

## Oncology

# Duodenal and rectal obstructions due to urothelial cancer infiltration from recurrent renal pelvic cancer in the bladder wall: An autopsy case

Takashi Ando<sup>a,\*</sup>, Kazuhiro Watanabe<sup>a</sup>, Kazuya Takahashi<sup>b</sup>, Takaki Mizusawa<sup>a</sup>, Takeshi Sakai<sup>c</sup>, Akiyoshi Katagiri<sup>a</sup>

<sup>a</sup> Department of Urology, Niigata Prefectural Central Hospital, Shinnancho 205, Jouetsushi, Niigata, 943-0192, Japan

<sup>b</sup> Department of Gastroenterology, Niigata Prefectural Central Hospital, Shinnancho 205, Jouetsushi, Niigata, 943-0192, Japan

<sup>c</sup> Department of Pathology, Niigata Prefectural Central Hospital, Shinnancho 205, Jouetsushi, Niigata, 943-0192, Japan

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## ABSTRACT

Duodenal and rectal obstructions due to urological malignancies are relatively uncommon. We report an autopsy case of an 83-year-old man with a history of renal pelvic cancer who presented these obstructions. Autopsy revealed that urothelial cancer infiltrated the bladder wall, duodenal wall, rectal wall, and prostate and widely spread in the retroperitoneal lymphatic vessel. We concluded that renal pelvic cancer recurred in the bladder wall and then infiltrated into each organ because of lymphatic dissemination. The gastrointestinal obstructions due to urinary tract cancer were lethal. Further knowledge and clinical experience regarding these types of obstructions are crucial.

## Introduction

Gastrointestinal obstructions may be due to several malignancies; however, those caused by urological malignancies are relatively uncommon, except for intestinal obstructions resulting from peritoneal dissemination of advanced urinary tract cancer.<sup>1</sup> Only few case reports about either duodenal obstruction (DO) or rectal obstruction (RO) due to urinary tract cancer infiltration are available in literature. Herein, an autopsy case of an 84-year-old man with both DO and RO due to urothelial carcinoma (UC) infiltration of the intestinal walls after a recurrence of renal pelvic cancer in the bladder wall is reported.

## Case presentation

An 83-year-old male presented to the hospital with upper abdominal pain and vomiting for a week. He had a history of gastric cancer treated with distal gastrectomy and prostate cancer treated with androgen deprivation therapy. He underwent left side nephroureterectomy [UC of the renal pelvis, high grade, flat > papillary type, pT1N0, ly0, v0, RM0] approximately 2 years before the visit. Periodic cystoscopy, urinary cytology, and computed tomography (CT) were performed as follow up after the surgery, and no recurrence was revealed before the visit (Fig. 1A and B). He experienced post-renal acute kidney injury due to transient right-side ureteral obstruction 2

months before the visit. The obstruction was spontaneously restricted, although the reason for the obstruction remained unresolved. At the visit, CT and gastrointestinal endoscopy with biopsies revealed DO due to oppression from the outside of the duodenal tract and RO with thickening of the surrounding tissue and thickness of bladder; however, the reason for both obstructions was unknown (Fig. 1C–F). Cystoscopy did not reveal any mucosal lesions. Notably, urinary cytology was negative after nephroureterectomy. After failure of conservative treatments for a month, gastrojejunostomy and para-duodenum tissue biopsy revealed the existence of dedifferentiated carcinoma of unknown primary origin. However, his general condition did not improve due to RO and intestinal obstruction, and he died 2 months post-operatively. (Fig. 1G and H).

An autopsy was performed after obtaining informed consent from the patient's family. Histopathological findings revealed that high-grade UC with plasmacytoid variant infiltrated the bladder wall, duodenal wall, rectal wall, and prostate and widely spread into the retroperitoneal lymphatic vessel and on the intraperitoneal intestinal walls as peritoneal dissemination (Figs. 2 and 3). We concluded that renal pelvic UC recurred in the bladder wall and then infiltrated the rectal and duodenal wall because of lymphatic dissemination.

\* Corresponding author.

E-mail address: [hawkcit@med.niigata-u.ac.jp](mailto:hawkcit@med.niigata-u.ac.jp) (T. Ando).

