A Rare Case of Symptomatic True Aneurysm of Posterior Tibial Artery

Devender Singh
Department of Vascular and Endovascular Surgery, Yashoda Hospital, Hyderabad, Telangana, India

Abstract

Aneurysms of the infrapopliteal region are uncommon. Of them, true aneurysms are very rare and that of the posterior tibial artery (PTA) are extremely rare. We present a case of a 25-year-old female presented with a pulsatile mass behind the right medial malleolus for 1-year duration. Arterial duplex and angiogram revealed a true saccular aneurysm of the PTA. The aneurysm was resected, and the PTA was reconstructed with a reverse saphenous vein graft.

Keywords: Posterior tibial artery, surgery, true aneurysm, vasculitis

Introduction

An aneurysm is a permanent, localized dilatation of a blood vessel, with at least 50% increase of its expected normal diameter. Aneurysms are considered either true or false based on the involvement of blood vessel wall layers. Pseudoaneurysms are more common and usually secondary to trauma. The infrarenal aorta is the most common site of the arterial aneurysms. The incidence of infrapopliteal aneurysms is very rare.1,2 The most serious complication of the aneurysms is rupture, which could lead to high morbidity, including amputation. Other complications include thrombosis, embolism, and compression of the adjacent structures. We present an extremely rare case of a true posterior tibial artery (PTA) aneurysm, which, to the best of our knowledge, is the 13th case report in the English literature.

Case Report

A 25-year-old female presented with a history of a painful pulsatile mass in the medial aspect of the right leg for 1 year. In the past 4 months, it increased in size and had become painful. There was no history of trauma, and the patient’s history is not significant. On examination, there was a 3 cm × 2 cm size pulsatile mass behind the right medial malleolus [Figure 1]. There was no thrill or bruit. Pedal pulses were palpable. There was no evidence of any other aneurysm on clinical examination. Color Doppler of the right lower limb revealed a PTA aneurysm. An computed tomography angiogram was performed which confirmed a saccular PTA aneurysm with patent pedal arteries [Figure 2]. A screening color Doppler excluded the presence of an aneurysm in any other part of the body. Laboratory investigations including erythrocyte sedimentation rate, C-reactive protein, and antinuclear antibodies were normal. The patient was symptomatic, and the aneurysm size was increasing as per the history, and, because of that, the patient was scheduled for surgical intervention. The aneurysm was resected, and PTA was reconstructed with an interposition reverse great saphenous vein graft [Figures 3 and 4]. Histopathological examination revealed intimal fibrosis with increased inflammation composed of lymphocytes, few neutrophils, and foamy macrophages with fragmentation of internal elastic lamina, features consistent with vasculitic changes [Figure 5]. She is planned to be investigated thoroughly for systemic vasculitis point of view and referred to the Department of Rheumatology.

Address for correspondence: Dr. Devender Singh, E-mail: drdevendersingh@hotmail.com

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False aneurysms are more common in comparison to the true aneurysms of infrapopliteal blood vessels. There have been only very few case reports of true aneurysms of PTA published. The precise etiological factors are not identified, but trauma, collagen vascular pathology, fibromuscular dysplasia, inflammation, infection, and atherosclerosis were suggested.

The most common clinical presentations include asymptomatic lump swelling, distal embolism, and aneurysm thrombosis. Paraesthesia secondary to such aneurysm is rare but reported in the literature. Tshomba et al. reported that 9% of cases presented with distal critical ischemia, of which two-thirds ended up having midfoot amputation, while only 3% of cases presented with rupture that resulted in acute compartment syndrome. Differential diagnoses of this aneurysm include tendon cyst, neurinoma, soft-tissue tumor, or pulsatile masses.

In our case, though preoperative assessment could not find any etiological factor for the aneurysm development, histopathological examination revealed the possibility of vasculitis. Of the 12 published case reports of true PTA aneurysms, in five of them, etiology was unknown.
cases were reported secondary to degenerative changes, and another three cases were secondary to mycotic infection. In one case, polyarteritis nodosa was responsible for such aneurysm, while in another case, histology was suggestive of syphilitic infection, but immunostaining and culture isolation did not confirm the diagnosis.

