Moderated Poster Session I: Oncology 1
Thursday, Oct 31, 2013
3:15 PM - 5:00 PM

P1
R.E.N.A.L Nephrometry Scores Are Associated With Perioperative Outcomes Following Partial Nephrectomy

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Background: To externally validate the relationship of R.E.N.A.L nephrometry score to perioperative outcomes following partial nephrectomy
Methods: We retrospectively reviewed our institutions database for any patient undergoing a partial nephrectomy from January 2011 to January 2012. R.E.N.A.L nephrometry score was compared with different pathologic features of these tumours.
Results: A total of 79 patients underwent partial nephrectomy and had imaging studies available. Higher R.E.N.A.L score was associated with increased blood loss (p<0.001), increased hospital stay (p<0.001), increased preoperative (p=0.035) and pathologic tumour size (p<0.001) and increased risk of complications (p=0.015). However, there were no significant differences with respect to demographic characteristics, type of procedure and renal ischemia time (Table 1).
Conclusions: Increasing R.E.N.A.L score is associated with increased blood loss, hospital stay and complications.

P2
Renal Lesions With High R.E.N.A.L Nephrometry Score Are Associated With More Aggressive Renal Cell Carcinomas

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Background: To externally validate the relationship of R.E.N.A.L nephrometry score to pathologic features of renal lesions surgically excised.

Table 1. P1.

	All patients N=79	Low complexity (NS: 4-6) N=32	Moderate complexity (NS: 7-9) N=32	High complexity (NS: 10-12) N=15	*p* value
Age, year (median, Q1, Q3)	64.0 (54.0, 71.0)	62.5 (55.5, 68.75)	66.0 (55.0, 72.8)	61.0 (54.0, 69.0)	0.483
BMI, kg/m^2 (median, Q1, Q3)	29.4 (25.2, 33.6)	28.4 (24.7, 32.4)	31.0 (25.9, 34.5)	29.3 (24.3, 32.7)	0.362
Type of procedure, n (%)					0.079
Robotic/laparoscopic procedure	7 (8.9)	6 (18.8)	1 (3.1)	0(0)	
Open procedure	72 (91.1)	26 (81.2)	31 (96.9)	15 (100)	
EBL, mL	600.0 (200.0, 1000.0)	300.0 (100.0, 725.0)	750.0 (300.0, 1200.0)	900.0 (650.0, 3500.0)	0.001
Ischemia time, min (n=40)	10.5 (8.0, 17.3)	13.0 (8.3, 24.5)	10.0 (7.3, 12.8)	12.5 (7.8, 17.0)	.474
Hospital stay, days	3.0 (2.0, 4.0)	3.0 (2.0, 3.0)	3.0 (3.0, 4.0)	4.0 (3.0, 5.0)	<0.001
Any complication (CCS 1-5), n (%)	10 (12.7)	1 (3.1)	4 (12.5)	5 (33.3)	0.015

BMI: body mass index; EBL: estimated blood loss; CCS: Clavien-Dindo classification system.

Table 1. P2.

Variables, n/N (%)	Low (RENAL 4-6)	Med (RENAL 7-9)	High (RENAL 10-12)	P for Linear trend
Total	36 (29.0)	49 (39.5)	39 (31.5)	
Benign	12/36 (33.3)	9/49 (18.4)	8/39 (20.5)	.201
RCC	23/36(63.9)	40/49 (81.6)	26/39 (66.7)	.829
T1a	19/23 (82.6)	27/40 (67.5)	3/25 (12.0)	<.001
T1b	4 /23 (17.4)	10/40 (25.0)	7/25 (28.0)	.395
T2	0/23 (0)	3/40 (7.5)	8/25(32.0)	.001
T3+	0/23 (0)	0/40 (0)	7/25 (28.0)	<.001
Grade I/II	18/23 (78.3)	24/39 (61.5)	12/25 (48.0)	.032
Grade III/IV	5/23 (21.7)	15/39 (38.5)	13/25 (52.0)	.032

