

SURGICAL AND ENDOVASCULAR TREATMENT IN THE ASSOCIATION OF BILATERAL POPLITEAL ANEURYSM AND ABDOMINAL AORTIC ANEURYSM

ABSTRACT

The association of popliteal aneurysms (PAs) with other aneurysms of the arterial tree is very frequent. Although PAs are an infrequent entity, the popliteal artery is the second most frequent location of arterial aneurysms.

In this paper we present the case of a patient with right lower limb ischemia as a result of a thrombosed popliteal aneurysm associated to contralateral popliteal aneurysm and aortic aneurysm. The case was resolved with a combination of surgical revascularization in the lower limbs and EVAR.

Key words: Abdominal aortic aneurysm; Popliteal artery aneurysm; Combined surgery.

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INTRODUCTION

The association of popliteal aneurysms with other aneurysms of the arterial tree is very frequently reported in the literature, reaching 62% in some series ⁽¹⁾. Although this is broadly acknowledged in the literature ^(2,3,4), the most common location (femoral vs. aortic), is under discussion. In any case, in patients with a popliteal aneurysm, the presence of other lesions should be ruled out at the time of consultation and during subsequent follow-up with Doppler ultrasound or CT angiography directed to the sites reported as most frequent.

In 1953, Gifford published the experience of the Mayo Clinic ⁽²⁾; this series of 69 patients with 100 popliteal aneurysms shows the main characteristics of this disease: frequent in hypertensive men, high incidence of bilaterality, association with aneurysms in other territories and what is most important, a 46-month- follow-up in asymptomatic patients shows that 29% of cases develop ischemic complications, and 11% lose their limb.

In 1963, Edmunds reviewed the experience of the Massachusetts General Hospital, concluding that vascular reconstruction with the saphenous vein, associated with the exclusion of the aneurysm is the treatment with the best results ⁽⁵⁾.

Popliteal aneurysms (PA) are a rare entity, however, the popliteal artery represents the second most frequent location of arterial aneurysms ⁽⁶⁾.

Although the diameter that determines indication for surgery or expectant management is not well established, aneurysms are classified into SPAAs (small popliteal artery aneurysms), i.e. those less than or equal to 20mm and PAAs (popliteal artery aneurysms), i.e. those greater than 20mm. However, since the most frequent complication is thrombosis, conventional surgery is considered in PAAs with aneurysmal exclusion and the creation of a bypass with the saphenous vein if possible ⁽⁷⁾.

The indication for surgery in PAAs is typically based on the appearance of symptoms, while for asymptomatic PAAs the parameter used to establish the surgical indication is the diameter, the same as for AAAs. However, unlike the latter, in which there is a firm and proven association between diameter and risk of rupture, in PAAs the appearance of symptoms and complications is not linked to aneurysmal diameter, which explains the lack of consensus in the management of asymptomatic PAAs ⁽⁸⁾.

We present a case report with right lower limb ischemia due to thrombosed popliteal aneurysm associated with contralateral popliteal aneurysm and aortic aneurysm (*Figures 1-2*) with resolution by combined surgical revascularization techniques in the lower limbs and EVAR.

