Moderated Poster Session V: Oncology/Laparoscopy/Robotics/ Basic Science
Friday, September 30, 2016
3:00 – 4:30 pm

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Investigating tumor dissemination during robot-assisted radical cystectomy

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Background: Local recurrence remains a major cause of cancer-specific mortality following radical cystectomy. We sought to investigate tumor dissemination in the operative field and contribution of pneumoperitoneum during robot-assisted radical cystectomy (RARC).

Methods: Six RARCs were included. Four pelvic irrigations with 0.9% normal saline were performed: Sample I: before RARC; Sample II: after RARC; Sample III: after pelvic lymph node dissection (PLND), and leftover irrigation fluid at end of procedure (Sample IV). CO_2 used for pneumoperitoneum was filtered using surgical smoke plume evacuation device. Filter was then removed, washed with 0.9% saline, centrifuged and sediment was analyzed. Intravesical bladder irrigations were performed for three patients. Methodology: pelvic irrigations (SI-IV) were examined for cytology using thin preparation and cell block by a genito-urinary pathologist/ cytopathologist. Meanwhile, intravesical wash, pelvic irrigation, and filter sediment were analyzed for mRNA expression of bladder cancer related genes. mRNA expression was examined by qRT-PCR, with human bladder cancer cell line 253J and GAPDH (controls). Epithelial cell markers EpCAM, cytokeratins 8, 18, and 19 were also assessed. Bladder cancer gene panels used in the Cxbladder Detect urinary test were also examined (CDK1, MDK, IGFBP5, HOXA13 and CXCR2).

Results: Four patients received neoadjuvant chemotherapy. The mean operative time was 300 minutes. Four patients had pT1 disease, two had pT2 disease. All patients had negative soft tissue surgical margins and mean LNY was 31. One patient had positive lymph nodes. No spillage of tumor cells or inadvertent entry into the bladder was observed. All lymph nodes were removed in specimen bags. Cytology: Pelvic Irrigation showed mostly blood, inflammatory, mesothelial cells and macrophages. All specimens were negative for malignant cells. mRNA expression: Bladder cancer-related mRNA was detected in the intra-vesical wash and 253J bladder cancer cells (control). In contrast, all pelvic irrigations and filter sediment had very low or undetectable mRNA levels. However, in patient with node positive disease, SI irrigation showed many epithelial markers (KRT8, 18, 19, IGFBP5).

Conclusions: Our preliminary analysis showed that bladder cancer cells, bladder cancer-related genes and epithelial markers were not present in pelvic irrigation but in intravesical wash. These cells were detected in the pelvis in one patient with advanced disease. Active enrollment in this study continues, which will allow better understanding of local spread of bladder cancer. Funding by Roswell Park Alliance Foundation

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A comparison of open vs. robot-assisted prostatectomy postoperative oncological outcomes in high-risk prostate cancer patients between 2003 and 2013: Analysis of a single-center

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Background: Prostate cancer (PCa) is the most commonly diagnosed solid-organ tumor in the U.S. and robot-assisted radical prostatectomy (RARP) is currently the most common approach for localized PCa treatment. Comparative studies with respect to long-term biochemical recurrence rates associated with open radical prostatectomy (ORP) and RARP in the treatment of high-risk PCa patients are still lacking. The aim of our study was to compare the oncological outcomes and biochemical cancer recurrence in RARP and ORP in high-risk PCa patients.

Methods: This was a retrospective observational study of high-risk PCa prostatectomies, which were performed by two practiced surgeons in a single center from 2003–2013, with a record of 36-month followup time. Preoperative and postoperative data (Preoperative prostate-specific antigen [PSA], Nadir PSA, Gleason scores, pathologic stage, biochemical recurrence time) were compared with oncological results. Patients were categorized in different groups according to time to biochemical failure (six, 12, 24, 36months). High-risk PCa was defined as pathological stage ≥T3a, or biopsy Gleason score 8–10, or PSA>20 ng/ml, and biochemical failure was defined as two consecutive PSA≥0.2 ng/ml postoperatively.

Results: A total of 211 high-risk PCa patients (73 [34.59%] ORP and 138 [65.40%] RARP) were included in the study who had a record of 36 months of followup. Mean (median) age at the time of diagnosis was 60 (61) for PARP and 59 (60) for ORP. In high-risk patients, pathologic stage ≥T3a in RARP vs. ORP was 81.88% vs 75.34% (p=0.26] and Gleason score ≥8 in RARP was 39.85% and 36.98% in ORP (p=0.68). Patients who progressed to biochemical failure in 36-month followup were (42 [57.53%] ORP and 60 [43.47%] RARP) (OR 1.76; p=0.051). Patients who progressed to biochemical failure <6 months (16 [21.91%] ORP and 12 [8.69%] RARP) (OR 2.94; p=0.007); and <12 months (25 [34.24%] ORP and 30 [21.73%] RARP) (OR 1.87; p=0.048]; and <24 months (33 [45.20%] ORP and 47 [34.05%] RARP) (OR 1.63; p=0.112].

