Renal preservation by pure laparoscopic partial ureterectomy for contralateral ureteral metastasis 7 years after nephrectomy for renal cell carcinoma: A case report

Masahiro Katsuia,*, Takemi Shishidoa, Tomohiro Iwasawab, Hideki Orikasac, Seiya Hattorid, Satoshi Haraa

a Department of Urology, Kawasaki Municipal Hospital, 12-1 Shinkawadori, Kawasaki-ku, Kawasaki-city, Kanagawa, 210-0013, Japan
b Department of Urology, Keio University School of Medicine, 35 Shinjuchome, Shinjuku-ku, Tokyo, 160-8582, Japan
c Department of Pathology, Kawasaki Municipal Hospital, 12-1 Shinkawadori, Kawasaki-ku, Kawasaki-city, Kanagawa, 210-0013, Japan
d Department of Urology, National Hospital Organization Tokyo Medical Center, 2-5-1 Higashigaoka, Meguro-ku, Tokyo, 152-8902, Japan

* Corresponding author.
E-mail addresses: katsui.masahiro@gmail.com (M. Katsui), rubby4711@yahoo.co.jp (T. Shishido), tiwasawa217@gmail.com (T. Iwasawa), orihhym@js6.so-net.ne.jp (H. Orikasa), seihatt0109@hotmail.com (S. Hattori), uro.s-hara.0909@kmh.gr.jp (S. Hara).

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1. Introduction

Contralateral ureteral metastasis after nephrectomy for renal cell carcinoma (RCC) is uncommon. In such cases, the kidney may be preserved by partial ureterectomy. We report a case of contralateral ureteral metastasis after nephrectomy for RCC. We underwent an originative method of pure laparoscopic partial ureterectomy and ureteral end-to-end anastomosis.

2. Case report

A 70-year-old male. Laparoscopic nephrectomy was underwent for right clear cell-type RCC of cT1aN0M0. Follow-up was performed by computed tomography (CT) 5 years after the operation. Seven years after the operation, he presented with a complaint of gross hematuria, and CT showed a left ureteral tumor in the U2 area (Fig. 1a). There were no malignant findings on his urine cytology. Retrograde urography showed a filling defect at the sacroiliac joint level (Fig. 1b). Ureteroscopy revealed a nonpapillary nodular tumor (Fig. 1c). Tissue biopsy revealed no clear malignant findings. We constructed a left renal fistula. We performed pure laparoscopic partial ureterectomy and ureteral end-to-end anastomosis. First, we inserted a left ureteral stent. The patient was repositioned to the lateral position and laparoscopic surgery was started. We placed a camera port at the lateral border of the left rectus muscle 6 cm superior to the umbilicus, a 5-mm port 6 cm inferior to the camera port, and a 12-mm port on the left outside (Fig. 2a). We dissected the ureter caudally, and the ureter was made mobile (Fig. 2b).

A tumor was identified on the cranial side of the arterial intersection. The ureter was incised on the peripheral and central sides of the tumor. The exposed tumor was smooth, capsular, and pedunculated (Fig. 2c). We performed ureteral end-to-end anastomosis with 4-0 Vicryl interrupted suture (Fig. 2d). No intraoperative complications occurred. Total surgery time was 5 hours and 1 minute, insufflation time was 3 hours and 25 minutes, and blood loss was slight. Pyelography was performed on day 6 and no leakage was found, so the nephrostomy catheter was clamped. We pulled out the nephrostomy catheter on day 11. The excised mass was 20 × 10 × 8 mm (Fig. 3a), and the histology was clear cell type RCC (Fig. 3b). We pulled out the ureteral stent on postoperative month 3. He lived without fever or renal failure. He lived without disease in the following 7 months.
Fig. 1. Radiographic and Endoscopic Imaging. a) CT coronal view reveals the tumor of left ureter in the U2 area, which was stained strongly in the CT arterial phase. b) Fluoroscopic findings at the time of ureteroscopy. The circle shows the filling defect due to the tumor. c) Endoscopic view shows a nonpapillary nodular tumor occupying the ureteral lumen.

