

Posterior tibial artery false aneurysm as an early complication after fogarty embolectomy

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Abstract

Pseudoaneurysm is a possible complication after Fogarty balloon catheter thrombectomy because of intimal linear or full-thickness tears or disruption of the vessel wall. A 50-year-old woman was admitted with acute severe ischaemia of the lower extremities due to bilateral embolic common femoral artery occlusion so an embolectomy was performed under local anaesthetics. On the third post-operative day the patient complained of increasingly severe pain in her left calf with reduced dorsiflexion. A pseudoaneurysm was diagnosed and through a medial approach it was opened and the posterior tibial artery was reconstructed by a great saphenous vein autograft interposition.

Key words: infrapopliteal pseudoaneurysm, posterior tibial artery.

Introduction

Pseudoaneurysm is a possible complication after Fogarty balloon catheter thrombectomy because of intimal linear or full-thickness tears or disruption of the vessel wall [1]. Therefore surgical or endovascular aneurysm repair is mandatory. Aneurysm repair in infrapopliteal arteries can be particularly challenging due to the small size of the involved vessels so that ligation may sometimes be the only chance. In this short report we describe a patient with an early pseudoaneurysm of the posterior tibial artery consequent to femoral embolectomy injury treated by resection and autologous venous graft reconstruction.

Case report

A 50-year-old woman with smoking habitus was admitted with acute severe ischaemia of the lower extremities. Atrial fibrillation was confirmed on electrocardiogram and no *plus* images were detected in echocardiography. No past diseases were detected in her medical history. A Color Flow Duplex ultrasound study showed a post-obstructive flow in both popliteal arteries so bilateral femoral embolectomies were performed under local anaesthetics. A 3 and 4 French Fogarty catheter were passed down to the ankle with minimal manipulation and a good flow was restored bilaterally. On the third post-operative day the patient complained of increasingly severe pain in her left calf with reduced dorsiflexion. She was unable to walk due to the pain and on examination she had a swollen left calf with a very tender lower gastrocnemius muscle and positive Homan's test. On post-operative day four a pulsatile haematoma developed in the left leg and a pseudoaneurysm was proven by Color Flow Duplex and



Figure 1. CT scan of the posterior tibial artery pseudoaneurysm

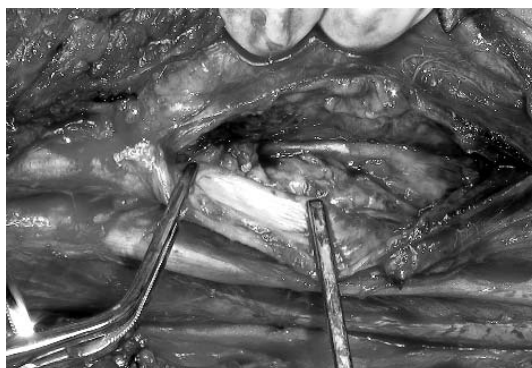


Figure 2. Intraoperative picture showing the 3-cm-long linear tear in the arterial wall leading to pseudoaneurysm development

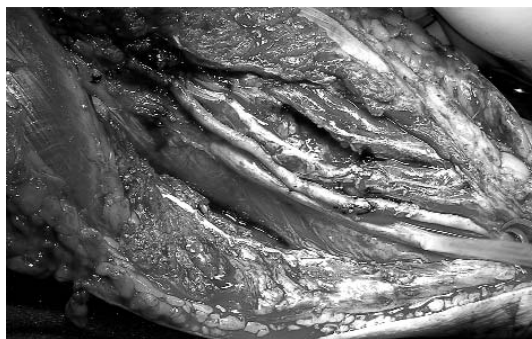


Figure 3. Surgical reconstruction of the posterior tibial artery by autologous venous graft interposition

confirmed by CT scans. The inflow and outflow arterial tracts of the aneurysm were identified and its diameter was measured at 2.7 cm to extend for 6 cm (Figure 1). Through the medial approach the aneurysm was opened and the posterior tibial artery was reconstructed with two end-to-end anastomoses with 6/0 polypropylene running sutures by interposition of a great saphenous vein autograft, thereby achieving good distal reperfusion (Figure 2 and Figure 3). Thrombophilia and autoimmune disease screening tests showed an increased blood homocysteine level (18.8 $\mu\text{mol/l}$, NV mean 6.6, range 3.4-10.1 $\mu\text{mol/l}$) and the patient started folate administration.

Discussion

Embolectomy is a well-established procedure for acute ischaemia of the lower limb. This procedure can be compromised by iatrogenic intimal damage from the embolectomy balloon with false aneurysm or arteriovenous fistula development, avulsion of atherosclerotic plaques, etc. Pseudoaneurysm complication has been previously described in as many as 6% of embolectomy procedures even if the exact incidence is difficult to define because of the

relatively uncommon occurrence. Moreover, an early unrecognized pseudoaneurysm occlusion could make the real incidence underestimated [2]. A gentle technique is necessary to avoid intimal damage during embolectomy, and selection of catheter size should be carefully considered [3]. Because of rare development of tibial pseudoaneurysms, a standard treatment has not been defined and the choice of the appropriate operative treatment is currently under debate. Different treatment options are available: excision of the aneurysm followed by reconstruction with a venous graft, embolization of the feeding vessels using a percutaneous technique, ligation of the artery proximally and distally and excision of the aneurysmal sac, only feasible if the blood supply to the foot is adequate. Moreover, endovascular procedures such as coil embolization, thrombin injection and stent deployment can sometimes be performed with minimal invasiveness and operative advantages such as protection of surrounding nerves and adjacent structures during repair and minimal blood loss [4, 5]. Nevertheless, endovascular procedures cannot be performed in every case because of the small size of vessels. To plan a surgical strategy, an accurate evaluation of the run-in, run-off and pedal arch patency is

necessary to avoid ischaemic complications: in the literature no differences are described between artery repair and ligation in terms of such distal complications when the surgical plan is adequate [6]. Bedford et al. demonstrated that one functional artery distal to the knee is sufficient for a proper blood supply to the toes if the pedal arch is patent, even though one or two arteries of the leg are occluded [7]. In pseudoaneurysms operative management is necessary because the weakening of the arterial wall predisposes to vessel rupture or occlusion. Moreover, pseudoaneurysm development may predispose to thrombosis and distal embolism. Commonly, therapeutic management of infrapopliteal pseudoaneurysm depends on the aneurysm's dimension. In our experience a 3 cm-long linear tear in the arterial wall was found and postoperative heparinization enhanced the development of a pseudoaneurysm that was clinically recognised and proven by angio-CT scans. This was the only report of embolectomy complication in our group over 30 years' experience. Aneurysmal dimension and extent prevented us from trying an endovascular or mini-invasive correction and surgical treatment was performed to relieve neighbouring structures from the compression exerted by the pulsating mass.

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