



# Open Surgical Repair of Femoral Artery Aneurysm: Case Report

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## Abstract

Common femoral artery aneurysms are a rare entity, occurring in 5 out of 100,000 patients and are usually related to aneurysms in other locations. We present the case of a 61-year-old man with a chance finding of a 23 mm common femoral artery aneurysm. Surgical repair of his femoral aneurysm was performed with an 8 mm ring-shaped PTFE prosthesis with anastomosis end-to-end from the common femoral artery to the deep femoral artery and reimplantation of the superficial femoral artery. There were no complications after 30 days.

**Keywords:** Aneurysm; Common femoral artery; Open surgical repair

## Introduction

Common Femoral Artery (CFA) aneurysms are a rare entity and are usually associated with aneurysms in other locations [1-3]. Most are asymptomatic, although in some patients symptoms related to its expansion or thrombosis appear. Regarding the risk factors, there are hypertension, dyslipidemia, female gender, connective tissue disorders. To perform the differential diagnosis, the use of duplex ultrasound, CT angiography and MRI has been described. There are few published studies; rather they are publications of clinical cases, and the majority combine anastomotic, atherosclerotic, and post-traumatic and pseudoaneurysms. Many emphasize the fact that the natural history is relatively unknown, so there is little consensus regarding the criteria for the treatment of asymptomatic aneurysms [4-6]. Surgical treatment is recommended in clinical practice guidelines when the aneurysms are symptomatic or their measure is >25 mm [2-9].

## Case Presentation

We present the case of a 61-year-old man with a personal history of hypertension, ex-smoker, polycythemia vera, and hyperuricemia. Referred to our consultation from Hematology due to accidental finding in abdominal ultrasound of infrarenal abdominal aortic aneurysm. The patient was asymptomatic from the vascular point of view. He only reported self-limited pain located at the groin level and in the left popliteal fossa several weeks prior to the consultation. In the vascular examination, only an expansive left popliteal pulse stands out, with normal distal pulses. Arterial mapping was performed, revealing 33 mm infrarenal abdominal aortic aneurysm, 25 mm right common iliac artery aneurysm, 23 mm left common femoral artery aneurysm and 33 mm left popliteal artery aneurysm, with thrombus partially obstructing the lumen. An outpatient study with CT angiography of the thoracoabdominal aorta and lower limbs was indicated preferentially with subsequent review in our consultations.

In the imaging test, the previous findings were confirmed. The case was discussed in a multidisciplinary clinical session, deciding on surgical treatment of its popliteal and femoral aneurysm in the same act. In the operating room, a dissection of the femoral tripod, distal superficial femoral artery and distal popliteal artery was performed. After systemic heparinization, the femoral aneurysm was firstly repaired. After opening the sac, we proceeded to interposition with end-to-end anastomosis from the common femoral artery to the deep femoral Artery (AFP) with an 8 mm Poly-Tetra-Fluoro-Ethylene (PTFE) prosthesis and reimplantation of the superficial femoral artery. Finally, an aneurysmorrhaphy is performed on the prosthesis. In a second stage, the surgical repair of his popliteal aneurysm was performed by bypassing from the distal superficial femoral artery to the distal popliteal artery with internal saphenous vein in situ Figure 1a-1c.

## Discussion

Primary femoral aneurysms are rare and are usually associated with other aneurysms, mainly

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**Figure 1a:** Femoral aneurysm exposure with de femoral tripod controlled with vessel loops. **Figure 1b:** Opening of the aneurysm sac. **Figure 1c:** Interposition with PTFE from the common femoral artery to the deep femoral artery and reimplantation of the superficial femoral artery.

of the aorta and the popliteal arteries [3,4]. Its main etiology is atherosclerosis [2-4]. The most widely used tool for diagnosis is Doppler ultrasound. It has important advantages such as its low cost and that it's a not invasive test. It also provides detailed information on the dimensions, morphology, flow and relationship with adjacent vessels [1,2]. CT and MR angiography provide greater anatomical definition and can aid in preoperative planning [2,4]. Limiting claudication, local pain, rupture, acute thrombosis and rest pain stand out among the main symptoms that determine the indication for its treatment. However, studies such as this by Lawrence et al. [6] report up to 65% asymptomatic aneurysms. Open repair surgery with interposition of a PTFE prosthesis or with a saphenous vein segment has always been considered the gold standard. In the study published by Piffaretti et al. [10], they included a total of 35 femoral artery aneurysms. Of these, 31 were operated on, with a 5-year survival of 77.6%. They only presented as a complication an anastomotic pseudoaneurysm that was repaired with a stent. Endovascular techniques allow the approach to obstructive pathology in the common femoral artery, however, to the best of our knowledge; endovascular devices have not yet been developed that allow adequate management of aneurysmal pathology in this sector while maintaining the patency of both outflow vessels. Furthermore, due to the flexion and extension of the hip, there is a high risk of fracture of any device released in this territory [11,12]. In this case, the patient had an indication for treatment of his popliteal aneurysm. Although the maximum diameter of the femoral artery aneurysm was 23 mm, simultaneous repair was decided to ensure the patency of the AFS. In short, open surgical treatment of CFA aneurysms is a safe option with good patency results.

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