Podium Session 2: Urologic Malignancies
June 27, 2016 1305-1405

POD-02.01
Conditional relapse-free survival in active surveillance for clinical stage I germ cell tumours

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Introduction and Objectives: While patients are counselled regarding their baseline risk of relapse on active surveillance (AS) for clinical stage I germ cell tumours (CSI GCTs), it would be beneficial to update their relapse risk estimate once patients have survived a period of time without relapse — a concept known as conditional survival. This has not been determined for CSI GCTs.
Methods: We performed a retrospective review of 1239 patients with CSI GCTs managed with AS. Conditional relapse-free survival (cRFS) estimates were calculated by using the multiplicative law of probability at time periods coinciding with our AS followup protocol. We stratified patients according to validated risk factors for relapse. We used linear regression to determine cRFS trends over time. Models were validated using discrimination and calibration.
Results: Disease relapse occurred in 126 (27%) of the 464 patients with CSI non-seminoma GCT (NSGCT). During the first five years, cRFS estimates increased from 58% to 100% in NSGCT patients with CSIB disease and pure embryonal carcinoma in orchiectomy pathology. Disease relapse occurred in 135 (17%) of the 775 patients with CSI seminoma. During the first five years, cRFS estimates increased from 80% to 97% for seminoma patients with tumour size ≥3cm. Over time, cRFS increased significantly ($p<0.02$) in all models stratified by risk factors for relapse in both NSGCT and seminoma. All models demonstrated good discrimination and calibration.
Conclusions: cRFS increases rapidly over time in patients managed with AS for CSI seminoma and NSGCT. This information, when provided to patients, may aid in patient counselling and decrease anxiety; moreover, it could be used to adjust followup schedules to minimize radiation exposure and cost of surveillance.

POD-02.02
Benchmarking quality for renal cancer surgery: Canadian Kidney Cancer information system (CKCis) perspective

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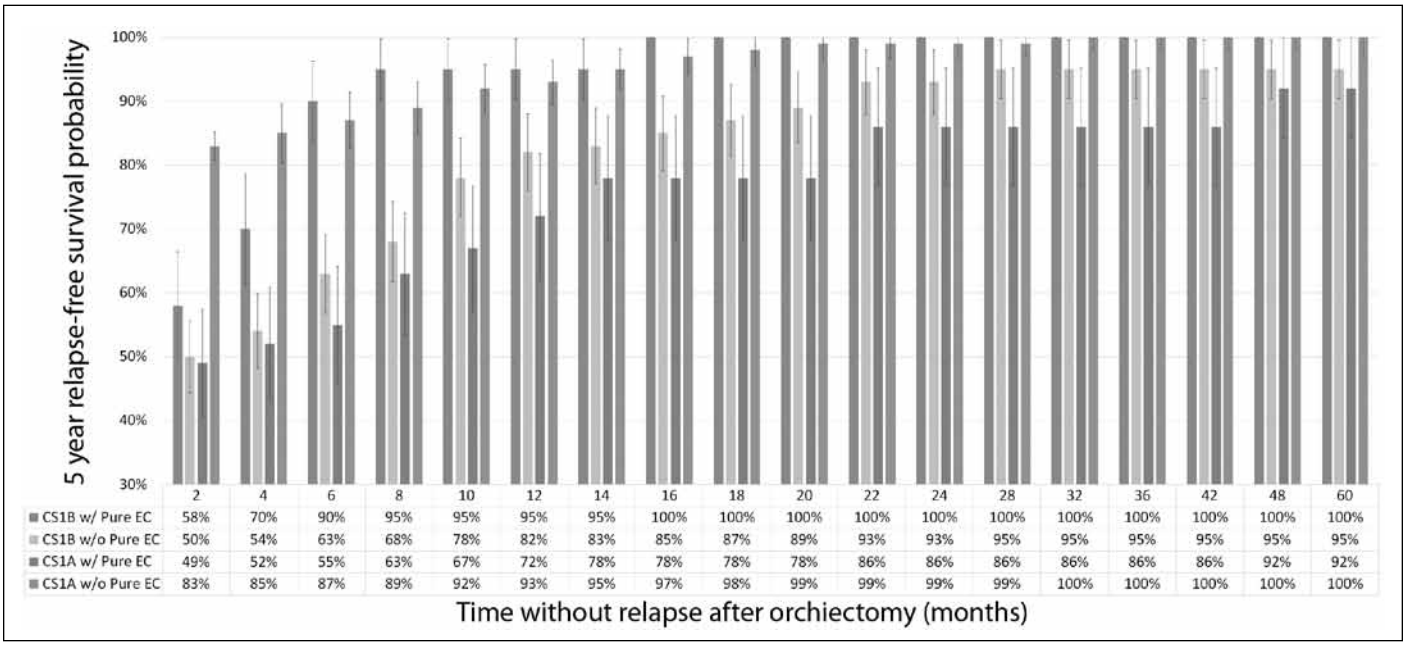

