

## Challenges and complications in the diagnosis and treatment of arteriovenous fistula following renal allograft biopsy

Marija Bukvić<sup>1</sup>, Marija Ćorić<sup>1</sup>, Tomislav Brajković<sup>1</sup>, Sven Želalić, MD<sup>2</sup>, Vinko Vidjak, MD, PhD<sup>1, 2</sup>

1 School of Medicine, University of Zagreb, Zagreb, Croatia

2 Department of Radiology, University Hospital Merkur, Zagreb, Croatia

### Keywords:

arteriovenous fistula, endovascular procedure, kidney transplantation

### Background:

A renal allograft biopsy is the gold standard diagnostic method for evaluating the extent of acute and chronic renal transplant dysfunction, offering vital diagnostic and prognostic insights. A recognized post-procedural complication is the formation of an arteriovenous fistula (AVF).

### Case presentation:

A 53-year-old male, who had undergone a simultaneous pancreas-kidney transplant six years ago due to diabetic end-stage kidney disease, was admitted to the hospital after presenting at the emergency department with symptoms of fever, dysuria, and a deterioration in kidney allograft function. The patient had undergone a kidney allograft biopsy two days earlier. Upon admission, serum creatinine was 293  $\mu\text{mol/L}$ . He was administered broad-spectrum parenteral antibiotics which rapidly improved his symptoms. However, allograft dysfunction only partially improved, with creatinine levels of 180  $\mu\text{mol/L}$ . Ultrasound showed a hemodynamically significant AVF in the upper pole of the graft, which was confirmed on MSCT angiography. His condition worsened, showing signs of high-output heart failure. After stabilization of his clinical status, endovascular closure of the AVF was attempted, resulting in an iatrogenic dissection of the allograft artery. The procedure was aborted. MSCT angiography a week later showed no signs of dissection, and a second attempt at endovascular treatment was recommended, as kidney function was significantly affected by the „steal“ syndrome from the AVF. The final procedure was performed two weeks later. Two microvascular occluders and four detachable coils were placed in the feeding artery. Post-embolization angiography confirmed the absence of flow in the fistula. Graft function subsequently improved, reaching the previous baseline creatinine.

### Conclusion:

The case demonstrates the complexity and challenges associated with renal allograft biopsies. AVFs can have a severe impact on kidney function. However, they can be effectively treated with endovascular procedures, using microvascular plugs as the method of choice, and coils or liquid agents as alternatives.