Unmoderated Posters
Oncology: Kidney and Ureter

UP-10

Laparoscopic Robotic-assisted Excision of Adrenal Pheochromocytoma

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Introduction and Objectives: Historically pheochromocytoma excision has proven to be challenging for a variety of reasons such as blood pressure spikes and blood loss. With the development of sophisticated robotic systems, this surgery has become more feasible. The following will present a case highlighting the excision of a metabolically active pheochromocytoma using the DaVinci robot. A 79-year-old male presented for evaluation of left adrendal mass measuring 8.0 cm. Subsequent testing revealed pheochromocytoma.

Methods: Preoperatively the patient received a two week alpha blockade. The DaVinci robot was side docked with left side elevated. It was noted that manipulation of the tumour resulted in a spike of the patient's blood pressure. Patient was noted to have large accessory veins, controlled with 45 mm Ethicon endoscopic vascular stapler. Following occlusion of the veins there was a noted drop in blood pressure, typical of metabolically active pheochromocytoma. Blood loss was estimated at 200 cc. Procedure was tolerated well.

Results: Pheochromocytoma was successfully removed assistance from the DaVinci Robot. Minimal blood loss was encountered and complications were minimal. Patient developed postoperative ileus and was discharged home on postoperative day 16.

Conclusion: Robotic assistance allowed for limited manipulation of the lesion, reducing the risk of unsafe blood pressure spikes. Blood loss was minimized with the use of the Ethicon endoscopic vascular stapler.

UP-11

Robotic-assisted Laparoscopic Partial Nephrectomy: Resection of Multiple Renal Masses and Demonstration of the Sequential Pre-placed Suture Technique

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Objective: The incidence of multifocal RCC is increased in patients with hereditary syndromes (e.g., VHL). Simultaneous resection of multiple tumours is beneficial because it obviates the need for repeated general anesthetic and hilar dissection. Because of the longer warm ischemia time (WIT) multifocal resection has typically been carried out by the open approach. However increasing experience with robotic partial nephrectomy has allowed for resection of more complex solitary tumours with comparable WIT. Our aim was to demonstrate a technique for robotic partial nephrectomy for multifocal RCC. We also demonstrate our technique for the resection of tumours with the hilum unclamped (sequential pre-placed suture).

Methods: A 28-year-old female with VHL presented with 3 left sided enhancing renal masses. A CT scan showed a 2.1-cm upper pole mass (R.E.N.A.L. 5x), a 2.1-cm inter-polar mass (R.E.N.A.L. 7p), and a 2.0-cm lower pole mass (R.E.N.A.L. 7x). The upper and inter-polar masses were resected on clamp, and the lower pole mass was resected off clamp, using our sequential pre-placed suture technique.

Results: Operative time was 210 minutes, and estimated blood loss (EBL) was 250 cc. WIT was 26 minutes. There were no intra-operative or postoperative complications. Serum Cr on postoperative day 2 was 0.62 mg/dL. The final pathology was grade 2 Clear Cell RCC. All margins were negative.

Table 1. UP-11

Variable		Value
Sample size		11
Sex	Male	7 (63.6%)
	Female	4 (36.4%)
Age (years)		66 (59-69)
BMI (kg/m^2)		27.7 (25.7-28.8)
ASA		3 (3-3)
Charlson Comorbidity Index		4 (3-5)
Follow-up length (months)		10.34 (5.5-18.4)
Tumour size off clamp (cm)		2 (1.1-3)
Highest renal score		6 (6-7)
EBL (ml)		250 (100-300)
OR time (min)		170 (120-180)
Overall WIT (min) (n=2)		14.75 (14.5-15)
Laterality (R/L)		4/7
Postoperative complications	Clavien 1 (n=1)	Ileus
	Clavien 2 (n=1)	Blood transfusion

BMI: body mass index; EBL: estimated blood loss; WIT: warm ischemia time ; R: right; L: left.

Conclusion: Robotic-assisted partial nephrectomy for multifocal RCC is technically feasible with an acceptable WIT. We encountered no complications with minimal blood loss. All resection margins were negative, and short-term renal function was not affected. The use of an un-clamped sequential pre-placed suture technique was used to facilitate a decreased WIT. Eleven patients at our centre (Table 1) have had a partial nephrectomy with this technique (3 with multiple tumours) and results are comparable to our clamped technique.

UP-12

Conditional Survival of Patients with Renal Cell Carcinoma Treated with Nephrectomy: A Population Based Analysis

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Introduction: The aim of the study was to examine the impact of length of survivorship on survival probability, otherwise known as the effect of conditional survival, following nephrectomy (NT) in patients diagnosed with renal cell carcinoma (RCC).

