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Urothelial Carcinoma Recurrence at an Ileal Orthotopic Neobladder and Unilateral Lower Ureter After Surgery

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ABSTRACT

The recurrence of urothelial carcinoma in an orthotopic neobladder is rare. We report the case of a 61-year-old man with a muscle-invasive bladder tumor that was treated using radical cystectomy and the creation of a Studer's orthotopic neobladder. However, nine years after the cystectomy, we detected a mass at the left ureteroileal anastomosis. We successfully performed Studer's neobladder resection, urethrectomy, and left nephroureterectomy to remove the entire mass. Pathological examination revealed urothelial carcinoma with adenocarcinoma in the neobladder and adenocarcinomatous metastasis in the mesenteric lymph node.

Introduction

Radical cystectomy (RC) with lymph node (LN) dissection is the standard treatment for muscle-invasive bladder tumors. Among patients who are <80 years old and have preserved renal function, an orthotopic ileal neobladder is often created as a urinary diversion. In case of orthotopic urinary diversion, some patients experience recurrence in the upper tract or urethra.[1] A recent study of urethral recurrence after RC and orthotopic urinary diversion for bladder urothelial carcinoma (UC) reported a recurrence rate of 0.5%-17.2%, and most of these recurrences occurred within 5 years.[1] However, there are few reports regarding recurrence in urinary diversions that use the colon, and only sporadic reports have described recurrence with metastasis to the LN. Therefore, we report a rare case of UC recurrence at an orthotopic ileal neobladder and the lower ureter, as well as our successful surgical treatment.

Case presentation

A 61-year-old man underwent a radical cystoprostatectomy, with the creation of a Studer's orthotopic neobladder, for a muscle-invasive bladder tumor. The histopathological findings from this procedure suggested UC (grade 3, stage pTis) without LN metastasis and prostate adenocarcinoma with a Gleason score of 7. After surgery, the patient was followed-up using urine cytology testing and imaging at regular intervals. Nine years after the surgery, cytology tests revealed abnormal results and computed tomography (CT) revealed neobladder wall thickening around the left ureteroileal anastomosis and anastomotic stenosis (Fig. 1A). Furthermore, we detected left hydronephrosis, although no elevations in the serum levels of prostate-specific antigen were detected during this period. Cystoscopy also revealed irregular mucosa in the orthotopic neobladder and a mass at the left ureteroileal anastomosis (Fig. 1B). At that time, there were no signs of metastatic or other neoplastic diseases.

We performed a random biopsy of the neobladder and observed carcinoma in situ (pTis at the neobladder neck away from the urothelium and non-invasive pTa UC at the left ureteroileal anastomosis). Thus, we performed resection of the Studer neobladder, urethrectomy, and left nephroureterectomy to remove the entire tumor, and we also performed a right ureterocutaneostomy. Pathological examinations revealed UC in the left ureter (grade 3, stage pTis), adenocarcinoma (AC) and UC in the neobladder (grade 3, INF γ, stage pT2b), and AC metastasis in the mesenteric LNs (Fig. 2A–D). Based on the detection of the LN metastasis, we also treated the patient with 9 courses of adjuvant chemotherapy (1700 mg gemcitabine and 300 mg carboplatin). The patient has been followed-up using urine cytology (every 3 months) and CT (every 6 months), and

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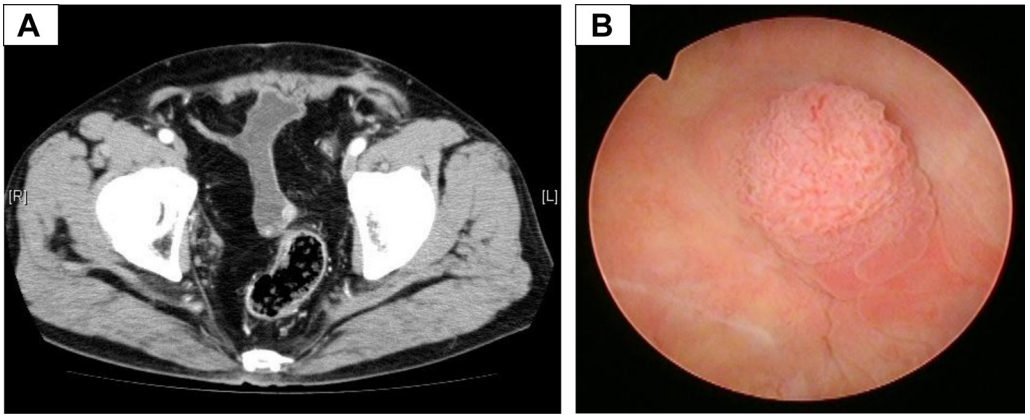