Conclusions: High-risk PCa patients who underwent ORP had a higher probability of a biochemical failure in the first six months and 12 months of followup than RARP. Our data displayed a trend toward more frequency and earlier biochemical failure in patients who underwent ORP than RARP. Despite early concerns regarding margin status in RARP patients, our data would suspect a trend toward a superior biochemical control in RARP group.

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Outcomes of robot-assisted radical cystectomy in patients over 80 years

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Background: Despite being the gold standard for treatment of non-metastatic muscle invasive bladder cancer, radical cystectomy remains a morbid procedure, especially for a high-risk population such as elderly. We sought to explore the safety, efficacy, and oncological outcomes of robot-assisted radical cystectomy (RARC) in patients older than 80 years.
Methods: We retrospectively reviewed our database of 425 RARCs. Patients were divided into two groups based on cutoff age of 80 years. Both groups were compared in terms of preoperative characteristics, perioperative outcomes including pathologic outcomes, complications, and survival rates.
Results: Sixty-two patients (14%) were 80 years or older. Although older patients received neoadjuvant chemotherapy less frequently (10% vs. 23% vs. 23%; p<0.01), they showed similar perioperative, pathological outcomes, and complications. Younger patients demonstrated better cancer specific and overall survival but not recurrence free survival rates (Fig. 1).
Conclusions: A minimally invasive approach to radical cystectomy does not seem to pose additional perioperative risks or compromise oncological outcomes in older patients.

P75
Should robot-assisted radical cystectomy be the gold standard? A surgeon perspective

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Background: Robot-assisted radical cystectomy (RARC) has been associated with similar oncological outcomes to the conventional open approach and superior in terms of perioperative outcomes. We sought to investigate the surgeon perspective of RARC after more than a decade of the first case.
Methods: Survey included questions about the demographics, training, surgical experience (open, laparoscopic and robot-assisted surgery), cystectomy experience, institution characteristics (volume of cases, robotic cases, cystectomy volume). We fitted a logistic regression model to evaluate surgeon and institution characteristics factors associated with considering RARC as the gold standard.
Results: Thirty-eight surgeons from 21 institutions participated in the study. Only one-third of the surgeons considered RARC as the new gold standard treatment. Twenty-six surgeons (68%) had experience of more than 10 years, and 22 surgeons (61%) received formal minimally invasive-robotic training, 18 surgeons (47%) performed >100 cases. Twenty surgeons (52%) performed more than 1000 robotic cases, 18 (47%) performed >100 RARC. Twenty-five institutions perform ≥500 inpatient urological procedures/year, and 26 had a dedicated cystectomy program. Considering RARC as the gold standard, surgeon age >55 years (p=0.04), urologic experience >10 years (p=0.04), and robot-assisted experience >1000 cases (p=0.02) were positive predictors of considering RARC as the current gold standard. In terms of institutions characteristics, performing >500 procedures a year (p<0.01) was a predictor of considering it as gold standard.
Conclusions: Higher institution and surgeon volume, based on surveying of bladder surgeons, were associated with considering RARC as the gold standard.
Funding by Roswell Park Alliance Foundation

P76
Robot-assisted laparoscopic ureterolysis and omental wrapping for management of idiopathic retroperitoneal fibrosis

