

Poster Session 8: Oncology – Kidney/Ureter/Other

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MP 8.1

Partial adrenalectomy in functional tumors: An underused approach or a high-risk strategy?

Ameeta Lubina Nayak¹, Amanda Hakala¹, Neal Rowe¹

¹Division of Urology, The Ottawa Hospital, Ottawa, Canada

Introduction: The main surgical treatment of functional adrenal tumors is total adrenalectomy. While cure of adrenal hyperfunction is often achieved, there is an inherent risk of life-threatening adrenal insufficiency. Partial adrenalectomy (PA) is an attractive alternative to total adrenalectomy (TA) in patients with bilateral adrenal involvement or risk of contralateral adrenal pathology. The goal of our study was to review the current literature on partial adrenalectomy and delineate the contemporary role of this surgical approach.

Methods: A scoping review of the literature was performed using the PubMed database. Search terms included variations of partial adrenalectomy and major benign tumor types. Randomized control trials (RCT) and observational studies reporting comparisons of PA vs. TA for each tumor type with at least five patients per arm were included. Relevant studies identified in review articles were reviewed. Outcomes of interest included perioperative characteristics (operative time, blood loss, complications) and disease-related outcomes (steroid supplementation, clinical success, disease recurrence). Abstracts and papers were independently reviewed by two reviewers.

Results: A total of 248 abstracts were identified in the search. No RCTs were identified. Among 10 comparative studies investigating primary aldosteronism, most studies reported no significant difference in blood loss or operative time for PA compared to TA. Hypertension cure was similar for both approaches (PA: 44–100%; TA: 39–100%). Complications were infrequent, including blood transfusion, fever, ileus, subcutaneous emphysema, and wound infection/dehiscence, and did not differ significantly between surgical approaches. Among 14 studies comparing PA and TA for pheochromocytoma, no studies reported differences in survival outcomes; however, rates of recurrence were higher for PA (4–38%) than for TA (0–19%). In patients with bilateral pheochromocytoma, there were lower rates of adrenal insufficiency and steroid supplementation with PA (0–46%) than with TA (100%). Only three studies were identified comparing PA vs. TA in cortisol-producing adenomas. Postoperative symptom improvement was equivalent for both techniques, and recurrence risk remained low regardless of surgical approach. The largest cohort study comparing PA vs. TA in Cushing's patients confirmed increased use and duration of corticosteroid supplementation following surgery.

Conclusions: There is growing evidence to support PA in the management of functional adrenal tumors. Clinical outcomes and complication rates were similar for both approaches, while PA decreased the need for postoperative corticosteroid supplementation. Nonetheless, most of the published literature is limited to observational studies. While PA is an attractive approach to functional adrenal tumors, further investigation with clinical trials is needed before wide dissemination of this technique.

MP 8.2

The long-term renal functional outcomes for cT1 tumors: The effect of tumor patient characteristics, radical vs. partial nephrectomy, and tumoral characteristics

Steven Lu¹, Tom McGregor², Deepak Pruthi³

¹Section of Urology, University of Manitoba, Winnipeg, Canada; ²Department of Urology, Dalhousie University, Halifax, Canada; ³Department of Urology, University of Texas San Antonio, San Antonio, United States

Introduction: Nephron-sparing surgery is known to preserve short-term renal function in patients undergoing partial nephrectomy (PN) compared to radical nephrectomy (RN); however, there is limited longitudinal data on renal function trajectories extending beyond five years. Understanding long-term renal outcomes is essential given the rising life expectancy and the chronic burden of kidney disease. We aimed to evaluate long-term renal function after PN and RN, with particular attention to tumors that would be amenable to either partial or radical nephrectomy based on the CUA guidelines controlling for RENAL nephrometry score.

Methods: We conducted a retrospective cohort study of patients who underwent open or laparoscopic PN or RN for cT1 renal tumors at a single academic center between 2011 and 2015. Patient demographics and comorbidities were recorded. Longitudinal renal function was assessed using serial eGFR values standardized via the CKD-EPI equation. The primary outcome was absolute and percent change in eGFR at five and 10 years post-surgery. Multivariable linear mixed-effects models were used to assess the association between surgery type (open/MIS) and eGFR trajectory over time, adjusting for baseline eGFR, age, comorbidities, and RENAL nephrometry score.

Results: A total of 375 patients met the inclusion criteria, of whom 267 underwent PN. Median followup was 10.6 years (IQR 8.5, 12.4). At baseline, mean eGFR was similar between groups (PN 88 mL/min/1.73m² vs. RN: 78 mL/min/1.73m², p=0.11). At five and 10 years postoperatively, PN was associated with significantly smaller declines in eGFR compared to RN (mean eGFR 75 vs. 56 mL/min/1.73m² (p<0.00001). At 10 years, the mean eGFR decline from baseline was 74 mL/min/1.73m² for PN vs 54 mL/min/1.73m² for RN (p<0.00001). After excluding those with pre-existing renal disease, the cumulative incidence of CKD stage ≥3 was 47% (34/73) in the PN group vs. 72% (34/50)% in the RN group at five years. Progression to end-stage renal disease requiring dialysis occurred in 17 patients, with the median time to dialysis of 5.9 years (IQR 2.2, 8.9). In multivariable analysis, at five years, age (OR 4.04, p<0.001), diabetes (OR 3.08, p=0.002), and hilar tumors (OR 2.69, p=0.007) were independently predictors of an eGFR <45 mL/min/1.73 m² or dialysis; neither radical or partial nephrectomy, nor other elements of nephrometry score were statistically significant. Renal function remained largely stable from 5–10 years. At 10 years, only age remained statistically significant (OR 2.23, p=0.026).

Conclusions: While patients who underwent a PN were more likely to have preserved renal function, in multivariate analysis, age, diabetes, and whether the patient had a hilar-located tumor were associated with greater eGFR declines at five years post-surgery for cT1 tumors. In the multivariate analysis, radical or partial nephrectomy were not statistically significant. Renal function from 5–10 years remains stable. The long-term drivers of renal functional outcome are largely patient- and tumor-based and not reliant on the surgical technique.

MP 8.3

Patient and provider factors associated with use of adjuvant pembrolizumab for renal cell carcinoma: Who gets it and why?

Charles A. Poco¹, Marco Trigiani², Laura Harkness¹, Shiv Kandappah³, Ilias Cagiannos¹, Christopher Morash¹, Rodney H. Breau¹, Luke T. Lavallee¹

¹Division of Urology, The Ottawa Hospital, Ottawa, Canada; ²University of Ottawa, Ottawa, Canada; ³Division of Urology, University of Alberta, Edmonton, Canada

Introduction: Adjuvant pembrolizumab was associated with improved disease-free and overall survival in one randomized clinical trial (KEYNOTE-564) for patients with resected high-risk clear cell RCC.¹ Real-world adoption of adjuvant pembrolizumab has not been well-described. This study examined the real-world use of adjuvant pembrolizumab in eligible patients with clear-cell RCC post-nephrectomy at a high-volume academic center.

