A ruptured aneurysm in persistent sciatic artery: A case report

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Persistent sciatic artery (PSA) is a rare congenital anomaly, but in many cases it is a clinically important condition. PSA is susceptible to atherosclerotic degeneration, resulting in aneurysmal dilatation, occlusive thrombosis, or thromboembolization. PSA aneurysm is associated with distal embolization, sciatic neuropathy, or rupture. We describe a case of a patient with a ruptured PSA aneurysm treated by exclusion of the aneurysm and bypass between the common iliac artery and the PSA distal to the aneurysm, and discuss treatment of PSA aneurysm. (J Vasc Surg 2005;42:556-8.)

The persistent sciatic artery (PSA) is a rare congenital anomaly with an incidence ranging from 0.025% to 0.04% of the population, based on angiographic studies. This artery is prone to atherosclerotic change and is associated with aneurysmal change in 46.1% of the cases; these cause a painful or painless pulsatile mass, distal embolization, sciatic neuropathy, or rupture. The most frequent symptoms associated with the PSA aneurysm are a painful pulsatile buttock mass, sciatic neuropathy caused by sciatic nerve compression, and lower limb ischemia caused by thrombosis or distal embolization.

Although PSA aneurysm carries a risk of rupture, only a few cases have been reported. We present a case of rupture of a PSA aneurysm that was treated by exclusion of the aneurysm and bypass between the common iliac artery and the PSA distal to the aneurysm.

CASE REPORT

A 65-year-old woman who complained of sudden onset of severe pain in the right buttock was referred to our hospital with a pulsatile mass in the right buttock and anemia. Physical examination showed a pulsatile mass with a subcutaneous hemorrhage in the right buttock. Her bilateral femoral pulse was weak, whereas all the other lower limb pulses were normal. Sensory function in the right leg was diminished; however, motor function could not be precisely evaluated because of severe pain radiating to the posterior aspect of the thigh and continued into the popliteal artery, displaced laterally. A large saccular aneurysm of the right PSA was identified at the level of the greater trochanter. The external iliac artery and femoral artery appeared hypoplastic and tapered to an end above the knee without direct communication to the popliteal artery.

Upon diagnosis of rupture of the PSA aneurysm, emergency surgery was performed. The PSA was excluded by ligation at the exit from the pelvis via the extraperitoneal approach and distal to the aneurysm through an incision made in the lateral thigh. We determined that the common iliac artery, rather than the hypoplastic femoral artery, was suitable for graft inflow for the purpose of achieving adequate flow and that there might be a risk of graft compression when the graft was bypassed to the popliteal artery displaced laterally because it was necessary for blood to course through the adductor muscle mass. Therefore, a bypass between the right common iliac artery and the PSA distal to the aneurysm was made using an 8-mm Dacron (DuPont, Wilmington, Del) graft with rings, through tunnels developed beneath the inguinal ligament and within the subcutaneous layer of the anterolateral thigh.

We used the Moore posterior approach to evacuate the hematoma and decompress the aneurysm. In the right buttock, a 15-cm incision was made from approximately 10 cm distal to the posterolateral iliac supine to the posterior margin of the greater trochanter, in line with the fibers of the glutaeus maximus. The gluteal muscle was split in the direction of its fiber and retracted to expose the aneurysm. After removal of a large amount of hematoma, we found that the sciatic nerve was stretched over the aneurysm and closely adhered to it. We decided that further dissection of the aneurysm was unnecessary because attempts of dissection might injure the sciatic nerve, and we considered that the aneurysm had spontaneously thrombosed because there was no bleeding.

A wound infection developed in the patient’s buttock postoperatively, which was successfully treated with open drainage. An enhanced CT scan showed that the PSA aneurysm had spontaneously thrombosed. The pain and abnormality of sensation in the right lower extremity were resolved. However, the patient developed weakness of the leg and foot drop caused by peroneal nerve palsy that had resolved. However, the patient developed weakness of the leg and foot drop caused by peroneal nerve palsy that had

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developed during perioperative bed rest. The patient underwent rehabilitation and gradually recovered to walk with a crutch a year after surgery. Distal perfusion was excellent with an ankle/brachial index of 0.96 on the right.

DISCUSSION

PSA is classified as complete or incomplete.7 In the incomplete type, the PSA is hypoplastic, and the superficial femoral artery is the major blood supply to the lower extremity. In the complete type, the PSA continues to the popliteal artery with a minimal change in size, while the superficial femoral artery is small and provides only collaterals to the lower limb.

In the complete type of PSA aneurysm, simultaneous revascularization is required because exclusion of a PSA aneurysm may cause lower limb ischemia. Options for revascularization of the lower extremities include graft interposition,8 femoropopliteal bypass,2,3,7,9 and iliac-PSA bypass.10,11 It is important to place the proximal and distal anastomosis so that adequate bypass graft flow is achieved and to ensure that the graft courses are set to avoid thrombosis by compression. Graft interposition carries a risk of graft occlusion secondary to compression when the patient is seated.7 Femoropopliteal bypass is the preferred method because it is free from risk of graft compression and alleviates future complications associated with residual PSA segments.7 The superficial femoral artery is reported to be aplastic in 7.4% and hypoplastic in 46.8% of patients with PSA.2 In such cases, the femoral artery may not be optimal as a graft inflow; instead, the iliac artery would be a good candidate.

The PSA usually passes into the above knee popliteal space and becomes continuous with the popliteal artery.1,12 In such cases, a bypass distal to the popliteal artery through a medial thigh approach can be performed, and the graft can pass through an anatomic pathway. However, when the PSA descends in the posterolateral aspect of thigh and continues along the laterally displaced popliteal artery, a medial thigh approach may make exposure of the PSA difficult11 and may require a bypass graft coursing through the adductor muscle mass. This may compress the graft, resulting in its occlusion.

In the present case, we bypassed the graft to the PSA through tunnels developed in the subcutaneous layer of the anterolateral thigh. Bypass to the PSA distal to the aneurysm is an acceptable treatment if the PSA is not affected by severe atherosclerotic changes, either occlusive or aneurysmal. However, because the remnant PSA has the risk of progression of atherosclerotic disease, careful follow-up is required. Simple exclusion may not be sufficient to decompress the aneurysm because feeder vessels are inside.8,9 However, direct exposure of the aneurysm remains controversial.

Fig 1. (A) Enhanced computed tomography scan shows aneurysm of the persistent sciatic artery (PSA) surrounded by hematoma in the right buttock. (B) Angiography shows dilated bilateral PSA and an aneurysm of the right PSA at the level of the greater trochanter.
PSAs lie close to the sciatic nerve or in its sheath and may be hazardous to the nerve when resection of the aneurysm is performed; therefore, leaving the aneurysm in place without dissection is recommended.

Percutaneous transcatheter embolization using a coil or gelfoam may be useful because nerve injury can be completely avoided. However, if a PSA aneurysm ruptures, we believe it should be approached for evacuation of the resulting hematoma to resolve compression of the sciatic nerve. In the present case, the sciatic nerve injury was resolved postoperatively by a direct approach to the aneurysm.

We approached the aneurysm via the Moore posterior approach, as did Steele et al., according to the method used in hip joint surgery. This approach, where the gluteus maximus muscle is split in line with its fibers, is useful in exposing the aneurysm because impairment of the nerve supply to portions of the muscle can be prevented.

REFERENCES


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