13%). Non-enhancing lesions were deemed indolent based on radiologic criteria. No lesions were deemed metastatic PrCa. MR/ultrasound fusion biopsies showed 75% without PrCa in BL+.

Conclusions: Despite the high percentage of incidental bone lesions among subjects, none were deemed to be metastatic PrCa, nor were lesions found to be correlated with the presence of PrCa. With the widespread use of MRI, clinicians must be prepared to manage similar findings with regard to subsequent testing and counselling of patients. In such settings of low likelihood of metastatic disease, our series suggest the presence of bone lesions may be highly non-specific. Moving forward, strategies to avoid unnecessary testing will be crucial.

P10

Magnetic resonance/ultrasound-guided fusion biopsy: An initial experience using the updated prostate imaging reporting and data system (PI-RADS v2)

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Background: Targeted magnetic resonance (MR)/ultrasound fusion prostate biopsy has been increasingly used in the evaluation of patients with elevated prostate-specific antigen (PSA) following negative standard sextant biopsy and in those patients considering active surveillance. Single-institutional series have demonstrated an association between Prostate Imaging Reporting and Data System version 2 (PI-RADS v2) score and the finding of clinically significant prostate cancer; however, the external validity of these studies is questioned. We report our initial experience MR/ultrasound-guided fusion biopsy and assess the predictive value of PIRADSv2 score in the detection of clinically significant cancer.

Methods: A retrospective review of our institution's electronic medical record was conducted to identify 69 consecutive cases between August 2015 and March 2016. Four patients with missing data and five patients with an unreported PI-RADS v2 score were excluded from the analysis. We assessed demographic and clinical characteristics of the patient population, as well as radiographic characteristics and pathologic outcomes of MR lesions targeted for biopsy. All MR imaging was performed on a 3 Tesla system, and the findings are based on the initial radiologic interpretation at the time of clinical evaluation. Among lesions with a PI-RADS v2 score of 3 or higher, the association between PI-RADS v2 and the presence of clinically significant cancer (Gleason 3+4 or higher) was evaluated using a chi square test. The positive predictive values of PI-RADS v2 scores for the detection of clinically significant cancer were also calculated.

Results: Sixty patients underwent targeted MR/ultrasound fusion prostate biopsy for evaluation of an elevated PSA following negative standard sextant biopsy (n=51, 85%) or consideration of active surveillance of previously identified cancer (n=9, 15%). Median PSA was 9.2 ng/mL (IQR 6.9–13.9 ng/mL), and the median number of prior biopsies was one (IQR 1–2). In all, 92 lesions were targeted for fusion biopsy. Among 89 lesions with a PI-RADS v2 score of 3 or greater, there was an association between PI-RADS v2 score and the presence of clinically significant cancer ($p<0.001$). The positive predictive values of PI-RADS v2 scores of 3, 4, and 5 for the detection of clinically significant cancer were 13%, 22%, and 68%, respectively.

Conclusions: In our initial experience of MR/ultrasound fusion prostate biopsy, the predictive value of PI-RADS v2 in the detection of clinically significant cancer was similar to previously published reports. These findings support the external validity of PI-RADSv2 in patients undergoing fusion biopsy.

P11

MRI-TRUS fusion biopsy in patients with atypical small acinar proliferation (ASAP): Evaluation of clinical benefit and comparison with biopsy-naive patients

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Background: Magnetic resonance-transrectal ultrasound (MRI-TRUS) fusion biopsy has shown improved detection of prostate adenocarcinoma over conventional systematic biopsy; however, the clinical impact of the technology on different biopsy populations requires validation. This prospective study evaluates the added clinical benefit of fusion biopsy over standard TRUS biopsy for patients with prior atypical small acinar proliferation (ASAP) histopathology as compared to first-time biopsy patients.

Methods: One hundred patients were enrolled in a single-center prospective cohort study — 50 for repeat biopsy with prior ASAP histology, 50 for first biopsy. Inclusion criteria: prostate-specific antigen (PSA) 2–20 ng/ml; no prior MP-MRI; no history of CaP. Multiparameteric prostate MRI (MP-MRI) was performed on all patients and any suspicious MP-MRI lesion was targeted using MRI-TRUS fusion biopsy. A Prostate Imaging Reporting and Data System (PIRADS) score was assigned to all MP-MRI abnormalities. A standard 12-core TRUS biopsy was performed on all patients regardless of MP-MRI findings and was used as an internal control.