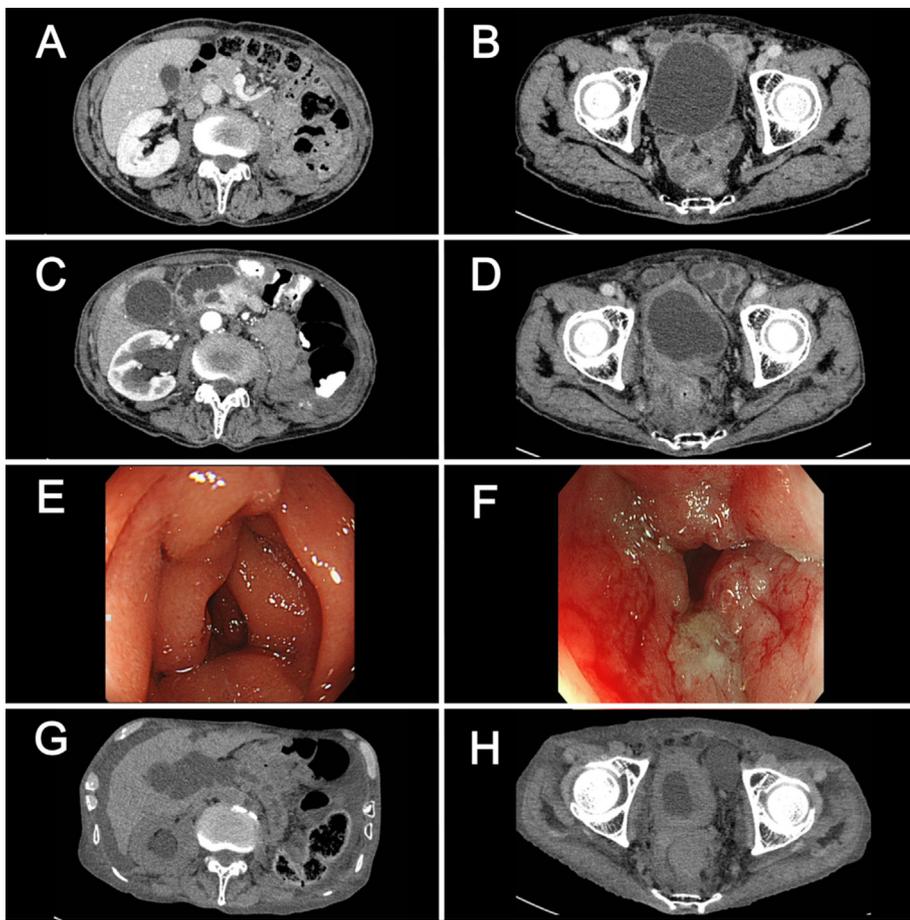
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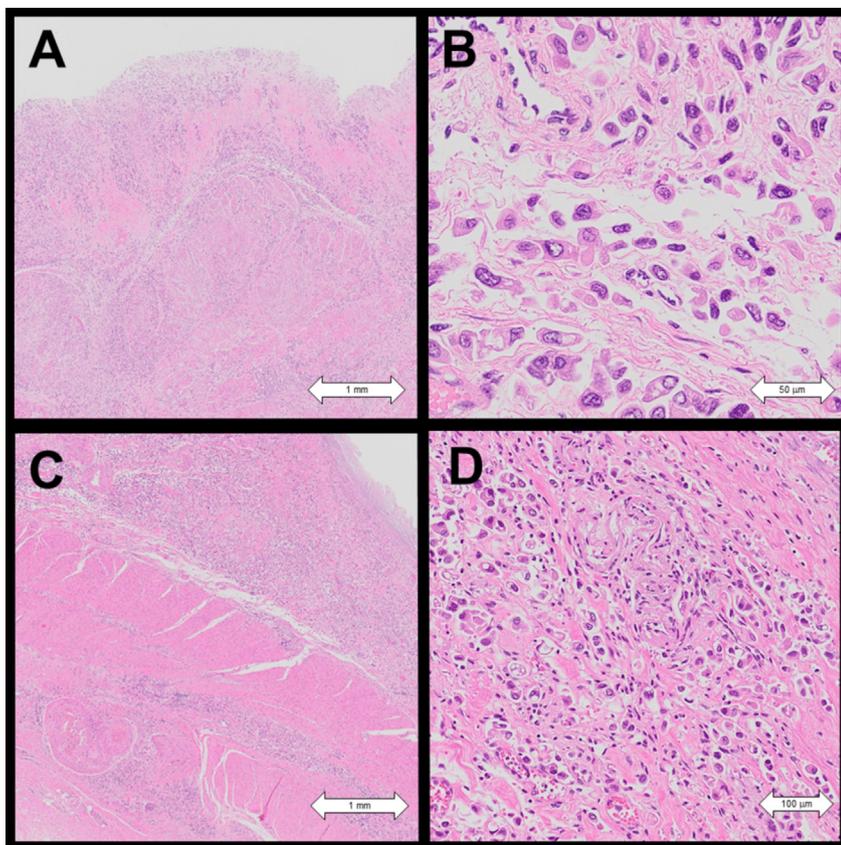
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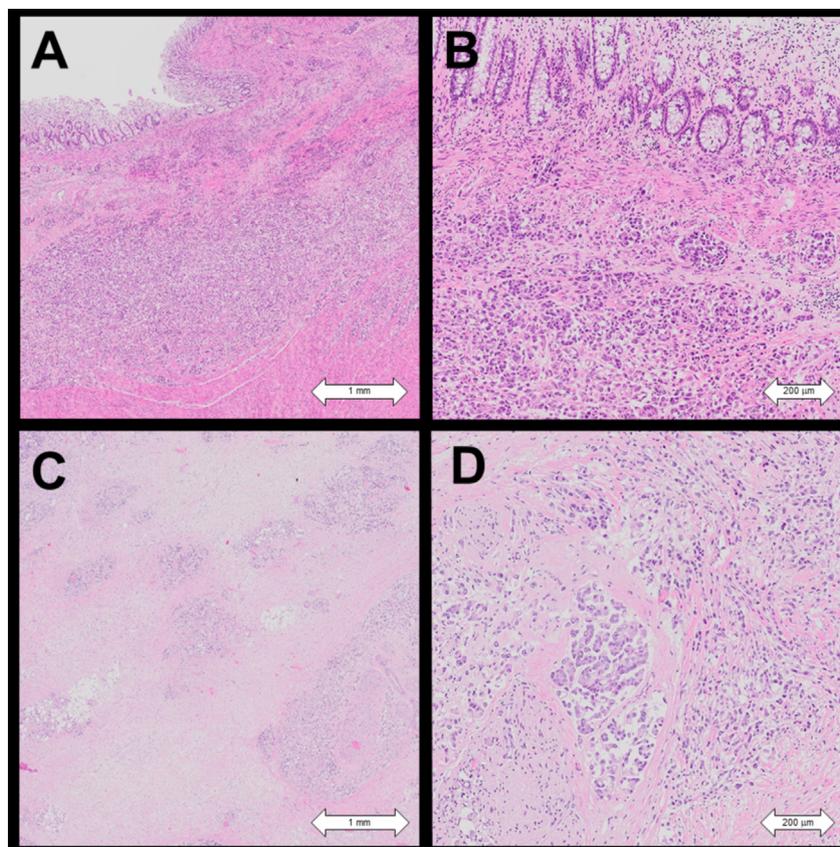
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**Fig. 1.** Abdominal computed tomography and gastrointestinal endoscopy. Abdominal computed tomography seven months before the visit (A, B), at the visit (C, D). Duodenal obstruction and moderate hydronephrosis are revealed, but no tumor and no lymph node enlargement are revealed. Upper gastrointestinal endoscopy showing narrowing of the duodenal lumen due to oppression from the outside of the intestinal tract (E). Duodenal mucosa biopsy did not detect malignancies. Lower gastrointestinal endoscopy showing narrowing of the rectal lumen (F). Rectal mucosa biopsy did not detect malignancies. Abdominal computed tomography before his death (G, H). The thickness of the bladder wall and rectal wall with thickening of the surrounding tissue worsened as the disease progressed. Visceral metastases (e.g., lung, liver, and bone) or lymph node enlargement suggesting lymphatic metastasis did not occur, even by the last CT.



