

Invasive Urothelial Carcinoma Presenting With Combined Obstructive Uropathy and Ischemic Small- and Large-Bowel Obstruction

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Abstract

Intestinal involvement by urothelial malignancy is uncommon and can obscure the primary diagnosis. We report a woman in her 70s who presented with shock, profound anemia, acute kidney injury, and bilateral hydronephrosis caused by a necrotic pelvic mass suspected to arise from the bladder. Despite resuscitation and urinary decompression, she developed abdominal distention, rising lactate levels, and respiratory decline. Exploratory laparotomy revealed combined small- and large-bowel obstruction with ischemic bowel caused by an invasive pelvic mass. Pathology from the resected small bowel showed poorly differentiated urothelial carcinoma with basal/squamous features. This case highlights an unusual presentation of advanced urothelial malignancy.

Categories: Urology, Oncology, Gastroenterology
Keywords: acute abdomen, bladder cancer, ischemic bowel, pelvic mass, small-bowel obstruction

Introduction

Bladder cancer commonly metastasizes to the lymph nodes, bone, lung, liver, and peritoneum rather than the gastrointestinal tract [1]. When the bowel is involved, patients may present with rectal infiltration or small-bowel obstruction, and the genitourinary primary may not be recognized initially [2-5]. We describe an older adult whose presumed bladder malignancy first manifested as shock and obstructive uropathy and later presented as combined small- and large-bowel obstruction with ischemic bowel. Resection pathology ultimately demonstrated a poorly differentiated carcinoma with an immunophenotype favoring urothelial carcinoma with basal/squamous features, a clinically aggressive phenotype associated with advanced disease and adverse outcomes. The case emphasizes the diagnostic value of integrating imaging, operative findings, and pathology when tissue from the primary site is unavailable.

Case Presentation

A woman in her 70s with chronic heart failure, chronic obstructive pulmonary disease on home oxygen, aortic stenosis, percutaneous endoscopic gastrostomy (PEG) dependence for dysphagia, prior gastrointestinal bleeding, and prior deep venous thrombosis not receiving anticoagulation was transferred from a skilled nursing facility for hypotension and altered mental status. History was limited by baseline cognitive impairment and acute encephalopathy. Once her encephalopathy improved, the patient denied any personal or family history of genitourinary malignancy. She reported no smoking history, had worked as a secretary, and did not recall any occupational chemical exposures.

On arrival, she was tachypneic and hypotensive, with systolic blood pressure as low as 69 mmHg. Laboratory studies, summarized in Table 1, showed hemoglobin 3.0 g/dL, sodium 123 mmol/L, blood urea nitrogen 158 mg/dL, creatinine 3.14 mg/dL, and lactate 4.9 mmol/L. She improved after intravenous fluids and a packed red blood cell transfusion. Computed tomography angiography of the chest, abdomen, and pelvis showed marked irregular bladder wall thickening with a pelvic mass, bilateral hydronephrosis, severe right renal atrophy, and right external iliac lymphadenopathy. These findings raised suspicion of advanced bladder malignancy with distal ureteral obstruction. No active gastrointestinal contrast extravasation was seen (Figure 1). She was admitted to the intensive care unit for shock, encephalopathy, and treatment of a complicated urinary tract infection.

Parameter	Patient Result	Reference Range
White Blood Cell	7.5 K/uL	3.8 - 11.8 K/uL
Hemoglobin	3.0 gm/dL	10.5 - 14.8 gm/dL
Hematocrit	8.9%	31.2 - 42%
Mean Corpuscular Volume	89.6 fL	80.0 - 100.0 fL