Results: Prostate adenocarcinoma was detected in 23/50 ASAP and 26/50 first-time biopsy patients with eight and 17, respectively, having significant disease. ASAP patients had greater benefit from MRI-TRUS fusion biopsy which was significantly more likely to detect significant cancer missed on standard biopsy for ASAP patients than first-time biopsy patients ($p<0.05$). The MRI-TRUS biopsy identified significant cancers in 5 (10%) ASAP patients that were missed on standard biopsy. The addition of fusion biopsy to standard biopsy had a 166.7% relative risk reduction for missing Gleason ≥3+4 disease (number needed to image with MP-MRI=10 patients) compared to only 6.3% for first biopsy patients (number to image=50 patients). For ASAP patients, if biopsies were only targeted at PIRADS ≥3 lesions, then 60% (30/50) of patients would have avoided biopsy without missing any significant cancer, and insignificant disease would have only been found in three (6%) instead of 15 patients (30%). Conversely, removal of standard biopsy for first-time biopsy patients would have caused 5 (10%) of significant cancers to be missed. The negative predictive value of a normal or benign MP-MRI (PIRADS 1 or 2) was 100% for ASAP and 79% for first-time patients with a median followup of 32.1±15.5 months.

Conclusions: MRI-TRUS fusion biopsy detected more significant cancers that were missed on standard biopsy for ASAP patients than it did for biopsy naïve patients, suggesting a greater clinical benefit of MRI-TRUS for the ASAP population.

P12

Oncologic outcomes of simple enucleation partial nephrectomy in sporadic papillary type 2 renal cell carcinoma

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Background: The increase use of percutaneous biopsy in the treatment algorithm for small renal masses (SRM) has led to histology-based management. Papillary type 2 renal cell carcinoma (RCC) has been associated with poor prognosis and increased risk of local recurrence following studies in patients with hereditary familial leiomyomatosis and renal cell carcinoma (RCC). The current recommendation for patients found to have papillary type 2 features on biopsy is for radical nephrectomy or partial nephrectomy with a wide margin. Here we intend assess the margin rate along with fossa recurrence rate of patients with sporadic type 2 papillary RCC that underwent simple enucleation partial nephrectomy as compared to those with clear cell RCC.

Methods: We performed a retrospective chart review of all patients with a small renal mass (4 cm or less in diameter) who underwent simple enucleation partial nephrectomy and were found to have papillary type 2 RCC or clear cell RCC over a 10-year period. Information regarding patient demographics, surgical technique, histological subtype, grade, margin status, recurrence rate, and development of metastatic disease was collected from the medical record. All patients with known histology prior to partial nephrectomy were excluded from the study, as were patients with mixed histology or patients who underwent laparoscopic/robotic procedures.

Results: One hundred thirteen patients met criteria for the study. Of these, 27 (24.0%) patients were found to have papillary type 2 RCC. Patients with papillary type 2 RCC had higher rates of pT3a compared to those with clear cell RCC (13.3% vs. 4.7%, respectively; $p=0.034$). The margin rate for both groups was comparable with 10% of patients presenting with a positive margin in the papillary type 2 group compared to 9.3% in the clear cell RCC group ($p=0.91$). The recurrence was also comparable with only two (6.7%) patients developing a fossa recurrence in the papillary type 2 group compared to five (5.8%) in the clear cell RCC group ($p=0.91$) with a median followup of 23 months.

Conclusions: In this retrospective trial the margin and fossa recurrence rate seen following simple enucleation partial nephrectomy was comparable between sporadic papillary type 2 and clear cell histology. These findings suggest simple enucleation can be performed with acceptable oncological outcomes in sporadic papillary type 2 RCC.

P13

Surgical treatment for stage I renal cell carcinoma: Does treatment facility or location matter?

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Background: American Urology Association (AUA) guidelines recommend partial nephrectomy (PN) as the surgical treatment for clinical stage I renal cell carcinoma (RCC). While use of PN has increased over the last decade, it is unclear if the shift has been uniformly driven by all cancer treatment facilities. Using data from the Commission on Cancer's (CoC) National Cancer Data Base (NCDB), this study seeks to compare the rates of PN for clinical T1 renal masses across types of cancer programs and geographic locations within the US.

