

# Small bowel obstruction secondary to metastatic urothelial bladder cancer

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## Abstract

Small bowel obstruction secondary to primary cancer, such as carcinoid and adenocarcinoma, is not unusual. Less frequently, hematological metastasis from breast, lung, and melanoma can occur. However, metastasis from urothelial bladder carcinoma is extremely rare. In this index case, we describe a 71-year-old Caucasian man with a prior history of urothelial bladder carcinoma. He was treated successfully with chemoradiation and local resection a year prior to his current presentation with small bowel obstruction which required surgical resection of a loop of jejunum, which was found to be caused by obstructive, metastatic urothelial bladder carcinoma on pathology. Therefore, one should consider the possibility of secondary obstructive malignant lesions arising from the urinary bladder in such a patient when presented with bowel obstruction and a history of urothelial bladder carcinoma.

## Keywords

Urothelial bladder cancer, small bowel obstruction, secondary metastasis

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## Introduction

Urothelial bladder cancer (UBC) ranks among the commonest genitourinary malignancies in the United States. It is estimated that the prevalence is approximately 19 cases per 100,000 persons, three times more common in men and 8%–18% presented with metastatic disease.<sup>1</sup> Bladder malignancies usually spread via lymphatic to bones, lung, liver, and peritoneum;<sup>2</sup> however, spread to the small bowel is rare. Brain and spinal cord metastases have been reported previously.<sup>3</sup> Muscular invasion by urothelial bladder tumor type is by far the most common variety and is associated with a high incidence of metastasis.<sup>4</sup> Here, we reported a rare presentation of metastatic UBC to the small bowel. Written consent was obtained from the patient.

## Case presentation

A 71-year-old Caucasian man was evaluated in the Emergency Department (ED) with small bowel obstruction (SBO), for which he was successfully treated conservatively a week earlier and was subsequently discharged home. His recurrent symptoms of nausea, vomiting, obstipation, and colicky abdominal pain required nasogastric suctioning and intravenous hydration. Physical examination in the ED

revealed a well-nourished male in no acute distress with normal vital signs. The abdomen was mildly distended and tender, with an otherwise normal examination. His medical history was significant for UBC treated a year prior with chemoradiation, followed by transurethral resection of a high-grade UBC with invasion of the muscularis propria and rectal wall and insertion of the ureteral catheter. Following this, there was successful resolution of his cancer with no further urinary complaints. He also has a history of hypertension, cardiomyopathy, chronic obstructive pulmonary disease, and chronic kidney disease.

His laboratory work-up was not critically elevated from the normal range, except for a high creatinine level of

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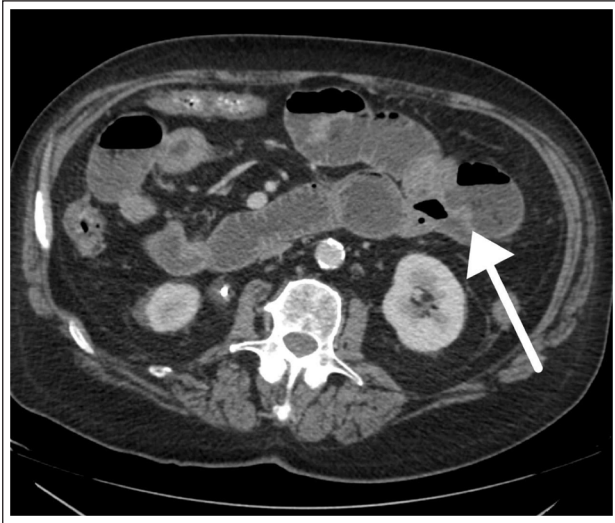
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**Figure 1.** Preoperative CT scan of the abdomen and pelvis with a narrow segment of the jejunum (←).

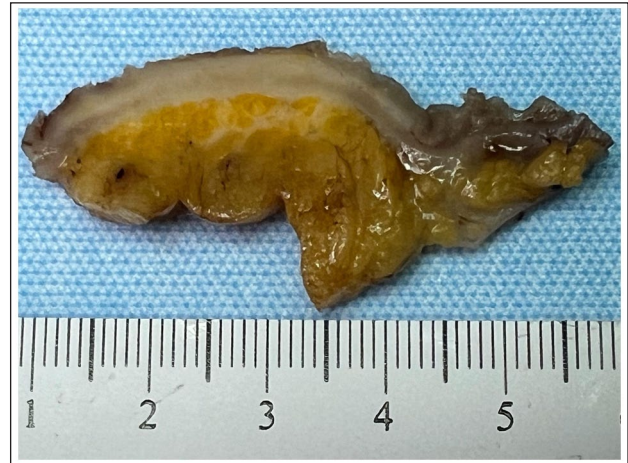
1.57 mg/dL (0.61–1.24), glucose level of 127 mg/dL (70–99), lactate dehydrogenase of 254 IU/L (125–220), and platelet count of 6.9 fL (7.4–10.4). Urinalysis showed positive for protein, moderate leukocyte esterase, and positive for white blood cells and positive for hematuria. Computed tomography (CT) of the abdomen and pelvis revealed multiple fluid-distended loops of the small bowel with tapering and a transition point at the mid jejunum with compression of the large bowel. Otherwise, normal findings of the abdominal and pelvic organs (Figure 1) are shown.

