Robotic Assisted Partial Nephrectomy in Patients without Hilar Clamping: A Multi-Institutional Study

Introduction and Objective: Ongoing efforts are focused on minimizing or eliminating renal ischemia during robot-assisted partial nephrectomy (RPN). We evaluate the outcomes of RPN without hilar clamping using data from a large multi-center series.
Materials and Methods: We performed a multi-institutional analysis of prospectively maintained databases of RPN performed by high-volume surgeons across 5 academic institutions. Our series combined operative data of 886 RPN collected between 2007 and 2011. A total of 66 patients who underwent RPN without hilar clamping were identified and retrospectively analyzed. Patient demographics, perioperative, functional, and early oncological outcomes of RPN without hilar clamping were assessed.
Results: Mean patient age was 60 years (18-88). Mean Charlson Comorbidity Index was 3.5 (SD=1.99) and mean ASA score was 2.5 (SD=0.68). Mean tumor size was 2.5 cm (range 0.7-11) and eight patients (12%) had tumors over 4cm in size. Mean nephrometry score was 5.3 (range 4-10) with 30 tumors (45%) >50% exophytic and 45 (68%) tumors in a polar location. Indications for an off-clamp approach included eGFR≤60 in 13 patients (20%), solitary kidney in 4 patients (6%), and multiple or bilateral tumors in 2 patients (3%). Perioperative outcomes included a median blood loss of 150 ml (IQR 50-300), mean operative time 157min (range 59-267), and hospital stay of 2 days (SD 1.8). There were no intraoperative complications. There were 8 postoperative Clavien I-II complications (12%) but no Clavien III-V complications. Preoperative mean eGFR was 81 (20-119). The mean postoperative change in eGFR was 0.4% and no patients required dialysis. Positive surgical margins occurred in two patients (3%). There were no disease recurrences at a mean follow-up of 21 months.
Conclusions: Off-clamp RPN is safe and feasible in appropriately selected patients and with surgeon experience. Off-clamp RPN may help optimize renal function by eliminating renal ischemia. This represents the largest multi-institutional series in the literature regarding off-clamp RPN.

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