Methods: Cases of surgically treated RCC at CoC-accredited facilities were identified from the Participant User File (PUF) from 2004-2013, which was obtained from the NCDB (a joint project of the CoC of the American College of Surgeons and the American Cancer Society). Patients with clinical stage I RCC who received either PN or radical nephrectomy (RN) as the primary surgical treatment at a CoC-accredited facility were included (N=123 706). Multivariable log-binomial regression was used to estimate risk ratios for RN overall and stratified by tumor size across types of CoC-accredited cancer programs and geographic regions.

Results: Compared to Academic Comprehensive Cancer Programs (ACAD), cases were more likely to be treated with a RN if they received care at a Community Cancer Program (CCP) (RR 1.50, 95% CI 1.47–1.52), Comprehensive Community Cancer Program (CCCP) (RR 1.38, 95% CI 1.36–1.40), or Integrated Network Cancer Program (INCP) (RR 1.23, 95% CI 1.21–1.26). Compared to patients receiving care in the Northeast, patients in the Southeast (RR 1.16, 95% CI 1.14–1.18), North Central (RR 1.13, 95% CI 1.12–1.15), South Central (RR 1.12, 95% CI 1.10–1.14), and Mountain/Pacific (RR 1.19, 95% CI 1.17–1.21) were more likely to be treated with a RN. When stratified by tumor size, the likelihood of being treated with RN was most pronounced for cT1a tumors (<4 cm) treated at CCPs (RR 1.62, 95% CI 1.57–1.67) or CCCPs (RR 1.45, 95% CI 1.43–1.49), and in the Mountain/Pacific (RR 1.25, 95% CI 1.22–1.29) or Southeast regions (RR 1.22, 95% CI 1.19–1.26).

Conclusions: Despite having CoC accreditation there is significant variability on patterns of care for Stage I RCC patient. Patients are most likely to be treated with a PN when receiving care at an ACAD or in the Northeastern US. The variability is most pronounced for patients with cT1a masses, with community cancer centers (CCPs and CCCPs) having the greatest likelihood of performing a RN. Further research is required to explore these differences.

P14

The role of urinary cytology when diagnostic workup is suspicious for upper tract urothelial carcinoma but tumor biopsy is non-confirmatory

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Background: Patients with suspicious upper tract lesions may undergo an endoscopic evaluation to obtain visual and pathological evidence of upper tract urothelial carcinoma (UTUC). When tissue biopsy is negative or non-diagnostic, urinary cytology may be used to help guide treatment, although its utility has not been well-defined in this setting. Our group aims to determine the value of obtaining preoperative urinary cytology when diagnostic workup (imaging, endoscopy, presentation, clinical history) is suspicious but biopsy fails to confirm malignancy.

Methods: Using billing code data, 239 patients were identified as having undergone RNU by 16 urologists at two hospitals from Sept. 29, 1998–July 31, 2015. Forty-three patients were initially excluded: concomitant cystectomy (25), non-functioning atrophic kidney (10), pediatric patient (4), billing code mismatch (2), RNU for extrinsic compression (1), RNU in a transplant kidney (1). Ninety-two patients had biopsies that were positive, suspicious, or suggestive of malignancy; 83 did not undergo biopsy; two had inadequate information and were also excluded. Thus, the final study population consisted of 19 patients who were divided into three groups. Group A had no urinary cytology taken (6); Group B had upper and/or lower tract cytology performed with neither positive nor atypical (7); Group C had upper and/or lower tract cytology performed with at least one positive or atypical (6).

Results: Demographic information was similar among the groups. Diagnostic workup (including endoscopic findings) was similar, although Group A had more patients with a history of cystectomy for bladder cancer (p=0.04). One patient in Group B had benign tissue on final pathology but the other six patients in that group had discordant results. All patients in Group A and C had malignancy on final pathology and overall, the three groups had similar rates of malignancy. Tumor and histological characteristics were similar. When rearranging the 19 patients and dividing them into groups based on just their upper tract cytology status — none (n=13), negative (n=2), positive (n=4). One patient with no cytology had benign tissue on final pathology; the others all had malignant disease.

Conclusions: When a composite of clinical findings are highly suspicious for UTUC, performing urinary cytology may not be necessary. A negative result in this setting should not be used to rule out UTUC, as this is often discordant with final pathology. A positive cytology result may help solidify the diagnosis when other findings are less clear.

