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SHORT REPORT

Persistent Sciatic Artery Aneurysm Treated by Exclusion and Obturator Bypass

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Persistent sciatic artery (PSA) aneurysms occur infrequently and present a diagnostic and therapeutic challenge. The PSA is often associated with a hypoplastic femoral system meaning revascularisation is necessary in addition to exclusion of the aneurysm. We present a case of a PSA aneurysm presenting with symptoms of sciatic nerve compression, successfully treated with exclusion and revascularisation with an obturator bypass. Obturator bypass of a PSA aneurysm has been reported once, in that case to treat distal ischaemic symptoms. The aetiology, presentation and management of PSA aneurysms are discussed, concluding that obturator bypass is a satisfactory option for PSA aneurysm associated with a hypoplastic femoral system.

Keywords: Aneurysm; Lower extremity; Blood vessel prosthesis implantation.

Case Report

A 53 year old woman presented with a 6 month history of sensory impairment of the toes of the left foot and intermittent weakness and a dragging sensation of the left foot on walking. The patient also complained of pain in the left buttock. There were no risk factors for vascular disease. Examination of the left lower limb pulses revealed a reduced femoral, normal popliteal and reduced volume pedal pulses. The right lower limb pulses were of normal volume. The lower limbs displayed normal power. Straight leg raising was limited to 80° by pain in the left buttock. There was diminished light touch and pinprick sensation over the sole of the right foot.

An MRI of the lumbar spine (Fig. 1) demonstrated an aneurysm in the buttock adjacent to the sciatic nerve, suggesting the symptoms were a result of compression of the nerve. Angiography (Fig. 2) confirmed an aneurysm of a left PSA. The PSA continued as the popliteal artery. It was associated

with a hypoplastic femoral artery, which was not continuous with the popliteal artery.

Operative Technique

The patient was treated with exclusion and bypass of the aneurysm. A retroperitoneal approach was made to the left iliac vessels. The proximal PSA was identified as a continuation of the internal iliac artery. The proximal PSA was ligated and divided. The distal PSA was approached using a medial mid thigh incision, partially disconnecting the muscular attachment of adductor magnus to gain adequate access. The distal PSA, approximately in 7 mm diameter (Fig. 3), was ligated and divided.

Hence, exclusion of the aneurysm was achieved without a buttock exploration or exposure of the aneurysm itself. A 7 mm ringed e-PTFE graft was tunneled via the obturator foramen, anastomosed proximally to the internal iliac and distally to the PSA. A post-operative Doppler ultrasound scan confirmed the aneurysm had been excluded with no flow seen in the sac. At follow up, 2 months later, the

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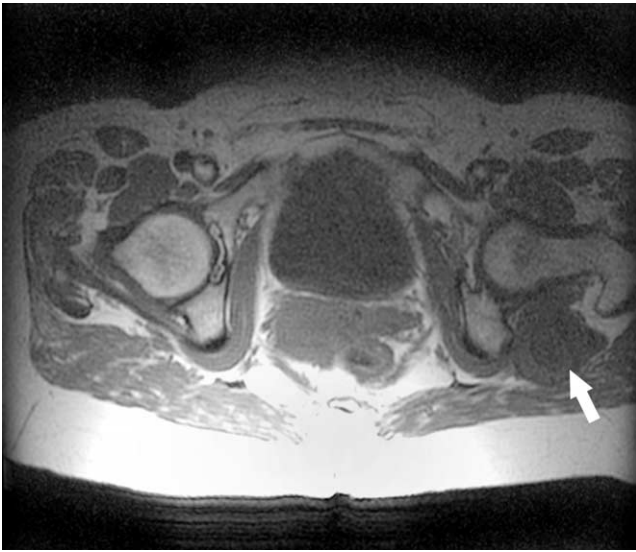


Fig. 1. MRI showing association of L PSA aneurysm with the sciatic nerve.

lower limb symptoms had resolved and there were palpable pedal pulses.