In view of the patient's work-up and recurrent symptoms, he underwent exploratory laparotomy with findings of distended proximal bowel loops and a severely thickened and narrowed segment of jejunum which was resected, an enteroenterostomy was created between the proximal and distal segments of the small bowel. The patient had an uneventful recovery and was discharged 4 days post-operatively.

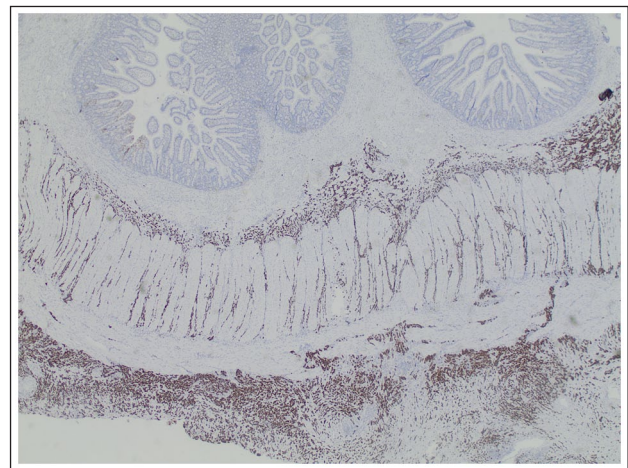
Pathological examination of the tissue (Figure 2) showed extensive serosal, mesenteric, and extrinsic small bowel involvement by invasive, poorly differentiated carcinoma with small bowel structure. Cytokeratin 7 immunohistochemistry stain showed diffusely infiltrative carcinoma in the submucosa, muscular wall, mesenteric adipose tissue, and serosal surface pattern compatible with the patient's history of UBC (Figure 3). The patient was referred to the previous institute where he received chemotherapy; however, he was lost to follow-up after 3 months.

## Discussion

UBC ranks among one of the most common genitourinary malignancies in the United States, with an estimated prevalence of 19 cases per 100,000 persons. It is three times more common in men and up to 8%–18% will present with metastatic disease.<sup>1</sup> Bladder malignancies usually spread via



**Figure 2.** Longitudinal sections of the small bowel contrasting normal small intestine (right) and abnormal stricture area of small intestine with mucosal attenuation, muscular wall thickening, fine adipose tissue fibrosis, and fine serosal exudate.



**Figure 3.** Cytokeratin 7 immunohistochemical stain highlighting the diffusely infiltrative carcinoma in the submucosa, muscular wall, mesenteric adipose tissue, and serosal surface.

lymphatics to bone, lungs, liver, and peritoneum.<sup>2</sup> Brain and spinal cord metastases have been previously reported;<sup>4</sup> however, spread to the small bowel is rare.<sup>5,6</sup>

Muscular invasion by UBC type is by far the most common variety and is associated with a high incidence of metastasis. We reported here a representation of metastatic UBC, with muscular invasion metastasizing to the small bowel.

SBO is a common surgical emergency among adult patients. The most common cause of SBO is by far adhesions secondary to prior abdominal surgeries. SBO from tumors can occur, but less frequently. The majority of small bowel tumors that cause obstruction are primary (i.e. adenocarcinoma, carcinoid, or lymphoma).<sup>7</sup> Small bowel metastasis commonly arises from breast, lung, and melanoma; however, metastasis from bladder cancer is rare. Metastatic spread to the small bowel can occur by direct invasion such as in colon and pancreatic cancer,

intra-peritoneal invasion such as in cases of gastric and hepatic cancer, or hematogenous spread as in lung and breast cancer.<sup>7</sup>

Our patient presented with typical signs and symptoms of bowel obstruction, that is, vomiting, abdominal distention, constipation, and abdominal pain. Initial CT of the abdomen was highly suspicious for obstruction of a jejunal segment, which initially was attributed to his prior radiation therapy. Findings during surgery clearly showed a segment of small bowel with near-complete occlusion of the lumen. Pathological diagnosis indicated metastasis from UBC. The patient had prior surgical excision of his bladder cancer with adjuvant chemotherapy and radiation therapy. The original specimen showed muscular invasion by the UBC. This presentation of UBC favors subsequent metastasis and significantly reduces the 5-year survival rate by 30% compared to non-muscular invasion.<sup>8,9</sup> Pattern and location of metastasis spread are generally unpredictable; however, the most common site is the lungs.<sup>10</sup> Despite increases in chemotherapy for treating bladder cancer, long-term survival rate remains unchanged.<sup>11,12</sup> Bladder cancer that invades the detrusor muscle is more likely to metastasize and constitutes about 25% of newly diagnosed bladder cancers.<sup>13,14</sup> Metastatic UBC to distant sites is associated with high mortality and morbidity, and the 5-year survival rate is 22% compared to 97% for stage 1 disease.<sup>3</sup> Unfortunately, our patient was lost to follow-up after 3 months following referral to his prior institute where he received chemotherapy.

## Conclusion

SBO is one of the most common surgical emergencies. Intestinal adhesions are by far the most common ideology; however, primary or secondary metastatic small bowel tumors should be included in the differential diagnosis such as those with a prior history of UBC.

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## Author contributions

T.W. was involved in patient care and management and writing the manuscript. J.M.A., S.J.V., and H.K. were the residents involved in the patient post-operative care and data collection. A.H. provided the pathological section of the report.

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## Ethical approval


Our institution does not require ethical approval for reporting individual cases or case series.

## Informed consent

Written informed consent was obtained from the patients for their anonymized information to be published in this article.

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