



The True Deep Femoral Artery Aneurysm: A Case Report

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A 55-year-old man with a palpable pulsatile mass and pain in his left thigh was presented to us. He had no history of trauma in his left leg, interventions, operation, or medical diseases, including cardiac valve disease, endocarditis, and systemic infection. The size of the aneurysm was 10 cm×7 cm with a mural thrombus in ultrasonography and multidetector computer tomography. There was no evidence of other aneurysms or occlusive lesions in the other arteries. The aneurysm was resected without a vascular reconstruction of the deep femoral artery. The patient's symptom improved rapidly. The patient had an uneventful postoperative recovery without complications. We report a case of true deep femoral artery aneurysm, which was successfully treated with resection of an aneurysm without a vascular reconstruction.

Key Words: Femoral artery, Aneurysm, Atherosclerosis

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INTRODUCTION

A true deep femoral artery aneurysm (DFAA) is extremely rare. It is difficult to find a true aneurysm of small size because of its anatomically deep location. The symptoms of an aneurysm could be a thigh pain, toe ischemia, leg swelling, or numbness derived from the mass effect of an aneurysm or rupture [1–6]. A true DFAA grows slowly than a false aneurysm. There are several treatment options, such as ligation, resection of the aneurysm with or without a vascular reconstruction, and endovascular treatment. We successfully treated a patient with a true DFAA who had an aneurysmectomy without a vascular reconstruction.

CASE

A 55-year-old man with a pulsatile mass and pain in his left thigh was presented to us. Thirty years ago, he had suffered a right clavicle fracture, which was fixed with an implant. Otherwise, he has been healthy except for the

mass in his thigh. He does not smoke. He has no history of other traumas in his leg, or any interventions, operations, diabetes mellitus, or hypertension. No local or systemic infection was reported. An ultrasonography indicated a 10 cm sized DFAA with calcification. The computed tomography (CT) showed that the aneurysm had originated from a left deep femoral artery, sparing the proximal first branch. The DFAA was 10 cm×7 cm in size with a mural thrombus (Fig. 1). There are many calcifications only in the left femoral artery. The surgical operation was planned because of the large size of the aneurysm without considering the endovascular intervention. The surgery was performed through a longitudinal incision along the deep femoral artery. The common femoral artery and deep femoral artery were isolated. The proximal neck of the aneurysm was isolated at a 2 cm distal from the origin of the first branch of the deep femoral artery. An aneurysm sac was dissected from the surrounding tissues (Fig. 2). The aneurysm sac was opened without any control of the distal neck of the aneurysm. There was a massive blood flow

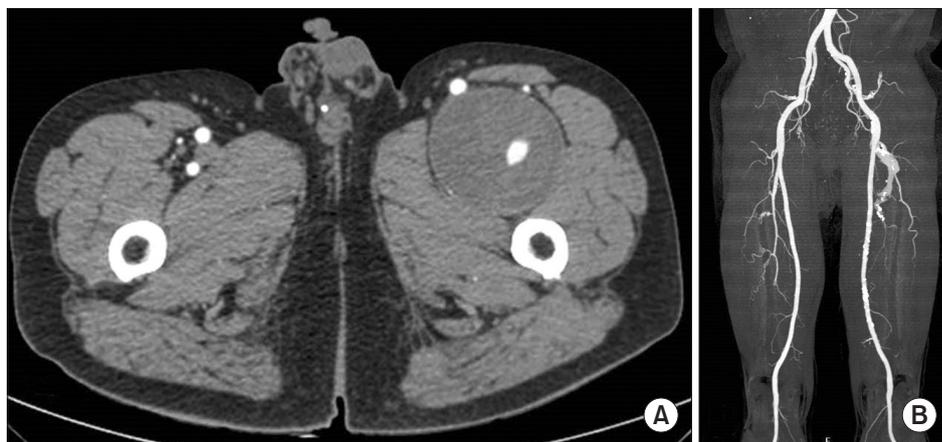


Fig. 1. (A) In preoperative computed tomography, an axial scan shows a 7.3-cm-sized aneurysm in the left deep femoral artery with mural thrombi. (B) A reconstructed image shows a 10-cm long aneurysm in the left deep femoral artery.

