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CASE REPORT

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Percutaneous nephrolithotomy in transplanted kidney—forgotten stent with complete staghorn and large bladder stone. Case report

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Introduction

Urolithiasis is an uncommon complication of renal transplantation, reported in approximately 0.5%–1% of renal allografts [1, 2, 3, 4, 5]. The risk factors are mainly hyperparathyroidism and non-absorbable sutures [2, 3, 6]. Other predisposing factors include ureteral obstruction, chronic urinary stasis, foreign body nidus (i.e., internal stents), metabolic diseases, and graft-gifted lithiasis (pre-existing stone in a donor kidney) [2, 4, 7, 8, 9].

The use of ureteral stents in renal transplantation may prevent ureteral complications related to the ureteroneocystostomy performed during transplantation [8]. However, routine use of ureteral stents has been criticized, due to various stent-related problems including urinary tract infection, secondary obstruction, stent migration or breakage, stone formation and hematuria [8, 10]. If a stent is not used, the risk of a forgotten stent may also be eliminated, but this must not constitute a contraindication [10]. Consequently, if stents are to be used during renal transplantation, documentation and follow-up are strongly recommended.

We report a case of complete staghorn calculus and large bladder stone formation on a forgotten stent in a renal transplant patient. The case was successfully treated with percutaneous nephrolithotomy combined with cystolithotripsy.

Case report

A 48-year-old woman who had received a cadaveric renal transplant 4 years earlier was examined for recurrent urinary tract infection and deterioration of graft function. Her serum creatinine was 4.5 mg/dl. Blood pres-

sure was normal. Plain abdominal X-ray revealed a forgotten internal stent with a 70-mm complete staghorn and a large 60-mm bladder stone (Fig. 1). We performed a CT scan of the abdomen and pelvis in order to diagnose the eventual interposition of intestinal loops between the transplanted kidney and the abdominal and flank muscles and to prevent injury during the subsequent placement of a percutaneous nephrostomy tube (PCN, Fig. 2). Before the procedure the PCN tube was placed through the upper calyx of the transplant kidney.

Under general anesthesia the patient was placed in the supine position with her left side slightly elevated. Under fluoroscopic control, the nephrostomy tube was exchanged for a NephroMax balloon catheter and dilatation of nephrostomy tract was completed to 30F. After dilatation, the corresponding Amplatz sheath was slid over the balloon, and the balloon catheter was removed. Ultrasound lithotripsy of the upper part of the stone was performed. For access to the lower part of the stone a second port was placed through the lower calyx during the procedure. Ultrasound lithotripsy of the staghorn was completed, and the pieces of stent were removed. At the end of the procedure a new double-J internal stent was placed and a Foley catheter was positioned trough the lower calyx in the renal pelvis as nephrostomy drainage. Finally, cystolithotripsy with complete stone extraction was performed.

Fig. 1 The plain abdominal film showed a forgotten stent with complete staghorn and bladder stone

Fig. 2 CT scan performed before insertion of the nephrostomy tube

The nephrostomy tube was removed 4 days later, after a normal nephrostogram had been obtained (Fig. 3). The patient was discharged from hospital on the fifth postoperative day. At the first follow-up visit her serum creatinine was 1.1 mg/dl. Two weeks later the stent was removed in the outpatient clinic without any complications. After 2 months' follow-up the patient is stone free, with her serum creatinine controlled at 1.0 mg/dl.

Discussion

The development of renal calculus in transplanted kidneys is uncommon, but in these cases complications such as infection and urinary tract obstruction with impair-

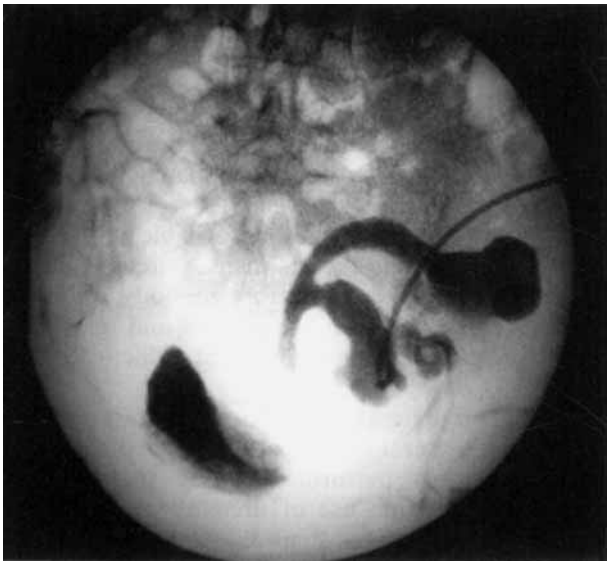

Fig. 3 Nephrostogram on the fourth day after the PCNL

ment of graft function can occur. The risk factors of urinary stone disease in renal transplant patients include the use of cyclosporine and steroids, ureteral strictures and poor urinary drainage, hypercalcemia with or without hyperparathyroidism, and foreign bodies (e.g., sutures, stents). These patients have been treated by traditional urological techniques similar to that with a solitary kidney, such as extracorporeal shock-wave lithotripsy (ESWL), endoscopic retrograde manipulation, percutaneous nephrostolithotomy (PCNL) and open surgical procedures. On the other hand, open surgery in immunosuppressed patients increases the risk of infection and impairment of wound healing and may be technically difficult because of scar tissue close to the vascular anastomosis [1, 2].

We presented a rare case of "forgotten" stent in a transplant kidney with a complete staghorn and large bladder stone that were successfully treated by PCNL with cystolithotripsy.

In our experience, PCNL in a transplant kidney is a safe and feasible procedure. We did not have any problem performing balloon dilatation of the tract in the transplanted kidney. Similarly, we encountered no problems whatsoever with the creation a second PNL port with fluoroscopic guidance. We highly recommend the use of preoperative computed tomography in order to visualize bowel loops overlying the allograft and plan appropriate percutaneous renal access.

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