Methods: Overall, 42090 RCC patients who underwent NT were abstracted from SEER (1988--2008). Relying on cumulative survival estimates, conditional survival rates were derived according to patient and disease characteristics. The analysis was performed within the overall cohort of RCC patients and subsequently repeated after stratification according to tumour stage, grade and size, nodal status, and patient age.

Results: The mean follow-up was 131 months (median: 130). The total number of deaths due to RCC was 5554 (13.1%). Of those, 3523 (63.4%) died within two years after NT. Immediately following surgery, the 5-year CSM-free survival rate was 83.5%. Amongst individuals who survived ≥1, ≥2, ≥3, ≥4, and ≥5 years following NT, the probability to survive an additional five years was 87.0, 89.6, 90.9, 92.0, and 92.3%, respectively. Given a 1- and 2-year survivorship, the probability of being CSM-free for another five years increased by +4.1 and 4.3% for stage III and +12.9 and 10.3% for stage IV disease, respectively. Similarly, the increase in the five-year CSM-free survival probability was +2.7 (88.3%) and +2.0% (90.3%) in patients with pNx/N0 disease vs. +17.2 (44.2%) and +13.0% (57.2%) in patients with pN1-3 disease, provided that they survived 1 and 2 years after NT.
Conclusions: Survival probabilities vary according to length of survivorship following NT. Specifically, even amongst patients with more advanced disease at surgery, more favourable prognosis can be achieved following a survivorship of 1-2 years. Consequently, a re-evaluation of prognosis after a critical period may be of value.

UP-13

Robotic Stereotactic Ablative Radiotherapy (SABR) Using CyberKnife® for Medically Inoperable Renal Tumours and Tumours Arising From Solitary Kidney: Technique, Efficacy and Safety

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Introduction: Stereotactic ablative body radiotherapy (SABR) is currently under study regarding its clinical application in management of patients with kidney cancers. CyberKnife® can accurately deliver ablative tumour radiation doses while preserving function of remaining kidney tissue. We report Canada's first use of CyberKnife® SABR system in treating primary kidney cancers and the technique, preliminary efficacy and safety of this technique.
Materials and Methods: Between January 2011 and February 2012, we treated three patients with renal tumours using CyberKnife® SABR. Two patients had tumours in solitary kidney. The third patient had a recurrent tumour after two previous RFA treatments. Platinum seed fiducials were used for real time tumour tracking on cyberknife treatment. MRI registration was used for tumour delineation in all cases. The patients were followed post-treatment with regular renal scans and renal function tests.
Results: The mean age was 79 years. Mean tumour size was 21.3 cm3. A dose of 39 Gy in 3 fractions was delivered. The post-treatment follow-up times were 15 months, 13 months and 12 months. Local control was obtained in all three patients. No acute or chronic toxicity was reported during the follow-up period. Kidney functions remained unaffected after treatment.
Conclusion: Robotic SABR using CyberKnife® is technically feasible for treatment of medically inoperable renal tumours or tumours in a solitary kidney.

UP-14

The Management of Complex Renal Masses by Ex-vivo Partial Nephrectomy and Auto-transplantation: Case Series and Video Presentation

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Purpose: Nephron sparring surgery has become the gold standard for patients with tumours in solitary kidneys, bilateral renal masses, genetic renal masses, chronic renal dysfunction or those at risk of future renal impairment. We describe our approach for the treatment of complex central renal masses not otherwise amendable to standard open or laparoscopic partial nephrectomy. We present a case series of ex-vivo partial nephrectomy and auto-transplantation for the treatment of complex renal tumours.
Methods: We present three cases of complex central tumours treated with ex-vivo partial nephrecromy and auto-transplantation with up to 1 year follow-up. We describe our approach with video demonstration and highlight our outcomes.
Results: Laparoscopic donor nephrectomy was performed followed by immediate renal cooling and perfusion with isotonic solution. Ex-vivo partial nephrectomy and renography were then performed, followed by successful auto-transplantation. Cold ischemic times averaged less than forty minutes and warm ischemic times were negligible (< 2 min). Average blood loss was minimal with no significant complications. Postoperative course was uneventful in all three cases. All patients displayed improved or stable renal function postoperatively. Pathology demonstrated clear cell renal carcinoma with negative margins. All are disease free at up to 1-year follow-up.
Conclusions: Ex-vivo partial nephrectomy and autotransplantation is a viable option for patients with a complex central renal mass in which a nephron-sparring approach is warranted. This technique facilitates both preservation of renal function and good oncologic control. The ex-vivo nature of the procedure allows for excellent exposure, a bloodless field and complex renography to be performed with negligible warm ischemia times.