

## Persistent sciatic artery: A case report

Truong - Giang Nguyen<sup>2</sup>, Ngoc - Trung Nguyen<sup>2</sup>, Ba - Hanh Le<sup>1</sup>, The - Kien Nguyen<sup>1</sup>,  
Vu - Thu - Ha Pham<sup>3</sup>, Duc - Hung Tran<sup>4</sup>, Duc - Thang Vu<sup>1</sup>

### ABSTRACT

Persistent sciatic artery (PSA) is a very rare congenital vascular anomaly, occurs in 0.025% to 0.04% of the population, and occasionally associated with thromboembolic events or aneurismal diseases. We herein share experience of diagnosis and successful treatment of a Vietnamese patient with PSA complicated with distal thromboembolism. A 70-year-old woman was admitted to the hospital for acute lower limb ischemia. A computed tomography angiography (CTA) revealed complete occlusion of the left common iliac artery. Surgical embolectomy was carried out and abnormal distal left femoral artery was noted intraoperatively. Postoperative CTA showed a persistent sciatic artery (PSA) on the left and adequate perfusion of the left lower limb. During 2 years follow-up, the patient remained symptom-free with good perfusion to the distal left popliteal artery, anterior and posterior tibial arteries.

### INTRODUCTION

Persistent sciatic artery (PSA) is a very rare vascular congenital anomaly and may be complicated by including limb ischemia and aneurysmal formation. Diagnosis of this condition may be neglected without prior experience. Treatment depends on clinical, classification and complications. Here we report our experience in diagnosis and successful treatment of a PSA case with acute ischemia in

the left lower limb who was successfully treated with embolectomy.

### Material and method:

#### ***This was a case report of a patient with PSA.***

A 70 year-old woman, with no previous history of trauma or cardiovascular disease, was admitted for acute lower limb ischemia. Clinical examination showed pain in the left lower limb, absence of pulsation on the left common femoral and popliteal artery. A computed tomography angiogram (CTA) showed complete occlusion of the left common iliac artery. The right external iliac artery was patent. Vascular ultrasound confirmed thrombus from the left common iliac to common femoral arteries, and absence of Doppler signal on the left popliteal artery (Figure 1).

The patient underwent surgical embolectomy through the proximal common femoral artery. Failure to advance a 2F Fogarty catheter distally to the left popliteal artery was noted intraoperatively. Nevertheless, reperfusion of the distal left lower limb was achieved, as shown by restoration of SpO<sub>2</sub> to 97%, and improvement of clinical condition with warm leg,

<sup>1</sup> Department of Cardiovascular Surgery, Hospital 103, Hanoi, Vietnam

<sup>2</sup> Department of Thoracic Surgery, Hospital 103, Hanoi, Vietnam

<sup>3</sup> Department of Cardiology, Hospital 103, Hanoi, Vietnam

<sup>4</sup> Department of Interventional Cardiology, Hospital 103, Hanoi, Vietnam

Corresponding author: Dr. VU Duc Thang MD, PhD; Department of Cardiovascular Surgery Hospital 103,

Vietnam Military Medical University, Hanoi, Vietnam

Tel: +84 362043892 - Email: vuducthang@gmail.com

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normal sensation and movement of the left leg. As such, no further intervention was required.

Postoperative CTA and vascular ultrasound confirmed patency of external iliac, femoral, distal popliteal arteries and restoration of circulation to left anterior and posterior tibial arteries. The internal iliac artery remained occluded. Instead, persistent sciatic artery (PSA), and incompletely developed superficial femoral artery (SFA) were noted on the left lower limb (Figure 2). On the right side, CTA showed a incompletely developed sciatic artery and completely developed SFA, which were still patent (Figure 3).

Postoperative treatment included 10 days of intravenous unfractionated heparin, followed by dual antiplatelet therapy with aspirin and clopidogrel. The patient was discharged 15 days after surgery, and remained symptom-free during 2-year follow-up, with patency of the distal left popliteal artery, anterior and posterior tibial arteries on vascular ultrasound (Figure 4)

### Discussion

The sciatic artery is the main arterial supply of the developing lower limb during the 6mm stage in embryonic development [1], [2]. The sciatic artery regresses when the femoral artery fully develops [1], [2], with only 0,025% - 0,04% PSA after birth [3]. Vascular complications, e.g. aneurysm, thrombosis and resultant acute or chronic limb ischemia, may occur in 48% of patients with PSA [4],[5].

