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Same day discharge robotic-assisted nephroureterectomy

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ABSTRACT

Minimally invasive radical nephroureterectomy (RNU) decreases length of hospital stay compared to open RNU. We describe and demonstrate with video the first report of an outpatient robotic RNU.

1. Introduction

Radical nephroureterectomy (RNU) is the gold standard treatment for high-grade upper tract urothelial carcinoma (UTUC). While endoscopic ablative therapies may be applied for high-grade UTUC in a solitary kidney, RNU is strongly preferred by professional guideline recommendations.

RNU may be performed via an open, laparoscopic, or robotic-assisted laparoscopic approach. Minimally invasive techniques decrease hospital stays from a median of 5 to 4 days, as well as the proportion of prolonged hospitalizations (≥7 days) from 30% to 20%.[1] RNU increased in popularity over both open and laparoscopic approaches following initial description in 2006.[2]

Moreover, same-day surgery (SDS) is safe and feasible for radical nephrectomy,[3] and we demonstrated that patients prefer SDS over an overnight stay for major urologic cancer operations such as radical prostatectomy.[4] To our knowledge, RNU has yet to be reported as an ambulatory procedure. As such, we build on our SDS robotic assisted radical prostatectomy and partial and radical nephrectomy experience to manage high-grade upper tract urothelial carcinoma with SDS robotic RNU.

2. Case presentation

A 65-year-old female was referred for gross hematuria. Her past medical history was significant for type I Von Willebrand's factor disorder and Hereditary nonpolyposis colorectal cancer syndrome. Her past surgical history was notable for total abdominal hysterectomy and bilateral salpingo-oophrectomy and multiple colonoscopies with removal of adenomatous colonic polyps. Her family history was significant for ovarian and breast (sister), colon (brother, mother, maternal grandmother), and prostate (brother) cancer. She denied a history of tobacco use.

A computed tomography (CT) of the abdomen and pelvis revealed a 3.0 × 2.7 × 2.3 cm lobulated, enhancing mass in the left renal pelvis (Fig. 1). Urine cytology was negative for high-grade urothelial carcinoma. Her preoperative creatinine was 0.89 mg/dL with an estimated glomerular filtration rate of 66 mL/min.

She underwent cystoscopy and left ureteroscopy which demonstrated a large mass within the renal pelvis. Biopsy confirmed the presence of high-grade papillary urothelial carcinoma. Patient was recommended for definitive treatment with RNU, and she elected to proceed with surgery. During preoperative clearance, her hematologist recommended administration of cryoprecipitate in the setting of intraoperative oozing/bleeding.

We performed robotic-assisted laparoscopic RNU with the Da Vinci Xi robotic platform as previously described.[5] The patient was placed in left lateral decubitus position with the left arm taped to the side of the body. Three 8 mm robotic ports were placed along the mid-clavicular line and one 12 mm assistant port was placed supra-umbilically (Fig. 2). In contrast to our early description,[5] rotation of the Xi robot on its boom precluded repositioning the patient or the robot between nephrectomy and ureterectomy. We demonstrate the procedure with video (Video).

Supplementary video related to this article can be found at https://doi.org/10.1016/j.eucr.2023.102490

The operative time was 115 min with a console time of 81 min and estimated blood loss was minimal. Ketorolac was administered prior to extubating. Postoperatively, the hematocrit was stable, and after 5 hours in the post-anesthesia care unit, she was given a second dose of intravenous ketorolac and discharged home. There was no need to administer cryoprecipitate. When given the choice to return for catheter removal vs.

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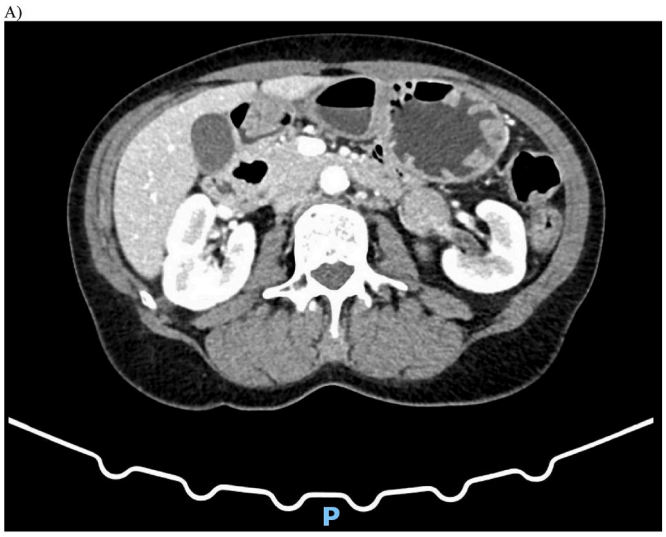

Fig. 1. Axial (A) and coronal (B) images of the computed tomography (CT) scan demonstrating a mass in the left renal pelvis.

self-removal, the patient elected to remove the catheter at home on postoperative day 5.

