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Initial experience with robot assisted partial nephrectomy for multiple renal masses

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Purpose: We evaluated the feasibility of performing robot assisted partial nephrectomy in patients with multiple renal masses and examined the results of our initial experiences.
Materials and Methods: We reviewed the records of 10 patients with multiple renal masses who underwent attempted robot assisted partial nephrectomy within the last 2 years. Demographic information, and intraoperative, perioperative and renal function outcome data on these patients were reviewed.
Results: A total of 24 tumors in 9 patients were removed with robot assistance. There was 1 open conversion with successful completion of partial nephrectomy. Of the patients 70% had a known hereditary renal cancer syndrome and the remainder had multifocal disease with unknown germline genetic alterations. Frozen section from the tumor bed evaluated in 5 of 10 cases was negative. One patient experienced urinary leak postoperatively, which resolved by postoperative day 9 without intervention. Of the 24 robotically resected masses 22 were malignant. Our most recent 3 patients underwent successful partial nephrectomy without hilar clamping, obviating the need for warm ischemia. Overall renal function was unchanged at most recent followup with a minimal decrease in operated kidney differential function.
Conclusions: Robot assisted partial nephrectomy for multiple renal masses was feasible in our early experience. Patient selection is paramount for successful minimally invasive surgery. Robot assisted partial nephrectomy without hilar clamping, especially in the hereditary patient population in which repeat ipsilateral partial nephrectomy may be anticipated, appears promising but requires further evaluation.

Editorial Comment

Since the first laparoscopic partial nephrectomy was performed to by Winfield et al. and subsequently perfected by Kavoussi, Gill and others, the nephron-sparing surgery evolved with better technology, i.e. intraoperative ultrasound, vascular clamps, articulating needle holders, absorbable clips, etc. Ultimately, the use of robotic assisted surgery has been performed by the authors with comparable results as the laparoscopic partial nephrectomy. The advantages of the robot seem clear in terms of the intuitive use of the robot for intracorporeal suturing and the 7 degree of freedom of the laparoscopic devices, but one should be aware of the cost involved and the learning curve that could be different from surgeon to surgeon if the previous laparoscopic experience is minimal, which is not the case in this particular report. Furthermore, other methods of nephron-sparing surgery may be used to manage small renal masses, i.e. cryoablation or other ablative techniques that may yield the same oncological and functional outcomes as partial nephrectomies. The strength of this manuscript is the large experience of this group with previous management of malignant renal masses and complex laparoscopic oncological procedures performed laparoscopically in a single institution. Moreover, the complication rates of robotic assisted partial nephrectomies are comparable to open technique even when the complexity of the cases increased.

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