Methods: We conducted a retrospective cohort study of adult patients with histologically confirmed clear-cell RCC who underwent partial or radical nephrectomy between September 2022 and December 2024 and would have met KEYNOTE-564 criteria for adjuvant pembrolizumab. Demographic, clinical, surgical, pathologic, and treatment-related data were extracted from electronic medical records using a standardized search and data collection tool. The primary outcome was the proportion of eligible patients who received adjuvant pembrolizumab. Secondary outcomes included referral rates to medical oncology, patient and tumor factors associated with treatment uptake, and regimen-specific details. Baseline characteristics were summarized descriptively. Univariable and multivariable log-binomial regression models assessed associations with referral to medical oncology and receipt of adjuvant pembrolizumab.

Results: Of the 124 patients who met eligibility criteria for adjuvant pembrolizumab, 52.0% were referred to medical oncology and 19.35% ultimately received at least one dose of pembrolizumab. Most patients were classified as intermediate-risk (96.77%), with a minority classified as high-risk (2.42%). Among patients referred to medical oncology who did not receive pembrolizumab, 63.41% declined treatment following informed discussions with their medical oncologist. A higher recurrence score based on the 2003 Leibovich nomogram was significantly associated with referral to medical oncology (RR 1.48, p=0.022), but was not associated with receipt of adjuvant pembrolizumab (RR 0.86, p=0.69).

Conclusions: Our findings suggest that the use of adjuvant pembrolizumab and referral patterns are not primarily driven by patient or tumor characteristics, but rather by patient-level decision-making. These results highlight the need for a better understanding of factors influencing patient decisions regarding adjuvant therapy.

Reference:

1. Choueiri TK, Tomczak P, Hoon Park S, et al. Overall survival with adjuvant pembrolizumab in renal-cell carcinoma. *N Engl J Med* 2024;390:1359-71. <https://doi.org/10.1056/NEJMoa2312695>

MP 8.4

Surgical staging of low-, intermediate-, and high-risk of inguinal nodal metastases cN0 penile squamous cell carcinomas in a Quebec cohort

Edouard Cazes¹, Michele Lodde¹, Malik Zennadi¹, Alain Bergeron¹, Yves Fradet¹

¹Department of Urology, CHU de Québec-Université Laval, Québec City, Canada

Introduction: In penile squamous cell carcinoma (SCC), the presence of inguinal metastasis is the most important prognostic factor for survival. In cN0, the 2023 EAU-ASCO guidelines on SCC suggests stratification into three risk groups to determine the need for surgical staging (SS) of inguinal nodes.¹ Guideline advises no SS in low-risk tumors (pTa, pTis, pT1a G1), while strongly recommending it for all high-risk tumors (pT1b+). In the intermediate-risk tumors (pT1a G2), the risk-benefit ratio to undergo SS should be weighted. This study aimed to review the number of pN+ in cN0 according to risk stratification in our cohort.

Methods: This is a retrospective, longitudinal study of invasive SCC treated between 2004 and 2024 at the CHU de Québec-Université Laval. Benign lesions or metastatic non-penile cancer were excluded.

Results: From 175 invasive SCC, 124 were cN0 (30 low-, 19 intermediate-, 75 high-risk). Only one low-risk cancer underwent dynamic sentinel node dissection (DSNB) and was pN0. In those who didn't undergo SS, 4/29 (13.8%) recurred. In the intermediate-risk group, five patients underwent SS, and all were pN0 (four DSNB, one superficial ILND). None of them showed recurrence. In those who

did not have SS, 2/14 (14.3%) developed metastases. In the high-risk group, 31 had SS with 11/31 (35.4%) pN+. Surgically treated patients showed 6.5% (2/31) recurrences compared to 18.2% (8/44) in the non-staged patients. Mostly, non-staged patients were before the introduction of DSNB at our center in 2022. Recurrences were mostly in HPV-negative tumors (10/16).

Conclusions: Our study shows a slightly higher percentage (35.4%) of micro-metastases in high-risk SCC compared to the literature and a potential risk of node progression in low- and intermediate-risk SCC, confirming the importance of SS and regular followup. We saw an increased adherence to EAU-ASCO guidelines since the introduction of DSNB. Further analyses are needed to see if late LND impacts survival.

Reference:

1. Brouwer OR, Rumble RB, Ayres B, et al. Penile cancer: EAU-ASCO collaborative guidelines update Q and A. *JCO Oncol Pract* 2024;20:33-7. <https://doi.org/10.1200/OP.23.00585>

MP 8.5

Patients' values and preferences regarding small renal masses treatments: A qualitative study

Hanane Zabouche^{1,2}, Rania Ouraou², Clara Diaz^{1,2}, Maryam Kandi³, Philippe D Violette^{3,4}, Matthieu Gratton⁵, Gordon Guyatt^{3,6}, Catherine Hudon^{1,7}, Patrick O Richard^{1,2}

¹Faculty of Medicine and Health Sciences, University of Sherbrooke, Sherbrooke, Canada; ²Division of Urology, Department of Surgery, Sherbrooke University Hospital Center, Sherbrooke, Canada; ³Department of Health Research Methods, Evidence, and Impact, McMaster University, Hamilton, Canada; ⁴Woodstock Hospital, McMaster University, Woodstock, Canada; ⁵Hôtel-Dieu de Lévis, Integrated Health and Social Services Centre of Chaudière-Appalaches, Lévis, Canada; ⁶Department of Medicine, McMaster University, Hamilton, Canada; ⁷Department of Family Medicine and Emergency Medicine, University Hospital Centre of Sherbrooke, Sherbrooke, Canada

Introduction: Although active surveillance (AS) is recognized as a safe management option for small renal masses (SRMs), most patients still undergo invasive treatments, such as surgery or thermal ablation, raising concerns about potential overtreatment. While clinical characteristics are well-described, little is known about how patients perceive AS and what influences their treatment decisions. This study aimed to explore the perceptions and preferences of patients newly diagnosed with SRMs to better understand their decision-making.

Methods: We conducted a multicenter, qualitative study using a descriptive and interpretive design. Before data collection, standardized information was provided to ensure an informed discussion. Individual, semi-structured interviews, held before the treatment discussion with the urologist, were conducted online. All interviews were audio-recorded, transcribed verbatim, and analyzed thematically following Braun and Clarke's framework. An inductive and iterative analytic approach was employed using NVivo 15 software.

Results: Thirty-four participants shared their experiences and perceptions. Two main themes emerged. First, perceptions of treatment options revealed that surgery was viewed as definitive and effective but associated with fear of invasiveness and postoperative complications. Thermal ablation was perceived as a safer, minimally invasive compromise, but with some uncertainty on its long-term efficacy. AS was appreciated for its flexibility and non-invasiveness, yet stressful due to the tumor's persistence and uncertainty about disease progression. Second, decision-making factors included medical elements, such as overall health; organizational aspects, such as access to information and waiting times; and the patient-physician relationship. Many participants reported that the physician's recommendation will be highly considered in their final decision, while others expressed a strong desire to make an independent choice.