Platelets	255 K/uL	179 - 409 K/uL
Reticulocyte %	2.56%	0.5 - 2.17%
Retic Abs	0.0977 K/uL	0.0230 - 0.0930 K/uL
Mean Reticulocyte Volume	124.0 fL	96.4 - 118 fL
Immature Reticulocyte Fraction	0.54	0.26 - 0.52
International Normalized Ratio	1.06	0.90 - 1.22
Prothrombin Time	12.6 seconds	10.7 - 13.3 seconds
Partial Thromboplastin Time	17.3 seconds	24.0 - 36.0 seconds
Sodium	123 mmol/L	136 - 145 mmol/L
Potassium	3.6 mmol/L	3.4 - 5.1 mmol/L
Chloride	75 mmol/L	98 - 107 mmol/L
Bicarb/CO ₂	32 mmol/L	22 - 29 mmol/L
Glucose	115 mg/dL	70 - 99 mg/dL
Blood Urea Nitrogen	158 mg/dL	10 - 20 mg/dL
Creatinine	3.14 mg/dL	0.57 - 1.25 mg/dL
Calcium	8.7 mg/dL	8.4 - 10.2 mg/dL
Phosphorus	4.8 mg/dL	2.3 - 4.7 mg/dL
Magnesium	2.9 mg/dL	1.6 - 2.6 mg/dL
Total Protein	7.2 gm/dL	6.4 - 8.2 gm/dL
Albumin	2.1 gm/dL	3.5 - 5.0 gm/dL
Total Bilirubin	0.2 mg/dL	0.2 - 1.2 mg/dL
Direct Bilirubin	0.2 mg/dL	0.0 - 0.5 mg/dL
Alanine Aminotransferase	7 IU/L	0 - 55 IU/L
Aspartate Aminotransferase	21 IU/L	5 - 34 IU/L
Alkaline Phosphatase	97 U/L	40 - 150 IU/L
Lactate Dehydrogenase	170 IU/L	125 - 220 IU/L
Lipase Level	55 IU/L	8 - 78 IU/L
Ammonia Level	33 mcmol/L	18 - 72 mcmol/L
Iron level	41 mcg/dL	40 - 177 mcg/dL
Transferrin	224 mcg/dL	174 - 364 mcg/dL
Lactic Acid	4.09 mEq/L	0.50 - 1.90 mEq/L
Ferritin	1,025 ng/mL	20 - 200 ng/mL
Haptoglobin	>300 mg/dL	30 - 230 mg/dL
B-type Natriuretic Peptide	676 pg/mL	0 - 100 pg/mL
Troponin I	0.041 ng/mL	0.0 - 0.028 ng/m

TABLE 1: Laboratory results on initial presentation

Laboratory values and reference ranges for the patient on initial presentation.

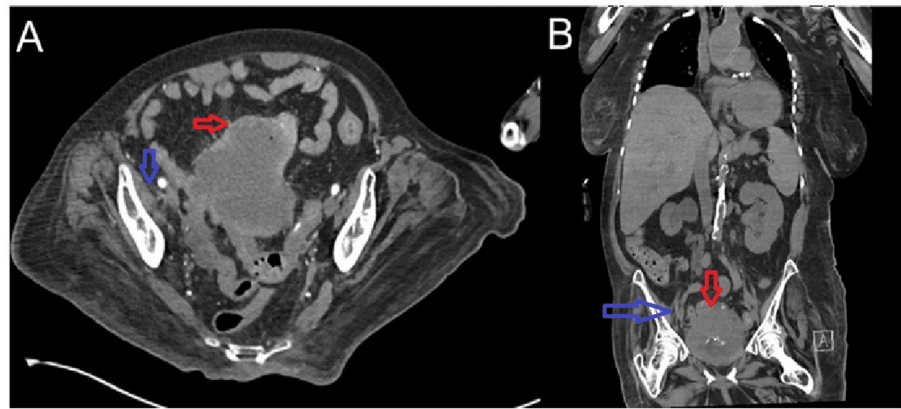


FIGURE 1: Admission computed tomography angiography of the abdomen and pelvis

(A) Axial image showing irregular bladder wall thickening/pelvic mass (red arrow) and right external iliac lymphadenopathy (blue arrow). (B) Coronal image again showing irregular bladder wall thickening/pelvic mass (red arrow) with bilateral hydronephrosis, severe right renal atrophy, and right external iliac lymphadenopathy (blue arrow).

Urology was consulted on admission for the suspected bladder malignancy and obstructive uropathy, and oncology was engaged for multidisciplinary planning; however, the patient's clinical instability precluded cystoscopic biopsy or initiation of cancer-directed therapy. Bilateral nephrostomy tubes were placed on hospital day two for progressive obstructive uropathy. Over the next two weeks, she had persistent postmenopausal vaginal bleeding, bleeding from the PEG site and rectum, transfusion-dependent anemia, thrombocytopenia, recurrent septic physiology, and PEG dysfunction requiring tube upsizing. These complications were attributed to a combination of direct tumor invasion and possible sepsis-associated coagulopathy. Despite aggressive interventions, abdominal distention, tachypnea, and lactate worsened on hospital day 14, prompting return to the intensive care unit. Computed tomography of the abdomen and pelvis was concerning for bowel obstruction with possible ischemia (Figure 2).

