CASE REPORT

A Persistent Sciatic Artery Aneurysm with an Associated Internal Iliac Artery Aneurysm

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Introduction

The sciatic artery is the axial artery of the lower limb, forming the dominant blood supply to the leg during early embryonic development. It normally involutes leaving only remnants in the mature arterial system. For it to remain in its entirety is rare. Known as a persistent sciatic artery (PSA), it is particularly susceptible to aneurysm formation. We report only the second case of a PSA associated with an internal iliac artery aneurysm.

Case Report

A 71-year-old man was referred with a 2-year history of left-sided sciatica. He had recently noticed that his left buttock had become pulsatile. He denied symptoms of intermittent claudication, but reported pain in his left calf and foot when sitting down. There was no past medical history of note other than long-standing treated hypertension.

On examination, there was a pulsatile left buttock mass. All lower limb pulses were present and there were no signs of ischaemia. Lower limb arteriography (Fig. 1) revealed a normal right-sided arterial system. On the left, however, the superficial femoral artery was small and terminated above the adductor hiatus. The internal iliac artery was hypertrophied and supplied a PSA which was itself hypertrophied and aneurysmal as it exited the pelvis through the sciatic foramen. This artery was in continuity with the popliteal artery and there was normal three-vessel runoff. A CT scan confirmed a thrombus-filled aneurysmal PSA with a maximum diameter of 4 cm (Fig. 2).

Surgical correction was performed in a two-stage operation. Firstly, in the supine position, an oblique lower abdominal incision was made and the left internal iliac artery identified via an extraperitoneal approach. The artery was found to be aneurysmal with a diameter of 1.5 cm. Both it and its branches were ligated proximally. A femoropopliteal bypass was then performed using a 6 mm Dacron graft, as no suitable vein was available. Secondly, in the right lateral decubitus position, an incision was made over the course of the aneurysm and the PSA exposed via a transgluteal approach. The artery was ligated distally and the aneurysmal sac opened. Two further feeder vessels were identified and oversewn from within the sac. The patient made an uncomplicated recovery.

Discussion

During development, the axial lower limb artery arises from the dorsal root of the umbilical artery, coursing along the dorsal surface of the thigh and knee and giving rise to primitive posterior tibial and peroneal branches. As the femoral artery develops and becomes dominant, the axial artery involutes. Its remnants can be found in the inferior gluteal, popliteal and peroneal arteries. Should the femoral system fail to develop, or the axial system fail to involute, the sciatic artery will persist. Two types of PSA have been recognised: a “complete” form in which the PSA is the dominant supply to the leg, often with a hypoplastic superficial femoral artery; and an “incomplete” form in which there is hypoplasia of the PSA in the thigh with a dominant femoral system. In our patient, the PSA was complete.

In 1994, a review of the world literature identified 167 cases of PSA with aneurysm formation in 77 (46%).
Persistent Sciatic Artery Aneurysm

Fig. 1. Lower limb arteriography showing a left-sided PSA. (a) The left internal iliac artery is prominent and communicates with an aneurysmal PSA. (b) The left superficial femoral artery is small and terminates above the adductor hiatus. (c) The PSA is now clearly visible coursing down the thigh. It will eventually communicate with the popliteal artery.

Since then a further 17 PSA aneurysms have been reported, including ours. The high incidence of aneurysm formation is most probably due to repeated external trauma, since the PSA occupies a particularly vulnerable position.\textsuperscript{2,4} Other causes postulated include accelerated atherosclerosis and a congenital lack of arterial wall elastic tissue.\textsuperscript{3} In our case, long-standing hypertension may well have contributed, although generalised aneurysmal disease was not present.

PSA aneurysms may be asymptomatic. Al-
by excision and by embolisation. Vascular reconstruction has been achieved by femoropopliteal bypass, iliopopliteal transobturator bypass or interposition grafting. This last method is controversial since there is a theoretical risk of external graft compression. In acute cases, limb amputation may be the only option.

We recommend that a PSA aneurysm is excluded both by proximal ligation in the pelvis and distal ligation. The aneurysmal sac should be explored since there may be additional feeder vessels. Revascularisation, if necessary, should be achieved by either femoropopliteal or iliopopliteal transobturator bypass.

Fig. 2. CT scan showing aneurysmal sac of PSA deep to gluteal muscles.

Alternatively, they may present with lower limb ischaemia (typically on sitting down), a gluteal mass (often pulsatile), gluteal pain or sciatica. Complications include acute ischaemia due to thrombus formation and distal embolisation. Rupture has not been reported although there has been one case of an associated ruptured internal iliac artery aneurysm. Our patient would seem to be only the second reported case of an associated internal iliac artery aneurysm.

The differential diagnosis of a pulsatile buttock mass includes aneurysms of the gluteal vessels and arteriovenous fistulas. Arteriography is essential for diagnosis and for assessing the associated arterial anatomy. CT or MRI scanning can best determine the true size of the aneurysm and its proximity to surrounding structures.

Treatment involves exclusion of the aneurysm and, if of the complete type, revascularisation of the lower limb. Aneurysms have been treated by ligation, by excision and by embolisation. Vascular reconstruction has been achieved by femoropopliteal bypass, iliopopliteal transobturator bypass or interposition grafting. This last method is controversial since there is a theoretical risk of external graft compression. In acute cases, limb amputation may be the only option.

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References


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