Conclusions: Patients' choices for SRMs are shaped by complex interactions between clinical, emotional, and relational factors. Our findings underscore the importance of strengthening patient education and shared decision-making to align treatment with patients' values and preferences.

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MP 8.6

A mobile application and anonymized registry to support testicular cancer awareness and screening behaviorsIbrahim Moussa¹, Jean-Baptiste Lattouf^{1,2}, Olivier Gendreau³, Lenny-Seupa Woungang⁴¹Faculty of Medicine, University of Montreal, Montreal, Canada; ²Division of Urology, Centre hospitalier de l'Université de Montréal, Montreal, Canada;³Computer Engineering and Software Engineering Department, Polytechnique Montreal, Montreal, Canada; ⁴Department of Mathematics and Statistics, University of Montreal, Montreal, Canada

Introduction: Testicular cancer is the most common malignancy in men aged 15–35 years, yet awareness, screening habits, and early health-seeking behaviors remain low. No digital platform currently supports regular testicular self-examination (TSE) or captures real-world screening behavior. MyGoldenBalls is a mobile app designed to promote prevention and generate a research-grade registry. This abstract describes the platform's methodologic framework.

Methods: The app integrates TSE reminders, a structured tutorial, and standardized reporting of findings including mass location, size, consistency, and pain (Figure 1). Enrollment includes demographics and testicular-related health history. Users self-enroll anonymously via Firebase Anonymous Login. No participants are recruited from clinical settings. The platform assigns each user a single transferable QR-code identifier, which generates a longitudinal anonymized registry. Currently, the system provides immediate recommendations if a mass is palpated (Figure 2). We intend to implement automated followup prompts to track the diagnostic cascade (e.g., medical visits, ultrasound, treatments). Educational modules include interactive quizzes to improve health literacy (Figure 3). The study protocol was approved by the Université de Montréal's affiliated hospital research center ethics committee.

Results: We demonstrate the feasibility of the system architecture, anonymization approach, and registry implementation. The app enables precise, timestamped, longitudinal data capture, including spatial "heatmaps" of user-reported findings (Figure 4). Beta testing confirmed reliable onboarding, fully functional reporting modules, and high-fidelity data recording without loss of anonymization integrity.

Conclusions: MyGoldenBalls represents an innovative model merging prevention, behavioral monitoring, and anonymized data collection. This platform will generate a unique real-world dataset describing TSE adherence and symptom-detection patterns. Full deployment is planned for 2026.

Acknowledgements: The authors acknowledge the work of the Polytechnique Montreal software engineering student group: Elouan Guyon (B. Eng.), Julien Légaré (B. Eng.), Justine Ouellette (B. Eng.), Mathieu Corbeil (B. Eng.). They would also like to thank Amal Nadiri, PhD, Site Manager, Uro-Onco, CHUM, for her guidance and support in preparing the project for ethical review at the CHUM.

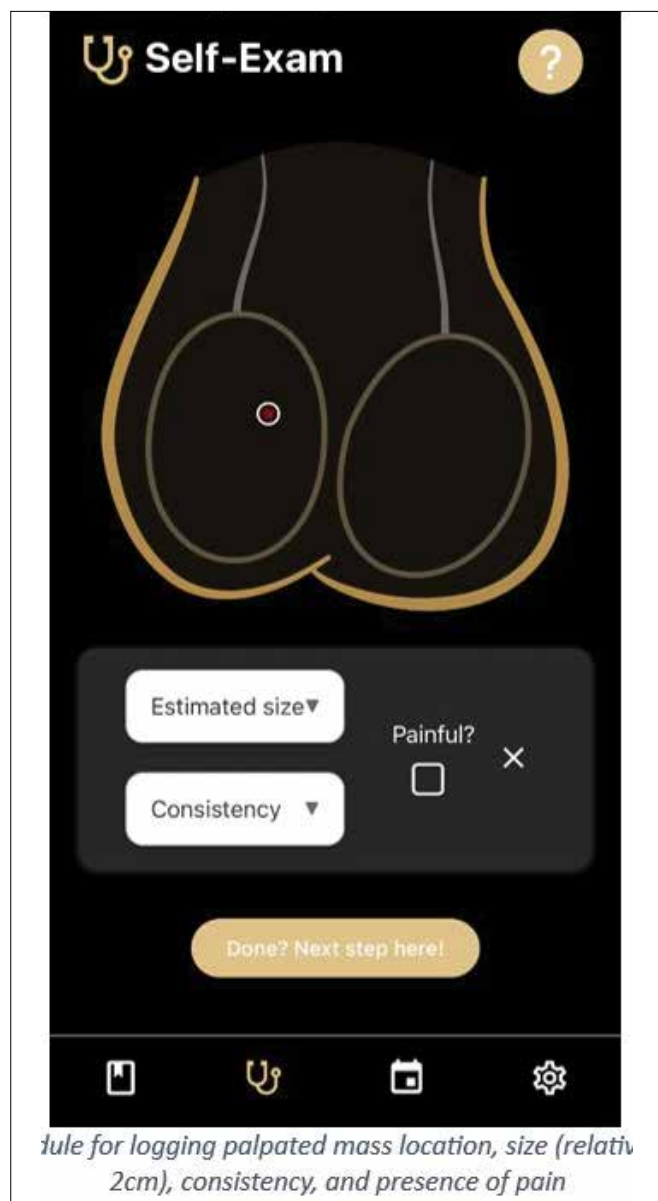
MP 8.7

Predictors of lymph node dissection and nodal positivity in renal cell carcinoma: A population-based analysis from the Manitoba Renal DatabaseKarim C. Sidhom¹, Katelyn Casalla¹, Filip Davidovic¹, Ardalanejaz Ahmad¹, Rachel Wong²¹Section of Urology, Department of Surgery, University of Manitoba, Winnipeg, Canada; ²Section of Urology, Department of Surgery, University of McMaster, Hamilton, Canada

Introduction: The role of lymph node dissection (LND) in clinically node-negative renal cell carcinoma (RCC) remains unsettled. Randomized evidence has not shown a universal survival benefit for routine LND yet improving staging accuracy and guiding adjuvant therapy remain key motivations for selective nodal sampling. Our objective was to 1) characterize trends in LND utilization; and 2) identify histopathologic predictors of nodal metastasis in a provincial RCC nephrectomy cohort.

Methods: We conducted a retrospective, population-based analysis of adult RCC nephrectomies performed between 2008 and 2018 within Manitoba's centralized histopathology system. Inclusion required radical or partial nephrectomy for RCC. Exclusions included pediatric histologies, biopsy-only specimens, transplant/rejection pathology, non-renal primaries, and cases outside the study window.

