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Cystectomy and orthotopic ileal neobladder in a male patient 12 years after kidney transplantation; good preservation of the renal function

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Abstract In case of cystectomy, some forms of urinary diversion can impair the graft function of renal transplant patients. Here we present the case of a 70-year-old male with carcinoma of the bladder 12 years after renal transplantation. Immunosuppression was achieved with Cyclosporin A (200 mg/day) and Prednisone (5 mg/day). The patient's serum creatinine level was 1.4 mg/dl. Following cystectomy, an orthotopic ileal neobladder was constructed by means of Studer technique, and the afferent ileal loop was anastomosed to the graft ureter. Pathology revealed pT1 G3 N+ transitional cell carcinoma. Ten months later, periaortic nodal recurrences necessitated four cycles

of chemotherapy with Epidoxorubicin and Gemcitabine. To date, 20 months after cystectomy, the patient is stable, with day and night-time urinary continence. His serum creatinine level is 1.3 mg/dl, and there is no evidence of hydronephrosis or acidosis. We conclude that the orthotopic ileal neobladder is an effective form of urinary diversion in renal transplant patients requiring cystectomy, allowing good preservation of the renal function.

Keywords Kidney transplantation · Bladder neoplasms · Urinary diversion

Abbreviations BCG Bacillus Calmette Guérin

Introduction

Immunosuppression following renal transplantation increases the risk of tumor development, including that of bladder carcinoma [1]. Radical cystectomy may be necessary in these patients, however, some forms of urinary diversion, such as an ileal conduit, may impair graft function. Here we report the case of an orthotopic ileal neobladder allowing good preservation of renal function in a renal transplant patient.

Case report

The patient, a 70-year-old male, had undergone cadaveric kidney transplantation 12 years previously. The graft, with a cold ischemia

time of 14 h, was from a 15-year-old female donor of identical haplotype.

The initial immunosuppressive regimen was Cyclosporine A (CSA) 230 mg/day, Azathioprine 50 mg/day and Prednisone 15 mg/day. Due to patient age, the immunosuppressive regimen was tapered over the years to CSA 200 mg/day and Prednisone 5 mg/day. The graft was functioning well with a serum creatinine level of 1.4 mg/dl. During the previous year, two transurethral superficial bladder tumors had been resected, and a recent third resection revealed pT1 G3 transitional cell carcinoma. Spiral CT scan failed to demonstrate enlarged pelvic lymph nodes and showed two shrunken native kidneys, the chest X-ray was normal.

The patient underwent radical cystectomy with right-sided pelvic lymphadenectomy, since the graft was placed in the left iliac fossa. An ileal orthotopic neobladder was fashioned by means of Studer technique using 55 cm of the terminal ileum, which was detubularized and folded twice, leaving a 14 cm afferent ileal loop, which was anastomosed to the graft ureter in the left iliac fossa by means of the "split cuff" technique (Fig. 1). The postoperative

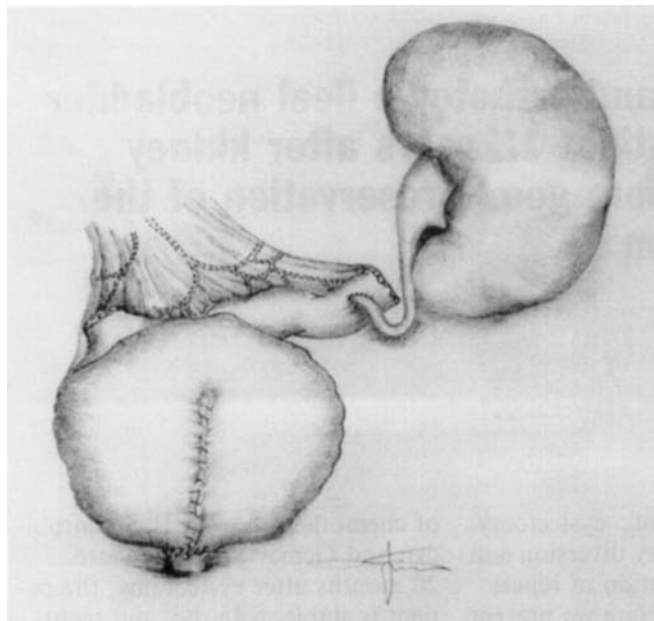


Fig. 1 Illustration of ileal orthotopic neobladder with Studer technique performed in patient with previous renal transplantation in the left iliac fossa



Fig. 2 Retrograde cystography of the ileal neobladder before catheter removal, demonstrating opacification of the afferent ileal loop and grade I reflux in the graft ureter

course was uneventful, the ureteral splint was removed after 4 weeks, and, 2 days later, the urethral catheter (Fig. 2). Pathology revealed multicentric pT1N1 G3 transitional cell carcinoma. Oral



Fig. 3 Spiral CT scan of the pelvis with contrast medium performed 10 months after confection of orthotopic ileal neobladder with Studer technique. The transplanted kidney has normal appearance and there is efficient propulsion of urine boluses in the neobladder by the peristalsis of the afferent loop

alkalinization was given during the first 5 months and then discontinued, due to good metabolic balance. Following surgery, the immunosuppressive regimen was further reduced to CSA 175 mg/day and Prednisone 5 mg/day.

