A persistent sciatic artery is a rare anomaly. On the other hand, a persistent sciatic vein is frequently associated with Klippel-Trenaunay syndrome. In a 71-year-old female with a complete-type persistent sciatic artery aneurysm, we performed aneurysmectomy and right femoropopliteal bypass surgery. The right popliteal vein drained into the femoral vein via a lower-type persistent sciatic vein and the deep femoral vein. The superficial femoral artery and vein were hypoplastic. Since only 4 cases of a coexisting persistent sciatic artery and vein have been reported, we report this extremely rare case.

Key words: persistent sciatic vein, persistent sciatic artery, peripheral aneurysm
muscle at a proximal site of the thigh, and continued to the femoral vein in the inguinal region.

She showed a favorable course, and was discharged 17 days after the operation.

**Discussion**

A persistent sciatic artery is a rare anomaly occurring in approximately 0.025–0.6% of the population based on angiographic studies.\(^1\), \(^3\), \(^4\) About 30% of the cases are bilateral,\(^3\), \(^5\) and the anomaly is congenital. Its diagnosis is made at about the age of 50 years in most cases, and there are no sex-related differences.\(^6\) Aneurysm formation is observed in about 40% of such cases.\(^4\), \(^5\)

The sciatic artery is a major blood supply vessel for the lower limbs in embryos 6 mm in length. In the 18-mm embryo stage, the femoral artery system becomes the predominant blood supply system. In the 22-mm embryo stage (fetal age, 3 months) or more, the sciatic artery regresses, leaving parts of the inferior gluteal, popliteal, and peroneal arteries behind. In this developmental process, a persistent sciatic artery occurs due to development failure of the femoral artery or regression failure of the sciatic artery.\(^3\), \(^5\), \(^8\) In terms of comparative morphology, the sciatic artery is preserved in amphibians, reptiles, and birds and is a major blood flow route to the lower limbs.\(^3\)
Coexistence of Persistent Sciatic Artery and Vein

After the route of the inferior gluteal artery, the sciatic artery passes under the piriformis muscle, runs along the sciatic nerve on the dorsal side of the adductor magnus muscle, and continues to the popliteal muscle located in the normal position.5, 6, 8, 9) A persistent sciatic artery is susceptible to atherosclerosis, and aneurysm formation is observed in 14–48% of the cases.4, 5) This is considered to be because this artery runs near the surface layer in the buttocks and tends to be subjected to blunt external forces, but there is no definitive evidence.9)

Persistent sciatic arteries are classified into the complete type that continues to the popliteal artery, supplying blood to the leg, and the incomplete type without communication with the popliteal artery.3, 5) In this patient, the sciatic artery was continuous with the popliteal artery and classified as the complete type.

Persistent sciatic vein is observed in 20–48% of patients with Klippel-Trenaunay syndrome.1) However, the coexistence of a persistent sciatic artery and vein is extremely rare, and only 4 cases have been reported (Table 1).1–4)

Table 1  Reported cases of coexisting sciatic artery and vein

<table>
<thead>
<tr>
<th>Reference</th>
<th>Age/sex</th>
<th>Type of persistent sciatic artery</th>
<th>Type of persistent sciatic vein</th>
<th>Comorbid disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Golan JF, et al. 1986</td>
<td>27/male</td>
<td>bilateral complete</td>
<td>left complete</td>
<td>malignant schwannoma of femoral nerve</td>
</tr>
<tr>
<td>Savov JD, et al. 2000</td>
<td>65/female</td>
<td>bilateral complete</td>
<td>right complete left lower</td>
<td>none (cadaver)</td>
</tr>
<tr>
<td>Parry DJ, et al. 2002</td>
<td>27/female</td>
<td>left complete</td>
<td>left lower</td>
<td>varicose vein</td>
</tr>
<tr>
<td>Futamata H, et al. 2008</td>
<td>96/female</td>
<td>right complete</td>
<td>right complete</td>
<td>none (cadaver)</td>
</tr>
<tr>
<td>Our case</td>
<td>71/female</td>
<td>right complete</td>
<td>right lower</td>
<td>persistent sciatic artery aneurysm</td>
</tr>
</tbody>
</table>

Anatomically, persistent sciatic veins are classified into complete, upper, and lower types.10) The complete type arises from the popliteal vein or its branch and terminates in the internal iliac vein. The upper type involves only the buttock and upper thigh. The lower type is limited to the distal and middle thigh, arising from the popliteal vein or its branch and terminating in the deep femoral venous system or subcutaneous venous network. The complete type was reported to be observed in 38.1%, upper type in 28.6%, and lower type in 33.3%.10) This patient had the lower type.

Conventionally, imaging diagnosis of a persistent sciatic vein was difficult. However, advances in magnetic resonance imaging (MRI) and CT have facilitated its visualization. Therefore, cases incidentally detected are expected to increase in the future, and the incidence of a persistent sciatic vein may be higher than conventionally considered.10)

CONCLUSION

We encountered a patient with a persistent sciatic artery accompanied by a persistent sciatic vein. The coexistence of both conditions is extremely rare, with only 4 cases having been reported. Contrast-enhanced CT was useful for its diagnosis.

REFERENCES