Discussion

The prevalence of PSA is approximately 0.05%.¹ During embryologic development, the sciatic artery, a branch of the dorsal root of the umbilical artery, forms the main blood supply to the lower limb. Usually this vessel persists distally as the popliteal, peroneal and pedal vessels.² However, proximally the sciatic artery involutes, while the external iliac and femoral system develops to become continuous with the popliteal artery distally.

A complete PSA, as in the present case, accompanies the sciatic nerve posteromedially, communicates with the popliteal artery to form the main supply to the lower limb, and is associated with hypoplasia of the femoral system.

Around 25% of PSAs develop aneurysms and in 12% these are bilateral. Factors contributing to aneurysm formation include trauma at the point, where the artery passes through the sciatic notch and congenital hypoplasia of the vessel wall.³ PSA aneurysms may present as a pulsatile buttock mass, or with associated compressive symptoms, thrombosis, embolic phenomena or, rarely, rupture. The absence of the femoral pulse in the presence of a strong popliteal pulse should raise clinical suspicion.

Distinction must be made from gluteal artery aneurysms as these can be managed by simple ligation or embolisation. This distinction can be achieved with



Fig. 2. Angiogram showing left PSA aneurysm and hypoplastic left femoral artery.

magnetic resonance angiography or digital subtraction angiography.

Management options include simple ligation or embolisation. This needs to be accompanied by a revascularization procedure because the PSA forms the dominant blood supply to the lower limb. Femoropopliteal bypass can be considered. However, the hypoplastic femoral system may not provide sufficient inflow. An excision and interposition grafting has been performed. This approach risks sciatic nerve injury during dissection and also subsequent graft trauma and occlusion during hip flexion and sitting.⁴ Successful endovascular stent-graft placement has been reported⁵ and avoids the need for a further revascularisation procedure. However, the long-term

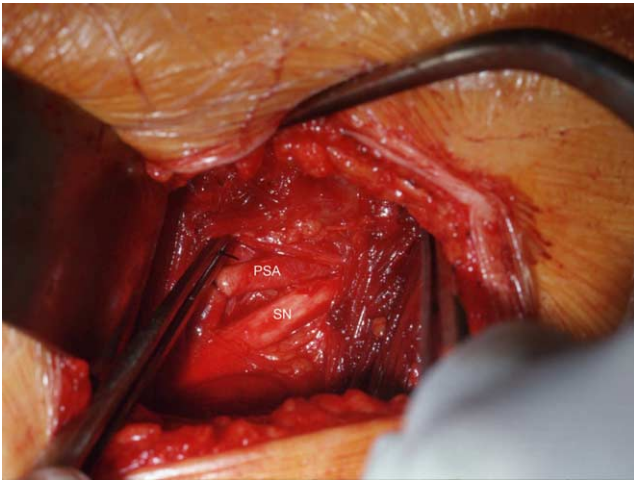


Fig. 3. Operative photograph of left mid-thigh medial exposure. Adductor magnus has been detached and retracted to reveal the large persistent sciatic artery (PSA) lying medial to the sciatic nerve (SN). The artery has been ligated prior to end to end anastomosis to a gortex graft tunnelled through the obturator foramen.

durability of this approach remains to be determined. In the present case the goals of management were to treat the aneurysm and associated sciatic nerve compression and restore blood flow. Embolisation was considered inappropriate, as post embolisation inflammatory change may exacerbate rather than cure the sciatic nerve compression. The hypoplastic femoral system precluded femoropopliteal bypass. Obturator

bypass is usually employed for cases, where the groin is not suitable to house a graft (infection, radiation necrosis or tumour invasion).

Obturator bypass has been described for successful treatment of a PSA aneurysm causing distal ischaemia.⁴ The authors emphasise that the obturator foramen provides the shortest route from the internal iliac to the distal PSA and that the graft is not exposed to the same trauma or kinking. The successful outcome in the present case demonstrates that obturator bypass is also a feasible option for treatment of PSA aneurysms causing sciatic nerve compression.

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