Methods: We retrospectively reviewed our institutions database for any patient undergoing a partial or radical nephrectomy from January 2011 to January 2012. R.E.N.A.L nephrometry score was compared with different pathologic features of these tumours.
Results: A total of 124 renal masses were surgically extirpated and had imaging studies available. Higher R.E.N.A.L. score was associated with higher grade tumours (grade III/IV) ($p<0.05$), and higher stage tumours (pT2, pT3+, $p<0.001$). Though R.E.N.A.L score was not able to distinguish malignant from benign lesions (Table 1).
Conclusions: Increasing R.E.N.A.L score is associated with higher grade RCC, confirming the utility of more aggressive management in these patients

P3
The CCP Score: A Novel Genetic Test for Prostate Cancer

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Background: The natural history of prostate cancer is highly variable and difficult to predict accurately. Improved tools are needed to match treatment more appropriately to a patient's risk of progression. Therefore, we developed an expression signature composed of genes involved in cell cycle progression (CCP score) and tested its utility in prostate cancer.
Methods: We developed an expression signature composed of 31 cell cycle progression and 15 housekeeper genes. An expression score (CCP score) was derived as the mean of all cell cycle progression genes. The signature was tested at disease diagnosis in two conservatively managed cohorts (N=337 and 349), after radical prostatectomy in two additional cohorts (N=366 and 413), and after external beam radiation therapy (EBRT) (N=141) in a final cohort. All studies were retrospective.
Results: The cell cycle progression signature was a highly significant predictor of outcome in all five studies. In conservatively managed patients, the CCP score was the dominant variable for predicting death from prostate cancer in univariate analysis ($p=6.1 \times 10\text{-}22$ after diagnosis by TURP and $p=8.6 \times 10\text{-}10$ after diagnosis by needle biopsy). In both studies, the CCP score remained highly significant in multivariate analysis, and in fact, was a stronger predictor of disease-specific mortality than other prognostic variables. After radical prostatectomy, the CCP score predicted biochemical recurrence (BCR) in univariate analysis ($p=5.6 \times 10\text{-}9$ and $p=2.23 \times 10\text{-}6$) and provided additional prognostic information in multivariate analysis ($p=3.3 \times 10\text{-}6$ and $p=9.5 \times 10\text{-}5$). After EBRT, the CCP score predicted BCR (Phoenix criteria) in univariate ($p=0.0017$) and multivariate analysis ($p=0.034$). In all five studies, the hazard ratio per unit change in the CCP score was remarkably similar, ranging from 1.89 to 2.92, indicating that the effect size for the CCP score is robust to clinical setting and patient composition.
Conclusions: The CCP score predicts prostate cancer outcome in multiple patient cohorts and diverse clinical settings. In all cases, it provides information beyond clinicopathologic variables to help differentiate aggressive from indolent disease.

P4
Process of Care Variables Explaining the Influence of Surgical Volumes in Bladder Cancer Outcomes: A Population-Based Study

