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CASE REPORT

A case report on ECIRS for the complex retrieval of an encrusted ureteric stent in a renal transplant recipient

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ABSTRACT

Ureteric stents are commonly used in renal transplantation to reduce the risk of ureteral complications. However, failure to remove these stents in a timely manner may result in severe encrustation, infection, and graft dysfunction. We present the case of a 30-year-old male renal transplant recipient who defaulted follow-up for ureteric stent removal. At over six months post-transplant, the patient presented with a decline in renal function. Imaging revealed a severely encrusted stent with graft hydroureteronephrosis. Multiple endourological attempts at removal were unsuccessful. During one attempt, the stent fractured, leading to urosepsis and hemodynamic instability. Urgent graft nephrostomy was performed. Following stabilization, endoscopic combined intrarenal surgery (ECIRS) enabled complete removal of all stent fragments. A persistent ureteric stricture was subsequently managed with a Boari's flap reconstruction. The patient recovered fully with stable graft function and resolution of hydronephrosis on follow-up imaging. This case highlights the challenges of managing neglected ureteric stents in transplant recipients, particularly the anatomical and immunological considerations. A staged approach is critical to preserving graft function and achieving successful outcomes.

1. INTRODUCTION

Kidney transplantation remains the treatment of choice for patients with end-stage renal disease (ESRD), offering superior survival and quality of life compared to long-term dialysis. Ureteric stents are routinely placed during renal transplant surgery to prevent ureteral complications, particularly at the ureteroneocystostomy site [1]. While beneficial, these stents are temporary and require timely removal,

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typically within 4–6 weeks postoperatively. Neglected ureteral stents, especially in transplant recipients, pose a significant risk for encrustation, infection, obstruction, and ultimately graft dysfunction or loss [2].

Management of stent-related complications in renal transplant patients is complex, given the anatomical challenges of the pelvic location of the graft, altered vascular and ureteric anatomy, and the immunosuppressed status of the patient. Here, we report a case of a severely encrusted and neglected ureteric stent in a renal transplant recipient, complicated by sepsis and graft dysfunction, successfully managed through a staged surgical approach. This case highlights the surgical and endourological challenges involved in managing such complications and underscores the importance of timely surveillance and intervention in post-transplant care.

2. CASE PRESENTATION

A 30-year-old man with end-stage renal failure underwent a living-donor kidney transplant, at Hospital Al-Sultan Abdullah (HASA), a teaching hospital at Universiti Teknologi MARA (UiTM) Puncak Alam. The transplant surgery proceeded uneventfully, and a double-J ureteric stent was placed at the anastomosis between the graft ureter and the bladder. The patient was discharged in stable condition, but failed to return for the scheduled stent removal.

Several months later, during routine follow-up, a rising serum creatinine level was noted. Renal ultrasonography revealed graft hydronephrosis, and a non-contrast CT scan showed a severely encrusted ureteric stent with associated graft hydroureteronephrosis (Figure 1). An initial attempt of stent removal under local anesthesia was unsuccessful (Figure 2). A subsequent attempt under general anesthesia using flexible ureteroscopy also failed due to heavy encrustation. A tandem stent was inserted as a temporary measure (Figure 3).

Fig. 1. Non-contrast CT scan demonstrating hydronephrosis of the graft kidney with an encrusted ureteric stent.

Source: Muhammad Fairuz Shah Abd Karim et al. (2026)

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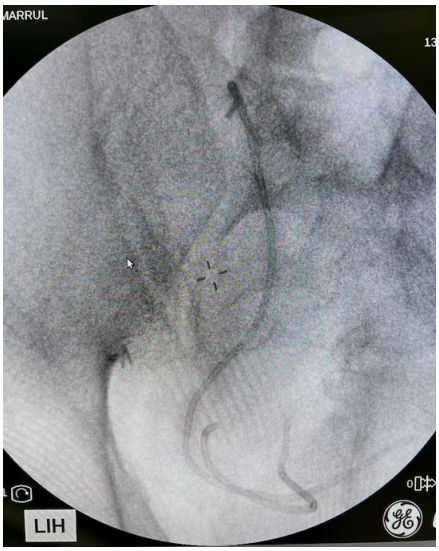

Fig. 2. Retained stent fragment that could not be removed intraoperatively

Source: Muhammad Fairuz Shah Abd Karim et al. (2026)

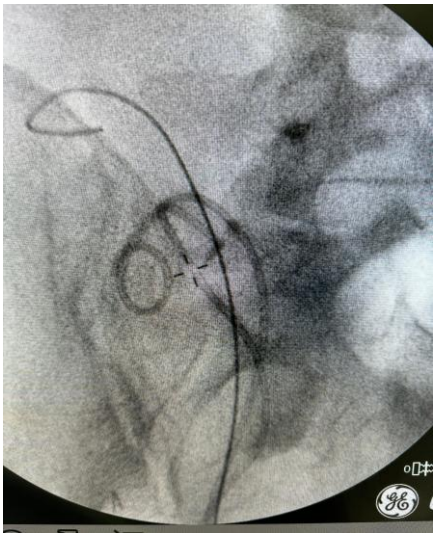

Fig. 3. Intraoperative image showing tandem stent insertion into the graft kidney

Source: Muhammad Fairuz Shah Abd Karim et al. (2026)

During a later surgical attempt, the encrusted stent fractured into small segments, leading to septic shock and hemodynamic instability (Figure 4). A percutaneous nephrostomy was urgently inserted to decompress the graft, and the patient was stabilized in the intensive care setting. Once recovered, he underwent endoscopic combined intrarenal surgery (ECIRS), which allowed successful removal of all retained stent fragments.

