



## Case report

## Urothelial carcinoma in a remnant ureter after a radical nephrectomy for renal cell carcinoma: A case report

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## ABSTRACT

Urothelial carcinoma of a ureteral stump after a radical nephrectomy for renal cell carcinoma is rare. We present the case of a 76-year-old man with painless gross hematuria. The patient had undergone a right nephrectomy for renal cell carcinoma 30 months previously. Cystoscopy showed a blood clot in the right ureteral orifice, and ureteroscopy revealed a papillary mass in the right ureter. The patient underwent a right ureterectomy and bladder cuff resection. The pathology examination showed a high-grade urothelial carcinoma. However, a superficial bladder tumor was discovered postoperatively, and a transurethral resection of the bladder tumor was performed. At 8 months postoperatively, the patient was alive with no evidence of recurrence. A ureteral stump evaluation must be performed when painless hematuria is noted in patients after a nephrectomy.

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## 1. Introduction

The incidence of a urothelial carcinoma recurring in a ureteral stump after an incomplete nephroureterectomy for urothelial carcinoma of the upper urinary tract ranges from 20% to 58%.<sup>1</sup> Despite being rare, a urothelial carcinoma in a ureteral stump after a radical nephrectomy for renal cell carcinoma (RCC) has been reported. A primary ureteral stump carcinoma is defined as a tumor originating from the remaining ureteral stump after a nephrectomy for reasons other than a urothelial tumor.<sup>2</sup> Urothelial carcinoma of the renal pelvis is often recurrent in a ureteral stump or the urinary bladder. We report a patient with a urothelial carcinoma arising in the ureteral stump 30 months after an ipsilateral nephrectomy for RCC and review the relevant literature.

## 2. Case report

In June 2010, a 76-year-old man presented with asymptomatic gross hematuria during follow-up for localized RCC (Fig. 1) that had been treated by a right radical nephrectomy 30 months earlier. Pathology results indicated a chromophobe RCC after a nephrectomy (nuclear grade 3, 5.3 cm in the greatest dimension, limited to the kidney with no evidence of extracapsular or regional lymph node

metastasis, pT1bN0M0). The computed tomographic (CT) image showed no metastasis, and there was no significant family history.

During the follow-up period, no evidence of metastasis or locally recurrent carcinoma was noted. However, painless gross hematuria was noted for a duration of 1 month. Therefore, the patient visited the outpatient department. Cystoscopy was performed on May 21, 2010 and showed a blood clot in the right ureter. Ureteroscopy (Fig. 2) was performed and revealed a right ureteral tumor and a papillary type tumor causing total obstruction.

Under a diagnosis of a primary ureteral stump tumor, the ureteral stump was excised along with bladder cuff resection in June 2010 (Fig. 3). A histopathology examination showed a papillary and infiltrating urothelial carcinoma, of high grade without muscularis propria invasion (pT1N0M0) (Fig. 4).

