

## Multiple peripheral arterial aneurysms - A case report

By

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### Abstract

*The objective of the present study is to report the procedures adopted in a patient with multiple abdominal and peripheral aneurysms. We report on the case of a 78-year-old patient with multiple aneurysms who have been followed up at the service for two years and whose main initial symptom was intermittent claudication due to thrombosis of the aneurysm in the limb. He has been followed for two years, and each phase of their evolution was adopted by a therapeutic measure. Clinical treatment, embolization and endoprosthesis implantation were the main approaches in this period. These aneurysms are uncommon and require continuous tracking of their evolution.*

**Key Words:** Multiple aneurysms, thrombosis, treatment, endovascular, surgery, clinical

### Introduction

Arterial aneurysm is defined as localized or diffuse dilatation greater than 50% of the vessel's original diameter. The etiology is associated with atherosclerosis, infection, vasculitis and trauma, with degenerative aneurysms representing most abdominal aortic aneurysms <sup>1-3</sup>.

The main risk factors related to the appearance of degenerative aneurysms include male gender, smoking, advanced age, hypercholesterolemia, family history of aneurysms, white race, systemic arterial hypertension and Chronic Obstructive Pulmonary Disease <sup>3-5</sup>.

Peripheral arterial aneurysms are abnormal dilations of the peripheral arteries caused by weakening of the arterial wall, usually caused by atherosclerosis, trauma, infection, or post-stenotic abnormalities. They are often associated with complications that lead to acute or chronic arterial insufficiency, embolization with infarction or gangrene of the involved organ or extremity, rupture and perhaps even death <sup>6,7</sup>.

At the same time, the presence of multiple arterial aneurysms manifests as a systemic vascular disease and is associated with atherosclerosis, vasculitis (polyarteritis nodosa and Behçet's disease), infectious mycotic aneurysms, and



hereditary conditions such as Marfan and Ehlers-Danlos syndrome. Multiple aneurysmal disease is rare and mainly affects males<sup>4</sup>.

A study evaluating 2,189 patients with aneurysms identified that 56.6% of them were single, 36.9% had two or three, and 6.5% had at least four aneurysms. Patients with multiple aneurysms are younger at the initial diagnosis and differ in the location of the aneurysm compared to patients with a single aneurysm<sup>8</sup>.

The main therapeutic options, in addition to the initial clinical treatment, are surgical or endovascular procedures. Despite the cited prevalence of multiple aneurysms, they have been reported more in the form of case reports. The objective of the present study is to report to a patient with multiple aneurysms and the procedures adopted in this patient.

## Case report

Male patient, 78 years old, was admitted to the Hospital de Base, in São José do Rio Preto - SP, due to intermittent claudication for one block associated with pain in the left lower limb for 10 months. Smoker, systemic arterial hypertension as comorbidities. In external imaging tests: In August 2020, a CT scan of the abdomen showed an infrarenal abdominal aortic aneurysm (AAAIR) measuring 4.5cm x 4.5cm; In November 2020 US Doppler revealed thrombosed aneurysm in the bifurcation of the left femoral artery and total thrombotic obstruction in the popliteal, anterior tibial, peroneal and dorsalis pedis arteries. In August 2021 CT scan of the abdomen showed AAAIR measuring 4.5 x 4.5 cm and a right internal iliac artery aneurysm measuring 5.7 x 5.7 cm and he underwent embolization of the right internal iliac artery aneurysm.

On 01/14/2023, the patient returned to the Hospital de Base-Sao Jose do Rio Preto-Brazil due to left abdominal and inguinal pain. On physical examination, mildly painful abdomen in the lower abdomen and left groin, presence of a palpable and pulsating mass in the hypogastrium; slowed perfusion in the left lower limb, with the presence of a hardened mass in the inguinal region, with pulses of the femoral (-), popliteal (-), anterior tibial (-) 80 mmHg, posterior tibial (-) 90 mmHg and Ankle Arm Index (ABI) equal to 0.42 (left upper limb 210 mmHg. Imaging tests identified multiple aneurysms: infrarenal abdominal aortic aneurysm measuring 6.5 cm x 5.7 cm, right internal iliac artery aneurysm, right gluteal artery aneurysm, thrombosed left popliteal artery, left superficial and deep femoral artery aneurysm and thrombosed left external iliac artery. On 01/23/2023, aneurysmectomy of the infrarenal aorta and common iliac arteries was performed, with reconstruction using an aortoiliac graft. Figures 1 to 8 shows the aneurysmal lesions. The study was approved by the research ethics committee of the Medical School in São José do Rio Preto (FAMERP)# 4.537.561 . The consent term was signed.

## Discussion

The present study reports the case of a 79-year-old patient with multiple aneurysm who has been undergoing follow-up

and treatment at the service for 18 months. The literature is poor on the subject, basically case reports<sup>3,7</sup>, but one of the studies reports a prevalence of 6.5%<sup>6</sup>. In addition to the arteriosclerosis process, other causes such as vasculitis disease (polyarteritis nodosa and Behçet's disease), infectious mycotic aneurysms and hereditary conditions such as Marfan and Ehlers-Danlos syndrome are reported.