PSA in adulthood may not be noticed if a physician has no prior experience with this condition [6]. More than half of reported PSA were discovered incidentally during other medical check-up [7]. As shown in this patient, the anomaly was not noticed preoperatively.

Early diagnosis of PSA could be possible with careful review of imaging materials. Since the PSA is filled with thrombus, it is not contract enhanced, but is still visible as a round structure extending beyond the internal iliac artery. However, the signal is so weak that is easily unnoticeable. The PSA was only seen on the second look at postoperative CTA and further investigation with vascular ultrasound where the thrombus was more easily detected. The PSA could have been diagnosed earlier in this patient if sufficient attention was paid to the relatively large size of the internal iliac artery, intraoperative failure of advancing a Fogarty catheter beyond the popliteal artery, a faint course of the no-contrast filling artery traced beyond the internal iliac artery, and additional investigation with vascular ultrasound was routinely performed.

Primary occlusion of the common iliac artery in a patient with PSA is not common. Our patient had occlusion of both the left external and internal iliac arteries, which are the only two exits of the common iliac artery. As a result, the thrombus continued to develop proximally and caused occlusion of the left common iliac artery. The treatment depends on the symptoms, PSA classification, and vascular complications [3],[8]. Currently, Pillet-Gauffre or Ahn-Min's classifications are used for PSA. The vascular anatomy of this patient showed incomplete right PSA and normal right SFA, equivalent to Pillet-Gauffre's type III or Ahn-Min's class II, and complete left PSA with incomplete left SFA, equivalent to Pillet-Gauffre's type IIa and Ahn-Min's class III ) (Figure 3) [3], [8]. Surgery or intervention is indicated only for symptomatic

patients or complications [3],[7]. As in our patient, sufficient collateral development from the distal femoral artery allows for adequate perfusion of the distal lower leg, and therefore no further intervention was required after initial embolectomy.

### Conclusion

The persistent sciatic artery is a rare congenital anomaly, which is commonly neglected due to the lack of awareness of this condition. The treatment depends on symptoms, PSA classification, and vascular complications.

