Clinical History:

A 68-year-old man, repeatedly treated for critical limb ischaemia, presents for internal thigh pain and difficulty walking. The CT-angiography shows a large internal iliac artery aneurysm. Here we present a case report of successful aneurysm exclusion using a combined approach with coil and Amplatzer vascular plug.

Imaging Findings:

The CT-angiography images were used in order to confirm and calculate aneurysm extension, evaluate vascular afferents, and assess coil and plug size (Fig 1).

Written patient informed consent was obtained and double anti-platelet therapy was administered three days before the procedure.

After placing a 6 Fr 10 cm long introducer sheath and reaching the aneurysm from an ipsilateral transfemoral approach using a Simmons I catheter, a diagnostic angiography was performed that showed multiple afferent arteries departing from the aneurysm sac (Fig 2).

We decided to catheterise and embolised selectively every afferent artery in order to reduce the risk of a retrograde inflow into the aneurysm. To embolise arteries we used coils; angiography control showed an optimal result (Fig 3). Then we proceeded to vascular plug release (oversized in 20%, in order to avoid dislodgement), positioned at the origin of internal iliac artery (Fig 4).

Discussion:

Aneurysms of the internal iliac artery (IIA) are rare and most commonly found in the setting of abdominal aortic aneurysms or common iliac artery aneurysms (CIAA) [1]. Atherosclerosis is the most common cause of general aneurysmal disease and also of IIA, followed by trauma, infection or collagen diseases [1]; the majority of cases is related to progressive atherosclerosis.

Most patients are men, aged 65–70 years [2].

For their anatomical location, IIAA can grow to significant size in a completely asymptomatic condition and their delayed identification can occur because of rupture or compression of venous, nervous, uro-genital and intestinal
structures. Parry et al. suggested that the anatomical proximity of the bladder and ureters resulted in compressive symptoms in 15-45% of patients [3]. A subsequent review of 32 published cases by Krupski, showed only 3 patients (9%) were asymptomatic at presentation [4]. The natural history of IIAA and high-associated risks of rupture and associated mortality, provide some evidence for an aggressive approach to the management of IIAA.

An endovascular approach, that may present a lower risk of haemorrhage and consequently the rate of mortality, is particularly appealing. Furthermore, an endovascular approach with limited local trauma, rapid recovery, low blood loss, less anaesthetic requirement, reducing the in-hospital stay. Embolisation using Gianturco coils was described by Perdue in 1983 [5]. The coil placement should be as proximal as possible in order to prevent interference with collateral circulation and recognised complications include buttock claudication in 12–55% and erectile dysfunction in 1–13% [6].

The Amplatzer vascular plug (AVP) is a self-expanding Nitinol cylindrical device, with two extremities platinum stripes as markers. AVP is preloaded and delivered through a guiding catheter or a sheet. Today AVPs are used in interventional radiology for the occlusion of arteries and veins of large and middle calibre. There are no absolute contraindications to the use of the device [7].

Definitive treatment of a hypogastric aneurysm consists not only of eliminating antegrade inflow but also of preventing retrograde filling of the aneurysm sac [8]. In our case we decided to embolise selectively all efferent arteries in the aneurysm sac in order to reduce the risk of buttock claudication, and close proximally with an AVP. This double endovascular approach, with coils and plug, led a significant reduction of the risks associated with open surgery, that are still quite high, allowed selectively embolising the arterial branches that can reflow in the aneurysm sac, while preserving the ipsilateral pelvic vascularisation thus reducing the risk of long-term onset of buttock claudication.

**Differential Diagnosis List:** Internal iliac aneurysm, Inguinal hernia, Renal colic pain

**Final Diagnosis:** Internal iliac aneurysm

**References:**


Figure 1

Description: Aneurysm inflow
Origin: Radology Department of Tor Vergata Rome Italy

10.2 mm (2D)
Description: MIP view of aneurysm; look at the controlateral aneurysm of left common iliac artery.
Origin: Radology Department of Tor Vergata Rome Italy
Description: Aneurysm inflow Origin: Radology Department of Tor Vergata Rome Italy
Description: Volume rendering view
Origin: Radology Department of Tor Vergata Rome Italy
Figure 2

Description: Angiographic control after aneurysm approach. Origin: Radiology Department fo Rome Tor Vergata
Description: Multiple afferent arteries from aneurysm sac. Origin: Radiology Department fo Rome Tor Vergata
Description: Embolisation with coils
Origin: Radiology Department of Tor Vergata Rome
Description: Control after coil release  
Origin: Radiology Department of Tor Vergata Rome
Description: Control after coil release  
Origin: Radiology Department of Tor Vergata Rome
Figure 4

Description: Vascular plug release

Origin: Department Radiology of Tor Vergata Rome