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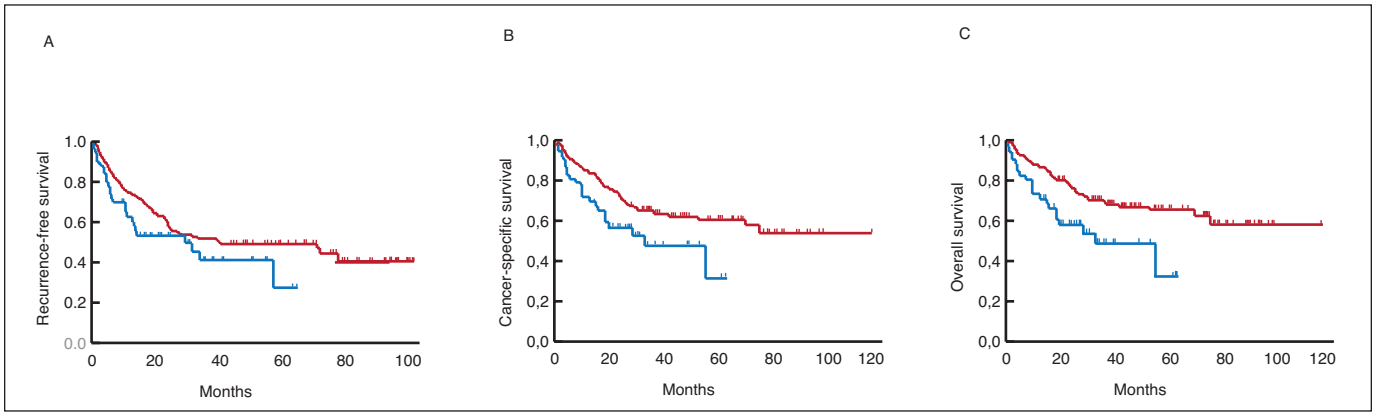
Background: Retroperitoneal fibrosis (RF) is a rare cause of ureteral obstruction. We report our experience of managing unilateral and bilateral idiopathic retroperitoneal fibrosis (RF) with robot-assisted laparoscopic ureterolysis (UL) and omental wrapping (OW).
Methods: Robot-assisted laparoscopic UL and OW were performed on four patients with idiopathic RF between March 2012 and January 2015. Our operative procedure included a cystoscopy with retrograde pyelogram to confirm the area of obstruction. Unilateral UL was performed in lateral decubitus position, while bilateral UL was performed in supine position. We introduced trocars using the da Vinci robotic system. The bowel was medialized and the retroperitoneum was entered, exposing the fibrotic ureter. The excised fibrotic tissue was sent for pathology to rule out malignancy. Following UL, an OW of the exposed ureter was performed via a window in the mesentery. The patient was then closed. Patient charts retrospectively reviewed.
Results: Three male and one female received clinical diagnosis of RF and underwent surgical treatment. The age range was 21–65 years. All patients presented with hydronephrosis, two of which were bilateral. Two patients had baseline chronic kidney disease. None received rheumatologic workup or preoperative steroid treatment. Two patients underwent bilateral UL and OW, and two patients underwent unilateral UL and OW. Mean estimated blood loss range was 75–180 cc. There were no intraoperative or postoperative complications. Total length of stay was one postoperative day for three patients and two for one patient. The



P74. Fig. 1. (A) Recurrence-free survival; ***(B)*** cancer-specific survival; and ***(C)*** overall survival of patients ≥80 years (blue) compared to those aged <80 years (red).

final pathology was consistent with retroperitoneal fibrosis in all four patients. The mean postoperative followup period was 31 months. All patients had complete resolution of symptoms and had either stable or improved renal function at followup.
Conclusions: Our surgical approach is unique in that we perform our OW through a mesenteric window rather than lateral to the colon as described by other groups, thereby eliminating the lateral movement and tension on ureter as the colon is reflected back to its usual anatomic position. Our experience with robotic-assisted laparoscopic UL and OW has resulted in no perioperative or long term complications, with excellent outcomes at midterm followup.

P77
Is robot-assisted radical cystectomy acceptable for locally advanced bladder cancer

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Background: Although cystectomy in the setting of locally advanced bladder cancer may be associated with higher morbidity and worse outcomes, it may be necessary to alleviate local symptoms. We aim to investigate if robot-assisted radical cystectomy (RARC) offers benefit in terms of perioperative outcomes and oncological control.
Methods: We reviewed our database of 425 RARCs. Patients with locally advanced disease (≥pT3) were subdivided based on the pathologic T and the N stages. Kaplan-Meier method and survival tables were used to compute recurrence-free survival (RFS), cancer-specific survival (CSS), and overall survival (OS) rates. Cox proportional hazards model were fit to evaluate predictors of survival.
Results: One hundred ninety-one patients (45%) had locally advanced disease; one-third of them had pT4 disease. No open radical cystectomy was performed in 10 years. Both groups had comparable perioperative outcomes. Patients with pT3N- disease demonstrated the best survival outcomes, while those with pT4N+ demonstrated the worst survival (Table 1, Fig. 1). On multivariable analysis, positive soft tissue surgical margins and pT4 were significant predictors of RFS, CSS, and OS.
Conclusions: RARC may offer survival benefit in patients with locally advanced disease, especially for patients with pT3 node negative disease.

