



Acute Renal Transplant Failure Secondary to an Obstructing Ileal Conduit Adenocarcinoma: Case Report and Literature Review

Heather L. Huelster, Melissa M.S. Hogan, and Matthew J. Resnick[#]

CASE PRESENTATION

A 38-year-old Caucasian male with a complex urologic history of renal transplantation and ileal conduit urinary diversion was admitted with acute renal failure and found to have an obstructing ileal conduit mass. The patient's history was notable for posterior urethral valves status post ablation as an infant, construction of a catheterizable channel at age 2, ileal conduit urinary diversion at age 4, left nephrectomy for recurrent pyelonephritis in a nonfunctioning kidney at age 7, and living-related kidney transplant for progressive chronic kidney disease at age 27. He initially presented to the emergency department with gradually worsening right lower quadrant (RLQ) pain and reported recent treatment for recurrent urinary tract infections by his primary care physician over the past 3 months. On physical examination, the patient had an unremarkable cardiopulmonary and systemic exam. His abdomen was soft, nondistended, and mildly tender to palpation around a patent RLQ urostomy, which was pouched with clear concentrated urine. Laboratory workup was notable for acute kidney injury, with elevation of his serum creatinine to 3.2 mg/dL (eGFR 23 mL/min/1.73 m²) from a baseline of 1.6 mg/dL. CT of the abdomen and pelvis demonstrated a soft tissue mass in the ileal conduit just below the level of the fascia with proximal nodularity and dilation of the conduit, hydroureteronephrosis of both the transplant and right native kidney, and mesenteric and retroperitoneal lymphadenopathy (Fig. 1).

MANAGEMENT

Urgent management included placement of a foley catheter cystoscopically at the bedside to establish urinary drainage. The patient was then taken to the operating room for loopogram, looposcopy, and biopsy of the obstructing mass. Endoscopy revealed a firm, well-circumscribed, and pedunculated mass filling the lumen of the conduit at and below the level of the fascia. Multiple biopsies were performed, and pathology revealed poorly differentiated adenocarcinoma.

After discussion in multidisciplinary genitourinary tumor board, consensus was to move forward with neoadjuvant chemotherapy, and the patient received 8 cycles of neoadjuvant FOLFOX6. Abdominal MRI after the third cycle of chemotherapy showed improvement in size of the enhancing mass within the ileal conduit, and chest CT continued to show no evidence of metastatic disease. Abdominal MRI was again performed at the completion of chemotherapy and revealed interval decrease in the soft tissue mass in the ileal conduit and stable lymphadenopathy. The patient underwent percutaneous transplant nephroureteral catheter placement by Interventional Radiology for drainage and identification of the transplant ureter. He subsequently underwent exploratory laparotomy, lysis of adhesions, right native radical nephroureterectomy, en bloc resection of his ileal conduit and its mesentery, and redo ileal conduit creation with anastomosis to the transplant ureter by Urology with concomitant parastomal hernia repair with biologic mesh by General Surgery.

The surgical specimen revealed a polypoid mass (4.0 × 2.3 × 0.6 cm) which grossly invaded into the conduit wall and was 0.6 cm from its radial resection margin. H&E sections of the mass demonstrated poorly differentiated adenocarcinoma with signet ring cell features constituting less than 50% of the tumor. The tumor invaded the muscularis propria and did not invade the subserosal fat; however, extensive small vessel invasion and numerous tumor deposits were identified in the subserosal fat. Immunohistochemistry showed an intestinal phenotype with

[#] Senior author: Matthew J. Resnick, MD, Vanderbilt University Medical Center, 1301 Medical Center Dr #3823, Nashville, TN 37232.

Financial Disclosure: The authors have no financial disclosures or competing interests related to this submission.

From the Department of Urology, Vanderbilt University Medical Center, Nashville, TN; and the Department of Urology, Pathology, Immunology, and Microbiology, Vanderbilt University Medical Center, Nashville, TN

Address correspondence to: Heather L. Huelster, MD, Vanderbilt University Medical Center, VA-1302 Medical Center North, Nashville, TN 37232. E-mail: heather.huelster@vumc.org

Submitted: June 3, 2019, accepted (with revisions): June 11, 2019



Figure 1. CT showing an obstructing soft tissue mass within the ileal conduit below the level of the fascia with proximal conduit dilation and right lower quadrant transplant kidney.

staining positive for CDX2 and negative for GATA3. The margins of the resected tumor were negative, and 4 of 7 mesenteric lymph nodes were positive for metastatic adenocarcinoma consistent with TNM stage of pT2N2 (Fig. 2).

Postoperatively, the patient developed an ileus which was managed conservatively with nasogastric decompression and diet de-escalation. He was ultimately discharged home postoperative day 9 and his ureteral stent was removed postoperative day 14. Unfortunately, he was readmitted 1 month after surgery with nausea, vomiting, and 25 lb weight loss at which time abdominal MRI demonstrated multiple new liver metastases and mesenteric lymphadenopathy. The patient elected to pursue palliative hospice care and passed away 3 months after surgical resection.

