

Multidisciplinary Management of Advanced Urothelial Carcinoma with Intestinal Obstruction Secondary to an Infiltrated Bladder Diverticulum: A Rare Case and Literature Review

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ABSTRACT

Background: Urothelial carcinoma (UC) is the most common form of bladder cancer, with a significant risk of progression to muscle-invasive or metastatic disease if not treated. Although metastases and urological complications are common, rare presentations such as small bowel obstruction secondary to tumor-infiltrated bladder diverticula remain poorly documented. **Case Presentation:** We report the case of an 81-year-old male with advanced urothelial carcinoma and a history of delayed follow-up and refusal of curative surgery. The patient presented with symptoms of intestinal obstruction. Imaging revealed mechanical small bowel obstruction caused by a bladder diverticulum infiltrated by urothelial carcinoma. Bilateral nephrostomies were performed to address obstructive uropathy, followed by a double-barrel ileostomy to relieve the intestinal obstruction. Postoperatively, the patient was initiated on a palliative chemotherapy regimen combining gemcitabine and carboplatin due to renal impairment and frailty. **Discussion:** This case highlights the challenges of managing advanced UC with rare complications. Mechanical bowel obstruction from bladder carcinoma is an uncommon phenomenon. Surgical intervention is essential for symptom relief, while tailored systemic therapies address disease progression. Palliative care, including pain management and nutritional support, plays a critical role in improving quality of life. **Conclusion:** This case underscores the importance of a multidisciplinary approach in managing advanced UC with rare presentations. Timely surgical decompression, combined with palliative chemotherapy and supportive care, can effectively alleviate symptoms and optimize patient outcomes.

Keywords: Urothelial Carcinoma, Bladder Diverticulum, Small Bowel Obstruction, Palliative Care, Gemcitabine, Carboplatin.

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INTRODUCTION

Urothelial carcinoma (UC) is the most common type of bladder cancer, accounting for approximately 90% of cases [1]. It is characterized by its aggressive nature, frequent recurrence, and, in advanced stages, local or systemic extension [2]. While metastases and urological complications such as ureteral obstruction are well-documented, digestive complications resulting from tumor infiltration or structural bladder anomalies, such as bladder diverticula, remain rare [3].

Bladder diverticula, defined as herniations of the bladder mucosa through the muscular layer, can be congenital or acquired. When these structural anomalies coexist with bladder carcinoma, they increase the risk of complications, including tumor infiltration, urinary or digestive obstruction, and even fistulization [4]. Cases of intestinal compression secondary to a bladder diverticulum infiltrated by UC are particularly uncommon and poorly reported in the literature.

We present the case of an 81-year-old man with advanced urothelial carcinoma associated with a rare complication: mechanical intestinal compression caused by an infiltrated bladder diverticulum. Through this case report, we discuss the clinical, diagnostic, and therapeutic challenges of this unusual presentation while situating the case within the context of current literature.

CASE PRESENTATION

An 81-year-old male patient, with a medical history of diabetes managed with insulin, hypertension treated with antihypertensive medication, coronary stenting in 2020, a 40-pack-year history of smoking, and chronic alcoholism (now abstinent), was followed for urothelial carcinoma of the bladder.

Initially diagnosed with non-muscle-invasive urothelial carcinoma (pT1), the patient underwent transurethral resection of the tumor followed by six cycles of BCG therapy. However, he was lost to follow-up for two years. Upon recurrence, the tumor was found to be muscle-invasive (pT2), and radical cystoprostatectomy was recommended.

The patient declined surgical intervention and was again lost to follow-up, receiving no further treatment, including radiotherapy.

The patient presented after a period of worsening general health. A CT scan revealed a 30-mm circumferential thickening of the right lateral and posterior bladder wall, infiltrating the ureteral orifices and causing moderate bilateral hydronephrosis. Additionally, latero-aortic lymphadenopathy, a pulmonary lesion, and hepatic lesions suggestive of metastases were identified. The patient had a performance status (PS) of 2 and reported pelvic pain with a visual analog scale (VAS) score of 7/10.

Palliative care was initiated. Bilateral nephrostomies were placed to address acute obstructive renal failure caused by the bladder tumor. Subsequently, the patient presented with vomiting and complete cessation of stool and gas passage for five days. Abdominal radiography revealed signs of bowel obstruction.

A contrast-enhanced CT scan demonstrated circumferential and irregular bladder wall thickening (maximum thickness 24 mm) involving a diverticular bladder dome measuring 34 × 25 mm. The diverticulum exerted a mass effect on an adjacent ileal loop, resulting in subtotal luminal occlusion and upstream small bowel distension with air-fluid levels (31 mm maximum diameter). A “pearl sign” was visible at the site of obstruction.

Another diverticulum in the right posterolateral bladder wall, measuring 30 mm in diameter, contained microcalcifications and was encasing the ureteral orifice and pelvic ureter, which showed no upstream dilatation due to the nephrostomy. The thickened bladder wall appeared to infiltrate the prostate and was in intimate contact with the anterior rectal wall, which exhibited submucosal edema.