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WITHDRAWN

P79
Spinal segmental contribution to pudendal and tibial inhibition of bladder overactivity in cats

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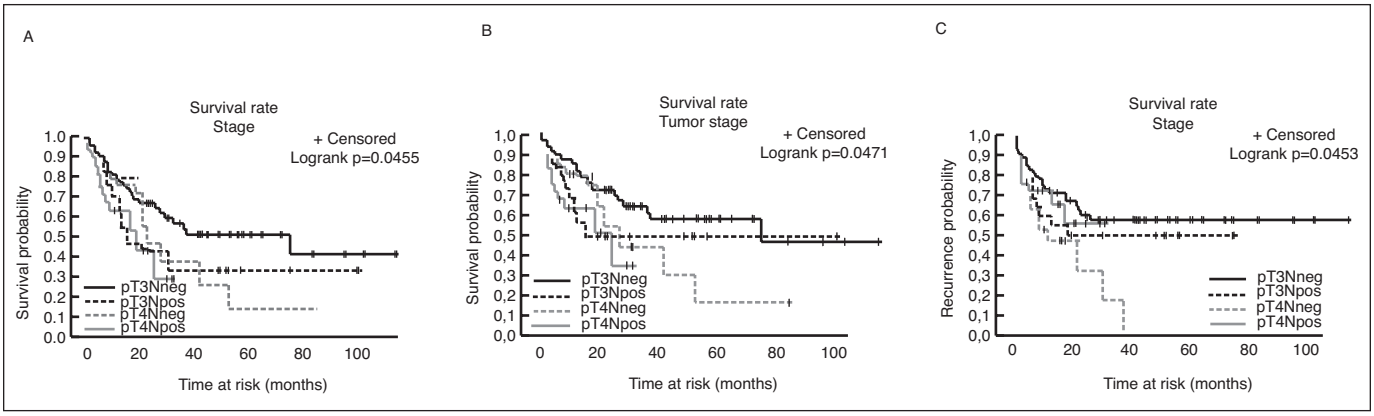
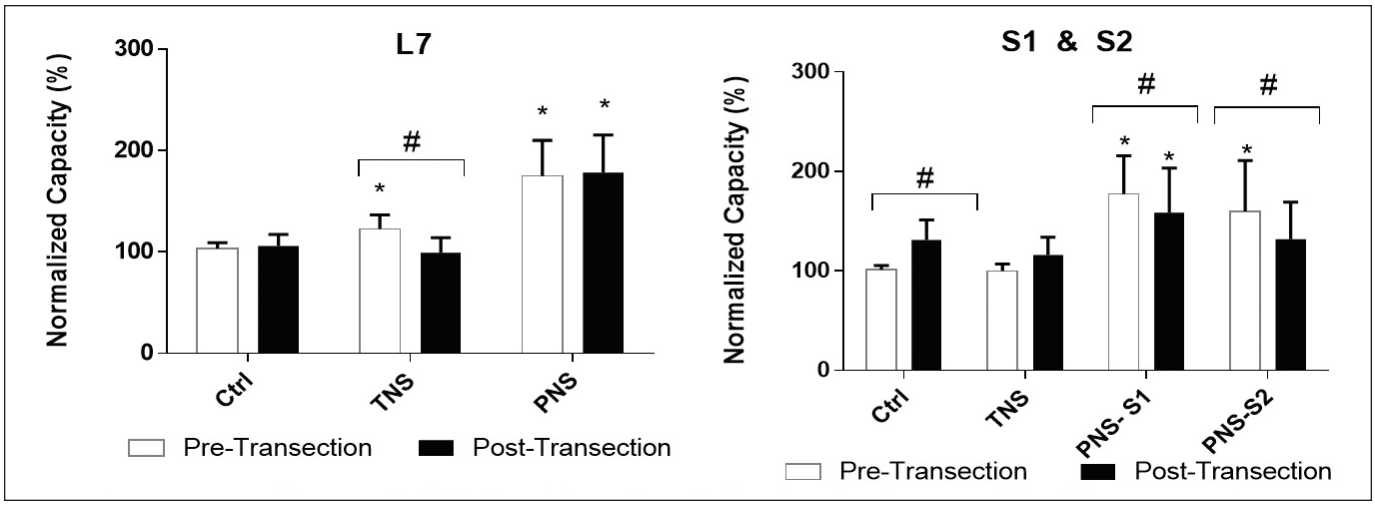
Background: As the etiology of overactive bladder (OAB) has largely remained unknown, treating OAB has been a major challenge. Alternative treatments have involved the use of sacral neuromodulation in alleviating OAB symptoms. Both tibial and pudendal nerve neuromodulation have been shown clinically to increase bladder capacity. The purpose of this study was to delineate the spinal segmental contribution of tibial and pudendal nerves, enabling inhibition.
Methods: Our experiment was conducted using a cat model in which we isolated the tibial and pudendal nerves and exposed the lumbar and sacral roots L5-S3 by performing a laminectomy. Initial bladder capacity was determined based on repeated cystometrograms (CMGs) with saline. An OAB model was created by infusing 0.50% acetic acid. Once a stable bladder capacity was achieved, both tibial and pudendal nerves were stimulated consecutively. The stimulation threshold was defined as the minimal intensity for inducing external anal sphincter or toe twitch and was performed at the beginning of the experiment. After stimulation and control CMGs, spinal dorsal roots from L5 to S3 were transected sequentially. After transection, stimulation was then tested to determine spinal dorsal root contribution to tibial and pudendal nerve inhibition.
Results: During acetic acid irritation, tibial nerve stimulation (TNS) significantly inhibited bladder overactivity and increased bladder capacity from 100.5±0.4% to 139.4±7.2%; p=0.001 (n=10 cats). Only after tran-