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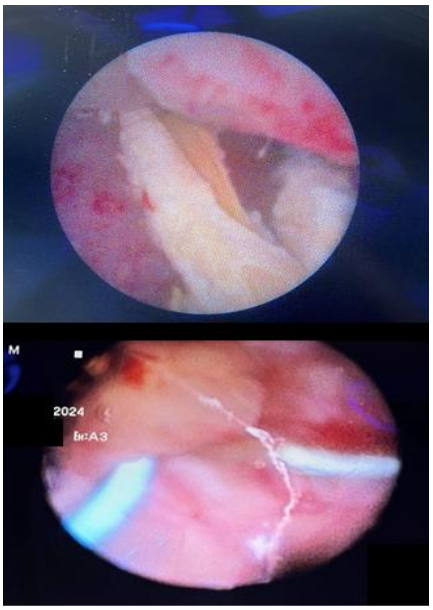

Fig. 4. Intraoperative image showing an encrusted ureteric stent. Cystoscopic view demonstrating tandem stents at the neoureterocystostomy site

Source: Muhammad Fairuz Shah Abd Karim et al. (2026)

Intraoperative nephrostogram revealed a distal ureteric stricture at the ureteroneocystostomy. After further stabilization and recovery, the patient underwent definitive ureteric reconstruction using a Boari's flap. At follow-up, the patient remained stable with no further signs of obstruction or infection. Repeat CT KUB imaging showed resolution of hydronephrosis, and his renal function remained stable with an acceptable estimated glomerular filtration rate (eGFR) and serum creatinine.

3. DISCUSSION

Ureteric stenting during renal transplantation is a common practice aimed at minimizing the incidence of ureteral leaks and strictures [3]. However, delayed removal or neglect of these stents can lead to significant complications. In this case, a young renal transplant recipient defaulted follow-up for stent removal, leading to a cascade of complications, including stent encrustation, graft hydronephrosis, and ultimately septicemia.

The extraperitoneal placement of the renal allograft in the iliac fossa poses unique anatomical and surgical challenges. Unlike native kidneys located in the retroperitoneum, the transplanted kidney resides in a superficial pelvic location, which limits surgical access and complicates interventions, especially when dealing with distal ureteral complications [4]. Moreover, the vascular supply and ureter of the transplanted kidney are derived from donor anatomy, which may introduce further variability and risk during subsequent surgeries.

Accessing the transplant ureter via retrograde approach can be technically demanding. The ureteroneocystostomy, often located on the anterolateral wall of the bladder, may be difficult to cannulate, particularly in the presence of inflammation, strictures, or significant encrustation [5]. In our case, initial attempts at retrograde stent removal via flexible ureteroscopy under general anesthesia were unsuccessful, necessitating the insertion of a tandem stent as a temporizing measure.

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The risk of graft injury and subsequent graft loss increases with each surgical intervention [6]. Renal transplant recipients on immunosuppressive therapy, such as Tacrolimus, are at higher risk of developing urosepsis, particularly during surgical procedures, due to their impaired immune response [7]. Our patient developed hemodynamic instability and sepsis following stent fragmentation during attempted removal, requiring urgent nephrostomy drainage of the graft and aggressive supportive care.

Ultimately, endoscopic combined intrarenal surgery (ECIRS) facilitated complete clearance of the encrusted stent and its fragments. However, a persistent distal ureteric stricture necessitated reconstructive surgery via Boari's flap to restore urinary continuity [8]. This staged approach emphasizes the importance of individualized management and prompt recognition of complications in renal transplant recipients.

Several preventive measures are needed to avoid the occurrence of neglected ureteric stents, particularly in high-risk groups such as renal transplant recipients. In response to this case, we are currently developing a number of strategies aimed at improving stent tracking and patient compliance. These include the creation of a stent registry system, providing clear and documented reminders to patients at the time of discharge regarding the importance and timing of stent removal, and reinforcing this information during outpatient follow-up visits. These steps are intended to reduce the risk of stent-related complications and improve long-term outcomes, especially in vulnerable transplant populations.

4. CONCLUSION

This case illustrates the complex clinical, anatomical, and surgical challenges involved in managing a neglected and encrusted ureteric stent in a renal transplant recipient. Delayed removal of transplant ureteric stents can result in serious complications, including obstruction, infection, and potential graft loss. When complications do arise, a carefully planned and staged approach is essential to preserve graft function and optimize patient outcomes.

5. PATIENT CONSENT

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. The patient was informed that all reasonable efforts would be made to protect their identity and confidentiality, and consented to the publication of the clinical information contained in this manuscript.

6. FUNDING

No funding was received for the preparation, writing, or publication of this case report.

7. CONFLICT OF INTEREST

Authors declare none.

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9. GENERATIVE A.I DISCLOSURE STATEMENT

No generative A.I tools were used.

10. AUTHORS CONTRIBUTIONS

Muhammad Fairuz Shah Bin Abd Karim was the primary author responsible for the conception, drafting, and revision of the manuscript. Ahmad Nazran Fadzli contributed to the clinical management of the case and assisted in manuscript editing. Shanggar Kuppusamy, Norman Dublin and Azad Hassan Abdul Razack provided surgical expertise and critical review of the manuscript.

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