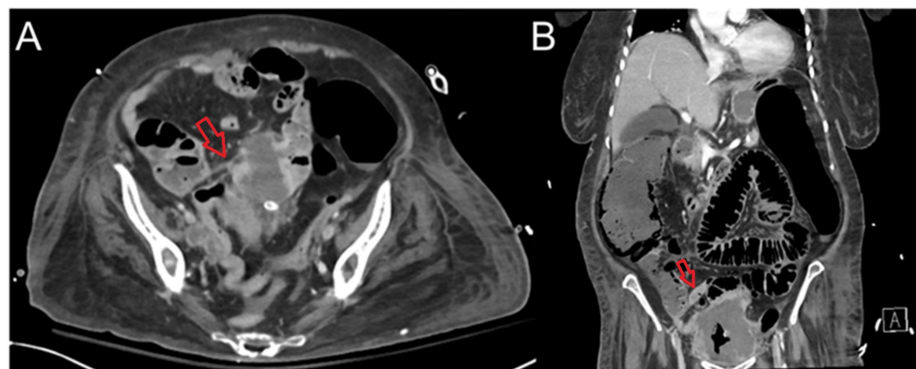


FIGURE 2: Preoperative computed tomography of the abdomen and pelvis

Axial (A) and coronal (B) images showing diffuse small-bowel and colonic dilation with a transition point near the pelvic mass (red arrow) and findings concerning ischemic bowel.

Emergency exploratory laparotomy on hospital day 15 revealed diffusely dilated small bowel and colon, a foul-smelling necrotic pelvic mass involving the bladder, and small bowel densely adherent to the mass with mechanical obstruction and ischemic compromise. The colon was globally dilated but viable, although the descending and sigmoid colon appeared distally obstructed by tumor mass effect. Surgeons performed an en bloc small-bowel resection with primary anastomosis and a loop transverse colostomy for diversion. Pathology from the resected small bowel showed poorly differentiated carcinoma. Immunohistochemistry demonstrated positivity for pan-keratin, CK7, CK5/6, and p63, with negative CK20, CDX2, GATA3, PAX8, ER, PR, p16, WT1, and S100 staining. In the context of the dominant bladder-centered mass and intraoperative findings involving the bladder, clinicopathologic correlation favored poorly differentiated urothelial

carcinoma with basal/squamous features (Figure 3).