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CS1B w/o Pure EC	50%	54%	63%	68%	78%	82%	83%	85%	87%	89%	93%	93%	95%	95%	95%	95%	95%	95%
CS1A w/ Pure EC	49%	52%	55%	63%	67%	72%	78%	78%	78%	78%	86%	86%	86%	86%	86%	86%	92%	92%
CS1A w/o Pure EC	83%	85%	87%	89%	92%	93%	95%	97%	98%	99%	99%	99%	99%	100%	100%	100%	100%	100%

Fig. 1. POD-02.01.

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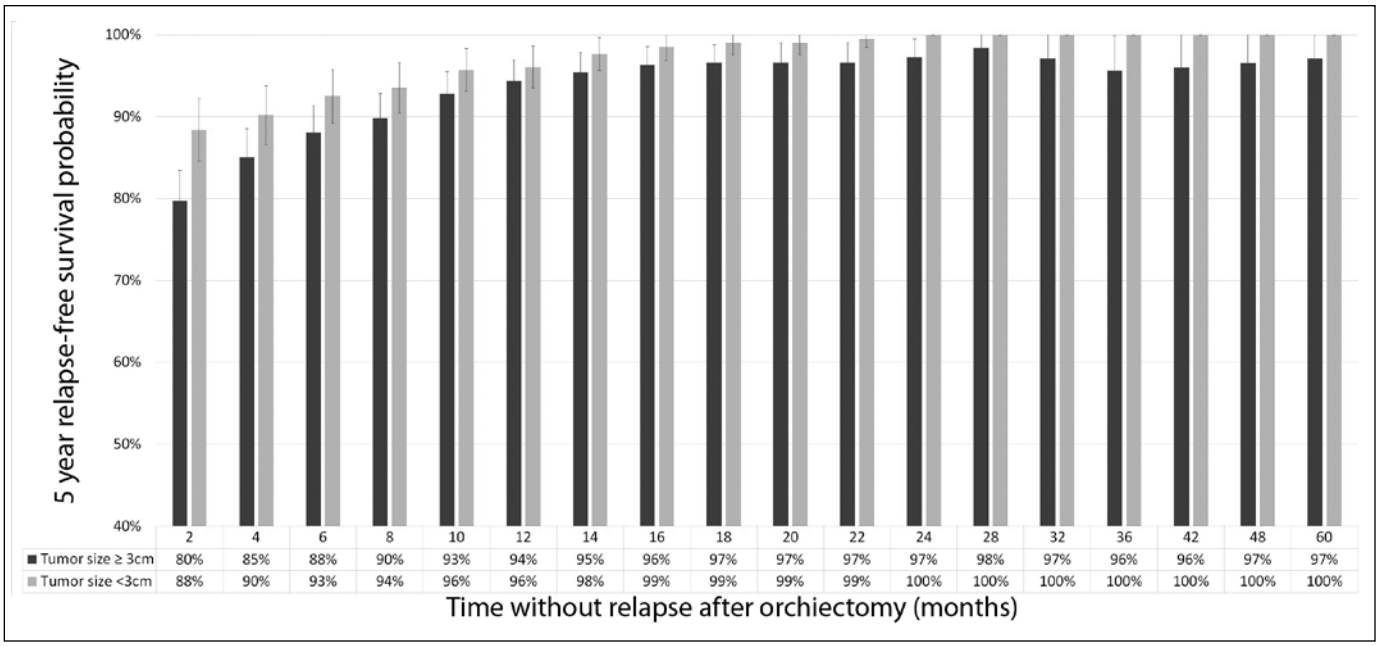

Fig. 2. POD-02.01.

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Introduction and Objectives: There is a lack of validated quality metrics to evaluate the care of patients receiving renal cancer surgery. To address this knowledge gap, the Kidney Cancer Research Network of Canada defined a list of quality indicators (QI) to assess hospital-level performance. We have risk-adjusted these QIs to benchmark renal cancer surgical care at Canadian academic centres.

