Liquefaction of Renal Allograft: An Unprecedented Complication in Transplantation Medicine

Dr S. J. Arain, Mr A. Morrell

Background

Renal transplantation is the preferred treatment for end-stage renal disease (ESRD), significantly improving quality of life and survival. However, renal allograft failure can occur, requiring careful management. Although interventions like dialysis reinitiation, immunosuppression management, and transplantectomy are commonly used, cases of allograft liquefaction are extremely rare [1, 2].

Management of failed allografts is complex, especially when stopping immunosuppression, which can trigger graft intolerance syndrome. Symptoms resemble infection (fever, flu-like symptoms, haematuria, graft tenderness) and usually occur within the first year of dialysis reinitiation [3]. Risk factors include donor age, history of rejection, and shorter graft survival. Studies have shown increased infection rates and mortality in patients continuing immunosuppression post-graft failure, highlighting significant risks of complications [3, 4].

Case Presentation

A 52-year-old Caucasian female with a complex medical history presented with a unique complication following renal transplantation. Her medical background included stage 5 chronic kidney disease (CKD) due to reflux nephropathy necessitating haemodialysis, non-ST-segment elevation myocardial infarction (NSTEMI) treated with angioplasty, hypertrophic cardiomyopathy with mild left ventricular systolic dysfunction (LVSD), atrial fibrillation (AF) and an implantable cardioverter-defibrillator (ICD), as well as a history of cardiac arrest resulting in hypoxic brain injury. Furthermore, she underwent a Hartmann's procedure for perforated diverticulum and experienced amiodarone-induced thyroid deficiency.

The patient underwent renal transplantation in 2019. However, three weeks later, she began experiencing a decline in renal function. Another three weeks later, she presented with worsening renal function and abdominal pain localised to the transplant site. Despite on-going haemodialysis for poor renal function, her condition continued to deteriorate, culminating in recurrent admissions marked by fever, abdominal pain, and vomiting.

Initial ultrasound imaging revealed an avascular, oedematous kidney with evidence of infection, including urothelial thickening (Figures 1). Follow-up ultrasound imaging demonstrated early stages of breakdown with the transplant encapsulated by a fluid collection containing debris (Figure 2). Subsequent computed tomography (CT) scans demonstrated complete breakdown and liquefaction of the transplanted kidney in the right iliac fossa (Figure 3). Efforts to manage the complication included ultrasound-guided aspiration and drainage procedures, with subsequent follow-up indicating a persistent but diminishing fluid collection encapsulating the parenchyma (Figure 4).

Conclusions

This case represents a rare occurrence of liquefaction of a transplanted kidney following renal transplantation. Despite extensive literature on graft failure management, instances of complete breakdown and liquefaction of the allograft are scarcely documented. The management of such cases necessitates a multidisciplinary approach, considering factors such as timing of dialysis reinitiation, immunosuppression management, and the potential need for transplantectomy.

While existing literature offers insights into the challenges associated with failed renal allografts, further research is warranted to elucidate the pathophysiology and optimal management strategies for unique complications such as graft liquefaction. This case underscores the importance of vigilance in monitoring transplant recipients for uncommon complications and the need for individualised treatment approaches in complex clinical scenarios.

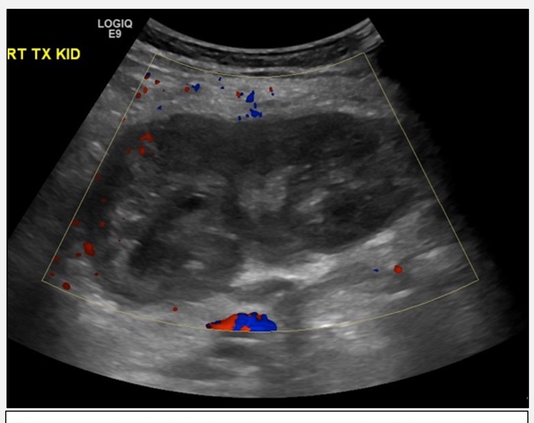

Figure 1. Initial ultrasound: Right iliac fossa transplant kidney, devoid of blood flow and oedematous.

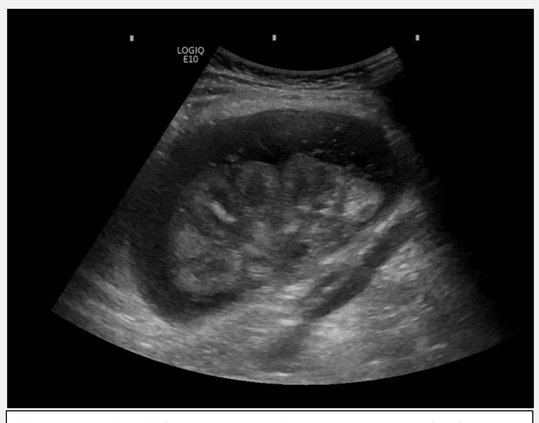

Figure 2. Ultrasound one month later: Shallow fluid collection containing debris encasing the transplant kidney.