P77. Table 1. RFS, DSS, and OS of patients with locally advanced bladder cancer classified by pT and pN stages

	Overall survival (%)			Disease-specific survival (%)			Recurrence-free survival (%)		
	1 year	3 years	5 years	1 year	3 years	5 years	1 year	3 years	5 years
pT3N-ve	78	56	50	82	64	58	73	57	57
pT3N+ve	66	32	32	68	47	47	60	49	49
pT4N-ve	79	37	12	79	43	14	46	15	0
pT4N+ve	62	28	0	62	33	0	72	56	0



P77. Fig. 1. (A) Overall survival; ***(B)*** disease-specific survival; and ***(C)*** recurrence-free survival of patients with locally advanced bladder cancer classified by pT and pN stages.



P79. Fig. 1. Effect of tibial and pudendal stimulation on bladder capacity pre- and post-transection.

section of L7 dorsal root was TNS inhibition eliminated (Fig. 1). Pudendal nerve stimulation (PNS) also significantly increased bladder capacity from 100.5±0.4% to 179.2±14.5%; p=0.002. Transection of the S1 dorsal root partially reduced PNS inhibition (177.1±12.8% to 158.5±15.0%; p=0.002). The inhibition was completely removed following S2 dorsal root transection (Fig. 1).

Conclusions: Tibial afferents in L7 dorsal root has a major role in the inhibitory effect of TNS on bladder overactivity. In contrast, pudendal afferents in S1 and S2 dorsal roots modulate PNS inhibition on bladder overactivity. As a result, the pudendal afferents rather than tibial afferents might play a role in sacral neuromodulation in overactive bladder.

P80

Role of connective tissue growth factor in epithelial maladaptive repair in renal fibrosis

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Background: Chronic kidney disease (CKD) affects approximately 14% of U.S. population. Almost all etiologies are associated with renal fibrosis, and the severity of fibrosis correlates with degree of decline in renal function. Effective treatment to halt progression of CKD is largely lacking. Renal tubular expression of connective tissue growth factor (CTGF) is upregulated in various nephropathies. For example, in a mouse model of unilateral ureteral obstruction, increased CTGF expression and renal fibrosis is noted in the obstructed kidney, and pre-treating mice with a CTGF antibody reduces the degree of renal fibrosis. Thus, CTGF is an attractive target for drug therapy since it is considered a causative factor in kidney fibrosis. Precise mechanism of CTGF contribution to the maladaptive phenotype, however, is largely unknown.

Methods: Human kidney tubular epithelial cells (HK-2) were stably transduced with either control or CTGF expression lentiviral particles to mimic CTGF induction in renal injury. Immunoblot analysis was used to confirm CTGF overexpression and to investigate the effects of CTGF overexpression on various fibrotic factors and de-differentiation markers. Studies on epithelial cell-cell cross-talk were conducted by transfer of conditioned media from control or CTGF expression cells to similarly seeded HK-2 cells. Microscopy was used in evaluation of cell morphologic changes.

Results: Prolonged epithelial cell CTGF overexpression results in upregulation of pro-fibrotic factors including fibronectin and PAI-1, upregulation of dedifferentiation maker, vimentin, and downregulation of expression of epithelial cell adhesion molecule, E-cadherin, compared to vector transduced controls. Changes in epithelial morphology and suppression of cell count are also accompanied by CTGF overexpression relative to the control cultures. CTGF-derived paracrine factors promote grown inhibition in normal epithelial cells.