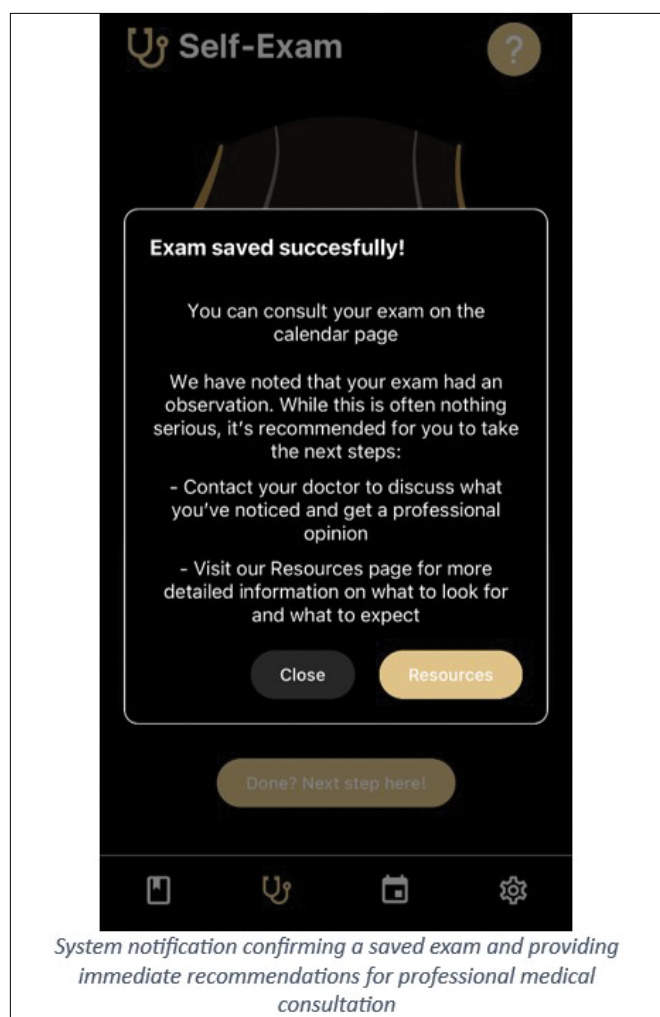
Results: Among 690 RCC nephrectomies, LND was performed in 83 (12.0%) and 13/83 (15.7%) were node-positive (Table 1). LND use increased over time, with year-to-year variability (peak 16.2% in 2018). Within the LND subset, lymphovascular invasion (LVI) was significantly associated with nodal metastasis



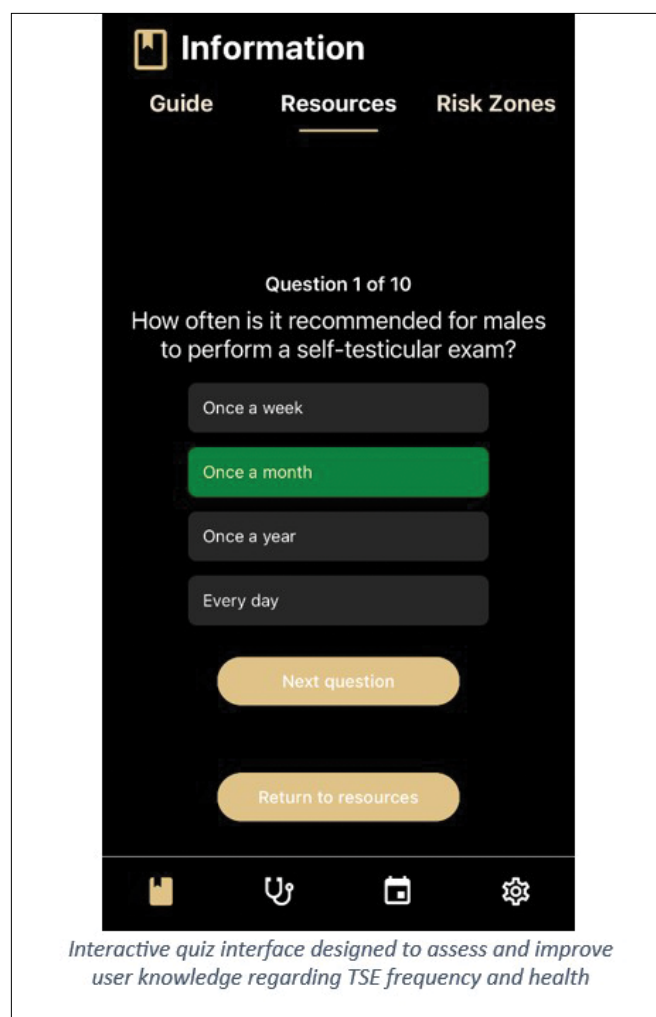
MP 8.6. Figure 1. Standardized self-examination reporting interface.

(OR 4.28; 95% CI 1.25–14.65; $p=0.034$), as was sarcomatoid differentiation (OR 7.33; 95% CI 1.55–34.59, $p=0.019$). High histologic grade was more frequent in node-positive tumors (mean 3.5 vs. 2.81, $p=0.005$). Tumor size was numerically larger in node-positive disease (11.07 vs. 8.79 cm) but not statistically significant ($p=0.165$) (Figures 1, 2).

Conclusions: In this population-based cohort, LND was employed selectively and increased modestly over time. LVI and sarcomatoid differentiation were the strongest histopathologic correlates of nodal metastasis. These findings support a biology-driven approach to LND rather than routine dissection in all cN0 RCC.



MP 8.6. Figure 2. Post-examination guidance and next steps.



MP 8.6. Figure 3. Testicular health educational resources.

MP 8.8 - WITHDRAWN

MP 8.9

Complex and minimally complex Bosniak II–IV renal cysts: Outcomes from a large, 15-year, observational cohort

Steven Lu¹, Ian Kirkpatrick², Deepak Pruthi³

¹Section of Urology, University of Manitoba, Winnipeg, Canada; ²Department of Radiology, University of Manitoba, Winnipeg, Canada; ³Department of Urology, University of Texas San Antonio, San Antonio, United States

