Case Report

Radical cystectomy, bilateral lymphadenectomy and native ureteral ligation in a patient with history of kidney transplantation

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Abstract

We reported radical cystectomy (RC), bilateral lymphadenectomy and orthotopic ileal neobladder reconstruction in a patient with history of kidney transplantation. A 71-year-old man was referred to us with bladder tumor, elevated serum creatinine (1.9 mg/dl), hydroureteronephrosis in transplanted kidney and a 5–6-cm sessile mass in the right bladder wall with involvement of transplanted ureter orifice. The patient was candidate for RC. The native ureters were ligated permanently. Extended lymphadenectomy in left side and limited lymphadenectomy in right side were performed. The patient underwent ileal orthotopic neobladder reconstruction, and the graft ureter was reimplanted to ascending loop of the pouch with end-to-end anastomosis. In conclusion, bilateral lymphadenectomy is feasible in patients with a history of kidney transplantation during RC. Permanent ligation of native ureters is better to perform to reduce the time of surgery and prevent late probable morbidities due to uretero-intestinal reimplantation complications.

INTRODUCTION

Due to the prolonged use of immunosuppressive therapy, malignancy is more common in patients with a history of kidney transplantation, and it has the potential to be more aggressive compared to immunocompetent population [1–3]. Bladder cancer (BCa) has been found to be 3.3 times higher in patients with history of renal transplantation [4–6].

Radical cystectomy (RC) with pelvic lymph node dissection (PLND) is the gold standard treatment for muscle-invasive BCa [7]. The prognostic and therapeutic value of PLND in patients undergoing RC for urothelial cancer cannot be overstated; however, the optimal extent of dissection remains controversial [8]. PLND in patients with a history of kidney transplantation is challenging, especially when performed ipsilateral to the transplanted kidney. In these patients, there is a greater risk of injury to the main vessels and grafted ureter due to absence of clear surgical plane and presence of peri-graft adhesions. PLND on the side of the transplanted kidney was not feasible in several reports [9–11].

Uretero-intestinal anastomosis is also challenging in these patients [12, 13]. The benefits of reimplantation of native ureters that drain non-functioning kidneys are controversial. It can prolong the duration of surgery and may result in more complications.

In this case presentation, we report RC, bilateral PLND and orthotopic ileal neobladder reconstruction with ligation of native ureters in a 71-year-old man with muscle-invasive BCa and history of kidney transplantation.

CASE REPORT

A 71-year-old man, who had received renal transplantation 10 years ago, presented with bladder tumor. Transurethral resection of bladder tumor revealed muscle-invasive BCa. After refusing surgery, he received chemotherapy. Due to no response to chemotherapy, he was referred to us. In primary evaluation, serum creatinine was 1.9 mg/dl (glomerular filtration rate (GFR) = 37 ml/min/1.73m2). Computed tomography (CT) scan revealed mild-to-moderate hydrourephrosis of transplanted kidney and two small and atrophic native kidneys with no evidence of tumor metastasis (Fig. 1). In cystoscopy, a 5–6-cm sessile mass was detected in the right bladder wall with involvement of transplanted ureter orifice. Trans-urethral resection of the tumor was performed, and pathologic evaluation revealed high-grade urothelial cell carcinoma with muscularis propria involvement. After counseling, the patient decided to undergo RC.

Surgical technique

Midline incision was made and we tried to enter the Retzius space by focusing the dissection on the opposite side of the transplanted kidney. The bladder became separated from the scar tissue on the side of the graft by identifying the Cooper’s...
Figure 1. Preoperative CT scan shows mild-to-moderate hydronephrosis in transplanted kidney and two atrophic native kidneys.

Figure 2. Dilated graft ureter was dissected gently from dense fibrosis.

Figure 3. The graft ureter was reimplanted to the ascending loop of the pouch with end-to-end anastomosis.

A. Basiri et al.

postoperative period was uneventful and the only complication was ileus that improved with conservative management (Fig. 4). Serum creatinine was 1.2 (GFR = 65 ml/min/1.73m²) 3 months following surgery, with no evidence of recurrence during this short follow-up period.

Post-operation

The patient was discharged 10 days following surgery. Post-operative period was uneventful and the only complication was ileus that improved with conservative management (Fig. 4). Serum creatinine was 1.2 (GFR = 65 ml/min/1.73m²) 3 months following surgery, with no evidence of recurrence during this short follow-up period.

DISCUSSION

RC and bilateral PLND are the gold standard treatment for muscle-invasive BCa. Beside the therapeutic role of lymphadenectomy, it can also improve the accuracy of pathologic staging [14]. The problem in patients with history of kidney transplantation is that PLND is technically demanding. Yavuzsan et al. [15] reported a 39-year-old man who underwent RC after renal transplantation. They performed PLND only on the left side to avoid injury to the graft kidney. In a study, Moses et al. [9] reported five patients with BCa and a history of renal transplantation, who underwent RC and orthotopic urinary reconstruction. PLND on the side of graft was impossible in all patients. In another similar study, Prabharaeth et al. [10] reported four patients with a history of kidney transplantation who underwent RC. Right PLND was not technically feasible in any of them due to post-transplantation adhesions. In a video report, Caputo et al. [11] showed robotic-assisted RC in a patient with kidney transplantation; however, they showed PLND only on left side.

There are limited reports about RC in patients with a history of renal transplantation and most of them did not perform bilateral PLND (Table 1). PLND is highly predictive of patient survival
and it might affect decision for applying adjuvant therapies. In addition, PLND is therapeutic and is associated with survival benefit in some patients [16]. We performed limited (obturating and internal iliac) PLND on the graft side in our patient; however, limited PLND might also be of therapeutic and diagnostic value. Prolonged operative time is associated with higher perioperative morbidity and mortality in RC [17]. In the evaluation of >2300 patients who underwent RC, Lavallee et al. [18] found that operative time >6 hours is independently associated with postoperative complications. In patients with renal transplantation, reimplantation of graft ureter without re-implantation of native ureters may decrease the duration of surgery and associated morbidity and mortality. In a meta-analysis of 13 185 participants addressing upper urinary tract urothelial cancer after cystectomy was between 0.75 and 6.4% [19]. The authors recommended follow-up screening but not bilateral nephroureterectomy. Although bilateral native nephroureterectomy seems to be a reasonable option in terms of cancer control, due to significant increase in duration of surgery, it may be associated with higher morbidity and mortality.

This is the first report of RC with bilateral PLND and ligation of both native ureters in a patient with a history of kidney transplantation.

In this report, we showed that RC with bilateral PLND is feasible in patients with kidney transplantation. Permanent ligation of native ureters may reduce the time of surgery and associated morbidity and mortality.

**CONFLICT OF INTEREST STATEMENT**

All authors declare that they have no conflict of interest.

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