The findings were consistent with small bowel mechanical obstruction secondary to mass effect from a diverticulum infiltrated by urothelial carcinoma.

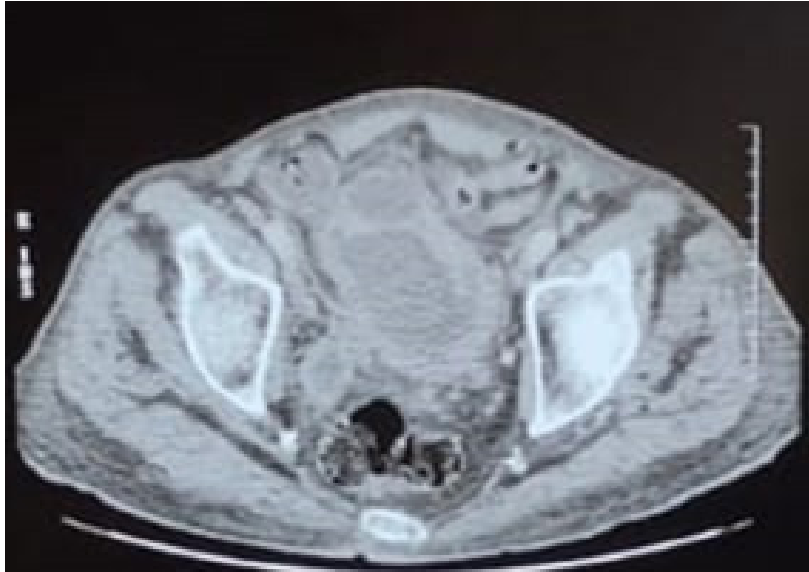


Figure 1. Axial pelvic CT scan showing circumferential thickening of the bladder wall with suspected infiltration and a diverticulum of the bladder dome.



Figure 2. Abdominal CT scan showing small bowel distension with air-fluid levels, suggestive of mechanical obstruction secondary to extrinsic compression.

This rare presentation required multidisciplinary management involving palliative care, nephrostomy for urinary diversion, and symptomatic relief for intestinal obstruction.

After brief hydro-electrolytic resuscitation and preoperative anesthetic assessment, the patient was transferred to the operating theater. During abdominal exploration, mechanical obstruction was confirmed, caused by the compression of an ileal loop by a bladder diverticulum infiltrated by urothelial carcinoma. This obstruction resulted in significant upstream small bowel dilation, with a maximum diameter of 31 mm. An ileal loop located approximately 20 cm from the

ileocecal valve was selected for decompression. A double-barrel ileostomy was successfully performed, allowing for effective decompression of the dilated small bowel loops and relief of the intestinal obstruction. The procedure was completed successfully, ensuring improved management of the associated complications.

Postoperatively, the patient was deemed eligible for palliative chemotherapy to address the advanced urothelial carcinoma and its metastatic complications. Given the patient's performance status (PS 2) and significant comorbidities, a tailored chemotherapy regimen was proposed to balance

efficacy and tolerability. Gemcitabine combined with cisplatin is the standard first-line treatment for advanced urothelial carcinoma; however, due to impaired renal function and the patient's overall frailty, carboplatin was suggested as a substitute for cisplatin. The recommended regimen included gemcitabine administered at a dose of 1000 mg/m² on days 1 and 8, combined with carboplatin dosed to an area under the curve (AUC) of 4-5 on day 1 of a 21-day cycle. This protocol aims to provide disease control, alleviate symptoms, and improve quality of life while minimizing toxicity. Close monitoring of renal function, hematologic parameters, and overall clinical status would be essential throughout treatment to adjust therapy as needed. Additionally, pain management, nutritional support, and psychological counseling were integrated into the patient's palliative care plan to ensure comprehensive supportive care.

DISCUSSION

The presented case highlights the complex management of advanced urothelial carcinoma (UC) with rare complications, including mechanical small bowel obstruction secondary to a bladder diverticulum infiltrated by the tumor. Advanced UC is associated with poor prognosis and requires a multidisciplinary approach integrating surgical, oncologic, and palliative interventions to manage local and systemic complications while maintaining the patient's quality of life.

Bladder cancer, primarily urothelial carcinoma, is strongly associated with smoking and chronic exposure to environmental carcinogens, which are significant risk factors in this patient. The natural history of bladder cancer often involves progression from non-muscle-invasive stages (Ta, T1) to muscle-invasive or metastatic disease (T2 or higher) if not appropriately treated. Radical cystectomy is the standard treatment for muscle-invasive bladder cancer (MIBC), offering the best chance of long-term survival [5]. However, approximately 20% to 40% of patients with MIBC relapse despite treatment, often presenting with systemic metastases [6].

In this case, delayed follow-up and refusal of radical surgery allowed disease progression to MIBC with subsequent metastatic spread. The development of obstructive complications from bladder wall infiltration highlights the aggressive nature of untreated UC.

Small bowel obstruction caused by bladder carcinoma is an uncommon but documented phenomenon. It can result from direct tumor invasion, extrinsic compression, or metastatic disease [9]. In the current case, the tumor-infiltrated bladder diverticulum exerted mass effect on the ileum, causing mechanical obstruction. The hallmark CT findings, including irregular bladder wall thickening, diverticular involvement, and dilated proximal small bowel loops with a "pearl sign," are consistent with this rare complication.

