Comparison of Laparoscopic and Open Partial Nephrectomies: Single Center Experience

Introduction and Objectives: Open partial nephrectomy (OPN) is an established treatment for small renal masses. Laparoscopic partial nephrectomy (LPN) is an increasingly performed, minimally invasive alternative to OPN. The aim of our study was to compare early postoperative outcomes in 272 patients who underwent OPN with the initial experience with LPN in patients with a single renal tumor.
Material and Methods: Nephron-sparing surgery was performed in 272 patients in 2001-2012 in our institution. We selected 2 comparable groups of patient with different approaches. LPN was performed in 122 patients and OPN – in 150 patients. LPN was performed in standard variant with or without ischemia and modified LPN with RFA.
Results: Patients who underwent OPN compared to the LPN group were at higher risk of symptomatically tumors with increased tumor size and intraparenchymal tumor localization ($p<0.05$). A mean size of a tumor according to histology was higher in OPN group than in the LPN group of patients: 38.5±22mm (8-180mm) and 25.9±12.5mm (5-85mm) respectively. Groups of patients were comparable on ischemia time and rate of complications ($p>0.05$). The significant difference was observed in median of blood loss, mean operating time and median duration of hospitalization. ($p<0.05$) The median blood loss for group of OPN was 700ml (50-4000) and 150ml (50-2800) for LPN ($p<0.001$). Mean operating time was 175.5$\pm$56.9min (60-360) in OPN group and 124.7$\pm$44.8min (60-360) in LPN ($p<0.05$). Positive surgical margins were not observed. The median duration of hospitalization was 8 days (6-14) in OPN and 8 days (5-21) in LPN group ($p>0.05$). Frequency of intra- and postoperative complications in OPN and LPN groups were comparable - 13.9% and 15.6%. Most complications were observed at the beginning of learning curve. Correlation between tumor localization (intraparenchymal or extrarenal) and a frequency of complications was observed, with complications more frequent in patients with intraparenchymal localization ($R=0.14$, $p<0.05$). Levels of creatinine and urea were similar in both groups.
Conclusions: Early experience of LPN is promising. LPN offered the advantages of less operative time, decreased operative blood loss and a shorter hospital stay. The long-term results are expected.