Pathological examination revealed 260 g nephroureterectomy specimen (Fig. 3) and a 3.5 cm renal pelvis tumor demonstrating invasive high-grade papillary urothelial carcinoma with tumor invading the lamina propria. All surgical margins, including the ureter, were negative for carcinoma.

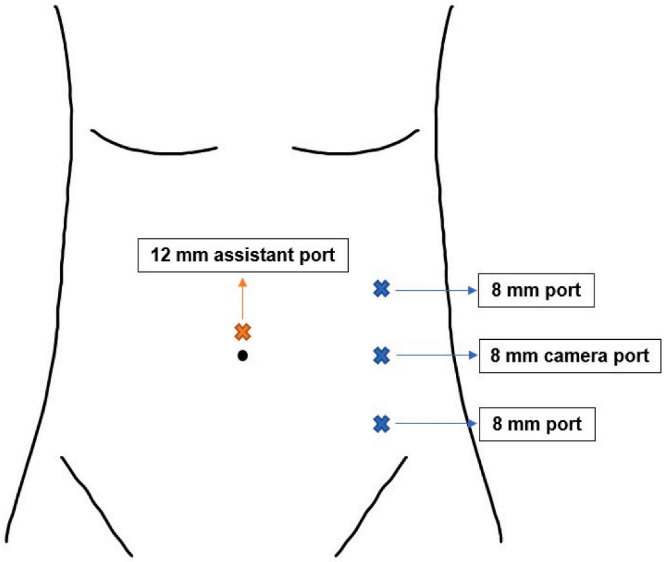

Fig. 2. Port placements for robotic-assisted nephroureterectomy.

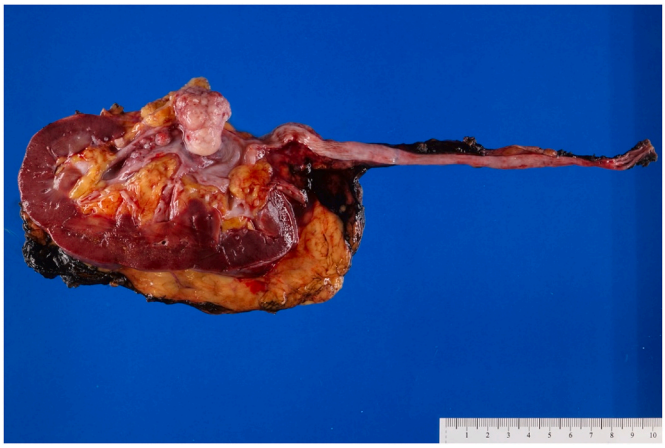

Fig. 3. Gross specimen of left kidney and ureter with renal pelvic mass.

3. Discussion

While RNU was traditionally performed via the open approach, the proportion of minimally invasive RNU increased from 36% to 54% during 2004–2013, largely due to adoption of the robotic approach.[2] Recent interest in performing SDS, particularly for prostatectomy and nephrectomy, increased due to the COVID-19 pandemic with the need to free up inpatient beds. When comparing SDS vs. inpatient radical prostatectomy, Cheng et al. demonstrated no differences in complications or patient satisfaction scores, and SDS vs. inpatient robotic assisted radical prostatectomy decreased healthcare costs by almost 20%.[4] Furthermore, when given the choice, 87% of men elected to undergo SDS rather than stay overnight.[4]

Same-day robotic RNU may provide similar cost-savings and may better align with patient preferences. We demonstrate that SDS RNU may be performed safely with comorbidities (von Willebrand factor disease). Factors associated with the feasibility of SDS for RNU include short operative time (115 min), the absence of a surgical drain, and avoidance of narcotic analgesics. Our protocol for outpatient robotic procedures includes early intraoperative administration of intravenous ketorolac and acetaminophen with redosing in the recovery room for optimal pain control. Patients are discharged on a clear liquid diet and instructed to gradually advance it on their own.

Our study is limited by retrospective review of a case report. Nevertheless, we demonstrate that robotic RNU is safe as an outpatient procedure. Future study is needed to better characterize outcomes of same-day robotic RNU.

4. Conclusion

We demonstrate that robotic RNU SDS is safe and feasible. Given similar outcomes to inpatient RNU with the absence of the healthcare cost of overnight hospital stay, robotic RNU SDS has higher value care, defined as healthcare outcomes divided by costs.

Disclosures

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Consent

Written consent was obtained from the patient prior to publication.

Declaration of competing interest

The authors have no conflicts of interest to report with regards to this case report.

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