Surgical intervention, such as decompressive ileostomy, is essential in such cases to alleviate obstruction and prevent further complications, including bowel ischemia or perforation. Double-barrel ileostomy provides effective symptomatic relief while allowing systemic therapy to address the underlying malignancy.

For patients with advanced or metastatic UC, palliative chemotherapy remains the cornerstone of treatment. The combination of gemcitabine and cisplatin is the standard first-line therapy, offering a median overall survival of approximately 14 months [7]. However, cisplatin-based regimens are contraindicated in patients with poor renal function or frailty, such as this patient, where carboplatin may be a more tolerable alternative. Studies have shown that the combination of gemcitabine and carboplatin achieves a median overall survival of 9–12 months, albeit with slightly reduced efficacy compared to cisplatin regimens [8].

The proposed regimen of gemcitabine and carboplatin is tailored to this patient's performance status (PS 2), comorbidities, and renal impairment. Close monitoring is vital to minimize toxicity, particularly hematologic and renal adverse effects. The goal of therapy is palliative, aiming to control tumor progression, alleviate symptoms, and enhance quality of life.

Beyond chemotherapy, comprehensive palliative care is paramount for managing symptoms such as pain, nutritional deficiencies, and psychological distress. Bilateral nephrostomies provided relief from obstructive uropathy, while pain management with opioids addressed pelvic pain. Nutritional and psychological support are critical components of care in patients with advanced malignancies [10].

Cases of bladder cancer presenting with small bowel obstruction are scarce in the literature. A similar case

reported by Hashimoto et al. [11] described intestinal obstruction caused by tumor infiltration, necessitating surgical decompression. These cases underscore the need for timely surgical intervention followed by systemic therapy to manage advanced disease and its complications effectively.

CONCLUSION

This case highlights the challenges of managing advanced urothelial carcinoma (UC) with a rare complication: intestinal obstruction caused by a tumor-infiltrated bladder diverticulum. The patient's refusal of curative surgery and delayed follow-up contributed to disease progression. A multidisciplinary approach, including surgical decompression (nephrostomies and ileostomy) and palliative chemotherapy (gemcitabine-carboplatin), alleviated symptoms and improved quality of life. This case underscores the importance of personalized treatment for frail patients and the need for comprehensive palliative care. Further studies are required to optimize the management of such rare presentations.

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None.

CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest.

REFERENCES

1. Babjuk M, et al. (2022). EAU Guidelines on Non-Muscle-Invasive Urothelial Carcinoma of the Bladder. *European Urology*.
2. Siegel RL, Miller KD, Jemal A. (2020). Cancer statistics, 2020. *CA Cancer J Clin*. 70(1):7-30.
3. Ahmed M, et al. (2019). Vesical diverticulum-associated complications in urothelial carcinoma: A systematic review. *Journal of Urology*.
4. Rundle RP, Winfield HN. (2017). Management of bladder diverticula. *Urologic Clinics of North America*.
5. Witjes JA, Bruins HM, Cathomas R, Comp erat EM, Cowan NC, Gakis G, et al. (2021). European Association of Urology Guidelines on Muscle-invasive and Metastatic Bladder Cancer: Summary of the 2020 Guidelines. *Eur Urol*. 79(1):82-104.
6. Gandaglia G, Briganti A, Clarke N, Karnes RJ, Graefen M, Ost P, et al. (2017). Adjuvant and Salvage Radiotherapy after Radical Prostatectomy in Prostate Cancer Patients. *Eur Urol*. 72(5):689-709.
7. von der Maase H, Sengelov L, Roberts JT, Ricci S, Dogliotti L, Oliver T, et al. (2005). Long-term survival results of a randomized trial comparing gemcitabine plus cisplatin, with methotrexate, vinblastine, doxorubicin, plus cisplatin in patients with bladder cancer. *J Clin Oncol*. 23(21):4602-4608.
8. De Santis M, Bellmunt J, Mead G, Kerst JM, Leahy M, Maroto P, et al. (2012). Randomized phase II/III trial assessing gemcitabine/carboplatin and methotrexate/carboplatin/vinblastine in patients with advanced urothelial cancer who are unfit for cisplatin-based chemotherapy: EORTC study 30986. *J Clin Oncol*. 30(2):191-199.
9. Sarma A, Heilbrun M, McDougall E. (2017). Urothelial carcinoma causing small bowel obstruction: Rare complications of bladder malignancy. *Case Reports in Urology*.
10. Bakitas M, Lyons KD, Hegel MT, Balan S, Brokaw FC, Seville J, et al. (2009). Effects of a palliative care intervention on clinical outcomes in patients with advanced cancer: the Project ENABLE II randomized controlled trial. *JAMA*. 302(7):741-749.
11. Hashimoto T, Yamada Y, Nakamura T. (2013). Intestinal obstruction caused by bladder carcinoma infiltrating the small intestine: A case report. *Journal of Urology*. 190(4):1391-1393.