DISCUSSION—PRESENTED BY MATTHEW J. RESNICK, MD, MPH

There is a paucity of data detailing the incidence and management of new primary malignancies in urinary diversions using isolated bowel segments. A detailed literature review reports a prevalence of new primary malignancies in up to 0.3% of ileal conduits.¹ There has been only one other reported case of a new primary malignancy in a urinary diversion in the setting of prior renal transplantation, which was a poorly differentiated neuroendocrine tumor.² While carcinogenesis in urinary diversions comprised of bowel is readily acknowledged in the literature, the pathophysiology is poorly understood and theorized to be related to a complex interaction between urine and intestinal mucosa in which prolonged exposure to urinary enzymes, stasis of urinary bacteria, and production of nitrosamines may contribute to chronic inflammation and higher risk of malignancy.³ Solid organ transplant recipients also independently have a 2-fold greater risk of developing any malignancy compared to the general population over 10 years presumably secondary to chronic immunosuppression.^{4,5}

The optimal management of patients with incident adenocarcinoma of urinary substitutes remains poorly characterized. Nearly all reported cases are managed with surgical resection, and ours is the first to report the use of neoadjuvant chemotherapy for poorly differentiated adenocarcinoma prior to ileal conduit resection. Certainly, the rare epidemiology of this disease as well as complex tumor-host interactions given the patient's chronic immunosuppression necessitate extrapolation of other evidence-based approaches to disease management. The prognosis for new primary malignancies in urinary diversions remains difficult to characterize given short follow-up in prior case reports, presenting a challenge in patient counseling regarding the effectiveness of surgical resection and role of neoadjuvant chemotherapy.

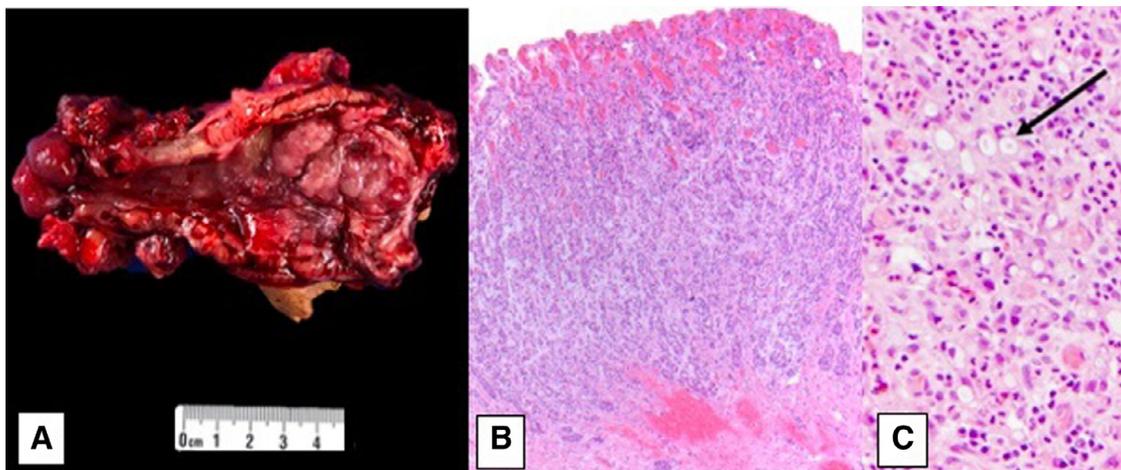


Figure 2. (A) En bloc specimen with gross residual polypoid mass involving the proximal ileal conduit. (B) Adenocarcinoma with invasion into the ileal wall (H&E, 4 \times). (C) Poorly formed glands of adenocarcinoma with signet ring cell morphology (H&E, 40 \times ; arrow denotes signet ring cell). (Color version available online.)

There are no current guidelines for screening patients with urinary diversions for new primary malignancies. However, many urologists advocate that endoscopic screening should be initiated 10-20 years after incorporating bowel into the urinary tract and continued on an annual or biennial basis. Prompt endoscopic evaluation for recurrence or new primary malignancies should be performed in patients who develop hematuria, recurrent infections, urinary obstruction, or suspicious findings on imaging studies with a particularly low threshold in patients with other risk factors for malignancy such as solid organ transplant.

References

1. Ali-El-Dein B, El-Tabey N, Abdel-Latif M, Abdel-Rahim M, El-Bahnasawy MS. Late uro-ileal cancer after incorporation of ileum into the urinary tract. *J Urol*. 2002;167:84–88.
2. Matulewicz RS, Fryer JP, Yang XJ, Goyal R, Hairston JC. Renal transplantation in the setting of prior urinary diversion: a case of poorly differentiated adenocarcinoma in an ileal conduit. *Urol Case Rep*. 2015;3:53–55.
3. Austen M, Kalble T. Secondary malignancies in different forms of urinary diversion using isolated gut. *J Urol*. 2004;172:831.
4. Engels EA, Pfeiffer RM, Fraumeni Jr JF, et al. Spectrum of cancer risk among US solid organ transplant recipients. *JAMA*. 2011;306:1891–1901.
5. Cohen-Bucay A, Gordon CE, Francis JM. Non-immunological complications following kidney transplantation. *F1000Res*. 2019;8:194.