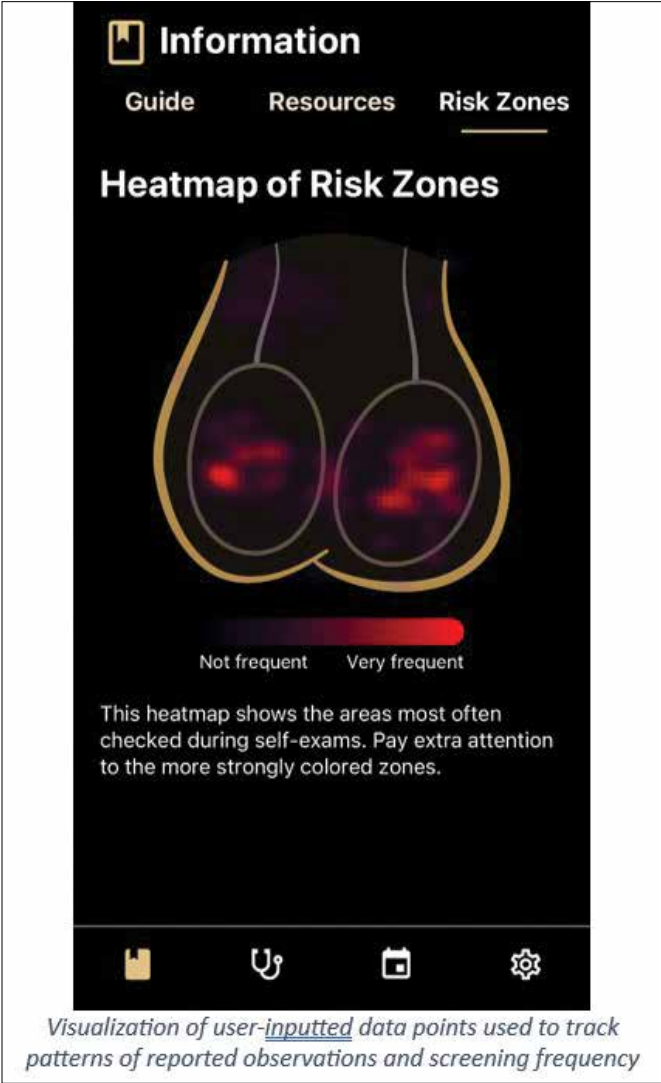
Introduction: Short- and intermediate-term outcomes for Bosniak cysts have been characterized; however, there is a paucity of long-term data. When patients are counseled to discontinue surveillance, many are left wondering whether the cysts may continue to evolve and what the potential risk is. We aimed to evaluate the natural history, intervention rates, and survival outcomes of patients diagnosed with Bosniak II, IIF, III, or IV cysts with 15 years of followup.

Methods: Consecutive patients enrolled in a renal cyst observational cohort (Bosniak II or greater) between 2003 and 2012 at a single institution were included in the study. Patients were categorized into four groups based on management strategy: active surveillance, discharge without further imaging, definitive surgical treatment, or lost to followup. Longitudinal imaging data, including Bosniak class and cyst size, were captured through 2025 using a province-wide central imaging bank. Renal function, recurrence/metastasis, and survival were captured

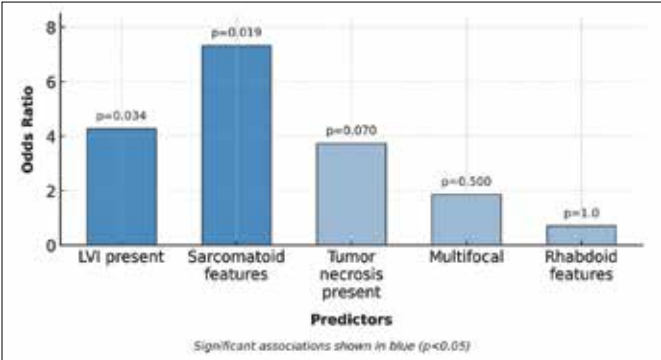
using the electronic medical record.

Results: A total of 131 patients were included, which includes 161 cysts comprising of 34 Bosniak II, 39 Bosniak IIF, 43 Bosniak III, and 29 Bosniak IV cysts. Median cyst size was 3.2 cm (IQR 1.8, 5.2). The median followup duration was 15.2 years (IQR 11.9, 17.1). Thirty patients underwent surgery; the median time to surgery was 352 days (IQR 224, 784). Seventeen of 30 were malignant. One patient who had a nephrectomy and node-positive disease developed local recurrence 14.7 years after surgery. One treated patient, who had pT3a papillary RCC N1 disease, developed pulmonary nodules at 3.4 years after nephrectomy. This patient had very atypical imaging findings (concern for urothelial carcinoma) and had surgery within one year of presentation. Of the 57 patients who remained on active surveillance, eight had Bosniak IV lesions, 10 were Bosniak III, and 14 had Bosniak II lesions after a median followup of 14.5 (IQR 12, 16.5) years. Thirty-nine of 131 patients died; none died of renal cancer. The median time to death was 11 years (IQR 6.7, 13.5). Notably, of those who were discharged who had incidental imaging (27 subjects), the cysts were noted to be Bosniak IIF or less. Some cysts had completely involuted (4/27), including one Bosniak IV cyst. Three cysts progressed from II to IIF and one cyst progressed from IIF to III. No patient ended up on dialysis.

Conclusions: With more than 15 years of longitudinal followup from a renal cyst registry, we demonstrate that active surveillance is a safe strategy. Even those patients discharged 10 years later had little variation in their cyst size and

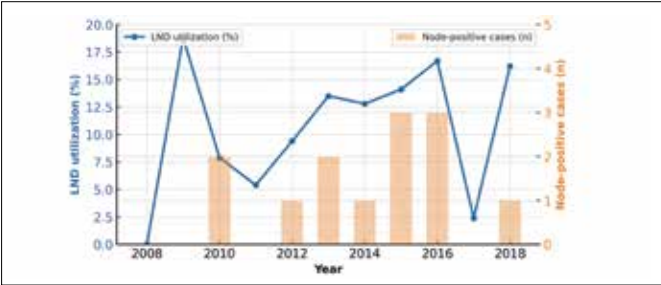


MP 8.6. Figure 4. Aggregated heatmap of risk zones.



MP 8.7. Figure 1. Univariable associations with nodal positivity.

classification. The frequency of surveillance imaging was de-escalated safely in



MP 8.7. Figure 2. Trend of lymph node dissection use and nodal positivity (2008–2018).

MP 8.7. Table 1. Baseline characteristics (RCC nephrectomies, 2008–2018)	
Characteristic	Value
Cohort size (RCC nephrectomies 2008–2018)	690
Age, mean (SD), years	60.4 (11.1)
Tumor size, median (IQR), cm	4.7 (3.2–7.0)
Grade 1, n (%)	88 (12.8%)
Grade 2, n (%)	219 (31.7%)
Grade 3, n (%)	240 (34.8%)
Grade 4, n (%)	84 (12.2%)
High grade (3–4), n (%)	324 (47.0%)
LVI present, n (%)	64 (9.3%)
Multifocal, n (%)	27 (3.9%)
Sarcomatoid features, n (%)	16 (2.3%)
Rhabdoid features, n (%)	6 (0.9%)
Tumor necrosis present, n (%)	185 (26.8%)
LND performed, n (%)	83 (12.0%)
Node-positive among LND, n (%)	13 (15.7%)

the actively followed active surveillance group. There was excellent long-term oncologic and overall survival outcomes among patients with Bosniak III and IV cysts. Of those who required surgery, the decision was made within one year: These findings suggest that candidates selected for surveillance can do so safely. These findings support a period of active surveillance prior to decisions made for surgery. Accurate characterization of the lesion is of pre-eminent importance and may take 1–2 years.