Methods: A cohort study was performed using CKCis, which collects data from 15 Canadian hospitals. Hospital-level performance was measured by five QIs: overall partial nephrectomy rate (PNR), laparoscopic approach rate (LAR), PNR in patients with chronic kidney disease (CKDPNR), positive margin rate (PMR), PN complication rate (PNCx). To benchmark performance, the expected rate for a defined QI for each hospital was determined through multivariate regression modeling of patient-, tumour-, and treatment-related variables. Model accuracy was assessed by receiver operating curve (ROC) analysis to generate area under the curve (AUC) values. Observed-to-expected ratios (O/E ratio) with 95% confidence intervals (CI) were calculated for each QI on a hospital level. Hospitals where the O/E ratio CI do not overlap 1.0 were identified as displaying significant variations in quality for a given QI.

Results: For PNR, LAR, CKDPNR, PMR, and PNCx, the risk model AUC values were 0.8, 0.8, 0.7, 0.6, and 0.6, respectively. Those models with AUC >0.7 were studied further. Of the CKCis hospitals, three (20%), three (20%), and two (13%) performed lower than expected for PNR, LAR, and CKDPNR, respectively. Hospital identity was an independent predictor of quality of care for PNR, LAR, and CKDPNR ($p<0.001$).

Conclusions: Hospitals in CKCis display variation in performance for several renal cancer QIs with a minority performing worse than expected. Greater CKCis capture rates are required to improve the validity of these results and extend the utility of this database to real-world QI initiatives.

POD-02.03

Survival outcomes of trimodal therapy compared with radical cystectomy for muscle-invasive bladder cancer: A propensity score-matched analysis of survival outcomes

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Introduction and Objectives: In our multidisciplinary bladder cancer clinic (MDBCC), patients have the opportunity to discuss various treatment options, including radical cystectomy (RC) or bladder-sparing trimodal therapy (TMT: endoscopic resection, radiotherapy, and chemotherapy). Although reports have shown comparable outcomes of TMT to cystectomy, no direct comparison to RC has been published and no randomized studies are available. We report our long-term outcomes of multidisciplinary care, comparing TMT to surgery using propensity-matched analyses.

Methods: Patients seen in our MDBCC receiving TMT for muscle-invasive bladder cancer (MIBC) from 2008 to 2012 were identified and matched, using propensity scores, to patients operated by RC. Matching occurred on age, ECOG status, Charlson comorbidity score, cT stage, cN stage, and date of treatment. Overall survival (OS) and disease-specific survival (DSS) were assessed with Cox proportional hazards modeling and competing risk analysis, respectively.

Results: Between 2008 and 2012, 248 patients were assessed in the MDBCC. Of these, 162 (65%) had MIBC. Nearly half (80) opted for radiotherapy +/- concurrent cisplatin chemotherapy and 49 underwent full bladder preservation with TMT as their primary therapy. We matched 48 TMT patients with 48 RC patients with no imbalances. Median age of the cohort was 67.5 years with 29.2% cT3/cT4. With a median followup time of 3.62 years, there were 19 (39.6%) deaths (seven from bladder cancer) in the RC group and 15 (31.3%) deaths (six from bladder cancer) in the TMT group. Five-year DSS was 85.2% and 84.7% with TMT and surgery,

