Occlusion of the Femoral Artery Secondary to Osteochondroma

A. D. Fox, J. A. Michaels and D. W. R. Gray

Nuffield Department of Vascular Surgery, John Radcliffe Hospital, Headington, Oxford, U.K.

Introduction

Osteochondroma is the commonest benign tumour of bone. A variety of presentations relate to local pressure effects and impingement on adjacent tissues, but vascular complications are rare. Pseudoaneurysm formation has been reported previously.\(^1\)\(^2\) Compression, displacement and stenosis of the vertebral, brachial, anterior tibial and posterior tibial arteries have been described due to osteochondroma at other sites.\(^3\)\(^4\) Distal vessel occlusion has occurred due to embolisation of thrombus within a femoral pseudoaneurysm.\(^5\)

Complete occlusion of the femoral artery secondary to an osteochondroma of the distal femoral metaphysis has not been previously reported.

Case Report

A 20-year-old man presented with an 8-month history of left calf claudication at 800 yards and trophic changes in his left foot. The symptoms developed during the repetitive exercises involved in his bodybuilding training programme. He smoked 10 cigarettes per day and had stopped self-prescribing the anabolic steroid, clembutyl, one month earlier. He was otherwise fit and well with no history of trauma to his left leg or thigh.

Examination revealed trophic changes of the skin and nails of his left foot. There was a poorly defined, slightly tender swelling on the posteromedial aspect of his left distal thigh. There was no pulse palpable distal to his left femoral artery. All pulses were present on the right leg but reduced on the affected side (posterior tibial 0.61 and dorsalis pedis 0.27).

Plain radiography demonstrated a benign osteochondroma arising from the posteromedial aspect of the left femur. Magnetic resonance imaging confirmed the diagnosis and suggested the presence of a small overlying bursa relating to the area of tenderness. Intravenous digital subtraction angiography revealed a 3cm long occlusion of the superficial femoral artery.

Fig. 1. A transfemoral arteriogram demonstrating occlusion of the superficial femoral artery at the site of an osteochondroma (oc).

Please address all correspondence to: Mr A.D. Fox, Nuffield Department of Surgery, Oxford University, John Radcliffe Hospital, Oxford, OX3 9DU, U.K.
at the level of the adductor hiatus corresponding to the site of the osteochondroma (Fig. 1). There was three vessel run-off across the ankle and other vessels appeared to be of normal calibre.

The osteochondroma was removed through a medial approach to the base of the tumour. This allowed good access to the superficial femoral artery which was displaced behind the bony tumour and was occluded by well-organised thrombus. A short, reversed saphenous vein, bypass graft was inserted, using end to side anastomoses and 6/0 prolene. The ABPI improved to 0.83 in both vessels. He was discharged from hospital on day 5 and advised to partially weight-bear for 2 weeks. His recovery was uneventful and he was asymptomatic when reviewed after 6 weeks.

Discussion

Arterial occlusive disease of the lower extremities is unusual in young adults. Traumatic arterial injuries are perhaps the most common cause followed by premature atherosclerosis obliterans, thromboembolism, popliteal artery entrapment, Buerger’s disease, collagen vascular disease and Takayasu’s arteritis. Thromboembolic sources include the cardiomyopathies, endocarditis and ulcerative lesions identified in the suprarenal vascular tree.

Benign osteochondroma occasionally causes aneurysm or pseudoaneurysm of the femoral or popliteal arteries and may be associated with diminished or absent pedal pulses. Arterial occlusion is a rare complication of osteochondroma, although vertebral artery compression and second cervical nerve root irritation have been reported. Involvement of the brachial, anterior and posterior tibial arteries have also been described. Woolson et al. reported a case of anterior tibial artery occlusion in a 13-year-old boy as a thromboembolic complication of a superficial femoral artery pseudoaneurysm.

The recognition of arterial ischaemia in young people is often delayed. Calf claudication may have been attributed to muscle strain and buttock or thigh claudication to arthritis or sciatica. Hallett et al. studied 51 patients with an age range of 13 to 39 years. In 63% claudication was the presenting feature, 27% had rest pain, 6% ulceration and 4% evidence of microembolic disease.

Risk factors that may help in the diagnosis of arterial disease in this group include smoking, elevated cholesterol and a family history of premature cardiovascular disease. In the presence of these risk factors premature atherosclerosis should be suspected but in their absence, between the ages of 20 and 30, femoropopliteal entrapment is more likely.

The distal femoral metaphysis is a common site for the occurrence of osteochondromas. Since the superficial femoral artery gives off its genicular branches at the level of the adductor canal it is relatively immobile and may be subject to extrinsic compression at this site. Patients may present with local symptoms such as pain and swelling due to an overlying bursa, pressure or malignant change.

In retrospect, it is likely that the trophic changes seen in this case were probably microembolic, and that the onset of claudication marked the point at which the vessel occluded. Isolated occlusion of the superficial femoral artery due to osteochondroma at the adductor hiatus has not previously been described.

Vascular disease is rare in young people and the aforementioned signs and symptoms should alert the surgeon to exclude an extrinsic cause such as an osteochondroma.

References