

Robotic distal ureterectomy and re-implant for obstructing metastatic melanoma – surgical considerations in the palliative setting

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Non-urothelial malignant ureteral obstruction (MUO) causes hydronephrosis, renal damage and infectious sequelae. The overall condition, symptoms, and plans for

systemic therapy inform urologic intervention. In well-selected cases, there is a role for definitive reconstruction. We describe a robotic-assisted distal ureterectomy and reimplant for definitive repair of obstructive metastatic melanoma.

Key Words: melanoma, ureterectomy, reimplantation, metastatic cancer

Introduction

Non-urothelial malignant ureteral obstruction (MUO) is commonly encountered in urologic practice. Reports have identified melanoma, lymphoma, pancreas, colon, breast, cervical and prostate as sites of distant origin.¹ In rare cases, the ureter is the only site of disease;

however, it is more commonly part of a multifocal process. The management of MUO should include renal preservation and a multidisciplinary approach to the primary malignancy. Initial renal drainage with a stent or nephrostomy tube is required for patients with active infection but a definitive approach with surgical resection and reconstruction may be considered in properly selected patients.

In this report, we describe a robotic distal ureterectomy and reimplantation for obstructing metastatic melanoma to the distal ureter. The patient had rapid convalescence from surgery, minimal time off of systemic therapy, and avoided the need for chronic stenting.

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Case report

A 71-year-old male with hypertension, diabetes, and chronic kidney disease presented with a slow-growing 8 mm nodular growth on the right heel. PET scan demonstrated increased FDG uptake in the right heel and staging CT showed a 1.3 cm pulmonary nodule in the posterior right lower lobe. He underwent wide excision of the heel lesion and right video-assisted thoracoscopic wedge resection of the right lower lung lobe. Pathology from the heel showed melanoma with a nodular growth pattern with ulceration with 8 mm invasion and the lung showed a 1.5 cm focus of metastatic melanoma. The patient was treated with nivolumab and ipilimumab systemic immunotherapy before transitioning to maintenance single-agent nivolumab.

During treatment, creatinine rose from a baseline 1.3 to 2.7 mg/dL and a CT scan showed new right hydronephrosis and a 1.7 cm soft tissue density in the right distal ureter. Retrograde pyelogram showed a 2 cm filling defect 3 cm proximal to the right ureteral orifice and ureteroscopy demonstrated an obstructive brown, friable mass, Figure 1. Endoscopic biopsies were taken and a stent was placed to facilitate maximal renal drainage while options for further management were considered. Systemic therapy was paused during the work up of new onset renal failure, but restarted after the obstructive source was identified and treated.

Biopsies demonstrated malignant epithelioid cells with nuclear pleomorphism, prominent nucleoli and cytoplasmic melanin pigmentation. Immunohistochemical staining was positive for Melan-A consistent with metastatic melanoma, Figure 1. There were no other sites of disease in the urinary tract.

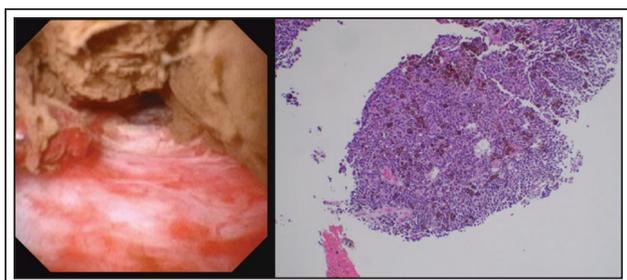


Figure 1. Endoscopic visualization of a brown, friable mass in right distal ureter; histology of biopsy showing malignant epithelioid cells with nuclear pleomorphism, prominent nucleoli and cytoplasmic melanin pigmentation.



Figure 2. Intraoperative view of ureter with clips applied distal to ureteral mass.

The evaluation was discussed with the collaborating medical and surgical oncology services and the risks and benefits of #1) chronic stent or nephrostomy tube, #2) endoscopic ablation and #3) definitive reconstruction were considered. Due to good performance status and infection risks, stent and



Figure 3. Gross view of excised distal ureter and longitudinal cut demonstrating obstructing tumor.

nephrostomy tube were excluded. We considered endoscopic laser ablation but the large size of the lesion and need for multiple procedures made this option less appealing.

The patient was taken for right distal ureterectomy and reimplant using a da Vinci Xi robot. The right distal ureter was identified and dissected from the iliac vessels to its insertion in the bladder. The obstructing mass was localized as a bulky deformity of the distal ureter and confirmed with intraoperative ultrasound. Weck clips were placed above and below the mass and the distal ureter was completely mobilized until bladder mucosa was seen, Figure 2. The ureter was then divided proximal to the mass. The defect in the bladder was closed and a non-refluxing reimplant was performed over a stent at the bladder dome. Gross inspection revealed a bulky 2 cm x 1 cm darkly pigmented mass obstructing the ureter, Figure 3. Final pathologic review confirmed metastatic melanoma.

The ureteral stent placed during reconstruction was removed 1 month after surgery and systemic therapy was restarted. At 6 month follow up, creatinine was 1.4 ng/ml and interval CT scan showed complete resolution of hydronephrosis.

Discussion

This report highlights the benefit of palliative urinary tract reconstruction in a patient with obstructing metastatic melanoma in the distal ureter. Robotic distal ureterectomy and reimplant provided durable relief of renal obstruction, eliminating the need for a chronic stent or nephrostomy tube. The robotic approach afforded very small surgical incisions and rapid convalescence in a patient at high risk for surgical complications and poor wound healing.² The case highlights several clinical points.

First, there are a range of obstructive non-urothelial entities arising in the ureter. Patients should be evaluated in stepwise fashion with cross-sectional imaging and systematic endoscopic evaluation of the upper tracts and bladder. It is critical to evaluate the suspicious area as well as the remainder of the GU tract to exclude synchronous disease proximal to the point of obstruction or in the contralateral ureter. Endoscopic biopsies with tissue diagnosis should guide overall management in collaboration with other specialties. In this case, tissue diagnosis confirmed metastatic melanoma and further care was coordinated with medical oncology.

Second, renal preservation is critical in patients with metastatic disease to allow for delivery of maximal systemic therapy. Heo et al reviewed 778 patients with

MUO from non-urologic cancer and found that patients who received chemotherapy after urinary diversion had a survival gain of 7 months compared to those who did not.³ Short term drainage can be performed with a stent or nephrostomy tube, but these are associated with infection risks in an immunocompromised population, can be easily dislodged and require frequent changes.⁴ Thus, definitive surgical reconstruction offers real benefits to well-selected patients. In this current report, a temporizing stent was initially placed then definitive reconstruction led to resolution of hydronephrosis and normalization of creatinine.

Third, minimally invasive techniques offer an alternative to traditional open procedures in the palliative setting where patients may be more frail, immunocompromised and have slower convalescence. Banapour et al reviewed over 10,000 diverse robotic surgeries at a comprehensive cancer center and found that complications occurred in 9.4% and readmission was required in 4% of cases highlighting the overall safety of the robotic approach.⁵ Robotic reconstruction is performed with a few small incisions, minimal bowel manipulation and an expedited recovery pathway limiting the patient morbidity.

This case demonstrates that definitive surgical reconstruction should be considered in well-selected patients with metastatic ureteral obstruction. Successful intervention will preserve renal function, reduce infectious risks, and eliminate the need for chronic stents or nephrostomy tubes. Patients should be selected for surgery based on overall goals of care and overall fitness, and minimally invasive techniques should be used when feasible. □

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