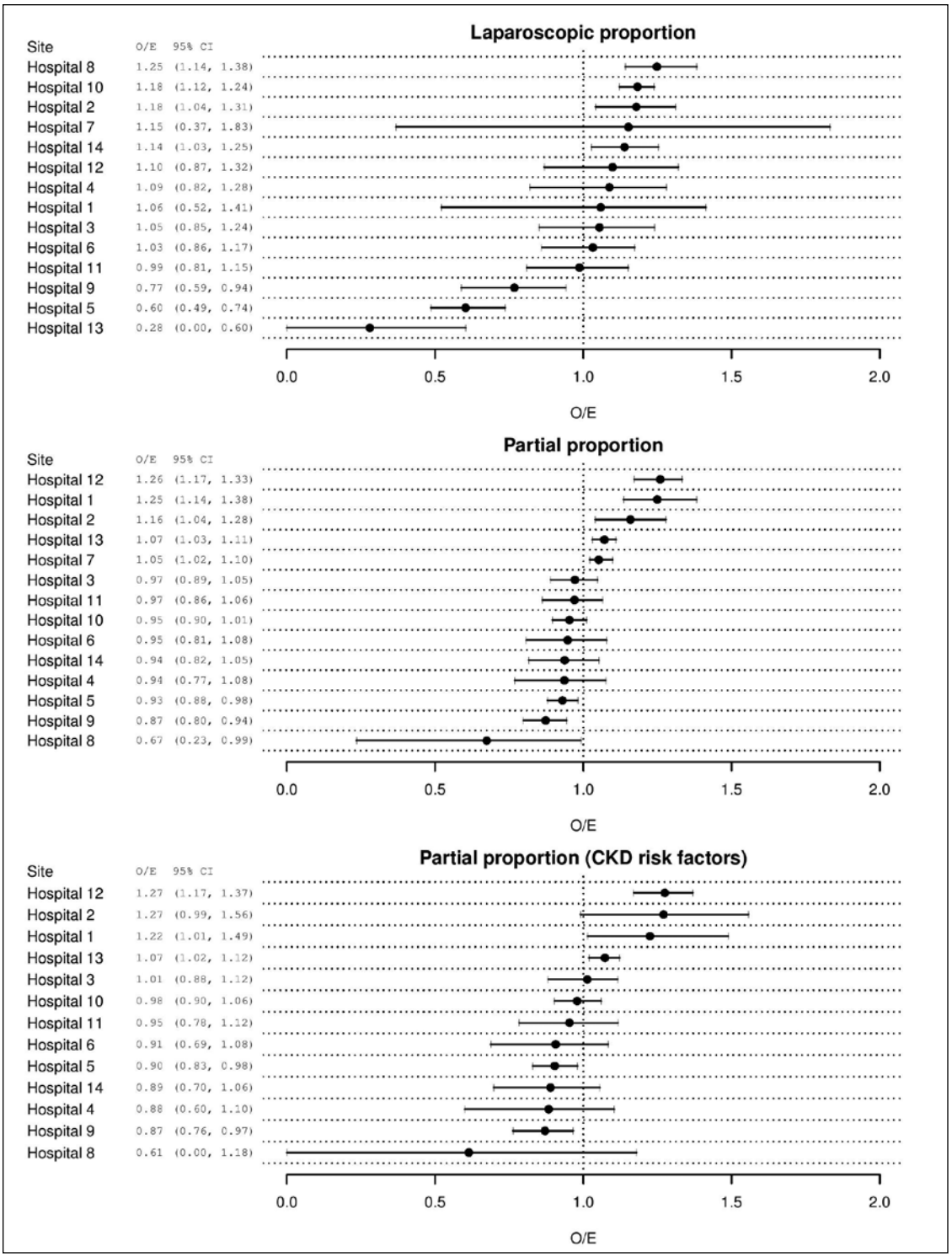

Fig. 1. POD-02.02.

respectively (p>0.05). There was no statistically significant difference in DSS between the two groups (HR for TMT 1.31 (0.40-4.23; p=0.66) or in OS (HR for TMT 0.77 (0.34-1.75); p=0.53).

Conclusions: In selected patients with MIBC, chemo-radiation yields survival outcomes similar to matched RC patients. BC patients should be offered the possibility to discuss various treatment options.

POD-02.04

Are renal tumour scoring systems better than clinical judgment at predicting partial nephrectomy complexity?

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Introduction and Objectives: Scoring systems, such as RENAL, PADUA, and centrality-index, objectively quantify the complexity of a renal tumour. Despite the validation of these scoring systems, they are infrequently used in clinical practice. The objective of this study was to determine how renal tumour scoring systems compare to clinical judgement in predicting time required for tumour removal and kidney reconstruction during partial nephrectomy.

Methods: A consecutive cohort of partial nephrectomy patients treated at The Ottawa Hospital was included. Preoperative axial images were reviewed by four urologic oncologists who independently rated the complexity of a partial nephrectomy from 1-10 to generate a clinical judgment score. Two independent reviewers determined the RENAL, PADUA, and centrality-index scores. The time to complete tumour resection and renal reconstruction during partial nephrectomy was prospectively recorded. If renal hypothermia was used, the time to cool the kidney was not included.

Results: During the study period, 116 partial nephrectomies were performed. The mean partial nephrectomy complexity score based on clinical judgment was 3.4 (SD 2.1) out of 10. There was good agreement between surgeons in assessing tumour complexity (intraclass correlation coefficient 0.72; 95% CI 0.65, 0.78). The mean RENAL score was 6.7 (SD 1.6) out of a maximum of 12, the mean PADUA score was 8.5 (SD 1.5) out of a maximum of 14, and the mean centrality index score was 3.8 (SD 2). Mean resection and reconstruction time was 24 minutes (SD 10 minutes). The correlation between clinical judgment score and time was 0.27 (p=0.005). The correlation between renal tumour scoring systems and time was 0.20 (p=0.04) for RENAL, 0.21 (p=0.03) for centrality-index, and 0.26 (p=0.007) for PADUA.

