

Trauma and reconstruction

Successful Boari Flap ureteroneocystostomy for distal ureteral necrosis after renal transplantation

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Introduction

Renal transplantation has been shown to improve the quality of life and overall survival in patients compared to long-term dialysis. However, the procedure is still often followed by surgical and medical complications.¹ Urinary fistulas are one of the most frequent complications occurring within the first month after the transplant, occurring in 2%–4.7% of cases.² It is usually associated with ischemic necrosis of the distal ureter which only receives vascularization through its superior pedicle originating from the renal artery. There are numerous ways to ensure urinary continuity in fistula cases, through either endoscopic or surgical methods. Even though there is a place for an endoscopic approach, the immediate success rate is 69% with a longer-term success rate of only 58% due to recurrent infections or stenosis.³

Surgical interventions for early complications offer a more consistent and durable solution that can prevent renal allograft injury due to pyelonephritis and hydronephrosis to re-establish urinary drainage range from simple re-anastomosis to more complex procedures which make use of the recipient bladder.³ Unlike vascular anastomosis, the optimal method for urinary anastomosis has not been universally decided. Different studies have reported multiple approaches to treat the problem and Boari Flap method was seldom reported to be used for the complication even though certain conditions may theoretically support the use of the method more than others. Reconstruction of the urinary tract by using the bladder may be beneficial if the transplant ureter lacks a sufficient blood supply at the time of transplantation.⁴ In this report, we present a case of urinary fistula due to distal ureteral ischemic necrosis in a 28-years-old male treated with a Boari Flap ureteroneocystostomy.

Case presentation

A 28 years old male underwent a kidney transplantation due to stage V chronic kidney disease. A week after the procedure, he complained of urinary leakage from the surgical site. The patient also

suffered from pain in his right lower abdomen. The patient's vital signs and general physical condition is normal apart from his urinary leakage from the drain tube at the surgical site. Laboratory results were within normal limit. We performed nephrostomy and placed a 6 Fr JJ stent for urinary diversion. However, the leakage still occurred, draining more than 1000 cc 2 weeks after the transplant. Ultrasonography (USG) examination shows free fluid indicating urinary leakage as shown in Fig. 1. We decided to perform a reopening of the surgical site and found a fistula due to ischemia and necrosis in the distal ureter. Boari-flap technique was performed for urinary reconstruction as shown in Fig. 2. A ureteral catheter was used to measure the required flap length and width at the base. The flap was then marked by coagulating the muscle serves as a roadmap which allowed the flap to be raised. An opening was made into the flap about 1 cm distal to the apex. The ureter was then anastomosed to the flap in end to side fashion, and double pigtail stent was placed from the transplanted kidney to the bladder. A new JJ stent was placed afterward. The drain production decreased as the renal transplant's function increased. The drain was removed on the 8th day after the procedure. The procedure was deemed successful as there were no complications following the procedure. The latest USG examination performed on July 4th, 2018 shows no leakage or free fluid and no signs of further complications which can be seen in Fig. 3. Currently, the patient shows a preserved renal function as well as symptomatic improvement.

Discussion

The patient presented in this case suffered from a urinary leakage due to a fistula caused by ischemic necrosis of the distal ureter after having undergone a kidney transplant a month prior. It is one of the most commonly found early postoperative complications; however, it should not be taken lightly.¹ The best choice of treatment is surgery despite advancements in endourologic and percutaneous alternatives.⁴ Direct reimplantation is often impossible due to insufficient length of the undamaged ureter or if the native ureter is short, nonfunctional, or

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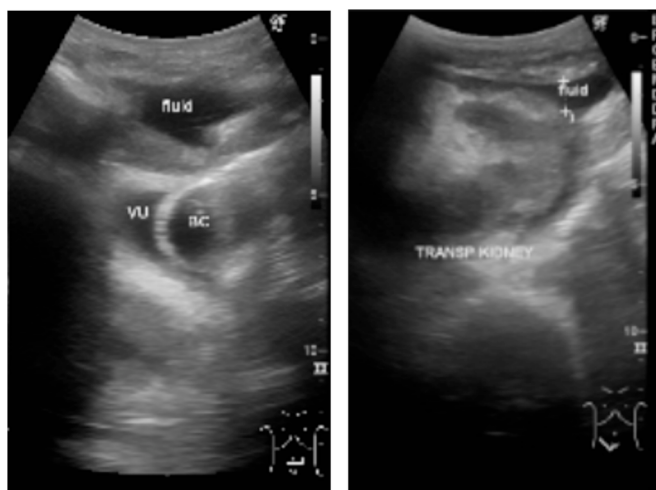


Fig. 1. Renal USG on 5th March 2018 shows free fluid in the pelvic cavity.

