

## Letters

### Vascular access for haemodialysis in extreme situations: surgically placed inferior vena cava catheter

Sir,

As the dialysis patient population increases, the so-called 'terminal access problems' become more common. Here we report an extreme vascular access problem, which was successfully solved with the surgical placement of an inferior vena cava catheter.

A 64-year-old female patient with longstanding end-stage renal disease developed a huge haematoma of the left groin and thigh after a haemodialysis session via a femoro-femoral loop vascular access graft, which subsequently thrombosed. The patient over the last 6 years suffered from peritoneal mesothelioma with consequent ascites. She had a history of repeated procedures for vascular access on both arms, as well as several attempts for placement of central venous catheters in the past, which finally resulted in chronic thrombosis of the superior vena cava. After that, she had a femoro-femoral arterio-venous PTFE graft on her right groin which failed after 18 months because of thrombosis of the external iliac vein. Finally, she was offered a left femoro-femoral biograft (SynerGraft vascular graft; CryoLife Europa Ltd, Hampshire, UK), 6 months before presentation with it thrombosed.

At that stage we had to provide the patient with an adequate vascular access for immediate haemodialysis, as peritoneal dialysis was not an option because of the abdominal pathology. Emergency abdominal CT scan with intravenous contrast material revealed that both the left iliac vein and inferior vena cava were patent. As serum potassium was rising, the patient was taken to the operating theatre in order to establish a venous line for vascular access. Under general anaesthesia and through a right lateral abdominal incision, the inferior vena cava was approached via an extra-peritoneal route. A permanent double-lumen cuffed catheter for haemodialysis (Dual Tesio10F; Medcomp, Harleysville, PA, USA) was inserted at the lower portion of the vein and its tip was advanced up to the level of the hepatic veins. The catheter penetrating the lateral abdominal wall came out in the anterior axillary line at the level of umbilicus. The whole procedure lasted ~40 min. The patient had an uneventful recovery and after 3 h she was able to undergo haemodialysis. The delivered dialysis dose, as estimated via the Kt/V index, was over the acceptable limits recommended by DOQI (dp Kt/V = 1.25) [1]. Six months later she is doing quite well and the venous catheter is still functioning properly.

The number of patients requiring tertiary complex vascular access procedures is rising, as the dialysis patient population expands and dialysis-dependent life expectancy increases [2]. In terminal access problems, where all possible vascular access solutions seem to be exhausted and the patient's life is threatened, the vascular surgeon/nephrologist have to make any effort in order to provide their patient an adequate access for haemodialysis. Several proposals have already been described with regard to the upper limbs and

central veins [2,3]. However, with widespread usage of central venous catheters for dialysis in the modern era, chronic thrombosis of these veins is not rare. Under these circumstances every attempt for vascular access should relay on the system of inferior vena cava. Femoro-femoral AV vascular grafts seem to be the preferred solution, as femoral haemodialysis catheters frequently result in thrombosis of the ilio-femoral venous axis [4]. When this option does not exist any more, the only possible solution seems to be the use of the inferior vena cava itself for dialysis access. There are some reports of direct translumbar catheterization of the vein, but they require an experienced radiology team as well as an adequately equipped angiographic suite [5,6]. Furthermore, most authors recommend the advance of a guide wire through the femoral vein initially, which sometimes, as in the case of our patient, is not possible.

The surgical approach of the inferior vena cava allows the insertion, positioning and securing of the catheter under direct vision. The catheter comes out of the abdominal wall in a convenient position for the patient and the medical staff who will use it, and its dislodgment is quite difficult. In our opinion, the surgically placed inferior vena cava catheter for haemodialysis offers an acceptable option not only for immediate, but also for long-term vascular access in selected cases, when all other possible solutions have been exhausted.

*Conflict of interest statement.* None declared.

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