Ten months later, enlargement of the periaortic lymph nodes was documented by CT scan, and the patient underwent four cycles of chemotherapy based on Epi-doxorubicin (70 mg/m^2) and Gem-cytabine (1000 mg/m^2), which he tolerated well. A spiral CT scan with contrast medium performed 10 months after surgery showed normal appearance of the transplanted kidney and efficient propulsion of urine boluses into the neobladder by peristalsis of the afferent ileal loop (Fig. 3). Twenty months after cystectomy, the patient is stable, with night-time continence and a voiding interval of 3 hours during the day. His metabolism is balanced (serum bicarbonate 24 mEq/l) and his renal function good (serum creatinine 1.3 mg/dl) without sonographic or computer tomographic evidence of hydronephrosis.

Discussion

Although renal transplant patients run an increased risk of developing tumors, bladder carcinoma is relatively uncommon, except for patients with end-stage analgesic nephropathy, who are at risk of developing transitional cell carcinoma in the entire urinary tract with a latency of about 20 years [1, 2]. There are only sporadic reports of analgesic-unrelated bladder carcinomas of various histologic types, such as transitional cell, squamous cells, adenocarcinoma [1, 3, 4]. The occurrence of transitional cell carcinoma in the blad-

der following renal transplantation poses several therapeutic problems.

Patients with renal failure secondary to analgesic nephropathy are advised to undergo nephro-ureterectomy simultaneously with cystectomy because of the high incidence of multicentric urothelial tumors [1].

For superficial bladder tumors, intravesical chemotherapy should be used with caution and only using Mitomycin C [5]. Bacillus Calmette Guérin (BCG), which currently represents the gold standard for multicentric, recurrent or grade 3 superficial tumors, should not be administered to immunosuppressed patients. For them, the risk of systemic diffusion is high, and the therapeutic effect is reduced, since the release of BCG-induced activated killer cells is not likely.

In presence of aggressive tumors such as transitional cell carcinoma of the bladder, the European best practice guidelines recommend reducing immunosuppression whenever possible, and in the present case we aimed at maintaining CSA levels at 150 ng/ml trough level [6].

Patients who had undergone cystectomy for muscle-invasive disease require a form of urinary diversion that minimizes the risk of graft dysfunction. According to a review of the literature available on Medline, orthotopic ileal neobladder following renal transplantation has been reported for only 5 patients; 2 females and 3 males [4, 5, 7, 8, 9].

Intestinal segments in the form of an ileal conduit or continent cutaneous diversion (Kock pouch) have been used in the past when cystectomy was necessary in renal transplant patients [10]. However, there is a risk of renal infection and graft deterioration if these procedures are performed in immunosuppressed individuals. This risk is greatly reduced with an ileal neobladder. After a follow-up of 8 years, only 3% to 18% of the patients evaluated

by Studer presented with urinary tract infection; 92% were continent by day and 84% by night; using a relatively short ileal segment, the incidence of atonic reservoirs requiring intermittent catheterization was low [11].

Moreover, specific conduit-related complications which seldom appear in normal conditions have been described in renal transplant patients [12]. Therefore, the fashioning of an orthotopic ileal neobladder in a renal transplant patient can be recommended when cystectomy is required, since, according to our experience and that of others [4, 5, 7, 8, 9], it proved to be feasible, safe (thanks to the improved quality of suture materials) and adequate to preserve graft function. There are several ways of making a detubularized ileal neobladder, but Studer technique, which assures an intact afferent ileal loop, is particularly suitable for tract reconstruction following renal transplantation, since this loop can be anastomosed to the short graft ureter, and its preserved peristalsis prevents reflux and hydronephrosis.

Transitional cell carcinoma in immunosuppressed individuals follows an aggressive course, as the experience by Thon et al. shows, where, after a mean follow-up time of 16.9 months, 5 out of 7 patients with bladder tumors died [1]. Also, the present case confirms this trend, since at the time of surgery there was microscopic involvement of 4 out of 7 pelvic lymph nodes from the right side, and periaortic nodal recurrence was documented 10 months later. Today, 20 months after surgery, the patient is alive and stable following 4 cycles of moderately nephrotoxic chemotherapy, which could be administered thanks to the preservation of graft function by means of an ileal neobladder.

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