Open and Robotic Nephron-Sparing Surgery for T1b or Greater Renal Cell Carcinoma

Introduction and Objective: Nephron-sparing surgery for renal cell carcinoma (RCC) with tumor size greater than 4 cm (T1b) is prevalent. Outcome data on robotic (RPN) versus open partial nephrectomy (OPN) has been reported. We report a single surgeon experience with RPN and OPN for T1b or greater RCC.
Materials and Methods: Patients undergoing RPN and OPN for T1b or greater RCC between 2007 and 2012 are included. Demographics, operative, perioperative, complications, and recurrence data were prospectively collected and analyzed.
Results: Fifty-nine patients underwent partial nephrectomy for T1b or greater RCC. Twenty-one of these patients underwent RPN and 38 patients underwent OPN. Patient demographics, ASA, and BMI were similar for both groups. The average tumor size for the RPN and OPN group was 5.8 and 5.7 cm respectively. The two groups had a comparable mean operative times (RPN 152 minutes, OPN 158 minutes, p=0.18). The average warm ischemia time for the RPN group was 27 minutes. Seventeen OPN cases were performed without hilar clamping and 21 cases required cold ischemia time with the average hilar clamping time of 25 minutes. Estimated blood loss for both groups was comparable (RPN 347 cc, OPN 289 cc) with a 21% transfusion rate. Length of stay (LOS) for RPN was significantly shorter than the OPN (2.5 days vs 5.3 days p=0.003). There was no significant change in the preoperative, postoperative, and 3 month calculated GFR. RPN and OPN had similar complication rates. RPN had 2 cases of prolonged urine leak. OPN had 7 complications. Four cases of prolonged urine leak requiring stents, 2 wound infections requiring negative pressure dressing, and 1 arteriovenous malformation requiring angioembolization. At average follow up of 24 months, there were no cases of local recurrence. One patient in the open group developed metastatic disease 18 months post-surgery.
Conclusion: OPN and RPN are efficacious treatments for T1b or greater RCC with acceptable morbidity and recurrence risk in short term follow-up. Minimally invasive approach may lead to a shorter LOS and earlier convalescence. Larger studies with longer follow up are needed to support these early observations.