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Background: Procedure volume is related to operative morbidity and mortality after cystectomy. However its effect on cancer-specific survival is not well characterized. Here we describe the relationships between hospital volume, surgeon volume, and late survival after cystectomy for muscle invasive bladder cancer (MIBC).
Methods: Electronic records of treatment and surgical pathology reports were linked to the population-based Ontario Cancer Registry to identify all patients who underwent cystectomy for MIBC in Ontario, Canada. Process of care factors examined to explain any volume effect included adjuvant chemotherapy use, lymph node dissection (LND) and surgical margin status. Volume was divided into quartiles and determined based on mean annual number of hospital/surgeon cystectomy cases per 5-year period. A Cox proportional hazards regression model was used to explore the associations between volume and survival.
Results: The study included 2738 cystectomy cases for MIBC treated between 1994 and 2008. Five-year overall (OS) and cancer-specific survival (CSS) for all cases were 30% (95% CI 28-31%) and 34% (95% CI 32-36%). In comparing the highest volume quartile to the lowest, the higher volume hospitals were more likely to have utilized adjuvant chemotherapy (27% vs. 15%, $p<0.001$) and were more likely to have performed a LND (83% vs. 53%, $p<0.001$). The highest volume hospitals were also associated with a lower 90-day mortality (6% vs. 10%, $p=0.032$). Low volume hospitals were associated with lower 5-year OS 28% (95% CI 24-31%) and CSS 32% (28-36%) compared to high volume centres 35% (31-38%) and 38% (33-42%) respectively. In multivariate analysis, hospital volume was associated with both cancer specific ($p=0.013$) and overall survival ($p=0.002$). Compared to the highest volume centres the HR for OS in the low volume centres was 1.24 (95% CI 1.09-1.41); the HR for CSS was 1.21 (95% CI 1.04-1.40). When individual surgeon volume was added into the model, almost all of the hospital volume effect on OS and CSS disappeared (1.07 [95% CI 0.90-1.27] and 1.05 [95% CI 0.86-1.27], respectively). The point estimate for the volume effect diminished, but did not disappear when LND was included in the model whereas utilization of adjuvant chemotherapy and margin status did not mediate the effect.
Conclusions: Greater cystectomy volume is associated with improved 5-year CSS and OS in MIBC in the general population and this effect appears to be explained best by individual surgeon volumes as opposed to hospital volume.

P5
Pathological Features of Surgically Managed Small Renal Lesions: Analysis of Contemporary Series

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Background: Recent studies have reported a 20% incidence of benign pathology following resection of small renal masses. Most series conclude that small renal cell carcinomas (RCC) trend toward low-grade histology with only a 10% incidence of high-grade features. This correlation has made the surgical management of small renal masses controversial, and prompted use of active radiographic surveillance. We analyzed the pathological findings of surgically managed small renal masses, 3 cm or less, for frequency of benign disease and correlation with low-grade malignancy.
Methods: We retrospectively reviewed of all patients that underwent surgical resection of renal masses under 3 cm in diameter between 2008 and 2012 at a single institution. Tumours were grouped as <1 cm, 1-2 cm and 2-3 cm in diameter for analysis. All pathology specimens were reviewed by a single urological pathologist for diagnosis, histological subtype, TNM stage, nuclear grade, angiolymphatic invasion or extra-capsular extension.
Results: A total 388 renal tumours had histological information available for analysis. Detailed pathological features are found in Table 1. Sixty-six were benign (17%), which comprised 50% of tumours <1 cm, 20% of 1-2 cm and 15% of 2-3 cm tumours ($p=0.09$). The most common histology was conventional clear cell carcinoma , which was identified in 62% of tumours 1-2 cm in diameter and 72% of tumours 2-3 cm in diameter ($p=0.4$) There was a significant increase in the incidence of high-grade features in lesions >2 cm (32%) relative to 1-2cm lesions (19%) ($p<0.01$).
Conclusions: In our series of small renal masses the incidence of benign pathology is comparable to that reported in recent published studies. However, we observed a higher incidence of high-grade features than

Table 1. P5. Pathological Features of 388 renal masses

	<1	1.0-1.9	2.0-3.0
Overall	4	140	244
Histology			
Clear cell	2	87 (62)	175 (72)
Papillary	-	20	29
Chromophobe	-	2	9
Stage			
T1a	2	110	197
T3a		2	11
Metastasis	-	-	4
Low-grade features			
Fuhrman grade 1&2	2	92 (65)	142 (57)
High-grade features	-	27 (19)*	79 (32)*
Fuhrman grade 3&4	-	20 (14)*	66 (27)*
Angiolymphatic invasion	-	5	16
Benign	2	28 (20)	36 (15)
Angiomyolipoma	-	20	26
Oncocytoma	1	7	8
Nephrogenic adenoma	-	1	2
Papillary adenoma	1	-	-
Surgical approach			
Radical nephrectomy	-	10 (7)	39 (16)
Laparoscopic	-	47 (33)	91 (37)

*Statistical significance.

previously reported, particularly for tumours 2-3 cm in diameter. These findings add to the data available for counseling patients with small incidental renal masses regarding active surveillance versus immediate intervention.