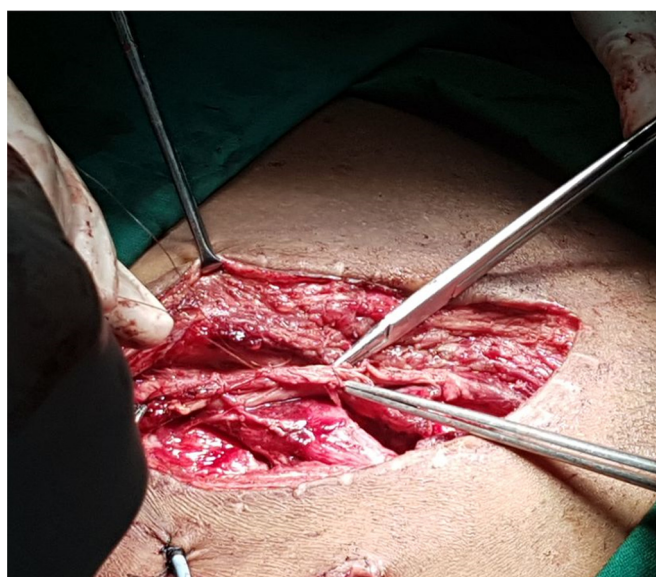


Fig. 2. Boari-flap reconstruction.

absent. Using the bladder for reconstruction via Boari flap circumvents these problems and permits successful restoration of the urinary tract.⁵

In this case, the problem lies in the long segment of the distal ureter. Anastomosing the ureter to the flap in an end-to-side fashion allowed us to perform the anastomosis in a tunneled fashion, thus providing greater support and decreasing the potential for leakage of urine at the anastomotic site. This method, which places a bladder flap to maintain urine in contact with urothelium, also decreases the risk of fistula, stones, and infection.⁵ Four months after the procedure, the patient shows significant radiographic and symptomatic improvements as well as a preserved renal function indicating the method's success.

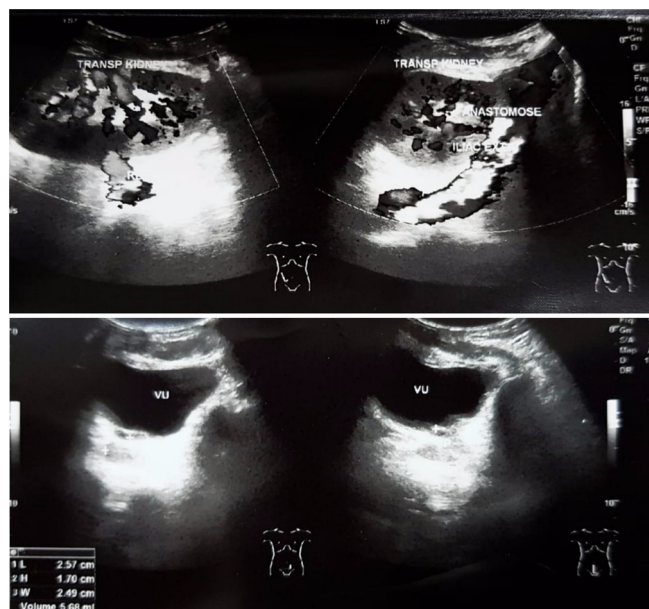


Fig. 3. Renal USG on July 4th, 2018 shows no sign of free fluid or leakage.

Conclusion

Using the bladder for reconstruction via Boari-flap ureteroneocystostomy allows for a successful restoration of the urinary tract which was previously damaged due to ischemic necrosis after renal transplantation.

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