A Pseudoaneurysm Secondary to Fracturing of a Calcified Superficial Femoral Artery: An Unusual Cause of Lower Limb Swelling Following Colonic Anterior Resection

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A 79 year-old man presented four weeks following anterior resection with an acute swelling of his left lower limb. Duplex ultrasound and magnetic resonance angiography revealed a pseudoaneurysm of a heavily calcified SFA, but no venous thrombosis. At surgery, a pseudoaneurysm was isolated in a rigid SFA and a femoro-popliteal bypass performed. The pseudoaneurysm presumably resulted from fracturing of the calcified SFA during the previous admission. The case reinforces the importance of clinical examination and patient handling.

Keywords: Pseudoaneurysm; Superficial femoral artery; Arterial calcification; Fracture.

Introduction

Femoral artery pseudoaneurysms most commonly occur as a result of arterial puncture or anastomosis formation. Open and closed trauma, particularly those associated with femoral shaft fractures, are other common causes of superficial femoral artery (SFA) injury and pseudoaneurysm formation. Fracturing of calcified arteries due to trauma and balloon angioplasty is also a recognised cause of pseudoaneurysm formation. Closed SFA injuries are frequently missed, typically with delayed presentations of gross swelling and acute ischemia. We describe a patient who presented four weeks following colonic surgery with an acute limb swelling due to a large SFA pseudoaneurysm.

Case Report

A 79 year-old man presented as an emergency to the physicians with acute swelling of the left lower limb (Fig. 1). He had been discharged two weeks previously following an anterior resection for adenocarcinoma of the rectum. There was no history of arterial disease or lower limb trauma. D-dimer was markedly elevated. Therapeutic low molecular weight heparin was commenced with a presumptive diagnosis of acute deep vein thrombosis (DVT) and a duplex ultrasound was requested. This identified a femoral vein lumen obliterated by compression from a large aneurysm of the SFA, but no DVT. Repeat clinical examination revealed a large pulsatile swelling on the medial thigh, a reduced popliteal pulse and no foot pulses. No other aneurysms were identified. Magnetic resonance angiography confirmed a 10 cm pseudoaneurysm with evidence of recent haemorrhage (Fig. 2). The aneurysm was deemed unsuitable for endovascular intervention due to the relative separation of the distracted ends.

Emergency surgery was performed using groin and medial thigh approaches to gain control of the femoral and popliteal arteries and isolate the large pseudoaneurysm. The proximal and distal ends of the SFA at the sac edge were rigid due to heavy calcium deposition. Haematoma was evacuated from surrounding tissues and sac. The sac was plicated with a 2/0 polyglactin suture (Vicryl). The distracted ends were oversewn where suitable with 1/0 polypropylene sutures (Prolene). The long saphenous vein was thrombosed. An above knee 8 mm femoro-popliteal
polytetrafluoroethylene (PTFE) graft was placed posterior and separate from the aneurysm sac. Culture of operative wound swabs was negative.

Post-operative recovery was uneventful; the patient was able to walk at three days and was discharged at ten days. Repeat ultrasound examination revealed a patent graft and deep veins.

Discussion

Pseudoaneurysm formation of the SFA in the absence of major trauma or arterial intervention is unusual. Spontaneous pseudoaneurysms of the SFA have been reported in association with vasculitis, bone tumours and rupture of minor muscular branches.\(^1\)–\(^3\) MRA demonstrated considerable displacement of the separated SFA. Local repair, image guided sac occlusion and endovascular intervention with stent deployment, were not deemed appropriate.\(^4\),\(^5\) At surgery, the SFA ends were confirmed as widely separate and rigid.

Anterior resection requires limb elevation with flexion, abduction and external rotation at the hip. There was no report of the apparatus impinging on the medial thigh. However, calcification of the arterial wall pre-disposes to fracture following relatively minor trauma with potential for pseudoaneurysm formation.\(^6\) It is more likely that an undocumented impact to the medial thigh whilst the patient was under anaesthesia caused fracturing of the calcified, poorly compliant SFA resulting in perforation and pseudoaneurysm formation.

This case also re-enforces two important aspects of patient management. Firstly, the thorough examination the lower limb in cases of acute unilateral swelling to detect unusual and hazardous arterial disease. Secondly, careful patient handling whilst they have impaired protective responses to prevent arterial as well as venous injury.

References


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