P6

The First National Experience Of Intravesical Injection Of The TraceIT™ Tissue Marker Under A Local Anesthesia For Imaging Visualization Of Muscle-invasive Bladder Cancer For The Targeted Imrt

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Background: The treatment of musle invasive bladder tumours remains challenging for urologic oncologists. Targeted radiation therapy coupled with chemotherapy has become as a promising treatment modality comparable with a radical cystectomy according to the cancer control results. Radiation oncologists often combine, or fuse, MR and CT images to improve dose planning. accuracy. However, most markers do not have equivalent visibility on both CT and MR, creating a permanent image artifact in areas of particular interest and limiting their usefulness for image fusion. The TraceIT™ Tissue Marker (Augmenix, Waltham, MA) is an injectable polyethylene glycol based hydrogel marker designed to be visible under CT, cone beam computed tomography (CBCT), MR and ultrasound imaging for three months after implantation, and then to absorb within seven months.

Methods: Patient M., 80 years with history of left nephrureterectomy for upper tract urothelial carcinoma 1.5 years ago diagnosed with recurrent bladder cancer. Cystoscopy was performed where a large papillary tumour more than 5 cm on anterior wall was found and resected by TURBT. The histology confirmed a high-grade muscle-invasive urothelial carcinoma with possible lymphatic invasion. Patient declined radical cystectomy and chose combination radiotherapy and chemotherapy. In order to outline a bladder tumour margins, the patient agreed to undergo an injection of TraceIT™ Tissue marker before IMRT. Under local anesthesia (intraurethral 2% lidocaine gel and intravesical 1%-lidocaine) a rigid 20 Fr. resectoscope was introduced into bladder, systematic cystoscopy was performed and of tumour was localized. TraceIT™ was injected using a 23G needle with 0.3 mL into 6 locations around tumour resection bed within 1 cm from cancer border in total amount of 1.8 mL were injected .

Results: Patient tolerated a procedure well and immediately underwent planning CT scan following the injection. The patient was discharged following completion of the planning CT scan. Three days later, IMRT radiation therapy was started for a planned dose of 65 Gy in total on the Varian image-guided linear accelerator using Rapid Arc technology. The exact outlining of tumour margins on CBCT provided with TracellT hydrogel™ allowed us to use a targeted boost IMRT regimen that led to successful cancer eradication with minimal toxicity.

Conclusions: Next generation absorbable tissue markers such a TraceIT hudrogel™ extends our ability to exactly map the tumour margins for targeted radiation therapy.

P7

Pure And Dominant Gleason Pattern 3 Prostate Cancer Has Limited Invasive And Metastatic Potential.

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Background: The potential for local invasion and metastatic spread of pure and dominant Gleason pattern 3 prostate cancer appears to be limited. As such, its clinical significance is becoming increasingly questioned. To address this question, the biochemical recurrence, pathological extent and survival of a large cohort of men with pure and dominant Gleason 3 pattern in the prostate after open radical prostatectomy (RP) were examined.

Methods: 2755 patients underwent open RP by a single surgeon from 1999-2012. Patients were stratified by pathologic Gleason grade: pure 3+3=6 (Group 1), 3+3=6 with any higher tertiary grade (Group 2), and pure 3+4=7 (Group 3). Univariate and multivariable analyses were used to compare biochemical recurrence (defined as PSA ≥0.2 ng/mL or any adjuvant treatment), overall and cancer-specific survival, pathological features and margin status among groups.

Results: A total of 622, 144 and 925 patients were categorized into Groups 1, 2, and 3, respectively. At a median follow-up of 58 months (IQR 29-95), biochemical recurrence occurred in 1.6%, 5%, and 6.8% in Groups 1, 2 and 3 ($p<0.001$). There was no difference in overall survival among groups and only one patient experienced a prostate cancer specific death (group 3). Group 1 patients had significantly smaller tumour nodules and percentage of tumour within the prostate ($p<0.001$). Tumours were organ confined in 96% (group 1), 91% (group 2) and 79% (group 3). Three patients had lymph node metastases, all from pure 3+4=7 primary tumours. Positive surgical margins occurred in 2.4% 8.3% and 5.3% in Groups 1, 2 and 3, respectively.

