Endovascular repair of bilateral isolated internal iliac arteries aneurysms

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Isolated internal iliac artery aneurysms (IIIAA) are a rare form of aneurysm but rupture has a high mortality rate.

The estimated incidence of IIIAA is 0.3% to 0.5% of all intra-abdominal aneurysms.

More than 100 years ago, Archibald MacLaren was the first surgeon to describe a case of an IIIAA.
Case presentation

- 63 yr. male patient
- Active smoker
- Presented with elevated level of serum prostate-specific antigen (PSA) & a positive biopsy of the prostate.
- CT scan accidentally reveal bilateral isolated aneurysms of the Internal iliac arteries (IIAs).
  - CT scan:
    - Fusiform aneurysm of the left IIA with max diameter of 4.17 cm and mural thrombus
    - Fusiform aneurysm of the right IIA with max diameter of 3.47 cm and mural thrombus
    - Patent both iliac axis.
❖ It is recommended to treat aneurysms of the IIAs larger than 3 cm as the risk of rupture is 14–31%.

❖ The problem of the patient management was that both aneurysms should be treated, while the one internal iliac artery must be remained patent.

❖ We also had to avoid open intervention to the pelvis given that the patient had a positive prostate biopsy and impending prostatectomy.
Pre-operative CT Angiography

BILATERAL INTERNAL ILIAC ARTERIES ANEURYSMS

CTA 3-D Reconstruction
HOW WE DID IT;

• Cut down exposure of both common femoral arteries

• Catheterization of the left IIA using the cross over technique from the right CFA

• Insertion of a 7Fr - 45cm long catheter

• Coils deployment because of rupture of a left IIA branch

• Deployment of the Advanta V12® balloon expandable covered stent (Atrium Medical, Hudson, NH) in the left IIA

• Deployment of the Anaconda AAA Stent Graft System limb (Vascutek Ltd., Inchinnan, Scotland, UK) to the right common – external iliac artery
Post-operative CT Angiography one month later

Iliac limb

Thrombosed Right IIA aneurysm

Patent Right External IA

Patent Left Internal and external IAs

Stent Graft

59X08

1712x08
WHICH TREATMENT OPTIONS?

OPEN SURGERY:

- Proximal ligation: the aneurysm may refill by retrograde flow with a risk of late rupture.
- Proximal & distal ligation: operative bleeding and ideally all tributaries leading into the aneurysm should also be ligated.
- Endoaneurysmorrhaphy: the sac is opened and the ostial branches oversewn.
- These procedures require a normal contralateral internal iliac artery without significant stenosis to avoid ischemic symptoms (buttock necrosis, ischemic colitis and paralysis).
The Endovascular techniques may be allocated in two main philosophies: with or without IIA flow preservation.

- Embolization with coils
- Covered Stent
- Vascular Plug
- Iliac Branch Device

Combined procedures: embolization + iliac limb or cover stent
Open repair of IIAA is technically challenging because of aneurysm localization and its outcomes confirm that complexity, with mortality rates of 11% for elective repair and 50% for emergency repair.


left internal iliac artery aneurysm (blue arrows).
CONCLUSION

➢ Internal Iliac Artery flow preservation is technically challenging.

➢ Endovascular repair is an emerging alternative to traditional open repair in selected patients, especially when asymptomatic.
"What do you think about the approach on this one? A Miller #3 blade or a Marley #4?"

Thank you for your attention
The internal iliac artery lies deep in the pelvis, and many authors have proposed this as an explanation for the high rate of asymptomatic IIIAAs.

Aneurysm rupture may be the first presentation with hypotension, abdominal, groin and thigh pain.

Symptoms of IIIAAs are attributable to direct compression of surrounding structures.

- Palpable mass in the iliac fossa, Ipsilateral leg pain with neurological signs.
- Ureteric colic, Hydronephrosis with renal failure can occur secondary to ureteric obstruction.
- Constipation, rectal bleeding if the rupture of the aneurysm occur into the colon.
- Obstruction to ilio-femoral venous flow causing edema of the lower limb.
Post-operative CT angiography one month later

Thrombosed Right IIA aneurysm

Patent Left Internal and external IAs

Patent Right External IA

CTA 3-D Reconstruction
Aetiology

- The majority of cases are related to progressive atherosclerosis.
- Infection, Trauma.
- Connective tissue disorders and diseases of the arterial wall such as Marfan and Ehlers-Danlos syndrome, fibromuscular dysplasia, Takayasu’s arteritis, Kawasaki disease, Behcet’s disease, cystic medial necrosis and spontaneous dissection.