The management options vary from conservative approach to surgical excision followed by reconstitution of PTA. Due to very limited number of published cases, a standard treatment has not been defined. Therefore, the indications for treating these lesions are still a matter of debate, but symptomatic aneurysms, asymptomatic large aneurysms, and those with laminated thrombus should be offered treatment. Yao and McCarthy observed asymptomatic aneurysm for 7 years without any enlargement of aneurysm or any development of symptoms. Borozan also reported and suggested conservative approach in asymptomatic aneurysms. Although ligation of PTA may be performed, especially in emergency settings, surgical excision with PTA reconstitution either by primary repair or by interposition vein graft is the preferred treatment. Endovascular embolization and percutaneous occlusion of aneurysm with various modalities are more commonly used in pseudoaneurysms and are associated with risk of limb ischemia.

This patient underwent surgical excision followed by interposition vein graft. Of the 12 published case reports, seven patients had undergone surgical excision of PTA aneurysm with interposition vein graft, while four patients had ligation of PTA. One patient had surgical excision with primary end-to-end anastomosis of PTA. In our patient, the anterior tibial artery was intact, and one might question the need for reconstruction; however, we believe that infrapopliteal aneurysms should be treated irrespective of symptomatology due to the risk of embolization, thrombosis, and rupture, leading to potential ischemia and amputation.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

**References**

1. Tshomba Y, Papa M, Marone EM, Kahlberg A, Rizzo N, Chiesa R, et al. A true posterior tibial artery aneurysm – A case report. Vasc Endovascular Surg 2006;40:243-9.
2. Danes SG, Drezner AD, Tamim PM. Posterior tibial artery aneurysm: A case report. Vasc Endovascular Surg 2006;40:328-30.
3. Loose HW, Haslam PJ. The management of peripheral arterial aneurysms using percutaneous injection of fibrin adhesive. Br J Radiol 1998;71:1255-9.
4. Kars HZ, Topaktas S, Dogan K. Aneurysmal peroneal nerve compression. Neurosurgery 1992;30:930-1.
5. Loose HW, Haslam PJ. The management of peripheral arterial aneurysms using percutaneous injection of fibrin adhesive. Br J Radiol 1998;71:1255-9.
6. Jenyo MS. Silent posterior tibial artery aneurysm. Report of a case and review of literature. J Cardiovasc Surg (Torino) 1987;28:456-9.
7. Sagar J, Button M. Posterior tibial artery aneurysm: A case report with review of literature. BMC Surg 2014;14:37.
8. Patel S, D’Souza N, Gurjar SV, Hewes JC, Edrees W. Mycotic aneurysm of the posterior tibial artery – A rare complication of bacterial endocarditis: A case report. J Med Case Rep 2008;2:341.
9. Yao J. Multiple arterial aneurysms: A seven-year follow-up. Contemp Surg 1987;31:73-8.
10. Kanaoka T, Matsuura H. A true aneurysm of the posterior tibial artery: A case report. Ann Thorac Cardiovasc Surg 2004;10:317-8.
11. Hasaniya N, Katzen JT. Acute compartment syndrome of both lower legs caused by ruptured tibial artery aneurysm in a patient with polyarteritis nodosa: A case report and review of literature. J Vasc Surg 1993;18:295-8.
12. Mukherjee D. Posterior approach to the peroneal artery. J Vasc Surg 1994;19:174-8.
13. Borozan PG, Walker HS 3rd, Peterson GJ. True tibial artery aneurysms: Case report and literature review. J Vasc Surg 1989;10:457-9.
14. Kumar S, Shreeram K, Agarwal SK, Bajjal SS, Phadke SR. Endovascular management of a posterior tibial artery aneurysm in type IV Ehlers-Danlos syndrome. Eur J Vasc Endovasc Surg Extra 2004;7:74-5.