Conclusions: Renal tumour scoring systems are not better than clinical judgment in predicting time required for tumour resection and renal reconstruction during partial nephrectomy.

POD-02.05

2016 Prize Essay Competition Winner: Basic Science
Effect of contrast media on urinary cytopathology specimens

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Introduction and Objectives: Urological dogma dictates that washings collected from the urinary tract for cytological assessment must be performed without interference from contrast agents that may alter cellular integrity and diagnostic interpretation. In practice, the initial contrast used to outline the upper tracts is commonly discarded with subsequent saline washings sent for cytology. We hypothesize that contrast washings do not affect the morphology of urothelial carcinoma cells or the integrity of cytology interpretation.

Methods: Urine obtained from 1) a human xenograft bladder cancer model using UC-3 cells; 2) patients with urothelial carcinoma; and 3) patients without urothelial cancer were subjected to various experimental solutions (water, saline, urine, and dilutions of contrast media) for different exposure times. After exposure to various different solutions, cells underwent cytological analysis to assess morphologic and degenerative changes.

Results: No cytological differences were seen when cells were exposed to ionic, hyperosmolar, and non-ionic low-osmolar contrast agents for any exposures up to five minutes. Cells exposed to mixtures of contrast agents and urine also demonstrated no evidence of degenerative change. Cells exposed to water for greater than one minute demonstrated significant hydropic degeneration impacting cytological interpretation. At 40 minutes or later, all reagents except urine caused severe degeneration. These results were confirmed when using urine from the mouse bladder cancer model and from human urine.

Conclusions: Commonly used contrast agents have no effect on urinary cytology up to five minutes. Contrast washings of the urinary tract should not be discarded and can be sent for cytological diagnosis if fixed within this time period

POD-02.06

Overall prevalence of malignancy and the differential diagnosis of Bosniak III renal lesions based on lesion size

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Introduction and Objectives: The aim of this study was to evaluate the pathological results of renal masses in comparison with Bosniak III renal cystic lesions to determine the actual malignancy risk.

Methods: A retrospective review of all Bosniak III renal lesions identified by computed tomography (CT) or magnetic resonance imaging (MRI) in our department were collected from all adult (>18 years of age) patients from August 1, 2013 to December 31, 2015 who underwent surgical excision. Surgical pathology, including TMN stage, histology, and Fuhrman grade, was collected, along with maximum lesion size. 25 patients were identified for this study and a two-tailed two-sample t-test was used to compare lesion size between malignant and benign lesions.

Results: Of the 25 cases, 15/25 (60%) of Bosniak III lesions were determined to be malignant. All malignant lesions were classified as less aggressive malignancies as either Fuhrman Grade 1 or 2 with no evidence of progression to Bosniak IV. On average, a larger lesion size trended towards pathological identification of benign complex cysts in comparison to a RCC (5.66 ± 2.53 cm vs. 4.09 ± 2.91 cm).

Conclusions: The malignancy risk of Bosniak III renal lesions is 60% in our study. Surgical excision should remain the recommended management option for patients who are good surgical candidates. Our study also identified that all identified Bosniak III lesions were of low Fuhrman grade, with no evidence of progression, which suggests a better prognosis. No patient in this study developed metastatic disease within the three year followup period. Finally, lesion size data suggest that the larger the complex Boxniak III cyst, the more likely to be benign.

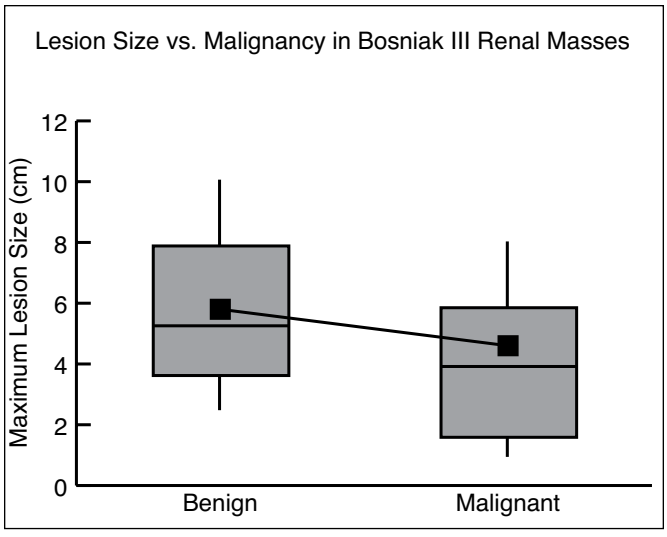

Fig. 1. POD-02.06.