Figure 1. Computed tomography findings at 9 years after radical cystoprostatectomy. **(A)** The neobladder wall was thickened and enhanced at the left ureteral anastomosis, and **(B)** the left ureteral anastomosis was swollen with degeneration of the irregular mucosa.

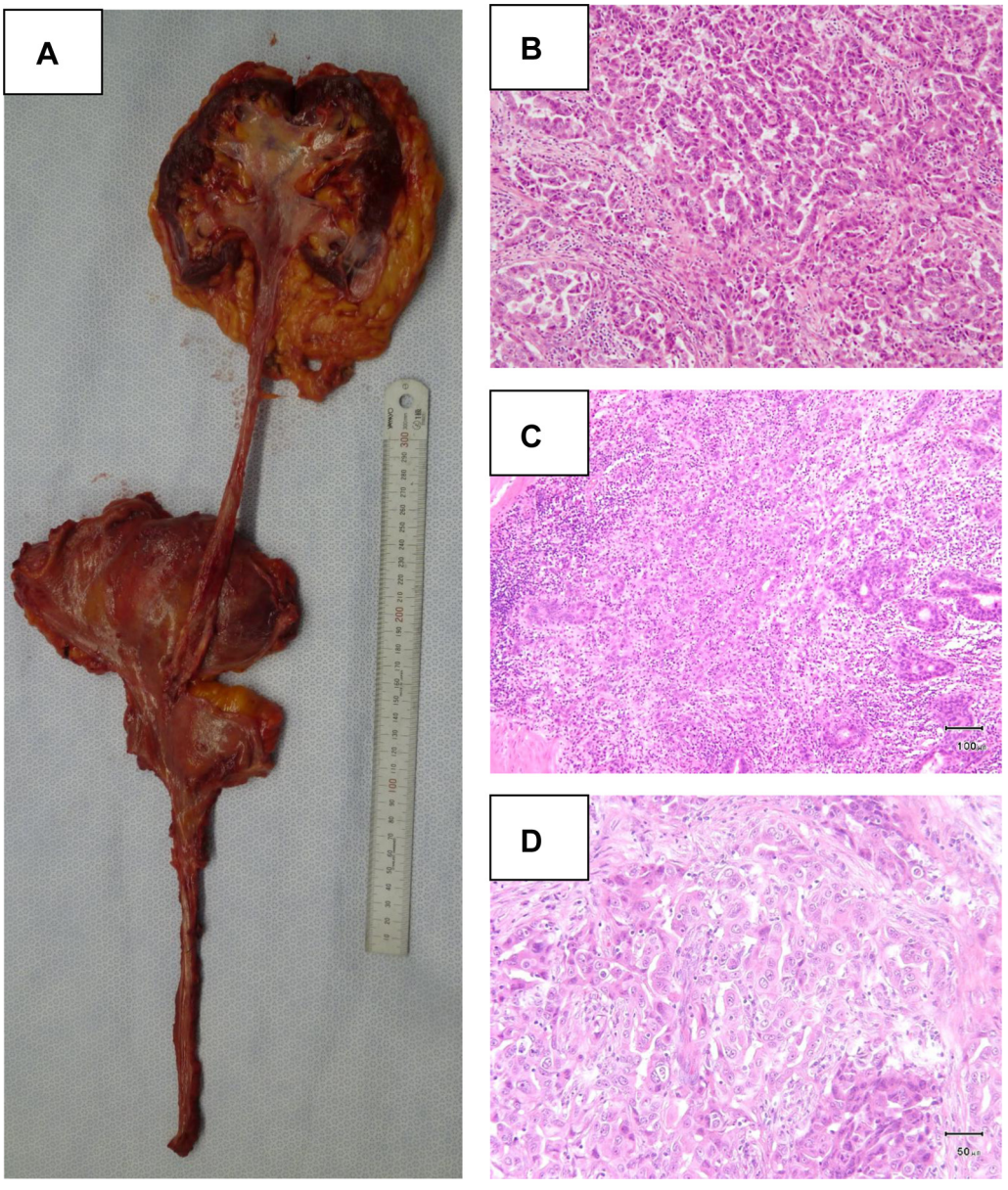

Figure 2. The resected specimen from the left kidney, ureter, neobladder, and urethra. **(A)** The whole specimen. Pathological evaluation detected urothelial carcinoma in the ureter **(B)** and in the neobladder **(C)**, with adenocarcinomatous lymph node metastasis **(D)**.

no recurrence or metastasis has been detected during the 20 months after the operation.

Discussion

We described a rare case of recurrent UC at the intestinal epithelium that included the ureteroileal anastomosis, and AC with LN metastasis. As in the present case, an orthotopic ileal neobladder is often used for urinary diversion, although patient selection is critical for the success of this approach. For example, it is necessary to confirm that there is no invasion into the urethra, and the patient must be willing and able to maintain the reservoir, regardless of their medical or psychosocial status.[2] The reported incidence of urethral recurrence after RC is 0.5%-17.2%, and the overall incidence is 8.1%, although most cases of recurrence in the urethra are identified within 5 years after RC.

There are few reports regarding UC recurrence in the bowel segment, although there are two theories regarding the mechanism of UC recurrence. The first theory is “field carcinogenesis”; tumor cells (especially carcinoma in situ) with malignant genetic profiles exist in the apparently normal urothelium, and the non-malignant but genetically abnormal cells spread throughout the epithelium around the visible UC, where they eventually and independently develop into overt tumors.[3] The second theory is “seed and implantation”. In the normal urinary tract, papillary tumors of the upper tract frequently recur in the bladder (15%-50%), and some cases have proven that urothelial tumor cells originated in the renal pelvis, which is the source of the “seed and implantation”.[4] In the present case, the UC recurred in the intestinal mucosa, but not in the urothelium, which appears to support the “seed and implantation” theory.