Conclusions: CTGF contributes to the maladaptive fibrotic phenotype via upregulation of various fibrotic factors, induction of epithelial dedifferentiation, suppression of cell growth, and epithelial cell-cell cross-talk. CTGF may be a good drug target in prevention or reduction in renal fibrosis.

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Effects of dietary omega-3 fatty acids on prostate tumor in immunocompetent mouse models

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Background: Prostate cancer (PCa) is second most diagnosed cancer in the world. Chronic inflammation is one of the contributing factors to PCa. The potential anti-inflammatory effects of omega (Ω)-3 fatty acids (FA) on PCa tumor microenvironment still remain to be explored. Our objective was to measure the effects of dietary Ω3 vs Ω6 FAs on prostate tumor growth and immune response in androgen-dependent and androgen-independent immunocompetent murine models.

Methods: C57BL/6 mice were fed with Ω3 or Ω6-enriched diets. After four weeks of diets, androgen-dependent murine prostate tumor cells, 2x10E6 TRAMP-C2 cells were injected sub-cutaneously in all mice. Tumor growth was measured every following day. Mice were sacrificed when the tumor volume reached 2 cm^3. Plasma, red blood cells (RBC) and tumors were collected from each mouse at sacrifice. RBCs and tumors FA profiles were determined by capillary gas-liquid chromatography. Plasma and tumor lysate cytokine profiles were determined using Luminex assays. Tumors were dissociated and analyzed for immune cell infiltration by multicolor flow cytometry. To study the effect of Ω3 vs Ω6 on androgen-independent PCa tumor, we repeated a similar experiment in surgically castrated mice.

Results: Tumor growth was slower in Ω3-fed mice than Ω 6-fed mice in both models. Fatty acid profiles show that dietary FAs get incorporated into RBCs and tumors. Cytokine profile of plasma was not modulated by Ω3- nor Ω6-enriched diet. However, the intra-tumoral immune response was modulated by Ω3-enriched diet as compared to Ω6 in both models. In non-castrated mice, GM-CSF, eotaxin, IL1b, IL13, and MIP-1b were more expressed in Ω3-fed mouse tumors. In castrated mice, eotaxin, IL6, and IL9 were absent, while IL4, IL5, IL10, IL12(p70), MCP-1, MIP-1b, and TNF-α were expressed higher in tumors of Ω3-fed mice. In addition, infiltrating lymphocytes CD4+ and CD8+ were abundant in non-castrated Ω6-fed mice, but none of the CD4+ subtypes were different,

indicating that functional status of these cells may be compromised. In castrated mice, CD4+ and CD8+ cells were not differentially infiltrated into tumors of Ω3-fed mice. However, CD4+ cell subtypes CD4+IL10+ and CD4+IL4+ cells were more abundant, indicating that Ω3 help to build a better immune response via Th2 cells in androgen-independent PCa.
Conclusions: As compared to dietary Ω6, Ω3 could favor a more effective immune response to slow down tumor growth in both, androgen-dependent and -independent PCa.

P82
A novel live cell diagnostic platform using phenotypic biomarkers for risk-stratifying prostate cancer

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Background: Current prostate cancer (PCa) diagnostics do not risk stratify patients well, leading to overdiagnosis and overtreatment of the disease. A novel risk stratification test using a live cell phenotypic biomarker suite was developed to objectively assess disease aggressiveness and invasive potential of PCa. The risk stratification diagnostic test incorporates matrix biology, phenotypic biomarkers, microfluidics, image analysis, and predictive statistical algorithms that are designed to improve understanding of disease progression and metastatic spread. This technology was developed to stably harvest single cell suspensions from suspect tumor sites and automate biomarker measurements of those cells via image analysis algorithms to generate predictive metrics on adverse pathologies. Data are presented towards clinical validation, the ability to risk stratify, and prediction of local aggressiveness and metastasis.
Methods: Cancer cells were stably maintained under in vitro optimized conditions that simulate in vivo conditions by using a specialized extracellular matrix (ECM) formulation. Live automated microscopy imaging of the phenotypic biomarkers was established by placing tumor samples in an ex vivo standardized environment using an ECM treated microfluidic device.
Results: This IRB approved clinical validation study was performed in 300 consecutive PCa radical prostatectomy (RP) derived specimens collected between 03/2014 and 04/2016. Statistical analysis of the data was analyzed with receiver operating characteristics (ROC) generated area under the curve (AUC). The data include capsular penetration, seminal vesicle invasion, as well as margin-positive disease-predictive analysis. The study further demonstrated that a suite of phenotypic biomarkers can be used to produce predictive scores termed local adverse pathology potential (LAPP) and metastatic adverse pathology potential (MAPP). Concordance correlation analysis supports that LAPP and MAPP are integral for distinguishing between cancer cells and non-cancer cells, which sample-wide analysis predicts both stage and adverse pathology such as extra-prostatic extension (EPE) and lympho-vascular invasion (LVI). The study results demonstrate AUCs greater than 0.80 in predicting EPE and LVI.
Conclusions: Using RP samples with established adverse pathology reports the clinical validation of a novel live-cell phenotypic in vitro tumor diagnostic test was established. This test has the potential to predict adverse pathologies for PCa and may have extended clinical applications to optimize staging and risk stratification.

