

DRIL Procedure For Hemodialysis Access-Induced Lower Limb Ischemia

Clinical Cases

Jan Tordoir

MUMC, Maastricht, Netherlands, The

Introduction and Objectives

Hemodialysis access-induced distal ischemia (HAIDI) is a less frequent complication of brachial artery-based arteriovenous fistulas (AVF) in the upper extremity. Distal ischemia in the lower extremity is even more rare and mostly associated with the use of transposed superficial femoral vein AVFs. In this report we describe a patient with HAIDI, complicating a lower limb AVF, which was successfully treated by a distal revascularisation and interval ligation (DRIL) procedure.

Material and Methods

A 48 years old non-diabetic female patient with end-stage renal disease due to polycystic kidney disease, had intermittent hemodialysis (HD) treatment for over a period of 10 years. Multiple angio accesses and central vein catheters in the upper extremity had failed. In addition, bilateral central vein obstruction, not eligible for endovascular treatment, precluded the placement of arteriovenous grafts in the upper extremity.

Because of inability for peritoneal dialysis and failed renal transplants, the decision to perform a lower limb access was taken. A right saphenous vein and subsequently superficial femoral vein transposition failed after 24 months of use. The contralateral saphenous vein was too small for vascular access creation and it was decided to perform a transposition of the superficial femoral vein at the left thigh in a straight subcutaneous tunnel with anastomosis to the popliteal artery above the knee. Within 6 months after operation, the patient complained of progressive pain in the foot, ultimately leading to rest pain. AVF flow reduction by banding (flow reduction from 1428 to 694 ml/min) led to temporary relief of complaints and an increase in the ankle-brachial index (ABI). Rebanding was done twice without long-lasting results. Finally, it was decided to perform a DRIL procedure. An ovine graft (Omniflow; Bionova) was interposed between the proximal superficial femoral artery with the distal anastomosis to the infragenual popliteal artery. Interval ligation was performed 2 cm proximal of the distal anastomosis. Completion angiography and ABI measurement were peroperatively performed to measure outcome.

Results

Rest pain disappeared immediately after operation with a raise in the ABI (from 0.26 to 0.74). The access flow was similar before and after operation (pre 1454 ml/min; post 1246 ml/min). The AVF was needed one day after operation without problems and continued over the next months. The vascular access and bypass remained patent for a follow up of 16 months.

Conclusion

The DRIL procedure may be an ultimate solution to treat disabling ischemia in the lower extremity, induced by transposed femoral vein AVFs.