Fig. 2. a) Port placement. A 12-mm camera port at the lateral border of the rectus muscle 6 cm superior to the umbilicus, a 5-mm port 6 cm inferior to the camera port, and a 12-mm port on the left outside were placed. Two ports were added to the caudal side to facilitate anastomosis. b) Dissecting the ureter caudally, and making the ureter mobile. c) The exposed tumor was smooth, capsular, and pedunculated. d) Ureteral end-to-end anastomosis was performed by interrupted suture.

Fig. 3. a) Macro finding reveals the 20 × 10 × 8 mm pedunculated, smooth-surfaced reddish-brown mass and the smooth ureter. b) Pathological specimen of the left ureteral tumor shows clear cell type RCC corresponding to G1 > G2 in which clear cells form acinuses and solid follicles are observed (hematoxylin & eosin staining, × 100). (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)
3. Discussion

In a previous review of 1451 autopsy cases of RCC, Saitoh reported only 20 cases of ureteric metastases. There was only one solitary metastasis to the ureter, and most were combined metastases with other organs.1

Zhang et al. reported that, of 51 ureteral metastases, seven were contralateral ureteral metastases and 44 were ipsilateral residual ureteral metastases.1 Contralateral ureteral metastases are rarer, and to our knowledge, our case was the 9th case.1

Hematogenous and lymphoid pathways are considered as the metastatic pathways for RCC to the contralateral ureter. Abeshouse found that the lymphatic vessels around the ureter did not have vertical continuity and were unlikely to be lymphatic. The risk of ureteral metastasis increases through the gonadal vein and ureteral vein; hence, ureteral metastasis is likely to occur on the left side.2 Based on past reports, the average period from nephrectomy to confirmation of metastasis was 2.5 years (5 months–6 years).3–4 Our case was 7 years, the longest reported so far.

According to a report by Abe et al., the symptoms at the time of metastasis were gross hematuria (n = 5), lower back pain (n = 3), and anuria (n = 2); however, no asymptomatic cases were found.4 If a contralateral ureteral tumor is found during image follow-up after RCC, primary ureteral tumor is first suspected. Preoperative diagnosis is extremely difficult because contralateral ureteral metastasis of RCC is rare.5 Zorn et al. diagnosed RCC contralateral ureteral metastasis preoperatively by ureteroscopic biopsy.5 In our case, the findings of strong staining in the CT arterial phase led to the judgment that it was atypical and that there was a high possibility of contralateral ureteral metastasis. Thus, it is important to consider contralateral ureteral metastasis of RCC as a differential diagnosis.

When contralateral ureteral metastasis of RCC is diagnosed, the general treatment is renal-preserving surgery. Methods for urinary tract reconstruction, such as ureteral end-to-end anastomosis, ureteral bladder anastomosis using psoas hitch, and ureteral replacement by the ileum, are selected according to the length and site of the ureteral defect. In the present study, the length of the resected ureter was 3 cm; therefore, we performed end-to-end anastomosis. In previous reports, all procedures, including tumor resection and ureteral reconstruction, were performed by open surgery. It is very difficult to insert a ureteral stent under laparoscopy after ureterectomy. By inserting a ureteral stent in advance, the ureteral stump to be anastomosed is loosely fixed, making it easier to suture. Moreover, as the positional relationship between the port and the expected anastomosis site differ from the CT image due to pneumoperitoneum, intraoperative findings may be used to add ports. Although ureteral anastomosis requires laparoscopic suturing, pure laparoscopic procedure might be a lowly invasive and helpful therapeutic choice.

4. Conclusion

We reported a case of contralateral ureteral metastasis after nephrectomy for right RCC. We underwent an originative method of pure laparoscopic partial ureterectomy and ureteral end-to-end anastomosis. Although ureteral anastomosis requires laparoscopic suturing, pure laparoscopic procedure might be a lowly invasive and helpful therapeutic choice.

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