Pediatric Robot-Assisted Heminephrectomy in Horseshoe Kidney

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Abstract

Introduction: The robotic surgical platform allows for more complex minimally invasive procedures to be performed. There are prior reports of laparoscopic treatment for nonfunctioning moieties in horseshoe kidneys. We present two cases of pediatric robot-assisted heminephrectomies of horseshoe kidneys in the form of video.

Methods: Two patients underwent robot-assisted heminephrectomy in the past year at our institution with the Xi da Vinci robotic system. We present the video of the procedures.

Results: The first patient is a 17-year-old girl who presented with urosepsis. Computed tomography (CT) revealed dilated left kidney with significant parenchymal loss in a horseshoe configuration. She had normal renal function, after placing a left ureteral stent, an MAG3 nuclear scan revealed <5% function of left moiety. She underwent robot-assisted laparoscopic heminephrectomy with Xi Robot. The robotic stapler was useful in dissection sealing and cutting the left moiety from the isthmus. There were no perioperative complications and she was discharged on POD 1. The second video presented is that of a 2-year-old girl with Turner syndrome with congenital right hydronephrosis. She did not have reflux on VCUG. MAG3 renal scan revealed no function on the right. Magnetic resonance urogram revealed a dilated right kidney with no significant parenchyma and likely atretic distal ureter. She underwent robot-assisted laparoscopic right heminephrectomy. For atretic kidney, the robotic vessel sealer was used to take the right moiety off the isthmus as well as the vessels. There were no perioperative complications and she was discharged on POD 1 uneventfully. There was no urine leak from the isthmus stump in either cases.

Conclusions: This is the first report of pediatric robot-assisted laparoscopic heminephrectomy in horseshoe kidneys; it is both feasible and safe. The da Vinci robot system allows for improved observation and ability for 360° wrist movements. Use of robotic stapler as well as vessel sealer can be helpful to mobilize the targeted moiety off the isthmus.

No competing financial interests exists.

Disclaimer: The opinions expressed in this article are the authors' own and do not reflect those of the Oregon Health and Sciences University.

Runtime of video: 6 mins

Keywords: heminephrectomy, horseshoe kidney, robotic surgery, pediatric urology

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