MP 8.10 - WITHDRAWN

MP 8.11
Temporal patterns and sites of metastatic progression following partial and radical nephrectomy

Steven Lu¹, Deepak Pruthi², Tom McGregor²
¹Section of Urology, University of Manitoba, Winnipeg, Canada; ²Department of Urology, Dalhousie University, Halifax, Canada; ³Department of Urology, University of Texas San Antonio, San Antonio, United States

Introduction: Renal cell carcinoma (RCC) displays diverse metastatic behavior; yet little is known about the timing, distribution, and sequential order of metastatic spread following treatment for localized disease. A deeper understanding of metastatic progression could inform post-treatment surveillance protocols and shed light on the biology of RCC dissemination. This study aimed to characterize the time to first metastasis or recurrence, the anatomic sites of recurrence, and temporal progression of metastatic spread in patients with organ-confined RCC in a long-term cohort with greater than 10 years of followup.

Methods: We retrospectively analyzed 464 patients with pT1–T3aN0M0 RCC treated with partial or radical nephrectomy at a single tertiary center between 2011 and 2015. Patients with nodal involvement or distant metastases at diagnosis were excluded. Clinical records and serial imaging were reviewed to identify time to metastasis, first metastatic site(s), and subsequent progression patterns. Metastatic sites were standardized and categorized anatomically, including local,

abdominal, thoracic, and uncommon. Patients with multiple sites of recurrence identified on the first imaging study were classified as having synchronous metastases. Descriptive statistics and temporal sequence analysis were performed to characterize metastatic progression.

Results: After exclusion of non-renal cell histology, 386 subjects were included. Over a median followup of 10.5 years, 71 patients (19%) developed recurrence or metastatic disease. The median time to first metastasis or local recurrence was 4.7 years (IQR 2.1–8.6). Twenty-four patients (34%) who underwent a partial nephrectomy had a mean pathologic tumor size of 3.9 cm and developed recurrence/metastasis, of which 11 were local recurrence (five had positive surgical margins). Overall, 19 patients presented with recurrence (nephrectomy bed or retroperitoneal nodes) at a median of three years (IQR 1.6–6.3). Of those with recurrence, 14 also developed metastasis; the mean time to metastasis after recurrence diagnosis was 44 days. Of those with metastasis-only disease (n=64), 58% (n=37) presented with a solitary site metastasis. When examining the first site of metastasis, 56% presented with pulmonary metastasis, 30% had bone metastasis, and 22% had liver metastasis. The median survival from identification to recurrence/metastasis to death was 5.1 months (IQR 2.5–15.5). Of those who died within six months of metastasis diagnosis, 74% had either liver or bone metastasis. Forty-two patients (60%) underwent systemic therapy. Twenty-five patients underwent metastasis-directed therapy, including gamma knife, SBRT, laminectomy, or wedge resection/lobectomy. Abdominal surgery included local resection, radical nephrectomy, adrenalectomy, pancreatectomy, gastrectomy, and hepatic resection. Metastatic progression was observed in 42 patients. The median interval between the first and second site of metastasis was 13.3 months (range 3–64.9). The most common progressions were pulmonary to pulmonary (n=8), synchronous to multiple sites (n=7), and synchronous to pulmonary (n=5). Pulmonary (n=16) and multiple-site (n=13) patterns were the most frequent second sites of metastasis.

Conclusions: Patients with localized kidney cancer who develop recurrence/metastasis often do so after their conventional surveillance imaging ends. Extending abdominal imaging past three years and potentially continuing thoracic imaging may be warranted. At the time of detection of recurrence/metastasis, patients have multiple sites of metastasis, and subsequent imaging demonstrates further progression of such metastasis. This portends a poor survival. Early detection and possible intervention may improve survival. Further study is warranted.

MP 8.12

Congestive nephropathy and renal preservation after inferior vena cava thrombectomy in renal cell carcinoma

Lorraine Scanlon¹, Jesus Cendejas¹, Mithun Kailavasn¹, Jonathan Izawa¹, Brant Inman¹, Melissa Huynh¹, Nicholas E. Power¹

¹Urology, London Health Sciences Center, London, Canada

Introduction: Congestive nephropathy represents an emerging paradigm in the understanding of renal dysfunction, emphasizing venous congestion rather than ischemia alone as a potentially reversible mechanism of kidney injury.^{1,2} Experimental and clinical data demonstrate that elevated renal venous pressure can impair glomerular filtration, promote interstitial edema, and lead to functional renal decline independent of parenchymal loss.^{1,3} In renal cell carcinoma with inferior vena cava tumour thrombus, venous outflow obstruction may therefore contribute directly to preoperative renal dysfunction, and relief of this obstruction through thrombectomy may permit renal recovery.^{4,5} We evaluated whether radical nephrectomy with inferior vena cava thrombectomy is associated with superior long-term renal preservation compared with nephrectomy alone.

Methods: We performed a retrospective cohort study (2002–2023) including patients undergoing radical nephrectomy with inferior vena cava thrombectomy (n=23), open radical nephrectomy (n=35), and laparoscopic radical nephrectomy (n=23). Estimated glomerular filtration rate (eGFR) was recorded preoperatively, on postoperative days 1–2, and at greater than 90 days. Primary outcomes were absolute and percentage change in eGFR at greater than 90 days. Group comparisons were performed using analysis of variance. General linear models adjusted for baseline eGFR, age, body mass index, American Society of Anesthesiologists class, and comorbidities including diabetes, hypertension, ischemic heart disease, and cerebrovascular disease.

Results: Patients undergoing inferior vena cava thrombectomy had larger tumours (10.5 ± 4.3 cm vs 7.1 ± 3.6 cm vs 4.5 ± 1.3 cm, p < 0.001) and lower baseline eGFR (63.8 ± 20.4 vs 82.6 ± 20.9 vs 78.6 ± 30.2, p = 0.014). At greater than 90 days, percentage eGFR decline differed significantly across

surgical groups (21% vs 38% vs 38%; F(2,78)=4.21, p=0.018), favouring radical nephrectomy with inferior vena cava thrombectomy. In adjusted analysis, surgical group remained an independent predictor of 90-day eGFR (F(2,65)=5.27, p=0.008; partial η^2 =0.14). Adjusted mean eGFR at 90 days was higher following thrombectomy compared with open and laparoscopic nephrectomy (59 vs 51 vs 45 mL/min/1.73 m²; p=0.008). Increasing age (p=0.03) and diabetes (p=0.04) were additional predictors of lower postoperative eGFR. No patients required dialysis, and perioperative morbidity was similar across groups.