### Declaration of conflicting interests

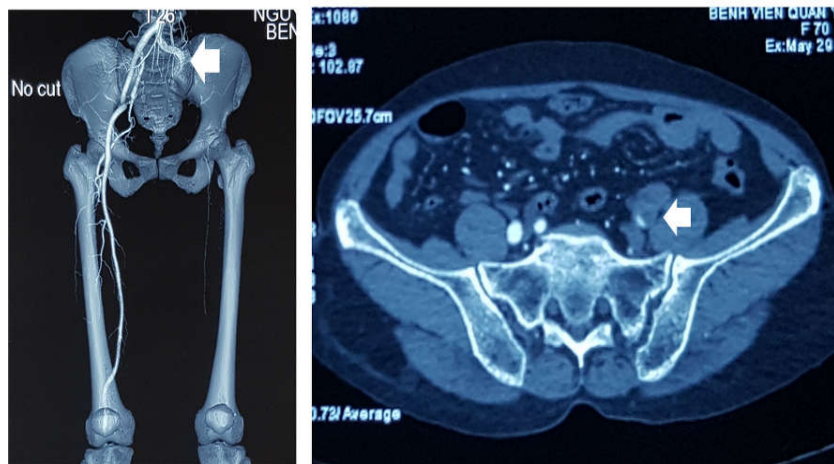
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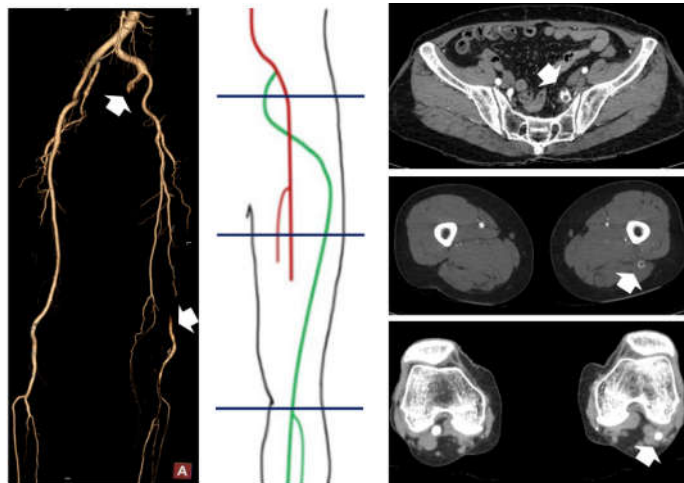
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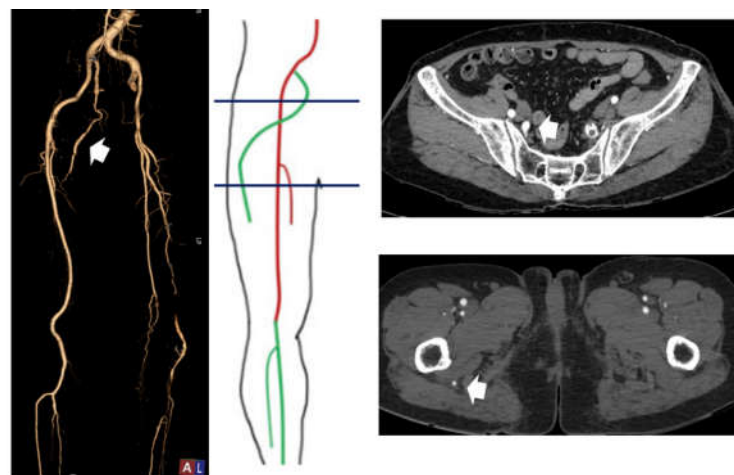
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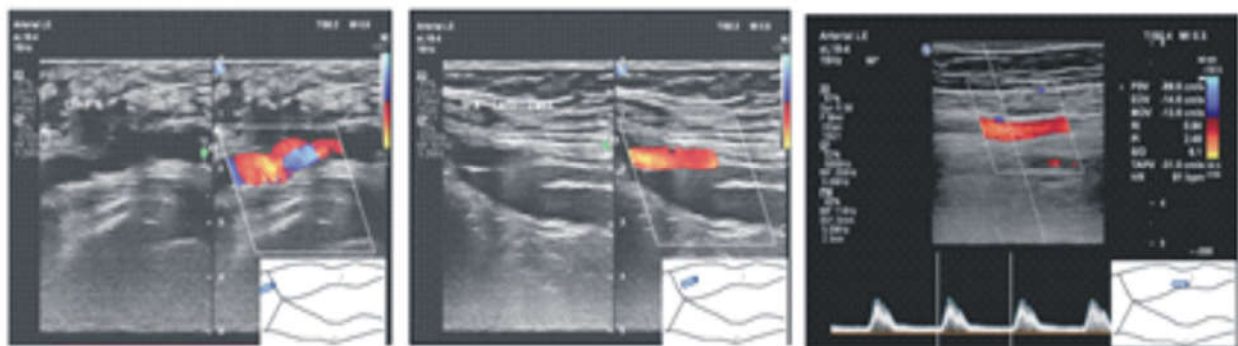
**Figure 1:** CTA showed total occlusion on the left common iliac artery (white arrow). On the right side, complete patency was seen below the common iliac artery.



**Figure 2:** On the left lower limb, there were persistent sciatic artery and incomplete femoral artery (type 2a, according to Pillet-Gauffre’s classification). The PSA was occluded from its proximal segment which originated from the internal iliac artery; its distal segment was detected at the middle thigh and the proximal segment of popliteal artery, which was perfused with collateral arteries (white arrows).



**Figure 3:** On the right lower limb, the normal femoral artery and incomplete PSA (type 3, according to Pillet-Gauffre’s classification) (white arrow) are shown



**Figure 4:** Vascular ultrasound after two years of surgery shows good perfusion on the left lower limb.