Conclusions: Pure and dominant Gleason pattern 3 prostate cancer has limited invasive and metastatic potential. Pure Gleason 3+3=6 lesions are particularly indolent lending further support for initial active surveillance of these tumours. Biochemical recurrence rates should be in the single digits after RP, reflecting the quiescent biological nature of these cancers.

P8

An Analysis of Hospital Readmissions Following Radical or Partial Nephrectomy for Renal Cell Carcinoma

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Background: Retrospective comparisons suggest higher postoperative complication rates for partial nephrectomy (PN) compared to radical nephrectomy (RN), but readmission rates based on surgical approach are

poorly documented. Postoperative hospital readmissions have a major economic impact and are utilized as surgical quality indicators. We set out to investigate the impact and reasons for post-RN and PN hospital readmissions.
Methods: We queried a single centre prospectively maintained IRB-approved kidney cancer database for all patients who underwent RN or PN between February 1999 and January 2013. Reasons for readmissions were recorded and patients were stratified into RN versus PN and open versus minimally invasive approaches. Readmission rates within 30 and 90 days of surgery were recorded.
Results: Among 864 consecutive patients undergoing nephrectomy, 426 underwent RN and 438 underwent PN. Of the total cohort, 57 (6.6%) were readmitted within 90 days of surgery, including 7 patients (1%) readmitted twice. We compared readmission rates between different surgical techniques and found a higher readmission rate for laparoscopic (including robotic) radical nephrectomies compared to laparoscopic partial nephrectomies (9% vs. 5%, p=0.045). We did not find a significant difference in readmission rates between open radical and open partial nephrectomies (6.5% vs. 6.8%, p=0.928). Readmission rates between laparoscopic and open approaches were also similar (6.6% vs. 6.6%, p=0.991). When analyzing the reasons for readmission between radical and partial nephrectomies, we noted higher rates of readmissions due to post-op ileus (1.9% vs. 0.5%, p=0.052), disease progression (2.35% vs. 0%, p=0.001), and biliary or lymphatic leakage (1.2% vs. 0%, p=0.024) in radical patients. For partial nephrectomies, readmission due to bleeding (1.4% vs. 0.2%. p=0.061) occurred at a numerically but not statistically higher rate than radicals. When stratified by tumour size and stage, there were no differences in readmission rates observed, despite the higher rate of disease progression for RN.
Conclusions: Our analysis indicates a higher rate of readmissions for laparoscopic radical nephrectomies compared to laparoscopic partial nephrectomies. Further investigation is needed to assess the impact of standardized postoperative care pathways on reduction of postoperative readmissions.

P9
Is Smoking A Risk Factor For Non-clear Cell Renal Cell Carcinoma Subtypes?