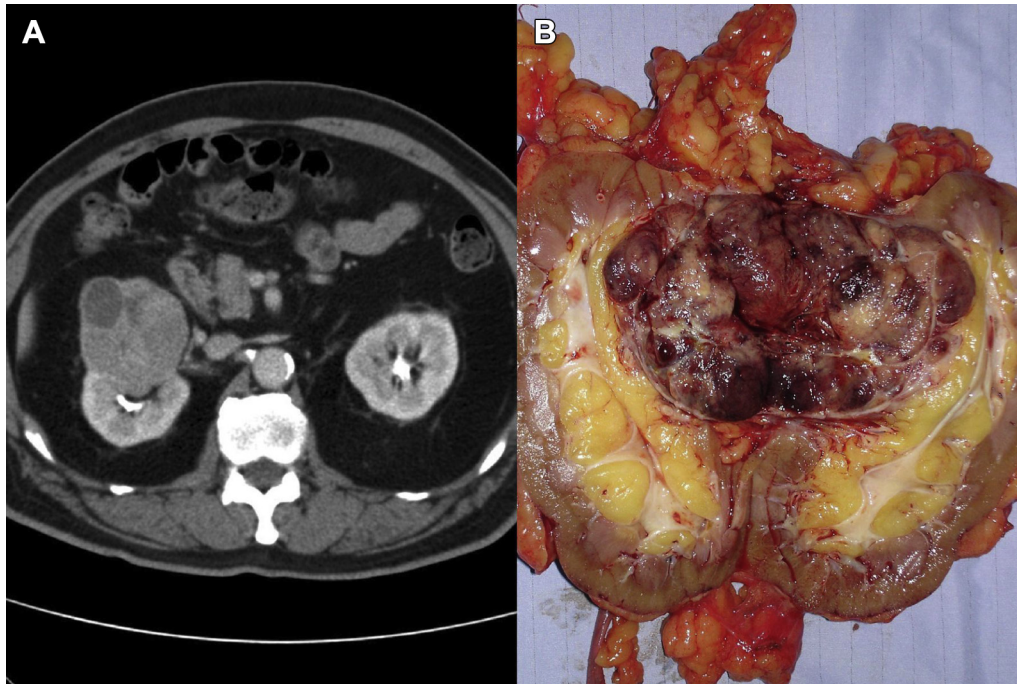
Postoperatively, the patient's condition was stable with no noteworthy complaints. The postoperative course was uneventful. The patient was discharged on the 10<sup>th</sup> postoperative day. Three months after the operation, superficial bladder cancer was found, and the patient received transurethral resection of the bladder tumor. At the time of follow-up 8 months postoperatively, the patient was alive with no evidence of disease.

## 3. Discussion

A primary ureteral stump carcinoma is defined as a tumor originating from the remaining ureteral stump after a nephrectomy for reasons other than a urothelial tumor.<sup>2</sup> The incidence of primary

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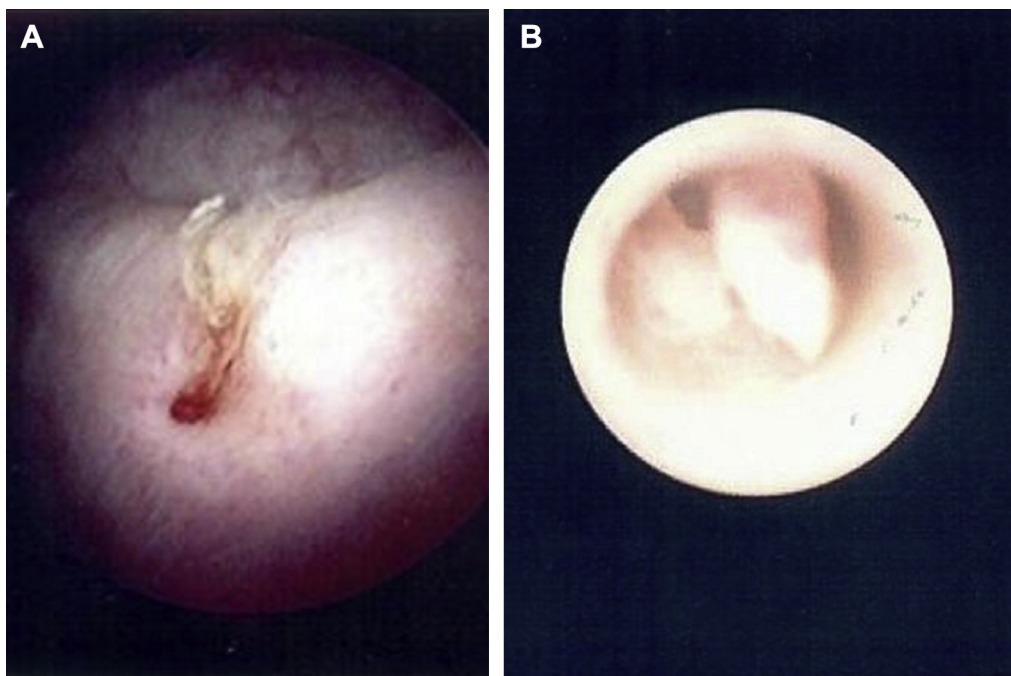
E-mail address: [tshuro.tw@yahoo.com.tw](mailto:tshuro.tw@yahoo.com.tw) (T.-S. Hsieh).