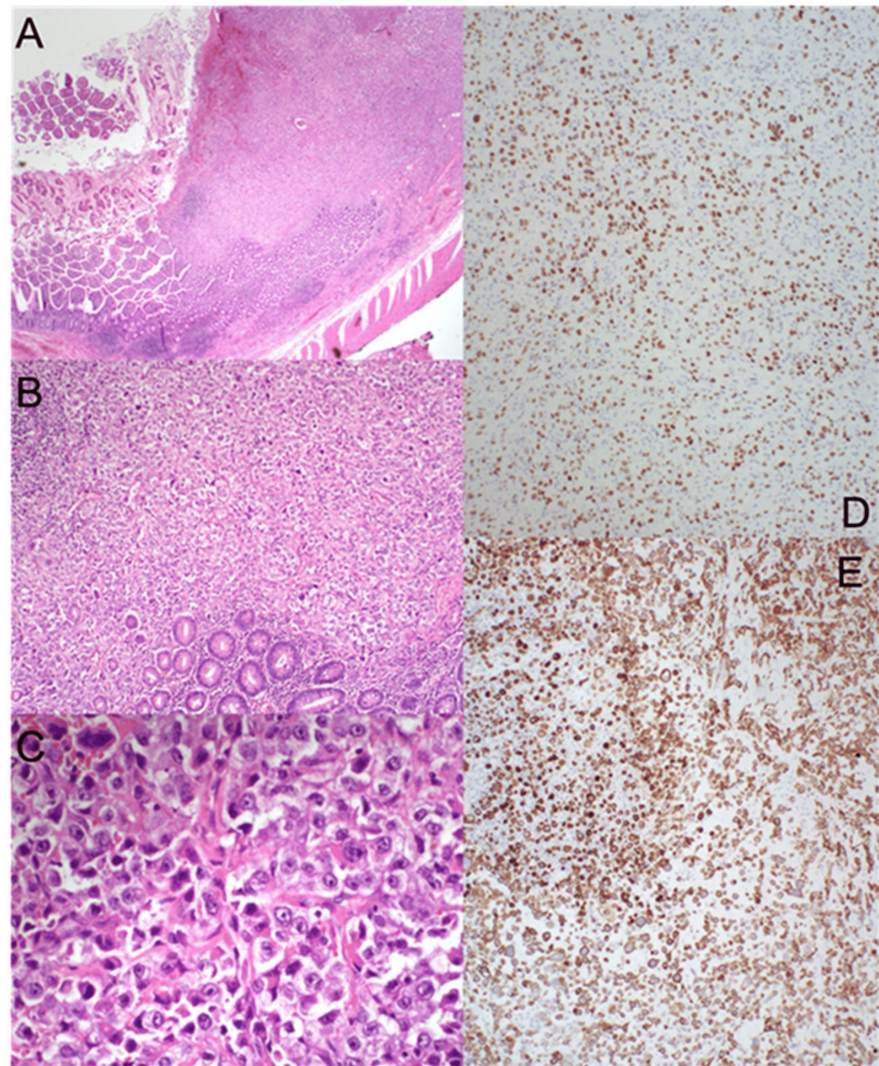


FIGURE 3: Pathologic correlation of the resected small bowel

Histopathologic images from the resected small bowel demonstrating poorly differentiated carcinoma. (A) H&E, x40 magnification. (B) H&E, x100 magnification. (C) H&E, x400 magnification. (A-C) demonstrate the small intestine extensively infiltrated by sheets of pleomorphic tumor cells with numerous mitotic figures. Multilobed tumor giant cells are also present. The tumor encroaches upon the small intestinal mucosa. (D) p63 immunohistochemical staining, x100 magnification, demonstrating squamous differentiation. (E) Cytokeratin 5/6 immunohistochemical staining, x100 magnification, demonstrating squamous differentiation.

The postoperative course was complicated by mechanical ventilation, multiple episodes of septic shock with *Escherichia coli* bacteremia, bloody output from surgical drains, and progressive multiorgan failure. Hematologic evaluation for cytopenias was unrevealing, and she required repeated red blood cell and platelet transfusions. Given the invasive pelvic tumor, ventilator dependence, and worsening shock, she was a poor candidate for further surgery or escalation of care with dialysis, tracheostomy, or cancer-directed therapy. Her condition continued to deteriorate, resulting in worsening multiorgan failure, and she ultimately expired.

Discussion

This case illustrates an uncommon presentation of urothelial carcinoma and its complications: simultaneous obstructive uropathy, combined small- and large-bowel obstruction, and ischemic bowel caused by an invasive necrotic pelvic mass. Bladder cancer most often spreads to lymph nodes, bone, lung, liver, and peritoneum, whereas bowel involvement is uncommon [1]. Published gastrointestinal presentations include rectal metastasis or infiltration and small-bowel obstruction [2-5], but presentation with both urinary obstruction and intestinal obstruction is rare.

In our critically ill patient with sepsis, severe anemia, and rising lactate, it would have been easy to attribute the deterioration to ileus or global hypoperfusion alone. The combination of progressive abdominal distention, renal failure, and lactate elevation signaled an evolving acute abdomen requiring urgent exploration. The operative findings were especially important in establishing the diagnosis. Rather than suggesting a primary mesenteric vascular event, surgery showed local tumor-related mechanical compromise. The small bowel was tethered to the pelvic mass with ischemic injury, and there was distal colonic obstruction from mass effect, suggesting evolving malignancy as the cause of the acute decompensation.

The multisite bleeding also warrants explanation. Admission computed tomography angiography showed no active gastrointestinal extravasation, and the initial platelet count and prothrombin time/international normalized ratio (PT/INR) did not support overt disseminated intravascular coagulation (DIC) at presentation. During the course of hospitalization, however, bleeding from the vagina, rectum, percutaneous endoscopic gastrostomy (PEG) site, and surgical drains occurred in the setting of a necrotic pelvic tumor, thrombocytopenia, and recurrent sepsis. Direct tumor invasion of pelvic structures and adjacent viscera can cause hemorrhage through erosion into mucosal surfaces and tumor neovasculature. Concurrently, recurrent sepsis with *Escherichia coli* bacteremia may have triggered sepsis-induced coagulopathy or low-grade DIC, a well-recognized complication in which pathogen-associated molecular patterns drive tissue factor expression, thrombin generation, and consumptive thrombocytopenia. The combination of a locally invasive, necrotic tumor and superimposed sepsis-associated coagulopathy likely produced the refractory bleeding observed throughout the hospital course.

Histologic confirmation came from the resected small bowel rather than a bladder biopsy, so attribution of the primary site depended on clinicopathologic correlation. Immunohistochemistry from the resected small bowel showed CK7+, keratin+, CK5/6+, and p63+, with negative staining for CK20, CDX2, GATA3, PAX8, ER, PR, p16, WT1, and S100 (Table 2). This profile is most consistent with poorly differentiated carcinoma with a "basal/squamous" phenotype. Although GATA3 is a commonly used urothelial marker, its sensitivity drops significantly in urothelial carcinomas with squamous differentiation (20–35%), and the CK7+/CK20-/CK5/6+/p63+ pattern supports urothelial lineage [6]. The GATA3-/CK5/6+ immunoprofile corresponds to the "basal/squamous" molecular subtype of bladder cancer, which is associated with squamous morphology, advanced stage, and worse prognosis [7].

