BEST CHILDREN'S HOSPITALS U.S.News & WORLD REPORT UROLOGY 2017-18

CHALLENGING CASES

MINIMALLY INVASIVE RENAL PRESERVATION SURGERY

Boston Children's Hospital | Urology

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Robotic assisted laparoscopic partial nephrectomy can be safely and effectively performed in pediatric patients for renal tumors while preserving renal function. Classically, cases such as the two described here have been managed with an open, invasive approach or by radical nephrectomy. These two cases, cared for in collaboration with specialists from Dana-Farber/Boston Children's Cancer and Blood Disorders Center, demonstrate the effectiveness of renal preservation using robotic assisted laparoscopic surgery applied for renal masses in two different pediatric patients.

—Richard S. Lee, MD

CASE STUDY #1

Robotic assisted laparoscopic partial nephrectomy to remove a hilar mass

A 13-YEAR-OLD MALE PATIENT with a two-month history of abdominal pain, nausea, and 8-pound weight loss, was evaluated by his pediatrician. Results of the evaluation by abdominal ultrasound revealed a hilar mass in the left kidney (Fig. 1).

The patient was evaluated by a multidisciplinary pediatric oncology team from Dana-Farber/Boston Children's Cancer and Blood Disorders Center. Tumor-specific MRI imaging confirmed and further characterized this mass, which appeared suspicious for a malignancy (Fig. 2). Although located in the hilum, we felt that the patient was a candidate for a minimally invasive partial nephrectomy (as opposed to a radical nephrectomy) in an effort to preserve as much remaining kidney tissue as possible, particularly as the mass may have been benign.

The patient underwent a robotic-assisted left partial nephrectomy with lymphadenectomy. This approach allowed for precise temporary clamping of the renal hilar vessels to minimize blood loss and renal ischemia while the mass was excised from the normal kidney tissue.

Following a short post-operative stay, the patient was discharged to home and made a full recovery. Pathology of the mass was consistent with a benign growth. Follow-up 6 weeks after surgery demonstrated normal renal function, and a normal appearing left kidney with normal blood flow and without residual mass (Fig. 3).

FIG. 1 Initial ultrasound demonstrating centrally located mass in the left kidney.

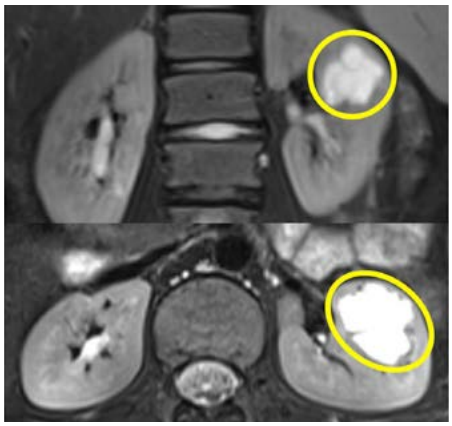


FIG. 2 Subsequent MRI confirming centrally located mass with appearance concerning for tumor.

FIG. 3 Post-operative ultrasound showing a normal appearing left kidney without mass.

CASE STUDY #2

Robotic assisted laparoscopic partial nephrectomy with selective arterial clamping to remove a suspicious cystic mass

A PATIENT INITIALLY PRESENTED PRENATALLY with a non-suspicious lower pole renal cyst. She was followed with annual ultrasound studies. At age 3, her ultrasound demonstrated that the cyst developed a solid component which was concerning for potential malignancy. After multidisciplinary evaluation at Dana-Farber/Boston Children's, she underwent MRI / MRA tumor-specific imaging. This study confirmed an enhancing solid lesion within the cyst (Fig. 4). The study also showed a lower pole renal vessel that supplied the affected portion of the kidney (Fig. 5).

Based on her presentation, the tumor was unlikely to be a Wilms tumor, but other malignant etiologies could not be excluded. Given the location and appearance of the lesion, the patient underwent a robotic assisted laparoscopic lower pole partial nephrectomy with selective arterial clamping to minimize renal ischemia.

The mass was excised in its entirety with minimal blood loss. The patient was discharged home following a short post-operative stay and made a full recovery. She had no change in renal function, as her serum creatinine was unchanged from her pre-operative level. The pathology of the mass was consistent with a benign growth and a follow-up ultrasound at 6 weeks demonstrated a normal appearing right kidney without residual mass (Fig. 6).

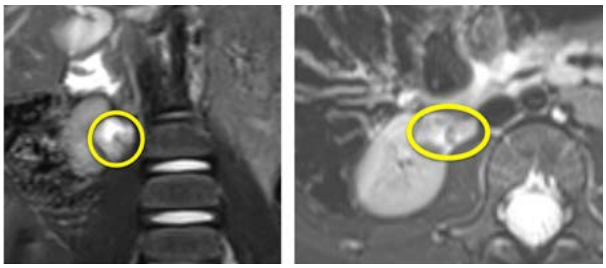
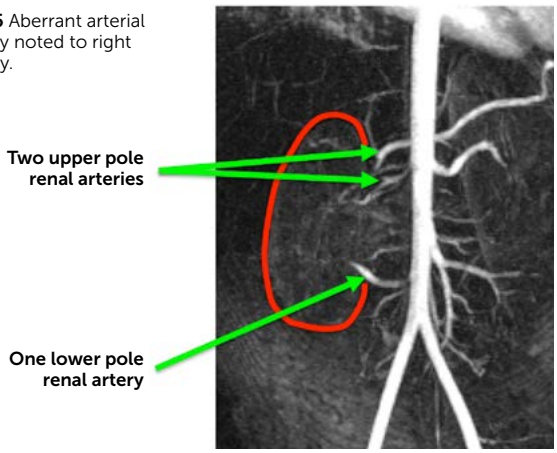


FIG. 4 MRI demonstrating cystic mass with enhancing nodule.

FIG. 5 Aberrant arterial supply noted to right kidney.



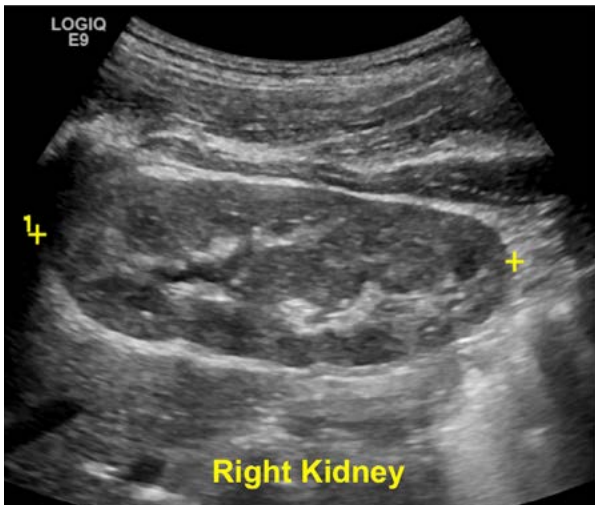
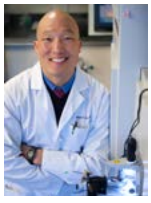


FIG. 6 Post-operative ultrasound demonstrating no residual mass in a normal appearing left kidney 6 weeks after surgery.



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