



Case study:

Single port retroperitoneal partial nephrectomy

By Alexander Chow, MD



Alexander K. Chow, MD

Rush University Medical Center
1725 W Harrison St.,
Professional Building, Suite 970
Chicago, IL, 60612
(312) 563-3447

Alexander K. Chow, MD, is an expert in robotic surgery for prostate cancer, treatment of complex kidney cancer, urinary tract reconstruction (pyeloplasty, buccal ureteroplasty, ureteral reimplantation, and urinary diversion) and treatment of complex stone disease.

History

Patient X is a male in his 40s with an incidentally found 3.7 cm mass located in the lower pole of the right kidney.

Presentation and Examination

The patient underwent abdominal imaging for vague abdominal pain prompting identification of an incidental right kidney mass suspicious for kidney cancer.

Facts about Single Port Retroperitoneal Partial Nephrectomy

Retroperitoneal approach for treatment of kidney cancer is only performed by a small number of urologists due to unfamiliarity with the orientation and anatomy with the retroperitoneal space. Centers, such as Rush University Medical Center, are offering retroperitoneal surgery, which translates to essentially zero risk of bowel injury, earlier return to postoperative bowel function, and lower risk of incisional hernias.

The advent of the da Vinci single port robot now allows us to take this to another level by offering the retroperitoneal approach via a single, 3-centimeter incision.

Treatment

A single, 3-centimeter incision was made into the flank and the retroperitoneal space was dilated to allow positioning of the da Vinci single port robot. The advantage of the retroperitoneal approach allowed us to identify the renal artery (located posteriorly) which was isolated and controlled. The renal mass was defatted and enucleated completely from the kidney. Finally, the enucleation bed was re-approximated with sutures using our standard technique.

Outcome

The patient had little to no flank incisional pain postoperatively and was discharged on POD 1. He had a return of bowel function and was able to tolerate a diet immediately after the surgery. The patient will be followed for surveillance scans pending surgical pathology.

In his one-month post op visit, the patient had no issues with pain and the incision was well healed. He will return in six months for surveillance imaging for kidney cancer.

Analysis

Retroperitoneal access is ideal for posterior or lateral masses for partial nephrectomies. Single-port retroperitoneal access enables surgeons to bypass the abdomen and bowel and allows

for direct operation on the kidney or prostate, either posteriorly or anteriorly. The da Vinci single port robot gives surgeons the ability to operate in a small, confined space with excellent maneuverability and visibility.

In general, retroperitoneal robotic partial nephrectomy has demonstrated comparable surgical and oncological outcomes as a transperitoneal approach, with the added benefits in one comparative study of less blood loss and shorter operative times. A 2018 study comparing a retroperitoneal vs. transperitoneal approach for renal tumors showed better surgical outcomes, a lesser decrease in the early postoperative estimated glomerular filtration rate (eGFR) and shorter operative and console time for the retroperitoneal approach.

Single port surgery can also be offered for selective prostate cancer surgery and urological reconstruction.

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