Primary bladder AC is a rare histologic variant, with a reported incidence of 0.5%-2% among all bladder cancers.[5] The risk factors for this variant include bladder exstrophy, schistosomiasis, chronic irritation, obstruction, cystocele, and endometriosis. Secondary bladder AC is more common compared to primary AC, and it may arise from the colorectum, prostate, stomach, lungs, or other sites via direct extension or the hematogenous or lymphatic route.[5] Therefore, we suspect that the tumor in the present case originated as UC in the left lower ureter and spread to the bladder via the “seed and implantation” route, and then the UC in the orthotopic neobladder was modified to AC by chronic irritation.

It is also notable that the AC spread from the orthotopic neobladder to the mesenteric LN. Thus, appropriate staging of recurrent UC in an orthotopic neobladder is difficult, especially in cases with LN metastasis. For example, metastasis to only the lesional LNs (eg, the common, internal, and external iliac LNs) may be considered normal bladder cancer, although it is unclear how to address metastasis to the mesenteric LNs (as in this case). If the mesenteric LN is included with the regional LNs, the present case would be considered similar to normal UC (pN1M0), although metastases are considered distant (pN0M1) if the mesenteric LN is considered separate from the regional LNs. Moreover, if the recurrence in the intestinal tissue is considered an intestinal tumor, this case would be considered pT2N1M0 (stage IIIA), under the TNM classification for small intestinal cancer. Therefore, this very rare case highlights the importance of discussing the management of recurrent UC with LN metastasis.

Conclusion

Although UC recurrence in an orthotopic neobladder is unusual, we successfully resected the orthotopic neobladder using unilateral nephroureterectomy. However, we identified adenocarcinomatous metastasis in the mesenteric LN, which highlights the need for further discussion regarding the oncological classification of this type of tumor.

Conflict of interest

None.

References

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