A Case Report of Patients with Persistence of Sciatic Artery

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Abstract
Persistence of sciatic artery is a rare vascular anomaly with an incidence of 0.03 to 0.06%. It has a high incidence of complications such as aneurysm formation and ischemia, either of which may lead to an amputation in 8%. We report three cases with incidental findings of persistence of sciatic arteries, which two of them were previously treated. One of our cases had additional vascular variants of a common trunk between the right brachiocephalic artery, a right hepatic artery branching from the superior mesenteric artery, and a left hepatic artery branching from the left gastric artery. This association was not previously reported and we postulate that there may be a link between these variants during the vascular embryogenesis.

Keywords: Sciatic artery; Vascular anomaly; Brachiocephalic artery; Hysterectomy; Femoral artery

Case Report
We report three patients with persistent sciatic artery. The first patient was a 60 year-old male who was admitted with lumbar pain following a motor vehicle accident. The patient had a history of autosomal dominant polycystic kidney disease. Bilateral sciatic artery was seen in imaging. The patient had aneurysm of the left sciatic artery and the right sciatic artery was previously occluded with Amplatz device (Figure 1).

The second patient was a 44-year-old African-American male with a known left lower extremity swelling admitted for trauma injury and found to have incomplete type of sciatic artery. The patient was treated with proximal and distal embolization and had a complete relief of symptoms (Figure 2).

The third patient was a 37-year-old African-American woman with acquired immunodeficiency syndrome, presented for vaginal hysterectomy and left hemorrhagic ovarian cyst. The patient had a history of mucinous neoplasm of the body and tail of pancreas. Bilateral sciatic artery was an incidental finding in imaging (Figure 3). The images demonstrated normal variants of a common trunk between the right brachiocephalic artery, a right hepatic artery branching from the superior mesenteric artery, and a left hepatic artery branching from the left gastric artery (Figures 4 and 5).

Discussion
The primitive sciatic artery arises from the umbilical artery and is a continuation of the internal iliac artery to supply the embryological developing lower limb bud. Later, segments of this embryonic artery persist as popliteal and peroneal arteries [1]. This embryonic vascular supply is replaced by the development of the external iliac, common femoral and superficial/profunda junction [2]. If the distal superficial femoral artery does not fully develop, persistence of the primitive sciatic artery may be the result [2]. There are cases reported of coexistence of

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of the sciatic artery and only the lower part persists and normal femoral artery is normal; and type 4 is an incomplete persistence of the sciatic artery in which only the upper part persists and incomplete development of the femoral artery type 3 is incomplete development of the femoral artery type 2 is a complete persistence of sciatic artery in combination with incomplete development of the femoral artery type 1 represents complete persistence of sciatic artery with a normal femoral artery; type 2 is a complete persistence of sciatic artery in combination with incomplete development of the femoral artery type 3 is incomplete persistence of the sciatic artery in which only the upper part persists and the femoral artery is normal; and type 4 is an incomplete persistence of the sciatic artery and only the lower part persists and normal femoral artery. A fifth type was added by Gauffre et al.: a persistent sciatic artery originating by mediascral artery [12].

The clinical symptoms of persistent sciatic artery may manifest at any age with slight male predominance [2,13]. Fifty percent of the cases are bilateral. The presenting symptoms are pain, numbness, and motor impairment that result from compression of the sciatic nerve that lies adjacent to the persistent aberrant vessel [2,7,9]. The most common complication of persistence of sciatic artery is formation of aneurysm, occurring in 48% of cases [6]. It usually forms between the piriform muscle and the posterior aspect of the femoral greater trochanter, where the artery has slight S-curve [6,14]. The thrombus may form in the aneurysm that may cause an embolus [15]. Stenosis and occlusion may also be seen with persistence of a sciatic artery with an incidence of 7 and 9% respectively [6].

Persistent sciatic artery was reported to be associated with Mullerian agenesis [16], arteriovenous fistula [17], with hypertrophy of the lower limb, and with varicose veins [6,18].

Treatment options vary and depend on the patient symptomatology. Asymptomatic patients do not need any particular treatment aside for a follow-up with Ankle-Brachial index, Doppler sonography, CT angiography, or MR angiography. Aneurysm can be occluded or ligated with precaution that the femoral artery demonstrates adequate blood supply to the lower extremity. Stenoses can be stented. In cases that there is no adequate blood flow by the femoral artery, bypass graft can be performed. When excision of the sciatic aneurysm is combined with an interposition graft, the patency may be compromised when the patient sits down [6,15]. Exclusion of a sciatic aneurysm may also be complicated by sciatic nerve damage [6].

Our third case had other vascular variants of a common trunk between the right brachiocephalic artery, right hepatic artery branching from the superior mesenteric artery and a left hepatic artery branching from the left gastric artery. We could not find any previous reports of such associations with the persistence of the sciatic arteries, but we can assume that there is some link that may occur during the vascular embryogenesis.

This article does not contain any studies with human participants or animals performed by any of the authors.

For this type of study formal consent is not required.

References


