

Case study:

Robotic Ureteroneocystostomy (ureteral reimplant) for Treatment of Iatrogenic Ureteral Injury

By Alexander Chow, MD



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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 A is a female in her 50s who underwent a robotic-assisted hysterectomy and bilateral salpingectomy for treatment of endometrial cancer.

Presentation and Examination

Due to the extensive nature of her endometrial cancer, the right ureter was injured during the dissection. In an effort to maintain a minimal invasive approach, the ureteral injury was addressed robotically. The ureter was found to be completely transected and sealed off consistent with a cautery injury.

Initial Diagnosis

The patient was diagnosed with endometrial cancer.

Facts about robotic ureteral reimplant

Robotic ureteral reimplant is typically done in the setting of vesicoureteral reflux (VUR) with reconstruction following a distal ureterectomy for malignancy, ureteral obstruction, or iatrogenic ureteral injury. When a ureteral injury is recognized intraoperatively during a robotic surgery, having recognition of intra abdominal anatomy and ability to creatively reconstruct the upper urinary tract is critical to repair the injury while keeping the procedure minimally invasive.

Treatment

Patient A's surgery was on September 24, 2020. Once we identified the ureter, we attempted to mobilize it proximally to create a tension-free anastomosis. The bladder was then filled with 300 mL of saline without evidence of any urinary leak at the anastomosis.

Outcome

The patient was discharged and a fluoro cystogram was completed which showed a patent anastomosis of the implanted ureter without extravasation of contrast. The ureteral stent was then removed and the patient was observed for symptoms of obstruction as well as renal function.

At the last follow up on November 24, 2020, the patient has been doing well without any complications from the procedure. Our follow up plan is to monitor the patient every six months for two years.

Analysis

Outcomes for robotic-assisted ureteral reimplantation surgery are comparable with open repair--once considered the benchmark for this type of procedure--and are supported by existing evidence. While total operative time remained the same for both open and robotic surgery, in general, postoperative length of stay and

use of opioids for pain management were both decreased for robotic surgery.

In a 2016 comparative study between open vs. minimally invasive adult ureteral reimplantation, a 30-day outcomes analysis showed evidence for lower complications (9% for laparoscopic ureteral reimplantation (LUR) vs 28% for open ureteral reimplantation (OUR), $P < .01$) and surgical site infection (0% for LUR vs 5% for OUR, $P < .01$).

A 2014 comparison of over 100 minimally invasive cases involving open, laparoscopic, and robotic ureteroneocystostomy for benign and malignant ureteral lesions showed fewer complications (only four intraoperative complications (4.7%) and two (2.4%) conversions to open were identified in the LAP group, without statistical significance; no intraoperative complications or conversions were identified in the RAL or open cohorts) and a shorter length of stay for patients (median length of stay was significantly shorter in the minimally invasive cohorts compared to open ($p < 0.002$)).

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