IHC Marker	Result	Significance
Pan-keratin	Positive	Confirms epithelial/carcinoma lineage
CK7	Positive	Expressed in carcinomas of the lung, breast, ovary, endometrium, pancreaticobiliary tract, and urothelium
CK5/6	Positive	Marker of squamous differentiation; positive in squamous cell carcinoma, mesothelioma, and basal/squamous subtype of urothelial carcinoma
p63	Positive	Nuclear transcription factor expressed in squamous cell carcinoma and urothelial carcinoma
INI1	Retained	Normal (retained) expression excludes malignant rhabdoid tumor, epithelioid sarcoma, and other SMARCB1-deficient neoplasms
BRG1	Retained	Normal (retained) expression excludes SMARCA4-deficient undifferentiated carcinoma and atypical teratoid/rhabdoid tumor
CDX2	Negative	Nuclear marker of intestinal differentiation
CK20	Negative	Expressed in colorectal carcinoma, Merkel cell carcinoma, and some urothelial carcinomas
S100	Negative	Marker of melanocytic and neural tumors
GATA3	Negative	Luminal urothelial and breast marker
p16	Negative	Surrogate for HPV-associated carcinomas (cervical, oropharyngeal)
WT1	Negative	Marker of ovarian serous carcinoma and mesothelioma
PAX8	Negative	Marker of Müllerian (ovarian, endometrial, cervical), renal, and thyroid carcinomas
ER	Negative	Hormone receptor-positive breast or gynecologic primary
PR	Negative	Hormone receptor-positive breast or gynecologic primary

TABLE 2: IHC panel results from the resected small bowel specimen of the patient presented in this report

The profile (CK7+, CK5/6+, p63+, CK20-, CDX2-, GATA3-, PAX8-, p16-) is most consistent with poorly differentiated urothelial carcinoma with basal/squamous features. Retained INI1 and BRG1 expression excludes SMARCB1- and SMARCA4-deficient neoplasms. Negative staining for CDX2 and CK20 excludes a primary intestinal carcinoma, while PAX8 and p16 negativity excludes Müllerian or HPV-associated cervical origin. ER and PR negativity excludes hormone receptor-positive breast or gynecologic malignancy.

CK, cytokeratin; ER, estrogen receptor; HPV, human papillomavirus; IHC, immunohistochemistry; PR, progesterone receptor

Retained INI1 expression excluded malignant rhabdoid tumor, epithelioid sarcoma, and other SMARCB1-deficient neoplasms, while retained BRG1 excluded SMARCA4-deficient undifferentiated carcinoma and atypical teratoid/rhabdoid tumors [8,9]. Negative staining for CDX2 and CK20 excluded a primary intestinal carcinoma, while negative p16 and PAX8 staining excluded a human papillomavirus-associated cervical primary [6,10,11]. The full immunohistochemical panel and interpretations, as reported by the reviewing pathologist, are summarized in Table 2. Representative histologic images with p63 and CK5/6 staining are shown in Figure 3; digital images of the remaining individual stains were not archived during the clinical workup. The dominant bladder-centered pelvic mass, bilateral obstructive uropathy, necrotic tissue centered at the bladder on exploration, and absence of a competing primary lesion are consistent with a primary bladder source. The basal/squamous phenotype is associated with squamous morphology, advanced-stage disease, and adverse clinical outcomes [7]. Although this patient was never stable enough to receive systemic therapy, her rapid progression from obstructive uropathy to bowel compromise, recurrent sepsis, and multiorgan failure was concordant with this aggressive biology. This trajectory provides context for the limited benefit of technically successful procedures and supports early prognostic communication alongside urgent diagnostic and surgical care.

Conclusions

This case of poorly differentiated urothelial carcinoma with basal/squamous features, which is associated with advanced-stage disease and poor prognosis, offers two practical lessons. First, bowel ischemia in a patient with a pelvic mass may reflect direct malignant invasion or strangulating obstruction, not only classic mesenteric ischemia. Second, when advanced malignancy is accompanied by refractory bleeding,

recurrent sepsis, and progressive organ failure, procedural success may not alter the overall clinical trajectory. Early, explicit discussions about prognosis and the limits of disease-directed treatment should occur alongside diagnostic and surgical management.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

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Supervision: Christopher Allahverdian

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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