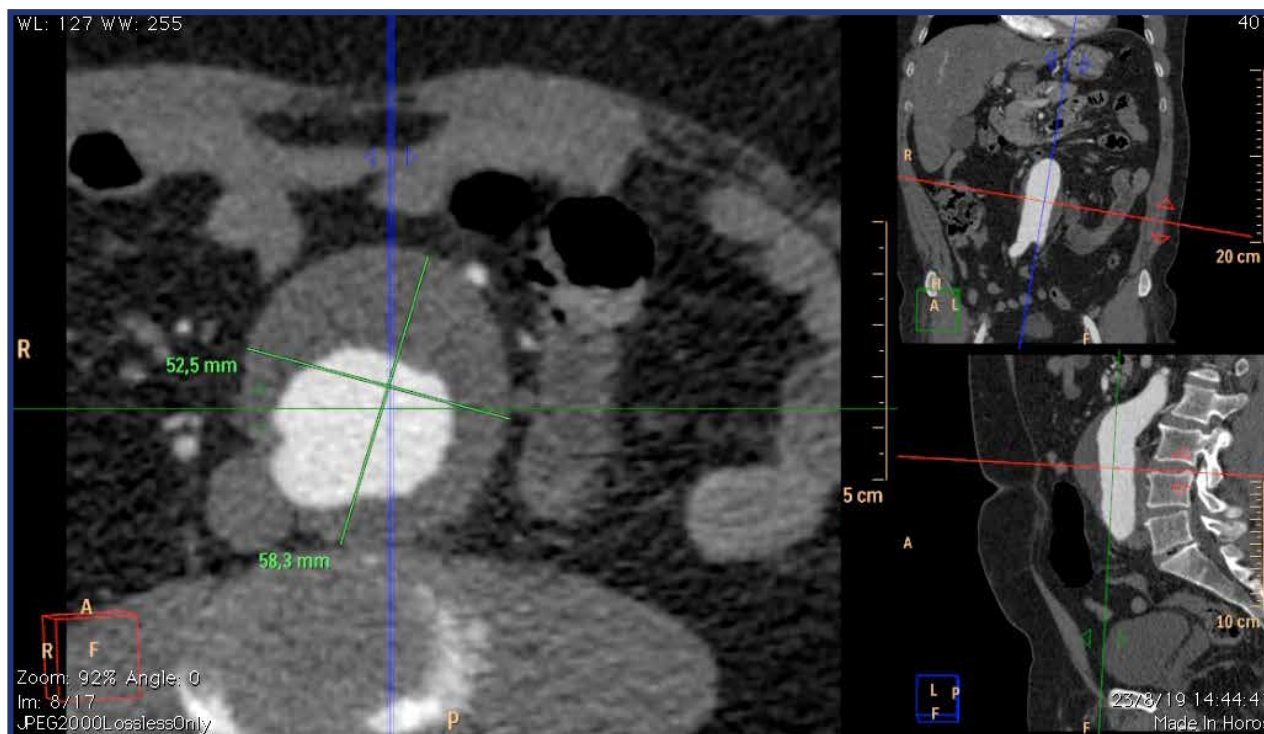


FIGURE 1. Aortic measurement

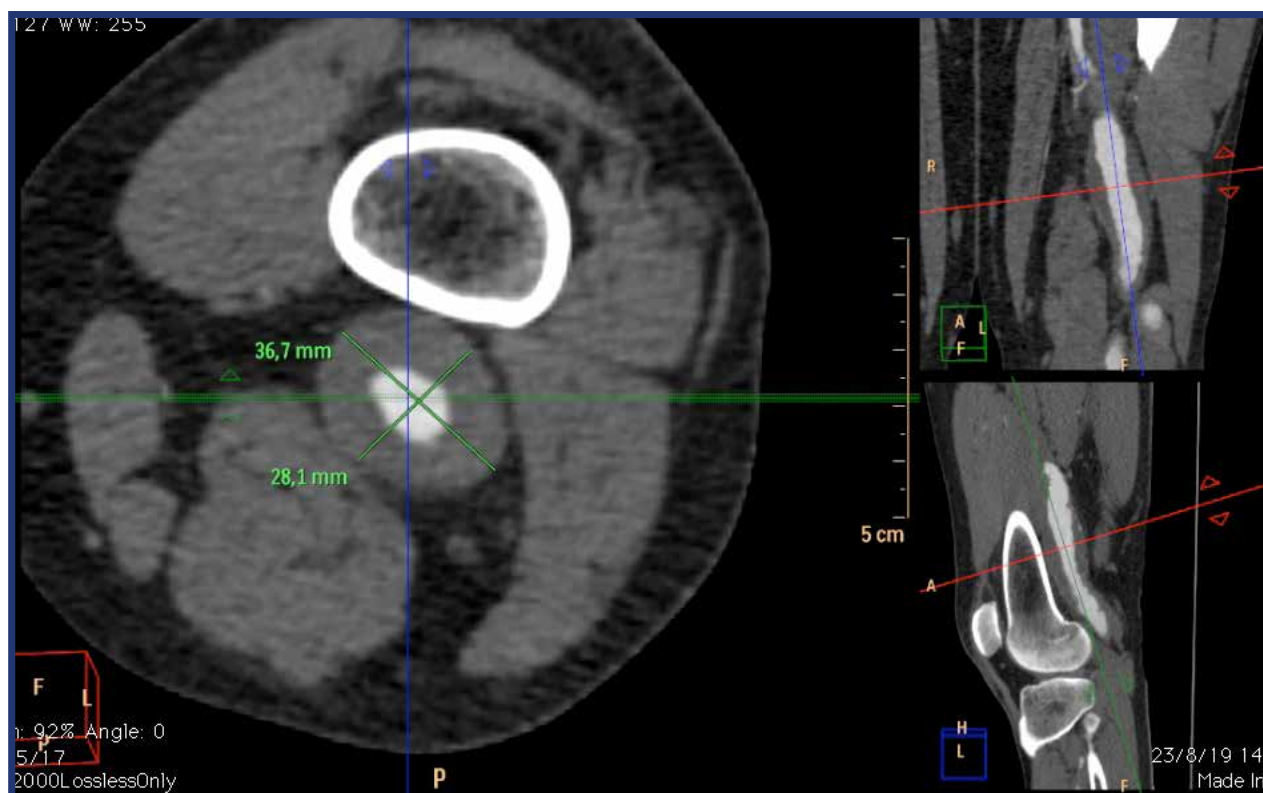


FIGURE 2. Measurement of left popliteal aneurysm.

CASE REPORT

A 64-year-old patient with a history of arterial hypertension and dyslipidemia, referred from a community health care center due to rest pain in the right lower limb, with angiography compatible with occlusion of the right SFA and poor visualization of the distal vessels, associated with an aneurysm, left popliteal and aortic dilation. Vascular examination shows absence of distal pulses, paresthesia, temperature drop and palpable non-pulsatile mass in the right popliteal fossa. Peripheral pulses in the left limb were preserved, with a significant pulsatile mass in the popliteal fossa. Abdominal examination reveals a pulsatile periumbilical mass. Suspecting the association of multiple aneurysms, a

CT scan was ordered confirming the diagnosis of a 58mm abdominal aortic aneurysm associated with a thrombosed right popliteal aneurysm and a left popliteal aneurysm with partial thrombosis greater than 36mm (Figure 3). Repair was carried out in three stages:

1st. stage: aorto-bi-iliac EVAR with self-expanding endoprosthesis EXCLUDER C3 (Figure 4); 2nd. stage: 13 days later, right anterior femoro-tibial bypass with inverted ipsilateral saphenous vein (Figure 5); 3rd. stage: 30 days after the first surgery, exclusion of left popliteal aneurysm and femoro-popliteal bypass with ipsilateral saphenous vein inverted from SFA to infrapatellar popliteal artery (Figure 6).



FIGURE 3. 3D image prior to surgery with visualization of aortic aneurysm, right popliteal occlusion and left popliteal aneurysm