P83
Fibrotic response to synthetic midurethral sling mesh in women with complications

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Background: The mechanisms of the host-tissue response as it relates to mesh complications have not been well-delineated. The host response to midurethral slings (MUS) has been even less studied. TGF-βis a dominant mediator of fibrotic tissue remodeling that has been well-studied. Further characterization of fibrosis can be gained by analysis of collagen fibers with picrosirius red stain (PSR), where thinner fibers appear green and thicker fibers appear yellow, orange, or red. It has been suggested that green represents type III collagen and yellow, orange and red type I collagen. The purpose of this study was to define and compare pathological fibrosis in patients with synthetic MUS removed for pain vs. exposure.
Methods: Thirty-three mesh-vagina complexes (exposure, n=20; pain, n=13) were compared to 14 full thickness vaginal biopsies taken at the time of mesh excision from an uninvolved area on the anterior wall (control). TGF- βlevels were measured by ELISA immunoassay and histologic comparisons made performed with H&E, Masson's trichrome, and PSR stains. PSR slides were analyzed under polarized light microscopy by applying custom threshold color filters to quantify areas of red, orange, yellow, and green, consistent with thickness of collagen fibers in the area of mesh fibers. Appropriate statistical analyses were performed.
Results: Demographic data did not differ between groups. Age was independently associated with TGF-β; decreasing levels were observed with increasing age (p=0.001). TGF-β was higher in mesh-vagina explants compared to control tissue (p=0.004), but was not significantly different between exposure and pain groups (p=0.56). We found a moderate negative correlation with time of implantation (R -0.422; p=0.057). There was significant inflammatory infiltrate at the host-tissue/biomaterial interface on H&E and trichrome stains in both groups. Analysis of PSR slides demonstrated a greater area of green (thin) fibers in the exposure group (p=0.039) and red (thick) fibers in the pain group (p<0.001). We also calculated a ratio of area green/(yellow + orange + red) and found that the mean value was significantly greater in the exposure group (p=0.01). There was a moderate positive correlation between the area of orange (thick) fibers and length of mesh implantation (R 0.504; p<0.02), as well as total collagen and length of implantation (R 0.512; p=0.02), supporting collagen deposition and maturation over time.
Conclusions: In women with complications, MUS induce an inflammatory tissue response characterized by elevated TGF-βlevels, which are also correlated with length of implantation. Patients who had mesh removed for pain had thicker collagen fibers compared to those with exposure, which supports progressive fibrosis as a potential mechanism contributing to pain.

P84
Liquid buccal mucosal grafting for urethral stricture disease: A preliminary animal study

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Background: We describe a method of treatment of urethral stricture using liquid-suspended buccal mucosal micro-grafts (LBMMG) to augment direct vision internal urethrotomy (DVIU). A rabbit stricture model was used to test this method.
Methods: In Phase 1, DVIU was performed in three rabbits and augmented by immediate intra-urethral injection of autologous buccal mucosal micro-grafts suspended in fibrin glue. Animals were sacrificed at 2–3 weeks. Their urethras were examined for presence of buccal mucosa engraftment. In Phase 2, strictures were induced in nine rabbits and divided into two groups: 1) treatment with DVIU and LBMMG (six animals) and 2) control with DVIU and injection of fibrin glue (threer animals). Two treated and one control animals were sacrificed at eight, 16, and 24 weeks. Prior to sacrifice, animals underwent retrograde urethrograms (RUG) and urethroscopy. Histologic specimens were examined for presence of buccal mucosal engraftment.

