

Case Report

Suprapubic cystostomy during renal transplantation in a patient with a urethral stricture after hypospadias surgery: A case report

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Introduction: Renal transplantation often causes polyuria, and a Foley catheter is typically placed after transplantation. A urethral stricture often makes it difficult to insert a normal diameter urethral catheter.

Case presentation: We report on the case of a 16-year-old adolescent male with a history of hypospadias surgery who underwent a cystostomy during renal transplantation. A cystostomy was placed during transplantation because of stricture of the pendulous urethra. Urine leakage into the retroperitoneum occurred after cystostomy catheter removal. An 8-Fr urethral catheter was placed, and urine was aspirated to prevent drainage failure. Voiding cystourethrography performed after 2 weeks showed that there was no leakage. After that, the patient had no trouble with urination.

Conclusion: A cystostomy may be one strategy for renal transplantation patients with a urethral stricture. Urine leak can occur because of the delay in wound healing caused by immunosuppressive therapy. Therefore, cystostomy management strategies should be considered carefully.

Key words: cystostomy, renal transplantation, urethral stricture, urine leakage.

Keynote message

We report on the case of a 16-year-old adolescent male with a history of hypospadias surgery who underwent a suprapubic cystostomy during renal transplantation. Urine leakage into the retroperitoneum occurred after cystostomy catheter removal. A cystostomy may be one strategy for renal transplantation patients with a urethral stricture. However, strategies to prevent a urine leak from the cystostomy extraction hole are necessary because a urine leak into the retroperitoneum can occur after cystostomy removal.

Introduction

A Foley catheter is typically placed after renal transplantation to prevent excessive tension on the newly created ureterovesical anastomosis.¹ Diuresis is often induced immediately after a living donor renal transplantation, and polyuria occurs. If a small diameter catheter is placed during the diuresis period, the risk of anastomotic leak increases due to urine drainage failure.

A urethral stricture is among the most common complication after hypospadias repair.² The urethral lumen generally becomes narrower compared with a normal urethra after hypospadias surgery. Because a urethroplasty is performed in the distal urethra, clinical symptoms of a urethral stricture become obvious only in the case of serious stenosis. However, it may be difficult to place a urinary catheter in a patient who has undergone a urethroplasty. Here, we report a case of living donor renal transplantation and intraoperative suprapubic cystostomy for a patient with a urethral stricture who had a history of hypospadias surgery.

Case presentation

A 16-year-old adolescent male who had developed interstitial nephritis at 10 years of age received a preemptive living donor renal transplant. The patient had a history of hypospadias surgery at the age of 6. Urethrography was performed before surgery, and a stricture of the pendulous urethra was detected. An 8-Fr Foley catheter was placed during surgery because there was resistance to a 12-Fr catheter insertion. A 16-Fr catheter was placed as a suprapubic cystostomy because a urine drainage failure was expected with a small diameter Foley catheter. The 8-Fr Foley catheter was removed immediately after surgery.

Graft function was good, and his serum creatinine level was 1.1 mg/dL at 5 days after transplantation. The patient received a combination of immunosuppressive therapy with methylprednisolone, tacrolimus, mycophenolate mofetil, and basiliximab. Cystography was performed 8 days after transplantation. The first desire to void and strong desire to void yielded 200 and 400 mL, respectively. There was no urine leakage, and the cystostomy catheter was removed the next day (day 9). The patient's urine volume decreased and body weight increased after catheter removal. On day 10, the patient complained of strong lower abdominal pain, and his serum creatinine level was elevated to 1.8 mg/dL. Computed tomography was performed, and fluid collection around the transplanted kidney and bladder was detected (Fig. 1). An 8-Fr Foley catheter was again placed in the urethra because urine leakage from the cystostomy extraction hole was suspected. Urine in the bladder was aspirated via the urethral catheter every hour to prevent drainage failure.

Once the urethral catheter was in place, the retroperitoneal fluid gradually decreased, his lower abdominal pain was reduced, and the serum creatinine level improved to 0.9 mg/dL. On day 21, a voiding cystourethrography was performed (Fig. 2), and as no leakage was observed, the urethral catheter was removed. Because then, the patient has had no trouble urinating and the graft function has been good.