Conclusions: Relief of venous congestion through inferior vena cava thrombectomy was associated with superior long-term renal preservation compared with nephrectomy alone. These findings support congestive nephropathy as a reversible pathophysiologic mechanism of renal dysfunction in locally advanced renal cell carcinoma, shifting emphasis from irreversible parenchymal loss to potentially modifiable venous-mediated injury.

Acknowledgements: This study was presented as a late-breaking abstract at the Society of Urologic Oncology Annual Meeting 2025 (Phoenix, AZ).

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MP 8.13

Preoperative 'virtual' surgery: Evaluation of a novel-single photon emission computed tomography imaging strategy to predict renal functional loss after partial nephrectomy

Charles A. Paco¹, Marco Trigiani², Neal Rowe¹, Zoe Myers¹

¹Division of Urology, University of Ottawa, Ottawa, Canada; ²University of Ottawa, Ottawa, Canada

Introduction: Partial nephrectomy (PN) is the preferred surgical approach for many patients with localized renal cell carcinoma, but postoperative renal function loss remains common despite nephron-sparing intent. Preoperative nuclear renograms have been used to estimate differential renal function and predict postoperative outcomes; however, traditional renography studies do not account for anatomical detail or surgical technique. Single-photon emission computed tomography (SPECT) provides both functional and anatomic detail — permitting calculations that incorporate tumor size and planned surgical margins. Our goal was to report our early experience with a SPECT 'virtual' partial nephrectomy strategy and evaluate the potential to predict functional outcomes following nephron-sparing surgery.

Methods: We conducted a retrospective review of adult patients who underwent partial nephrectomy at a single academic center between July 2022 and December 2024. Patients were evaluated preoperatively using a SPECT-based 'virtual' partial nephrectomy model that integrates functional and anatomical imaging to estimate renal functional loss and support operative decision-making. Dynamic SPECT imaging was planned by a nuclear medicine physician in collaboration with the surgical team. Using fused functional and anatomical data, tumors were delineated, and a standardized 5 mm margin was applied to simulate the planned resection. Predicted renal functional loss was calculated based on the volume of functioning renal parenchyma encompassed within the simulated excision. In all cases, modeling predicted excessive renal functional loss with radical nephrectomy, supporting a nephron-sparing approach. Predicted renal function loss was compared with observed postoperative renal outcomes. The primary outcome was early postoperative GFR-based renal function loss calculated from preoperative and 3–6 week postoperative estimated glomerular filtration rate (eGFR). Variables were summarized descriptively, and associations between predicted and observed renal function loss were assessed using correlation analyses and exploratory simple linear regression.

Results: Six patients met inclusion criteria with complete imaging and renal function data. Mean predicted renal function loss based on virtual partial nephrectomy modeling was 4.2%, while mean observed early postoperative GFR-based renal function loss was 10.4%. Individually, predicted vs. observed renal function loss varied substantially: case 1, 6.0% predicted vs. 4.9% observed; case 2, 6.0% predicted vs. -4.7% observed; case 3, 4.6% predicted vs. 46.4% observed; case 4, 4.0% predicted vs. 4.3% observed; case 5, 3.0% predicted vs. 0.0% observed; and case 6, 1.5% predicted vs. 11.6% observed. Overall, no significant association was observed between predicted and observed renal function loss (Pearson $r = -0.08$, $p = 0.89$).

Conclusions: We attempted to use SPECT-based virtual partial nephrectomy model to predict postoperative renal functional changes following nephron-sparing surgery. While statistical significance was not established, this early experience demonstrates the feasibility of integrating functional and anatomical imaging to model anticipated renal functional loss and inform preoperative surgical planning. The major limitation of this study is the small sample size, which reflects the novelty and limited clinical adoption of this novel technique. This underscores the need for broader implementation and prospective evaluation across a wider range of tumor characteristics and preoperative renal functional stages to fully assess its predictive utility.

MP 8.14

Agreement between clinical and pathological kidney tumor assessment using a large Canadian multicenter cohort (CKCis)

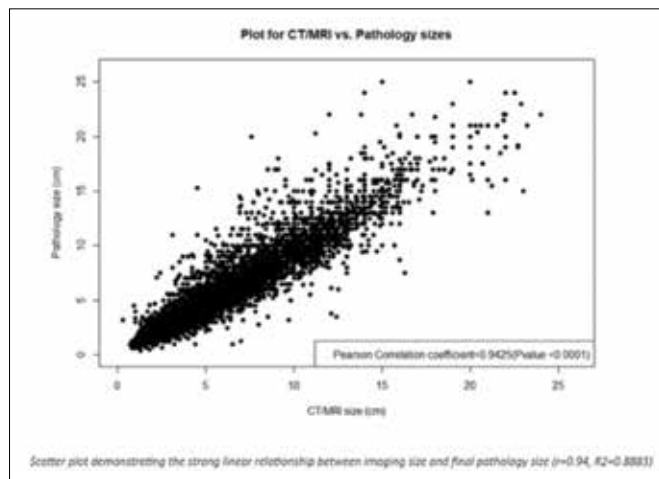
Ibrahim Moussa¹, Jean-Baptiste Lattouf², Luke T. Lavallée^{2,3}, Rodney H. Breau^{2,3,4}, Lori Anne Wood^{5,6}, Ricardo A. Rendon⁷, Jasmir Nayak^{8,9}, Simon Tanguay¹⁰, Keith Anthony Lawson¹¹, Frédéric Pouliot¹², Ranjeeta Malick¹³, Bimal Bhindi¹⁴, Antonio Finelli¹¹, Rahul Bansal¹⁵, Aly-Khan A. Lalani¹⁶, Naveen S. Basappa¹⁵, Miles Mannas^{18,19}, Andrew Feifer^{20,21}, Amanda Hird^{21,23}

¹Faculty of Medicine, University of Montreal, Montreal, Canada; ²Division of Urology, University of Ottawa, Ottawa, Canada; ³Clinical Epidemiology Program, Ottawa Hospital Research Institute, Ottawa, Canada; ⁴The Ottawa Hospital Research Institute, University of Ottawa, Ottawa, Canada; ⁵Department of Medicine and Urology, Dalhousie University, Halifax, Canada; ⁶Division of Medical Oncology, QEII Health Sciences Center, Halifax, Canada; ⁷Department of Urology, Dalhousie University, Halifax, Canada; ⁸Section of Urology, University of Manitoba, Winnipeg, Canada; ⁹Department of Urology, University of Washington, Seattle, United States; ¹⁰Division of Urology, McGill University, Montreal, Canada; ¹¹Division of Urology, Princess Margaret Hospital, University of Toronto, Toronto, Canada; ¹²Division of Urology, Université Laval, Quebec, Canada; ¹³School of Epidemiology and Public Health, University of Ottawa, Ottawa, Canada; ¹⁴Division of Urology, University of Calgary, Calgary, Canada; ¹⁵Division of Urology, McMaster Institute of Urology, McMaster University, Hamilton, Canada; ¹⁶Department of Oncology, Juravinski Cancer Centre, McMaster University, Hamilton, Canada; ¹⁷Department of Oncology, Cross Cancer Institute, University of Alberta, Edmonton, Canada; ¹⁸Urologic Sciences, The University of British Columbia, Vancouver, Canada; ¹⁹Vancouver Prostate Centre, Vancouver, Canada; ²⁰Department of Surgery, Trillium Health Partners, Mississauga, Canada; ²¹Department of Surgery, University of Toronto, Toronto, Canada; ²²Department of Surgery, Sunnybrook Health Sciences, Toronto, Canada