**Fig. 1.** (A) Computed tomography showing a heterogeneous mass in the right kidney which was suspected of being a renal cell carcinoma; (B) gross appearance of the renal cell carcinoma (brown-colored solid mass).

ureteral stump carcinoma is extremely rare. Loeff and Casella<sup>3</sup> first reported a case of a primary neoplasm in 1952 when a squamous cell carcinoma was found in a ureteral stump 14 years after a nephrectomy for hydronephrosis and hydroureter. Malek et al<sup>4</sup> reviewed the outcome of the ureteral stump in 4883 nephrectomies performed for nonmalignant diseases over 29 years and identified four cases of a remnant ureteral stump tumor. Kim et al<sup>5</sup>

reported that the incidence of primary ureteral stump tumors was 2.51%, all of which occurred in patients with long-standing inflammatory renal disease such as pyelonephrosis or tuberculosis. Based on a literature review, 13 cases, including our own, have been reported.<sup>6–8</sup> We know that urothelial carcinoma of the renal pelvis is often recurrent in a ureteral stump or the urinary bladder. However, urothelial carcinoma of a ureteral stump after a



**Fig. 2.** (A) Cystoscopy revealing a blood clot in the right ureteral orifice; (B) ureterorenoscopy showing a papillary tumor in the ureter.

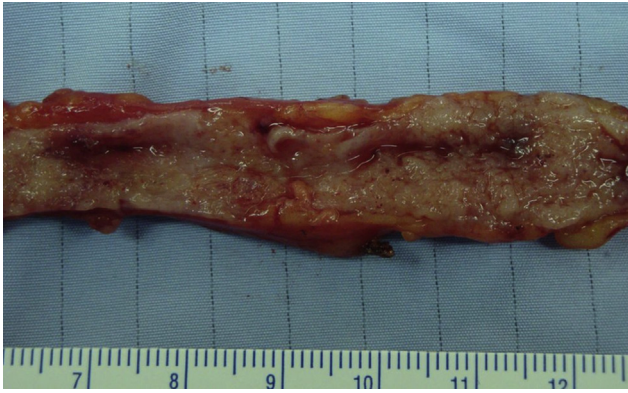


Fig. 3. Gross appearance of the urethelial carcinoma.

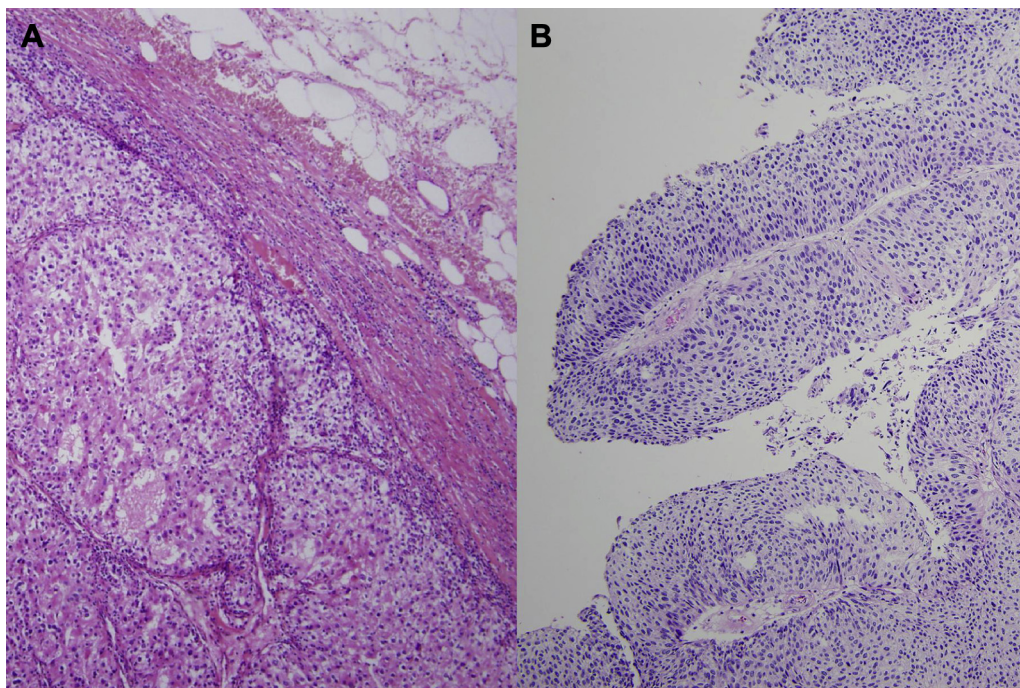


Fig. 4. (A) Chromophobe renal cell carcinoma (hematoxylin and eosin,  $\times 100$ ); (B) ureteral urothelial carcinoma (hematoxylin and eosin,  $\times 100$ ).