The initial alert of the present study was intermittent claudication where the diagnosis of multiple aneurysms, which were asymptomatic, were identified in complementary exams. Claudication was due to one of the complications of aneurysms, which are thrombotic events. The initial option was clinical treatment of claudication and embolization of the right internal iliac artery was scheduled. This embolization was unsuccessful on the first attempt, but on the second it was successful.

After embolization, clinical treatment was maintained and when the abdominal aneurysm reached 5.7 cm in diameter, surgery for resection of the aneurysm was indicated, which evolved well. The other aneurysms are under clinical follow-up. Visceral aneurysms are associated with higher mortality when ruptured, but peripheral aneurysms expose the limbs to risk. Popliteal aneurysms have a high association with those of the abdominal aorta and, when present, their screening is necessary.

As for endovascular, surgical or even clinical procedures are the options to be chosen and will depend on each specific case. Arteriosclerosis is the main cause of these multiple aneurysms and every prophylactic approach is fundamental. Control with doppler in the initial phase suggested and then evaluation with angiotomography to define the form of treatment is essential.

## Conclusion

Multiple aneurysms are uncommon, but alerts should be given when one of them appears, especially that of the popliteal artery.

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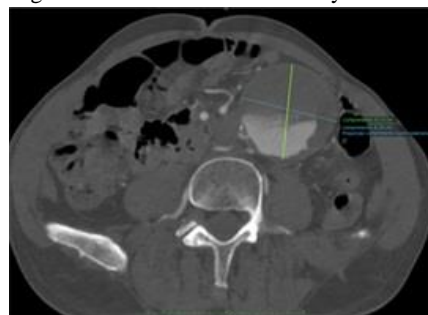
## Conflict Interest

The authors declared no have conflict interest.

The study was development in Hospital de Base-Sao Jose do Rio Preto-Brazil

**Figure**

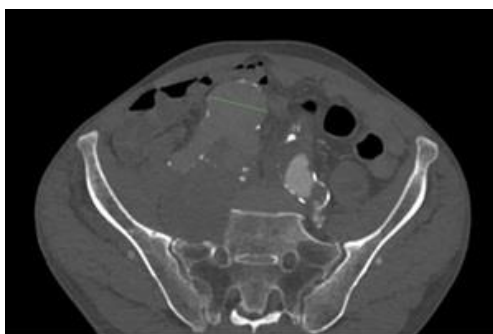
Figure 1. Abdominal aortic aneurysm 6.3cm



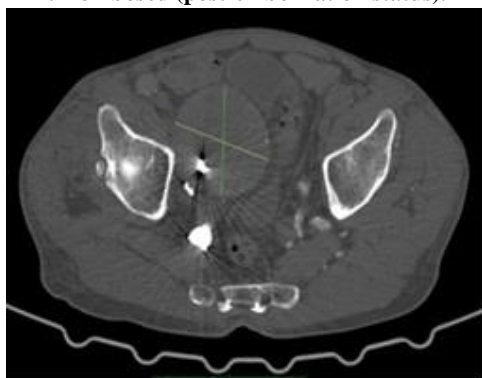
**Figure 2.** Abdominal aortic aneurysm and aneurysm of a. right internal iliac in status post embolization with free-release coils.



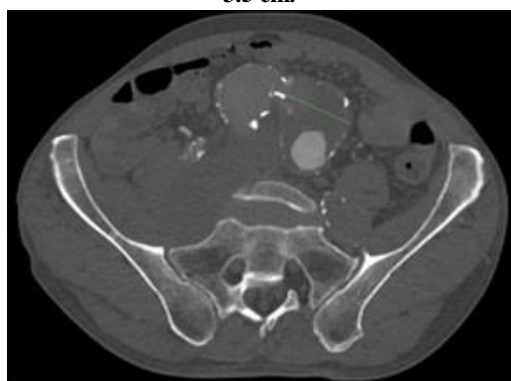
**Figure 3.** Right common iliac artery aneurysm measuring 4.2 cm



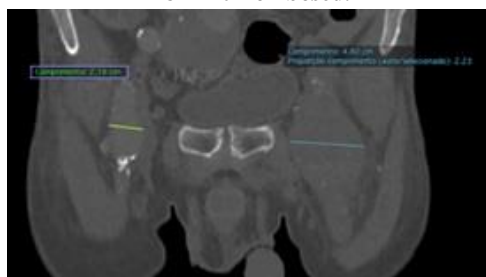
**Figure 4.** Internal iliac artery aneurysm right with 5.7 cm thrombosed (post-embolization status).



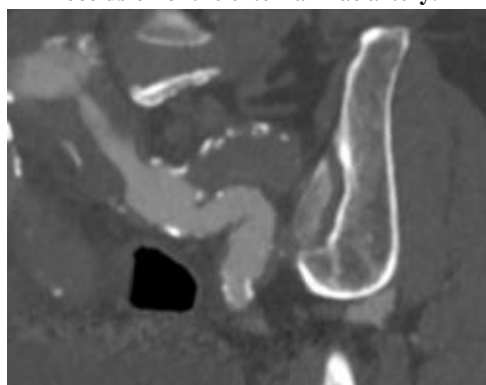
**Figure 5.** Left common iliac artery aneurysm measuring 3.5 cm.



**Figure 6.** Femoral artery aneurysm: right 21mm and left 48mm thrombosed.



**Figure 7.** Common iliac artery bifurcation left with occlusion of the external iliac artery.



**Figure 8.** Refilling of the deep femoral artery.



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