

## CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

### Vascular Diseases Quiz – Case 5

A 56 year old man presented to our emergency department complaining of left lower quadrant abdominal discomfort radiating to the back, within the last week. His past medical history included arterial hypertension, coronary heart disease and severe chronic obstructive pulmonary disease (heavy smoker). His was on antiplatelets, nitrates, diuretics and inhaled steroids.

His vital signs were normal and physical examination revealed a pulsatile mass in the left iliac fossa, but no other abdominal findings. Peripheral pulses were palpable. Chest x-ray, ECG and blood investigations did not reveal anything notable.

An abdominal CT scan with IV contrast demonstrated an intact 30 mm isolated Iliac Artery Aneurysm (IAA) (fig. 1). Due to the high risk of rupture, the patient was admitted for further evaluation of his IAA and treatment planning: Open or endovascular repair?

#### Comment

The patient was assessed as American Society of Anesthesiologists (ASA) grade III. Open repair was considered as high risk for the patient, and an endovascular procedure was planned.

CT angiography was performed to assess the anatomy of the aneurysm. The 30 mm isolated IAA was confirmed, while meticulous measurements counted a 25 mm in length and 16 mm in diameter proximal aneurysm neck (fig. 1). A patent internal iliac artery (IIA) arose within the distal part of the aneurysm. The contralateral IIA was also patent.

The endovascular procedure was carried out following coil embolization of the IIA's origin, through bilateral femoral access (percutaneously on the right) (fig. 2). A double stent procedure was performed: the distal stent-graft landing on the external iliac artery was deployed first, followed by the proximal stent-graft deployment. Balloon dilation was performed at the proximal and distal attachment sites and in the overlapping zones. Final angiography showed aneurysm exclusion with no signs of endoleak. It is worth noticing that by this technique, a sizeable lumbar artery arising from the terminal aorta and bringing direct collateral circulation to the ipsilateral distal branches of the proximally embolized, hypogastric artery, was preserved, maintain pelvic perfusion (fig. 3). The patient was discharged 2 days later. His abdominal discomfort had subsided and no pulsatile mass was anymore palpable.

The favourable early outcomes of endovascular aortic aneurysm repair in properly selected patients encouraged a similar approach to IAAs with promising results in recent publications, proving the feasibility and efficacy of the method. However, despite that accumulated experience exists in the management of common iliac artery aneurysms accompanying aortic aneurysms, less is known on the application of endografts in cases of solitary iliac artery aneurysms. In the former, a bifurcated device extending beyond the iliac aneurysm would be an effective solution. In the latter, however, a bifurcated graft would be not only unnecessary (or unfit) for a healthy aortic vessel but harmful for lumbar or inferior mesenteric-IIA collateral circulation, especially in cases where IIA embolization is considered. Although rich collaterals exist in the pelvic circulation, interruption of the IIA along with the inferior mesenteric or lumbar artery may lead to pelvic arterial insufficiency, even in the presence of a patent

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**Figure 1.** CT angio demonstrating the isolated left iliac artery aneurysm (only the functional lumen is visible).



**Figure 2.** Embolization of the left internal iliac artery.



**Figure 3.** Final angiography showing aneurysm exclusion with no signs of endoleak. Notice the sizeable lumbar artery arising from the terminal aorta bringing direct collateral circulation to the ipsilateral distal branches of the proximally embolized, hypogastric artery.

contralateral IIA.

Iliac anatomy is variable and usually complex (e.g. kinking, stenosis, calcification), requiring several adjunctive technical strategies to achieve adequate iliac aneurysm exclusion. An adequate proximal sealing zone is of utmost importance.

Endovascular repair of isolated IAAs is safe and effective, with initial mid-term results similar to those after endovascular aortic aneurysm repair. The low morbidity and mortality of endovascular IAA repair make it particularly well suited to patients with significant comorbidities. Currently, open repair may remain the standard therapy. Large studies with long-term follow-up will assess the durability of endovascular IAA repair and its possible broader applicability as first-line therapy.

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**Diagnosis:** Endovascular repair of isolated iliac artery aneurysm