Results: In Phase 1, two of the three demonstrated engraftment of buccal mucosa within the urethra after injection of LBMMG. In Phase 2, all six treated animals demonstrated engraftment of micro-grafts and showed resolution or improvement of strictures on RUG and on cystoscopy. The control animals had no buccal engraftment and had varying degrees of fibrosis and chronic inflammation. One of the three controls had persistent stricture while the other two showed radiographic and cystoscopic improvement of their strictures.
Conclusions: This proof-of-concept study demonstrates the feasibility of liquid buccal mucosa micro-graft use for minimally invasive urethral stricture repair. Additional studies are needed to optimize micro-graft preparation and delivery.

P85
Early oncological failure after robot-assisted radical cystectomy: Results from the International Robotic Cystectomy Consortium

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Background: Despite being performed for over a decade with satisfactory early oncologic outcomes, there are still concern regarding the induction of local recurrence and port site metastasis following robot-assisted radical cystectomy (RARC). To our knowledge, no major clinical study evaluating early oncological failure (EOF) with long-term followup has been presented regarding RARC. We attempt to assess the oncological safety of RARC with emphasis on rapid local recurrence and port site metastasis in a multi-institutional cohort.
Methods: The IRCC database comprising of 1586 patients from 22 institutions in 13 countries performing RARC was queried for EOF. EOF was defined as any presence of rapid local spread disproportional to the primary stage within one month and any port site metastasis after surgery. Additionally, the lead surgeons from each institution were contacted to confirm any reports of early failure. Each incidence was analyzed to identify common variables which may be associated with EOF.
Results: In the entire database of 1549 patients, EOF was reported in six patients (0.3%). Majority patients were males (90%) with ASA of >3 in 75% of them. Mean age was 67 years (range 42–80 years). No inadvertent spillage of urine was reported. No major postoperative complication was noted in all of the eight patients. All of the patients had high-grade disease, with negative margins, while only two patients had lymphovascular invasion on final histopathology. Additionally, in the database, three cases of port site metastasis were reported (0.15%). All of these patients had >T2 final pathological staging, with 2/12 and 1/8 positive lympho nodes in two cases. Specimen retrieval was performed using the standard lap-bag, without any reported urine spillage. Mean time to port site metastasis was four months (range 3–6 months). Two metastases were in isolation, while one case had additional lung lesions.
Conclusions: Early oncological failure and port site metastasis are rare but a significant outcome after RARC. Further prospective collection of factors associated with early failure can help in better understanding this rare, yet significant outcome.

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Interrogating exosome miRNA in bladder cancer differential expression by disease status

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Background: Exosomes, small membrane-bound vesicles, contain onco-specific cargo implicated in the diagnosis of malignancy. A number of studies have investigated exosome messenger RNA and protein levels in bladder cancer. However, none have interrogated micro RNA (miRNA) in exosomes of bladder cancer. It is postulated that malignant cells have an upregulated production of exosomes with mechanisms to preferentially sort RNA. Exosome miRNA has promising results in other malignancies. miRNAs have shown promising results in bladder cancer, however, not in the context of exosomes. Standard exosome extraction methods involve ultracentrifugation not feasible for the clinical setting. Our objective is to extract RNA from urine exosomes in bladder cancer patients using a commercially available kit and interrogate differential levels of miRNA that distinguish disease status.
Methods: Urine was prospectively collected from 42 subjects, with 14 positive for bladder tumor on cystoscopy and pathology that is high-grade (HG) in 53.8% and low-grade (LG) in 46.2%. Exosome RNA in urine was extracted using a commercially available kit (Norgen). Total RNA and small length RNA <250 nts, including miRNA, was measured with a Bioanalyzer. Specific miRNA targets were interrogated with Q PCR. An additional 112 miRNA targets were interrogated with open array (Life Sciences).
Results: Bladder tumor patients had a mean age of 67.0 years (range 35–90), 61.5% male and 37.5% female, while controls had a mean age 67.7 years (range 42–95), 56.5% male and 43.5% female. Total exosome RNA was higher in tumor patients than controls, 36.9 ng/uL vs. 11.2 ng/uL ($p<0.02$). In addition, total miRNA concentration was 8.0 vs. 1.1 ng/uL ($p<0.01$) in tumor-positive urines vs. controls. In interrogating specific miRNA sequences, miRNA -452, 210, and 10 b were expressed at a lower level in urine exosomes of patients with bladder tumors ($p<0.05$), with clustering illustrated on target-centric heat map with Pearson's correlation. Differential expression in urine exosomes of HG and LG tumors was also illustrated, with miRNA 210, 113, and 152 expressed in higher levels in LG than HG and heat map clustering by grade.
Conclusions: Exosomal RNA can be extracted using a commercially available kit and interrogated for miRNA targets that show difference in expression between patients with and without bladder cancer, and differing pathologies.