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Background: Renal cell carcinoma is comprised of multiple cancer subtypes with different histologies, genetics, and clinical behaviors. Smoking remains among the best established clinical risk factors for RCC, however the risk among individual RCC subtypes has not been thoroughly studied. We investigated the relation between smoking and the diagnosis of individual RCC subtypes.
Methods: A single institutional database of 691 consecutive nephrectomy patients, including 639 with renal tumours and 52 without neoplasms, was retrospectively reviewed. Data on smoking at the time of surgery were collected prospectively on all patients and tested for statistical association with RCC subtype or benign tumour diagnosis.
Results: Mean age for patients with renal tumours was 60.6 years with a 1.6:1 male:female ratio, compared to 60.8 years and 1.3:1 male:female ratio for patients without neoplasms. The overall rate of smoking (active or former) was significantly higher among patients with renal tumours (51%) compared to those without tumours (33%; p=0.01). However, among the chromophobe RCC patients (31%), smoking incidence was similar to that of non-neoplastic nephrectomy patients (p=1.0), and significantly lower than clear cell RCC (52%, p=0.03) or papillary RCC (56%, p=0.02) patients. Compared to tumour-free patients, the relative incidence of smoking was 1.6, 1.7 and 1.0 for patients with clear cell RCC, papillary RCC and chromophobe RCC, respectively. Similarly, active smoking was quite uncommon among chromophobe RCC patients (6%), benign tumours (12%) and patients without neoplasms (14%), compared to clear cell RCC (22%) and papillary RCC (25%; p=0.03 and p=0.03, respectively, compared to chromophobe RCC). The likelihood of diagnosis of either chromophobe RCC or benign tumour was more than double among non-smokers compared to smokers, while an active smoking history increased the chance of a papillary RCC or clear cell RCC tumour diagnosis to 94%.
Conclusions: Traditional understanding of smoking as a risk factor for RCC applies to both clear cell RCC and papillary RCC, but not chromophobe RCC. Absence of smoking increases the likelihood of a favorable histologic diagnosis with either chromophobe RCC or benign pathology. These findings underscore distinct molecular carcinogenic mechanisms underlying the different RCC subtypes, and clinically may aid in risk stratification of renal tumour patients lacking known histologic diagnosis.

P10
Cost Comparison between Active Surveillance and Surgical Intervention for Small Renal Masses

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Background: The incidental detection of small, solid renal lesions is now a common occurrence. Although surgical resection remains the gold standard for these lesions, in elderly patients and patients with limited life expectancy evidence suggests active surveillance is also a reasonable option as these lesions have a low risk of metastasis. The present study compares the costs of immediate resection to active surveillance.
Methods: Total costs were calculated for both active surveillance and up front surgical resection in patients with a solid, enhancing mass less than 4 cm. Costs were calculated over a 10 year period using a discount rate of 5%. The active surveillance protocol consisted of an office visit and renal ultrasound at 3, 6, 12, 18 and 24 months after diagnosis, and then annually if the mass was stable. Surgical excision consisted of either open, laparoscopic, or robotic partial nephrectomy. Patients in the upfront surgical arm were seen post-operatively at two weeks and three months after the procedure, and then annually for an office visit, ultrasound, and comprehensive metabolic panel. Patients were discharged from follow-up if they remained without evidence of disease five years after surgery. Procedure costs were estimated from reported costs in the literature. Costs of office visits, imaging studies and bloodwork were based on Medicare reimbursement.
Results: Total cost of active surveillance after 10 years was $2,053, assuming no patients crossed over to surgical intervention. If CT was used to monitor patients instead of ultrasound, costs increased to $3,499. The cost of up front surgical intervention after 10 years was $16,623, including follow-up care. If procedural costs were increased or decreased by 20%, costs after 10 years would be $19,663 and $13,583, respectively. If the annual crossover rate from active surveillance to surgical intervention was 4% (or 33.5% of all patients after 10 years), the costs of the active surveillance increased to $5,818. Even if all patients eventually crossed over to surgical intervention, active surveillance remains less costly than up front surgical intervention.
Conclusions: Active surveillance is clearly much less costly than up front surgical intervention for patients with small renal masses. If the risk of metastasis from these lesions is indeed low, active surveillance should be strongly considered in elderly patients and patients with limited life expectancy given its markedly decreased costs.

P11
Testosterone Replacement Therapy for Hypogonadism in Men After Radiation for Prostate Cancer

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Background: Testosterone replacement therapy (TRT) for hypogonadism after treatment of localized prostate cancer (pCa) remains controversial. Published data is sparse for TRT in the post radiation setting. We assessed the long term risk of biochemical recurrence in patients on TRT for symptomatic hypogonadism after primary pCa treatment with radiation.