Discussion

Renal transplantation is the only curative treatment for patients with end-stage renal disease. In many institutions, a Foley catheter is left *in situ* for 4–10 days after transplantation to prevent excessive tension on the newly created ureterovesical anastomosis.¹ Living donor renal transplantation often causes polyuria immediately after surgery.³ A urethral stricture often



Fig. 2 Stricture of the pendulous urethra (black arrow). Urethral dilation owing to distal stricture (white arrow).

makes it difficult to insert a normal diameter urethral catheter. If a sufficient diameter catheter cannot be placed, the risk of anastomotic leak increases due to hyperextension of the bladder because a small diameter catheter is not efficient for urine drainage.

A suprapubic cystostomy is one strategy for urine drainage from the bladder in a patient with a urethral stricture. In this case, the suprapubic cystostomy was placed during surgery because of a urethral stricture that was caused by hypospadias surgery. Urine leakage into the retroperitoneum occurred after cystostomy removal. The cystostomy extraction hole usually closes early and urine does not spread outside of the bladder. In this case, it seems that two factors were related to the urine leak. One was the effect of immunosuppressive therapy that was administered after organ transplantation; this therapy is known to cause delayed wound healing.⁴ The other was a wide Retzius space that was generated by the operation. A Retzius space separation associated with an open cystostomy may induce urine leakage from the cystostomy hole into the retroperitoneum compared with a percutaneous cystostomy. However, the space was usually closed because of early post-operative adhesion by wound healing without immunosuppressive therapy. Kase⁵ reported that it took an average of 3–4 days to close the suprapubic sinus after cystostomy catheter removal.

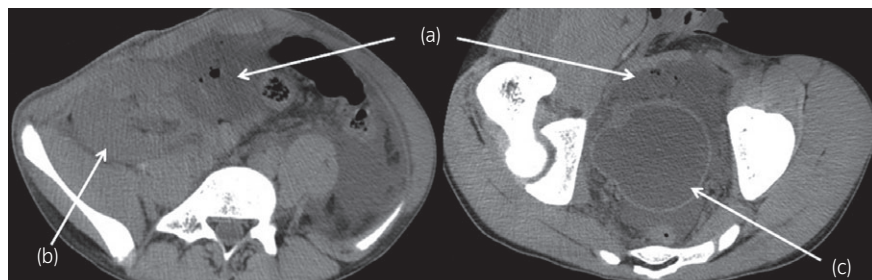


Fig. 1 Urine spread around the graft and bladder after a cystostomy extraction. (a) Urine leakage, (b) transplanted kidney, and (c) urinary bladder.

If renal transplantation is indicated for a patient with a urethral stricture, it is better to treat the urethral stricture before transplantation. After hypospadias surgery, a patient whose urethral diameter is insufficient for a normal diameter catheter placement, despite having no problem with normal urination, does not require treatment of the urethral stricture in general. In addition, it may be difficult to repair a narrow urethra after hypospadias surgery because the repaired urethral length is relatively long. In such a case, a suprapubic cystostomy is useful for urine drainage early postoperatively. However, it is necessary to take measures to prevent a urine leak after the extraction of the cystostomy because there is a possibility that a urine leak may occur, as happened in this case. One preventative technique is to suture the adventitia of the bladder and the inside of the abdominal wall around the hole to make a strong adhesion. Another is to extend the indwelling period of the catheter to allow enough time for adhesion between the bladder and abdominal wall. A case of urinary retention with a suprapubic cystostomy after renal transplantation was reported and the suprapubic cystostomy was removed after about 2 months without problem.⁶ In this case, the cystostomy sinus healed within 2 weeks after urinary leakage; therefore, a reasonable duration of an indwelling catheter may be 2–3 weeks.

A cystostomy may be one strategy for renal transplantation patients with a urethral stricture. However, strategies to prevent a urine leak from the cystostomy extraction hole are

necessary because a urine leak into the retroperitoneum can occur after cystostomy removal.

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Conflict of interest

The authors declare no conflict of interest.

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