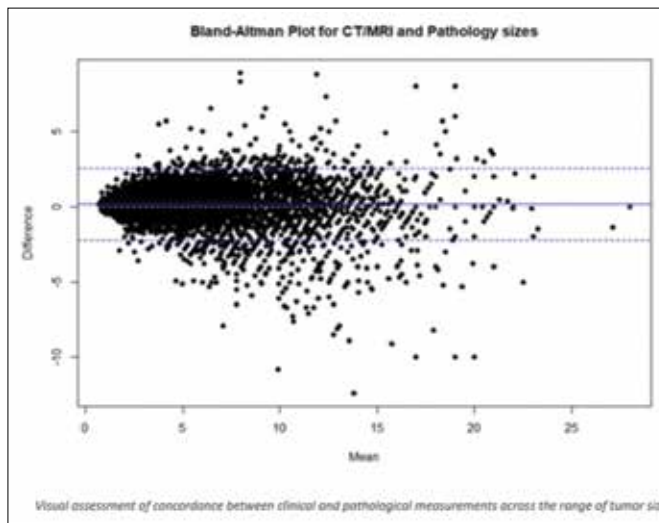
Introduction: Accurate preoperative assessment of kidney cancer is essential for surgical planning. Agreement between clinical (cT) and pathological (pT) T-stage influences prognostication. We used the Canadian Kidney Cancer Information System (CKCis) to evaluate radiological-pathological agreement in tumor size and stage.

Methods: We conducted a cohort study of CKCis patients who underwent surgical resection. Adult patients with solitary tumors, preoperative CT or MRI, and documented cT and pT stage were included. Staging agreement was assessed by comparing cT vs. pT stages, specifically identifying upstaging (cT1-2 to pT3-4) and down-staging (cT3-4 to pT1-2). Tumor size agreement was evaluated using absolute/relative differences. Uni-variable regression identified predictors of staging discordance.

Results: 8,750 patients were included (mean age 61.2; 66.8% male). Most patients underwent CT ($n = 7,113$) rather than MRI ($n = 1,037$), at a mean of 3.2 months before surgery. Mean tumor size was 5.8 ± 3.6 cm on imaging and 5.6



MP 8.14. Figure 1. Correlation between radiologic and pathologic tumor size.



MP 8.14. Figure 2. Bland-Altman plot for imaging and pathology size agreement.

± 3.6 cm on pathology ($r = 0.9425$, $R^2 = 0.8883$) (Figure 1). Imaging size was within 10%, 20%, and 30% of pathological size in 45.1%, 72.0%, and 86.6% of cases, respectively (Figure 2). Exact cT-pT concordance was 66.0%. Among clinically localized (cT1-2) tumors, 24.1% were upstaged (8.9% cT1a, 26.1% cT1b, 59.0% cT2), whereas down-staging was rare (7.1%). Upstaging risk was associated with older age, male sex, larger size, high grade, and clear cell histology. Notably, preoperative MRI was associated with a 24% lower risk of upstaging compared to CT. **Conclusions:** While tumor size shows strong agreement between imaging and pathology, staging concordance is more limited. Nearly one-quarter of clinically localized tumors were pathologically upstaged, with cT1b and cT2 lesions at highest risk. MRI provided more accurate stage assessment than CT. These data highlight the need for cautious preoperative counseling regarding prognostic expectations.

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MP 8.15

Autoembolization: A newly described technique for percutaneous image-guided renal biopsies

Nicholas Hanson^{1,2}, Mindy Baroddy^{1,2}, Rashad Ebeid², Kiat Tseng Tan²

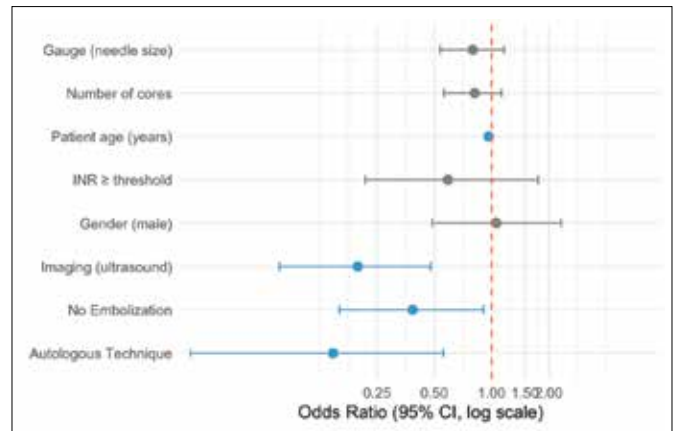
¹McMaster University, Hamilton, Canada; ²Niagara Health, St. Catharines, Canada

Introduction: Biopsy is the gold standard for diagnosis and staging of renal malignancies. Despite advances in biopsy technique, the risk of hemorrhagic complications remains a serious concern. Embolization of the biopsy tract using an autologous blood clot could lead to a reduction in complications. This retrospective chart review evaluated differences in complication rates between this novel autoembolization technique and standard approaches (gelfoam embolization and no embolization).

Methods: Clinical data from 299 image-guided percutaneous renal biopsies were assessed. Fifty-seven procedures were performed using autoembolization and 95 used gelfoam. Fisher's exact test was used to compare differences in complication rates between autoembolization, gelfoam embolization, or no embolization. Firth logistic regression evaluated the independent associations between biopsy technique and complication risk, adjusting for age, sex, imaging modality, needle gauge, number of cores, and histology.

Results: Among the 57 biopsies performed using autoembolization, two complications occurred (3.5%), compared to 32/242 biopsies performed using standard techniques (13.2%). Autoembolization has a significantly lower complication rate ($p=0.037$) when compared to standard techniques, and 79% lower odds of complication compared to gelfoam ($p=0.013$). Autoembolization was associated with lower odds of complication (OR 0.15, $p=0.004$) when controlling for confounding factors. The impact of different variables on complication rate are demonstrated in Figure 1.

Conclusions: Autologous blood clot embolization offers a significant reduction in hemorrhagic complications for renal biopsies, and outperforms standard biopsy techniques in terms of complication rates. Particularly when compared to gelfoam, odds of complication were reduced by nearly 80%. These findings suggest that the autologous embolization method is safer overall, and may represent a preferable embolization strategy particularly in cases where gelfoam tract embolization would otherwise be indicated.



MP 8.15. Figure 1. Relationship between different predictors and complication rate.