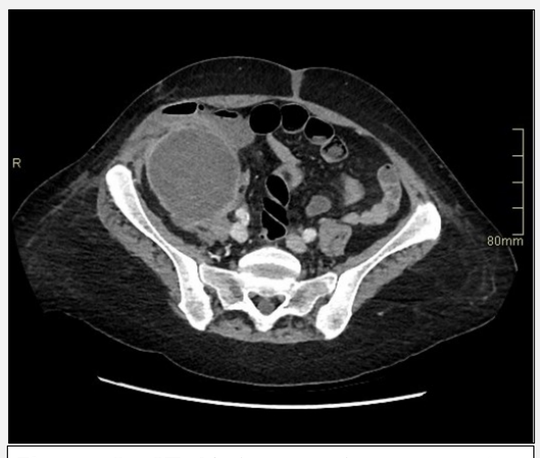

Figure 3. CT Abdomen demonstrating transplant kidney breakdown and liquefaction.
(a) Fluid collection increase.

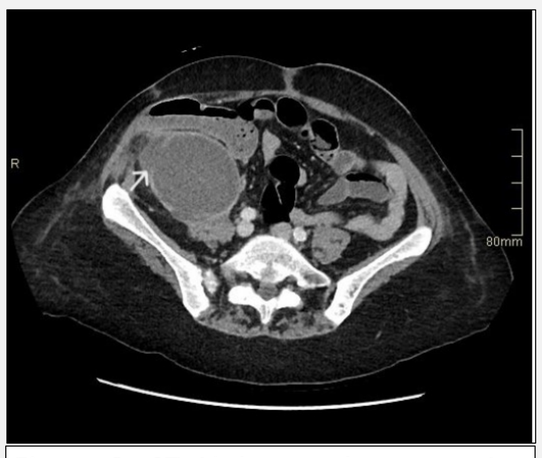

Figure 3. CT Abdomen demonstrating transplant kidney breakdown and liquefaction.
(b) Wall degradation (arrow).

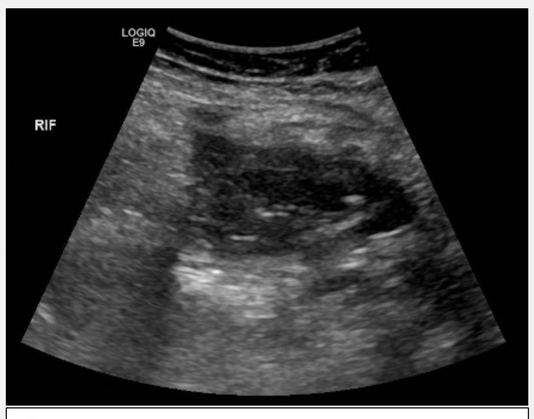

Figure 4. Post-drainage ultrasound.
(a) Longitudinal section - remnant complex fluid collection.

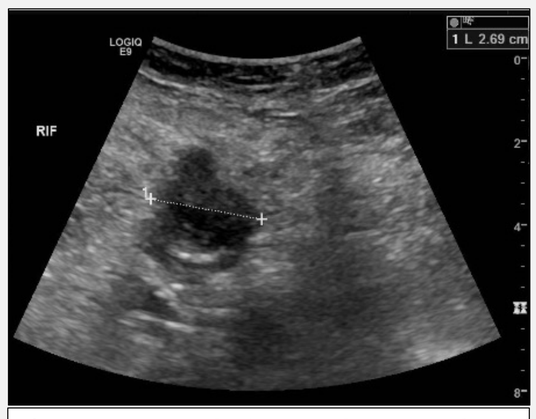

Figure 4. Post-drainage ultrasound.
(b) Transverse section - remnant complex fluid collection.

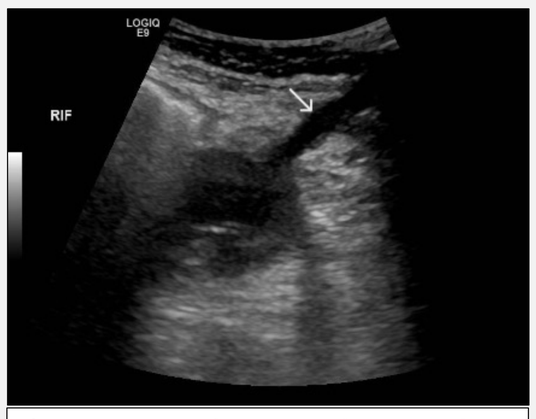

Figure 4. Post-drainage ultrasound.
(c) Drain track (arrow) from the remnant complex fluid collection.

References:

1. Pham, P.-T. (2015) 'Management of patients with a failed kidney transplant: Dialysis reinitiation, immunosuppression weaning, and transplantectomy', World Journal of Nephrology, 4(2), p. 148. doi:10.5527/wjn.v4.i2.148.
2. Pham, Phuong-Thu and Pham, Phuong-Chi (2011) 'Immunosuppressive management of dialysis patients with recently failed transplants', Seminars in Dialysis, 24(3), pp. 307–313. doi:10.1111/j.1525-139x.2011.00864.x.
3. Fiorentino, M. et al. (2020) 'Management of patients with a failed kidney transplant: What should we do?', Clinical Kidney Journal, 14(1), pp. 98–106. doi:10.1093/ckj/sfaa094.
4. Smak Gregoor, P. et al. (2001) 'Immunosuppression should be stopped in patients with renal allograft failure', Clinical Transplantation, 15(6), pp. 397–401. doi:10.1034/j.1399-0012.2001.150606.x.