Methods: We retrospectively reviewed the records of patients treated with brachytherapy, external beam radiation therapy, or combination brachytherapy with external beam radiation therapy for localized pCa between 1989 and 2012 who subsequently underwent TRT for T <350 ng/dL and clinical symptoms of hypogonadism. Demographic and clinical data, pre/post TRT total testosterone and PSA data were obtained. Records were captured by ICD-9 codes.
Results: Twenty six patients received TRT after radiation treatment for pCa at a median of 2.5 yrs. Median follow-up was 8.5 yrs. Total serum testosterone rose from a median of 137 ng/dL (range 6-325) to 685 ng/dL (range 83-5376) during TRT. Eighteen patients reported improvement of hypogonadal symptoms on TRT. One patient had a biochemical recurrence (BCR) at 22 years after initial cancer treatment. His recurrence was noted four years after initiation of TRT. A biopsy after BCR, showed residual Gleason 6 pCa. He was then treated with salvage brachytherapy resulting in an undetectable PSA and resumed TRT a year after treatment.
Conclusions: TRT improves total testosterone and reported symptoms of hypogonadism in patients previously treated with radiation for pCa. While this study does show one patient with biochemical evidence of recurrence (who was able to be salvaged with additional brachytherapy), there is still an overall very low incidence of recurrence in this cohort, supporting the safety of TRT in this group of patients. Standard pCa follow-up remains important in these patients.

P12

Predictors of Testosterone Recovery in Patients with Castrate Resistant Prostate Cancer who have Stopped Hormonal Therapy

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Background: Intermittent androgen deprivation therapy (ADT) is widely used a treatment for advanced prostate cancer. Predictors for recovery of testosterone after cessation have been reported to be length of time on luteinizing hormone-releasing hormone (LHRH) agonist as well as age. In castrate resistant prostate cancer (CRPC) there is no current data on predictors of recovery of testosterone if LHRH agonist therapy is withdrawn, as patients generally stay on LHRH agonist or antagonist therapy. We retrospectively reviewed patients of a multi-institutional randomized control trial of intermittent versus continuous LHRH agonist in CRPC (recently published) to see if predictors of recovery of testosterone could be determined in this unique group of patients.
Methods: A multi-institutional randomized control trial compared intermittent to continuous LHRH agonist therapy in patients with CRPC, with patients being re-initiated on LHRH agonist if their testosterone off hormone rose to above castrate levels. The data was retrospectively reviewed to determine if age or length of time on hormones were predictive of patients recovering their testosterone to above castrate levels.
Results: 18 patients with CRPC were in the intermittent hormonal therapy arm. 12 had to be re-initiated on hormones (mean time off hormones 252 days), while 8 did not recover their testosterone levels to above castrate levels before they died. The mean age was 71.7 years and the mean time off hormones prior to discontinuing them was 4.3 years. Those that were re-started on hormones and older than 74 years had a median time to re-initiation of hormones of 1.43 years while those younger had a median re-initiation at 0.79 years. Patients on hormonal therapy longer than 4.2 years prior to discontinuing them had a median of 1.5 years before re-initiating therapy versus 0.65 years in those on hormones less than 4.2 years. Age and length of time off hormones were not predictive of re-initiation of therapy or not.
Conclusions: This is the first study to look at predictors of recovery of testosterone in men with CRPC. In these patients with CRPC who stopped their LHRH agonist, time on hormones as well as age showed a trend to being predictive of re-initiation of hormones when castrate levels of testosterone were recovered. Considering the low number of men in the intermittent arm of this study, these results should be interpreted cautiously.