nephrectomy for RCC is rare. In patients with a prior diagnosis of a bladder tumor, urine reflux into the ureteral stump may be responsible for the ureteral stump tumor, possibly due to tumor implantation. However, in patients with no history of urothelial carcinoma, the etiology of a ureteral stump tumor is unclear.<sup>9</sup>

Bergman and Hotchkiss<sup>9</sup> proposed several possibilities for the etiology of ureteral stump tumors: (1) hyperplastic and metaplastic changes from chronic irritation due to infection or the presence of calculi; (2) malignant metamorphosis in an area of leukoplakia; (3) changes occurring in inclusions that had migrated from the basal epithelial layer of the ureteral mucosa; and (4) stimulation by an unrecognized carcinogenic agent. Our patient had a history of a separate carcinoma (RCC). Furthermore, the patient had a history of smoking cigarettes.

The clinical presentation and diagnosis of the ureteral stump tumor are similar to those of the intact ureter. Hematuria is the major presenting symptom. Imaging studies including retrograde urography and CT are helpful for a diagnosis. We found that gross hematuria or microscopic hematuria was present in the follow-up

period after a nephrectomy for RCC in the cases we reviewed. The ureteral stump must be evaluated using ureteroscopy, retrograde pyelography, or CT when hematuria is found. Eighty percent of patients with a ureteral stump carcinoma after a nephrectomy for benign disease demonstrated hematuria.<sup>9</sup> In our case, painless gross hematuria was noted, and a tumor was detected using ureteroscopy.

A primary ureteral stump tumor after a nephrectomy for RCC is considered a rare condition. Thus, urologists should consider the ureteral stump as a possible site for development of urothelial carcinoma and accordingly focus on that site during the follow-up period. Because the prognosis of urothelial carcinoma in the ureter depends on the degree of invasion, early diagnosis and treatment may improve the prognosis.

#### Conflicts of interest statement

The authors declare that they have no financial or non-financial conflicts of interest related to the subject matter or materials discussed in the manuscript.

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#### References

- Strong DW, Pearse HD, Tank ES, Hodges CV. The ureteral stump after nephroureterectomy. *J Urol* 1976;**115**:654–5.
- Wisheart JD. Primary tumor of the ureteric stump following nephrectomy. Presentation of a case and a review of the literature. *Br J Urol* 1968;**40**:344–9.
- Loef JA, Casella PA. Squamous cell carcinoma occurring in the stump of a chronically infected ureter many years after nephrectomy. *J Urol* 1952;**67**: 159–63.

4. Malek RS, Moghaddam A, Furlow WL, Greene LF. Symptomatic ureteral stumps. *J Urol* 1971;**106**:521–8.
5. Kim YJ, Jeon SH, Huh JS, Chang SG. Long-term follow-up of ureteral stump tumor after nephrectomy for benign renal disease. *Eur Urol* 2004;**46**:748–52.
6. Haritopoulos K, Stravodimos K, Baniyas C, Giaslaktiotis V, Alamanis C, Giannopoulos A. Transitional cell carcinoma of ureteral stump after radical nephrectomy in a patient with a history of bladder carcinoma. *Int Urol Nephrol* 2004;**36**:337–8.
7. Suzuki T, Tsuchiya N, Otomo R, Kakinuma H, Satoh S, Sato K, et al. Primary tumor of the ureteral stump following a nephrectomy for renal cell carcinoma. *Int J Urol* 1999;**6**:41–3.
8. Ikeda I, Terao T, Masuda M, Hirokawa M, Asakura S, Nozaki A. Primary ureteral tumor in residual ureter: a report of two cases. *Acta Urol Jpn* 1992;**38**:707–10.
9. Bergman H, Hotchkiss RS. *The ureteral stump. The ureter*. 2nd ed. New York: Hoeber; 1981. p. 685–96.