**Fig. 2.** Histopathological findings from the autopsy. Hematoxylin and eosin staining. Discohesive high-grade urothelial cancer cells diffusely infiltrated the bladder wall (A, B) and duodenal wall (C, D). The cancer cells had abundant eosinophilic cytoplasm with eccentrically located nuclei. Attenuation of E-cadherin and expression of CD138 in the cancer cells were affirmed by immunostaining (did not show). These characteristics suggested the existence of plasmacytoid variant.



**Fig. 3.** Histopathological findings from the autopsy. Hematoxylin and eosin staining. The high-grade urothelial cancer cells similar to the plasmacytoid variant in Fig. 2 diffusely infiltrated the rectal wall (A, B) and spread into the retroperitoneal lymph vessel (C, D).

## Discussion

Our present case had two severe gastrointestinal obstructions, DO and RO. DO due to urological malignancies is a rare condition, except for locally advanced renal carcinoma or renal pelvic cancer. This is also true for RO due to urological malignancies, except for locally advanced prostate cancer or advanced urinary tract cancer with peritoneal dissemination. Because renal pelvic cancer cells did not remain in the upper abdominal surgical site considering the histopathological findings of the nephroureterectomy, the pathway for UC to reach both the duodenum and rectum is intriguing. However, to the best of our best knowledge, we could not determine an adequate explanation of the direct pathway for renal pelvic cancer to reach the duodenum or rectum.

We focused on the recurrence of renal pelvic cancer in the bladder wall, which may have caused transient right-side ureteral obstruction, because a metastatic pattern of bladder cancer was well established. Bladder cancer metastasizes most frequently to the lymph nodes, and intestinal metastasis of bladder cancer, including to the duodenum and rectum, has rarely been reported.<sup>2</sup> Harada et al. reported a case of duodenal metastasis from bladder cancer after cystectomy and showed that the cancer cells, which were described as transitional cell carcinoma, reached the duodenum as retroperitoneal lymphatic dissemination, according to histopathological findings.<sup>3</sup> In addition, it is known that it is difficult for bladder cancer to directly infiltrate into the rectum because the Denonvilliers' fascia in males and the internal genital in females work as barriers to separate the bladder and rectum. Kobayashi et al. reported a study having three males with rectal indirectly infiltrated bladder cancer. They hypothesized that bladder cancer could spread via the lateral pedicles to reach the posterior rectal wall as one subtype of lymphatic metastasis and infiltrate the rectal wall.<sup>4</sup> Such bladder cancer has characteristics that made its prognosis poor, such as

male patient, high-grade cancer, and invasion into the trigone in the bladder. Our present study also had these characteristics. Additionally, it was reported that plasmacytoid variant, which was a rare high-grade variant of UC and its prognosis was poor, had a potential to spread along fascial planes in the pelvis presenting with locally advanced stage.<sup>5</sup> Therefore, we concluded that renal pelvic UC recurred in the bladder wall and spread into the retroperitoneum and each organ as lymphatic dissemination.

Typically, either DO or RO due to malignancies is treated with a surgical approach, such as surgical bypassing, colostomy, or stent placement.<sup>1</sup> The effectiveness of these treatments for restriction of obstruction was thought as even, and stent placement was less invasive. Even today, the prognosis of patients with these obstructions is poor.

## Conclusion

Urinary tract cancer infiltrating the bladder wall rarely causes DO or RO because of lymphatic dissemination. Those obstructions were lethal because the cancer had already spread throughout the body when the obstructions become apparent. To improve the prognosis of patients, further knowledge and clinical experience with obstructions due to urinary tract cancer are crucial.

## Consent

Verbal informed consent was obtained from the patient for the publication of this case report.

## Declarations of interest

None.

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## Abbreviations

CT	computed tomography
DO	duodenal obstruction
RO	rectal obstruction
UC	urothelial carcinoma

## Appendix A. Supplementary data

Supplementary data to this article can be found online at [https://](https://doi.org/10.1016/j.eucr.2019.100903)

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