P13

Tumour Complexity by R.E.N.A.L Nephrometry Score Predicts Malignant Disease and High-Grade Pathology for Small Renal Masses 3 cm or less in size

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Background: The small renal mass (SRM) poses a diagnostic and management dilemma, as it may represent a wide spectrum of pathologies from benign lesions to high-grade RCC. Management of these lesions, especially masses less than 3 cm, continues to be debated with options including active surveillance, surgical resection or ablation. Recently R.E.N.A.L. nephrometry score calculator, have been proposed as a useful tool to determine pathology and high-grade malignancy. Here we intend to validate the use of the R.E.N.A.L. nephrometry score calculator as a predictor of pathology and high-grade malignancy in masses 3 cm or less in diameter.
Methods: We retrospectively reviewed patients that underwent surgical resection of renal masses under 3 cm in diameter between 2008 and 2012 at a single institution. Patients with imaging available for analysis were included in the study. Tumour complexity was determined according to the R.E.N.A.L. nephrometry score calculator. Logistic regression analyses were performed to test the association between tumour complexity on imaging and tumour pathological characteristics. All pathology specimens were reviewed by a single urological pathologist for diagnosis, histological subtype, TNM stage, nuclear grade, angio-lymphatic invasion or extracapsular extension.
Results: A total 198 renal tumours had histological and radiological information available for analysis. Thirty-five masses were benign (18%), accounting for 19 % of all low and 14% of intermediate complexity masses. Increasing tumour complexity failed to predict malignancy (p=0.385). On subtype analysis high endophitic/exophytic ratio and closeness to the collecting system predicted malignancy (each p<0.01). The most common histology was conventional carcinoma accounting for 51% of all low, 65% intermediate and 79% high complexity masses. Fifty masses were found to be high grade (HG) which accounted for 31% of all RCC. On multivariate analysis, high complexity R.E.N.A.L. nephrometry score predicted high-grade pathology and clear cell histology (each p<0.05). On subtype analysis of low and intermediate complexity masses, no individual or combination of tumour characteristics predicted HG malignancy.
Conclusions: On evaluation of masses less than 3 cm diameter, R.E.N.A.L. nephrometry score predicted malignancy on masses highly endophytic and central in nature. High complexity nephrometry scores predicted HG pathology and clear cell histology when comparing all RCCs. However, R.E.N.A.L. nephrometry score failed to predict HG pathology when comparing low and intermediate complexity masses.

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WITHDRAWN

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No Impact on Survival with the Addition of Urologic Reconstructive Surgery in Patients undergoing Hyperthermic Intraperitoneal Chemotherapy

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Background: Cytoreductive surgery in combination with hyperthermic intraperitoneal chemotherapy (HIPEC) has been used effectively in select patients with peritoneal carcinomatosis. Frequently, urologic reconstructive surgery is needed, yet there have been no reports of the long-term impact on survival in these patients.
Methods: Data were extracted from a prospective database of patients with malignant peritoneal disease who underwent cytoreductive surgery with HIPEC and any urologic surgery under the same anesthetic. Information including number and type of urologic procedure (ureter-

olysis, ureterectomy, partial cystectomy) and patient characteristics was obtained. To compare demographic and clinical characteristics between groups, the independent t-test was used for continuous variables, and the $\chi 2$ test was used for categorical variables. Kaplan-meier analysis was used to calculate average survival from the date of the cytoreductive surgery and HIPEC procedure to date of last follow-up. Multivariable linear regression was also used to control for patient characteristics. Institutional Review Board approval was obtained.

Results: Between 2001 and 2012, among the 1088 patients who underwent cytoreductive surgery with HIPEC, 282 (26%) underwent a urologic procedure. Procedures included 24 partial cystectomies, 13 ureterectomies and 263 ureterolysis. Patients who required a ureterectomy at the time of cytoreductive surgery and HIPEC were more likely to have had previous chemotherapy (69% vs. 50%, p=0.28) or surgery (92% vs. 75%, p=0.26) than patients not requiring a ureterectomy. Additionally, patients receiving a ureterectomy had longer average operative times (569 vs. 468, p=0.055), and shorter average survival (3.1 vs. 4.7, p<0.05) than patients not receiving a ureterectomy. However, on multivariate analysis when controlling for disease type and type of urologic procedure no significant urologic factors independently impacted survival.

Conclusions: There appears to be no difference in survival in patients undergoing HIPEC and concomitant urologic reconstruction at the time of their surgery. Patients and physicians can be re-assured that additional urologic surgery at the time of HIPEC should not impact their clinical outcome.