P15

Utility of pre-biopsy multiparametric MRI of prostate in biopsy-naive men undergoing image fusion targeted biopsy

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Background: Multiparametric magnetic resonance imaging (MP-MRI) of the prostate and image fusion targeted approach to prostate biopsy has demonstrated improved cancer detection rates. We sought to evaluate the outcomes of our newly implemented targeted biopsy program, not only as a first detection for biopsy-naïve patients, but also those with disease that have eluded the standard template biopsy.

Methods: We reviewed the records of 361 men who underwent MP-MRI of prostate prior to their prostate biopsy. Clinical and demographic data were recorded. Men with PiRADS score 3–5 were considered to have MRI evidence of prostate cancer and were targeted for fusion MRI/US fusion biopsy, while PiRADS 1–2 were excluded as likely benign disease. The number and locations of suspicious lesion on the MRI were noted. All men underwent Uronav image fusion targeted biopsy followed by concomitant random 12-core biopsy.

Results: Of the 361 men with pre-biopsy MP-MRI of prostate, 219 (61%) had suspicious lesion on the MRI. Mean prostate-specific antigen (PSA) at time of biopsy was 6.925 ng/ml and 70% of men had normal digital rectal exam (DRE). A single lesion on MRI was noted in 52%. Overall, cancer was noted in 198 (55%) men. Of the 257 men undergoing "first" prostate biopsy (no previous biopsies), cancer was noted in 147 (57%) of men. Of those with previous negative biopsy, 30 of 70 (43%) had a positive biopsy. Cancer detection rate per PIRADS Score for both first biopsy and repeat biopsy groups were also calculated; 19 of 39 (49%) of first biopsy patients with PIRADS 3 lesions noted on MRI exhibited positive biopsies (average Gleason 6.37), as well as 12 of 24 (50%) who had previous negative prostate biopsy (average Gleason 6.5); 44 of 57 (77%) first biopsy with PIRADS 4 (average Gleason 7.02), 19 of 30 who had previous negative prostate biopsy (average Gleason 6.53); and 40 of 45 (89%) first biopsy with PIRADS 5 (average Gleason 7.4), 10 of 17 who had previous negative prostate biopsy (average Gleason 7).

Conclusions: A positive MP-MRI guided targeted prostate biopsy is associated with an increased rate of cancer detection in men with or without a previous negative biopsy. The majority of cancers noted are intermediate or high-grade.

P16

Validation of perioperative blood transfusion as a surgical quality indicator of radical cystectomy for urothelial bladder cancer

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Background: Radical cystectomy (RC) is a complex surgical procedure often required for elderly patients with urothelial bladder cancer (UBC). There is a significant need to optimize outcomes and, specifically, to identify quality indicators of care. Herein, we describe factors associated with perioperative blood transfusion (PBT) at RC and evaluate its association on outcomes in order to explore its utility as a quality indicator of surgical care.

Methods: Electronic records of treatment and surgical pathology reports were linked to the population-based Ontario Cancer Registry to identify all patients with bladder cancer who underwent RC between 2000 and 2008. Hospital discharge records were used to identify PBT. Modified Poisson regression model was used to determine the factors associated with PBT. A Cox proportional hazards regression model was used to explore the association between PBT and overall (OS) and cancer-specific (CSS) survival.

Results: Among 2593 patients identified, 62% received an allogenic red blood cell transfusion. The frequency of PBT decreased over the study period (from 68% to 54%; p<0.001). Factors associated with receiving PBT included age, sex, greater comorbidity, T stage and surgeon volume. Use of PBT was associated with inferior early outcomes including median length of stay (11 vs. 9 days; p<0.001), 90-day readmission rate (38% vs. 29%; p<0.001), and 90-day mortality (11% vs. 4%; p<0.001). OS and CSS at five years were lower among patients with PBT and these differences persisted on multivariate analysis (OS HR 1.33, 95% CI 1.20–1.48; CSS HR 1.39, 95% CI 1.23–1.56).

Conclusions: Although rates are decreasing, these data suggest very high utilization rate of PBT at time of RC in routine clinical practice. PBT is associated with substantially worse early outcomes and long-term survival. This association persists despite adjustment for disease-, patient- and provider-related factors, suggesting that PBT is an important and valid indicator of surgical care of UBC.