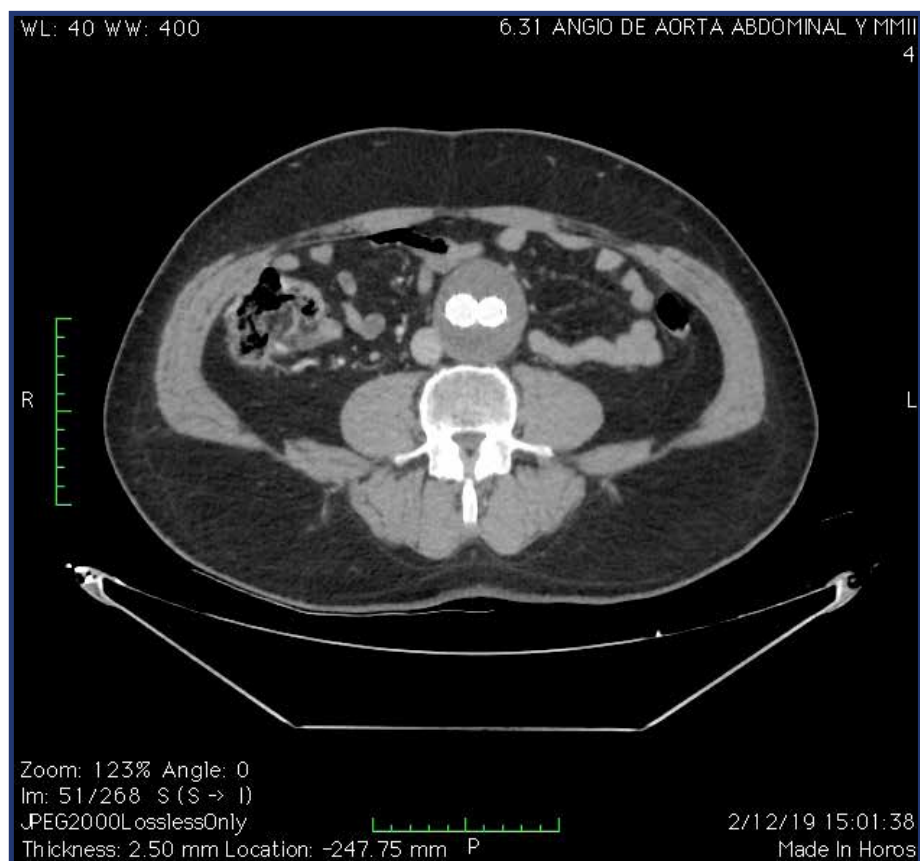


FIGURE 4. EVAR with EXCLUDER C3 endoprosthesis.



FIGURE 5. Right bypass to the anterior tibial artery.

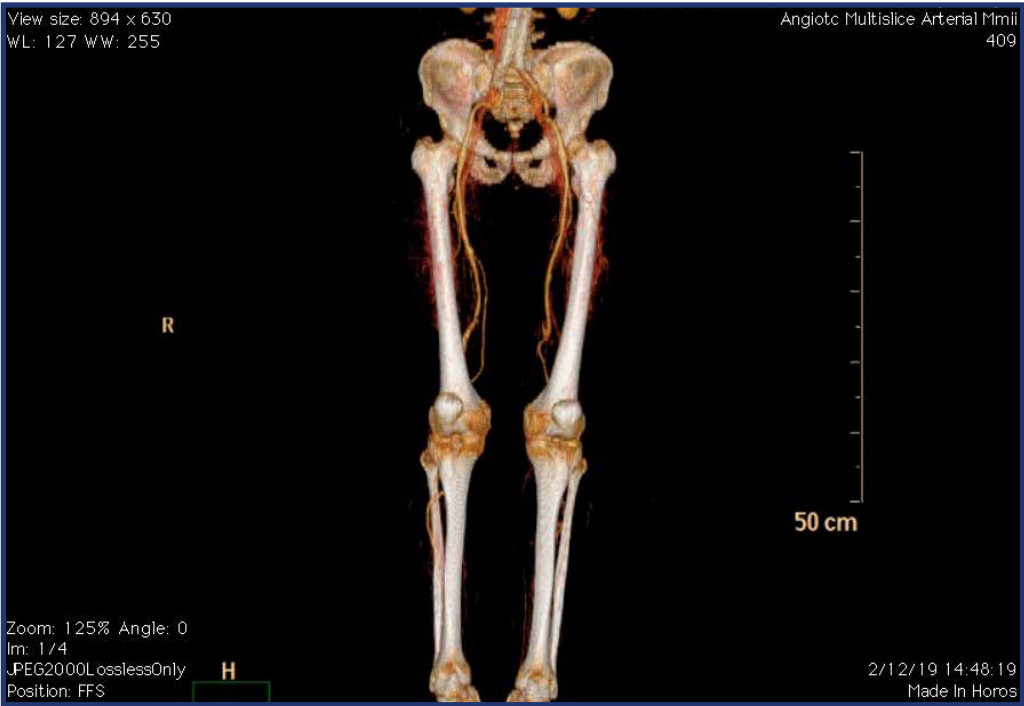


FIGURE 6. 3D image showing all procedures completed in stages

RESULTS

Favorable evolution with nosocomial stay of 3 to 7 days without complications in each procedure, with palpable bilateral pulse and resolution of symptoms of ischemia.

CONCLUSIONS

Due to the probability of association of aortic and popliteal aneurysms, it is necessary not only to achieve an accurate diagnosis but also to propose surgical strategies that eventually combine endovascular techniques with open surgery, prioritizing, if possible, the use of autologous tissue for revascularization.

Declarations

The authors declare no conflict of interest.

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