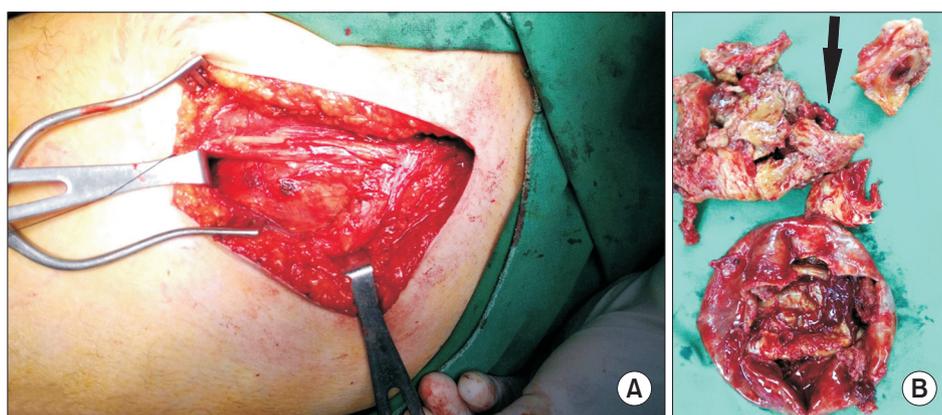


Fig. 2. (A) Intraoperative image shows a left deep femoral artery aneurysm. (B) The resected atherosclerotic aneurysm with mural thrombus. The arrow indicates the inner wall of the aneurysm.

from the distal neck. The distal neck was dissected and ligated. An aneurysm was resected without a reconstruction between the proximal and distal deep femoral artery. He recovered without any leg swelling, distal ischemia, or other sequelae. In postoperative CT, the proximal and distal branches of the deep femoral artery were opened and the portion of DFAA was not visible. He has not complained of any kind of discomfort, pain, or swelling in his left leg.

DISCUSSION

DFAAs have usually been reported as a case report. To date since the first report of Pappas et al. [1], approximately 140 DFAAs have been reported in the English literature [2–4]. Two cases have been reported in the Korean literature [5,6]. Although the etiology of DFAA is quite similar to an aneurysm at other sites, a false aneurysm caused by a penetrating injury, fracture, or iatrogenic injury is much more frequently found than a true aneurysm. It has been postulated that the deep femoral artery surrounded by the adductor muscle is resistant to atherosclerotic and aneurysmal change. The pulsatile mass with or without pain is the most frequent complaint. The other less frequent symptoms are leg swelling [7] by venous compression, toe



Fig. 3. In postoperative computed tomography, the mid portion of the left deep femoral artery is not seen. However, the distal branch is visible by the collateral flow. There are many calcifications at the common femoral, superficial and deep femoral arteries in comparison with the right femoral artery or aortoiliac artery.

ischemia [7,8], numbness or foot drop by nerve compression [9,10]. The rupture is common because of its deep location in the thigh and a delayed diagnosis. A spontaneous thrombosis has been reported as well [11]. The average age of patients with true DFAA is around 70 [2]. It occurs more often in the men than women like an aneurysm elsewhere. The incidence of a bilateral aneurysm is 5%, which is similar to the aneurysm of the femoral artery [2,12,13].

Ultrasonography and CT scans are effective tools to find aneurysms. CT is more useful to diagnose an aneurysm, to find occlusive arterial disease, and to find an aneurysm elsewhere. The true DFAAs are usually managed by operative treatment rather than endovascular procedure [14,15], because aneurysms are large at the time of diagnosis. Furthermore, there is no landing zone to put a stent graft and has a risk of rupture. Three kinds of operative treatment that can be performed in an aneurysm of the deep femoral artery are the ligation, aneurysmectomy with reconstruction, and aneurysmectomy without reconstruction. The important factors to decide operative treatment are the patency of superficial femoral/popliteal artery and the rupture of an aneurysm. Any kinds of revascularization of deep or superficial femoral artery

should be considered, regardless of graft conduits when the superficial femoral or popliteal artery is occluded. An aneurysmectomy can be done with ligation of inflow and outflow when superficial femoral and popliteal arteries are patent. In a ruptured aneurysm, it is difficult to revascularize with anatomic distortion. Ligation can be done safely when the distal pulse is present, but every effort should be made to revascularize when the distal pulse is absent.

Compared with other reports, our case had relatively unique characteristics. The patient is young and atherosclerotic calcifications have been discovered more frequently from the femoral arteries where there is DFAA. To ensure that there is no calcification at the contralateral femoral arteries, an atherosclerotic change in the left femoral artery can cause DFAA, which can exacerbate the atherosclerotic change in the left femoral artery. After resection of an aneurysm without reconstruction, a distal branch of the deep femoral artery is well visualized by the collateral flow (Fig. 3).

In conclusion, we report a case of true DFAA treated with an aneurysmectomy without reconstruction.

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