P17

Variations in preoperative use of bone scan among Medicare beneficiaries undergoing radical cystectomy

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Background: Routine staging with bone scan prior to radical cystectomy is generally discouraged in the absence of symptoms or an elevated alkaline phosphatase level. The current use of bone scan prior to radical cystectomy in the US is unknown. We sought to examine demographic, regional, and clinicopathologic factors associated with bone scan use in patients undergoing radical cystectomy and to assess trends in preoperative use of bone scan over time.

Methods: Using Surveillance, Epidemiology, and End Results - Medicare data, we identified 5573 patients who underwent a radical cystectomy from 2004–2011. The primary outcome was bone scan obtained within six months prior to surgery. Demographic regional, and clinicopathologic predictors of bone scan use were examined using a mixed logit model with health service area as a random effect to account for patients nested within health service areas. Covariates included age, race, comorbidity, marital status, education level and median income in ZIP code of residence, county population, region, grade, stage, measurement of an alkaline phosphatase level, and year of surgery.

Results: Among patients undergoing radical cystectomy during the study period, 1754 (31%) completed a preoperative bone scan. Urologists ordered most of these studies (69%). The adjusted probability of a patient undergoing a bone scan decreased from 0.40 in 2004 to 0.30 in 2011 (p=0.01). Compared with patients in the northeast region, those in the south (adjusted odds ratio [aOR] 0.37 95% CI 0.24–0.58), central (aOR 0.29 95% CI 0.18–0.49) and west (aOR 0.65 95% CI 0.56–0.75) regions were less likely to have a bone scan. Compared with those with stage ≤T1, patients with T2 (aOR 1.80 95% CI 1.51–2.15), T3 (aOR 2.12 95% CI 1.76–2.56), and T4 (aOR 2.22 95% CI 1.78–2.77) disease were more likely to have a bone scan. Alkaline phosphatase assessment was not associated with bone scan use (aOR 1.03, 95% CI 0.86–1.23). Among 102 individual surgeons who performed 10 or more operations over the study period, there was significant variation in the proportion of patients who completed preoperative bone scans (p<0.001).

Conclusions: Although bone scan use has decreased over time, they are still used frequently in the preoperative staging of bladder cancer. Future studies should investigate ways to improve patient selection and develop clinical pathways to standardize use of these studies in this setting.

P18

Young patients with T1a renal cell carcinoma and comorbidities treated at commission on cancer-accredited facilities are more likely to have radical and not partial nephrectomy

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Background: Prior studies indicate that in young patients, partial nephrectomy (PN) is associated with improved overall survival at long-term followup of 10 years when compared to radical nephrectomy (RN). However, prior analyses were performed using SEER database that does not allow for analysis of comorbidities that may have influenced outcomes. Using the Charlson-Deyo Comorbidity Score (CDCS) from the Participant User File (PUF) from the National Cancer Database (NCDB), we evaluate the correlation between presence of comorbidities and the likelihood of receiving a PN at Commission on Cancer (CoC)-accredited facilities.

Methods: Cases of surgically treated renal cell carcinoma (RCC) at CoC-accredited facilities were identified from the Participant User File (PUF) from 2004–2013 obtained from the NCDB (a joint project of the CoC of the American College of Surgeons and the American Cancer Society). Young patients aged 20–44 with tumors 4 cm or less were included in the study (N=9849). Cases were assigned a comorbidity score of 0 (CDCS=0), 1 (CDCS=1), or 2 (CDCS>1). Binary logistic regression was used to produce odds ratios (OR) for receiving RN compared to PN. Kaplan-Meier method and Cox Model were performed to estimate the overall survival curves and the hazard ratio (HR) between receiving RN and PN. The binary logistic regression and Cox models were adjusted for confounding factors.

Results: Compared to cases with a CDCS of 0, cases were more likely to be treated with a RN if they had a CDCS of 1 (OR 1.110, 95% CI 0.931–1.322) or greater than 1 (OR 2.049, 95% CI 1.527–2.750). PN offered an overall advantage in five-year and 10-year overall survival with an adjusted HR 0.432 (from Cox model, 95% CI 0.331–0.564) when compared to RN. There were 2701 cases with a followup of five years or greater. Followup length ranged from 0–130.96 months with a mean and median of 48.40 and 45.04, respectively.

Conclusions: NCDB PUF data analyses are consistent with prior studies demonstrating that compared with RN, PN improved overall survival in patients with small, localized RCC. Additionally, our analysis demonstrates that cases with higher CDCS are associated with an increased risk of being treated with RN.