

Profunda femoris arteriovenous fistula: clinical and radiological features

A 61-year-old man presented with a 3-day history of progressive swelling and pain in the right lower limb in September 2010. A motor vehicle injury 39 years earlier had caused a head injury and right femoral shaft fracture, which resulted in a residual right hemiparesis. Subsequently he suffered from recurrent falls and 14 years ago he sustained a right neck of femur fracture, which was surgically fixed

with a dynamic hip screw (DHS). However, there was no history of falls in the months prior to the presentation and there was no other significant medical history. Physical examination revealed ecchymosis on the medial aspect of the right thigh associated with significant swelling. There was pitting oedema up to the right knee, but there were no other neurovascular signs. A bruit was audible in the right groin region. An arteriovenous fistula (AVF) was suspected based on these clinical features.

Computed tomographic angiography (CTA) confirmed the clinical diagnosis; the scout film revealed the DHS (Fig 1, blue arrow), with screws fixated over the section of callous bone, all of which were consistent with the history of femoral shaft fracture. The CTA revealed a profunda femoris artery (PFA) to femoral vein (FV) AVF (Fig 2, yellow inset, yellow arrow). The image artefact was caused by the tip of the second screw for the DHS, which was



FIG 1. Scout film of the right hip and femur showing evidence of previous femoral fractures and dynamic hip screws



FIG 2. Computed tomographic angiogram of the right femoral region demonstrating a profunda femoris arteriovenous fistula communicating with the femoral vein and its close relation to the screw tip. The metal screw tip can be clearly distinguished from the associated bone/osteophytes in the bone window (blue inset)

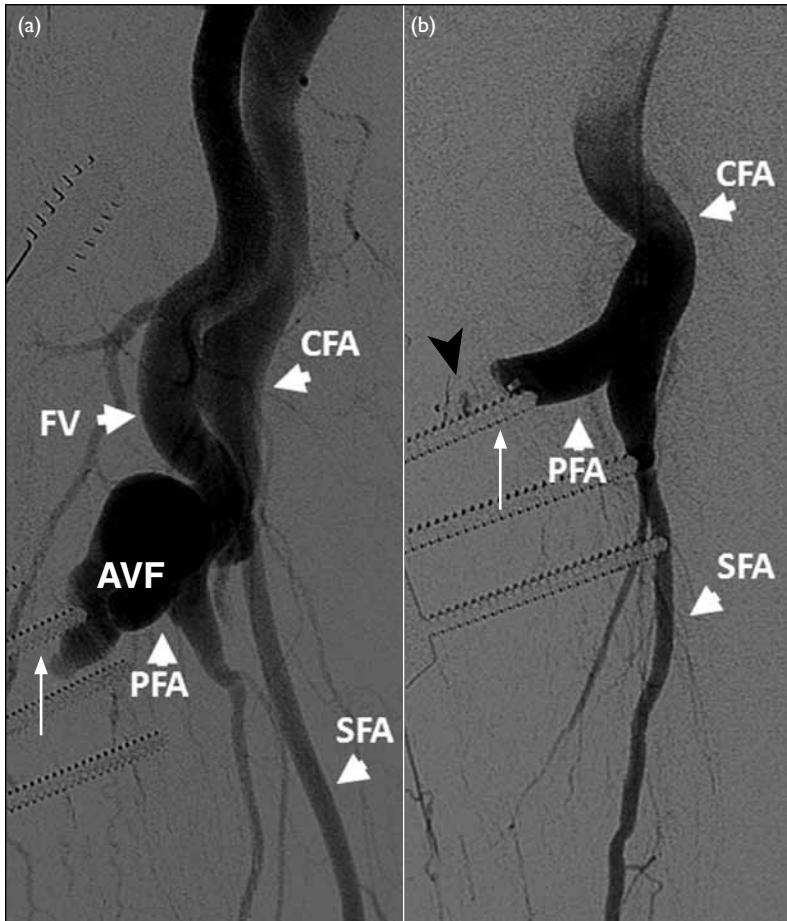


FIG 3. Digital subtraction angiograms demonstrating (a) the close relation of a screw to the profunda femoris arteriovenous fistula, and (b) exclusion of arteriovenous fistula by an Amplatzer vascular plug
CFA denotes common femoral artery, FV femoral vein, AVF arteriovenous fistula, PFA profunda femoris artery, and SFA superficial femoral artery

associated with bone osteophytes in close contact with the AVF (Fig 2, yellow inset, blue arrow). There was a tortuous aneurysmal dilatation of the AVF in the proximal segment (Fig 2, white inset, white arrow).

The patient underwent endovascular closure of the AVF. Digital subtraction angiography was performed via an antegrade puncture of the right common femoral artery, which also demonstrated the AVF in close proximity to the second screw of the DHS (Fig 3a, white long arrow). Exclusion of the AVF was achieved by deployment of an Amplatzer vascular plug (AVP) [Fig 3b, black arrowhead]. This led to prompt resolution of his symptoms.

Given the proximity of the AVF to the screws used for the DHS, and no history of any recent injury, the aetiology of his AVF could have been iatrogenic (from the DHS surgery). Delayed presentation of AVF is a rare but recognised complication of hip surgery¹ that may be revealed by a thorough physical examination. The AVP has been increasingly applied during endovascular treatment involving emergency embolisation procedures, including the occlusion of large arteriovenous fistulae.² This case demonstrated the clinical and radiological features of a possible delayed presentation of an iatrogenic PFA-FV AVF, that was successfully managed using endovascular techniques.

Regent Lee, MB, BS, MS

Email: regent.lee@cardiov.ox.ac.uk

Department of Vascular Surgery, Level 6, West Wing, John Radcliffe Hospital, Headington, Oxford OX39DU, United Kingdom

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