Isolated Iliac Artery Aneurysms: Treatment Options

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Epidemiology: of CIA and IIA aneurysms

- Uncommon – occurring in 0.03% of population
- <2% and 0.4% of clinically noted aneurysmal disease
- Versus – not isolated – with AAA – 40%
- 25% of isolated CIA will be bilateral
When to fix?

- Technical definition of CIA – 1.5 cm
- BUT – average size at rupture is 7-8 cm*
- AND – ruptures < 3.5 cm are very rare
- Therefore = repair between 3 & 4 cm
- Rate of growth – 1/3 no expansion over 30 months
  - < 3 cm – 1.1 mm/yr
  - > 3 cm – 2.6 mm/yr **

Open Repair -

- Straightforward - ? Proximal anastomosis?
- Difficult exposures
- Blood loss –controlling the internal
- Morbidity and mortality
- Indicated if venous or ureteral compression is present...
Preserving the IIA

1) Adequate proximal and distal landing zones
2) Unilateral IIA is generally tolerable – 45% of patients will complain of some buttock symptoms

Preserving the IIA: The last 10 years

- Full open bifurcated repair
- External to internal bypass with endovascular coverage of aneurysm (IIA – proximal ligation)*
- The Aortouniliac with a fem-fem bypass and EIA to IIA covered stent – with retrograde flow

Or…Just coil the thing and cover it…..

- But of the 45% with buttock claudication – very few actually improve (6%)**

Other techniques: If you dare…..

- Two dual-main body Excluder endoprostheses (Gore & Associates, Flagstaff, AZ) to create a trifurcated endograft
  - On the side opposite the iliac aneurysm, a contralateral limb extension is deployed in the standard fashion.
  - On the side ipsilateral to the CIA aneurysm, a second main body is deployed in the ipsilateral leg of the first main body.
  - One limb is then extended to land in the EIA and the other in the IIA, resulting in aneurysm exclusion with IIA preservation. This technique was successfully reported in five patients with 100% technical success. Axillary access was required for delivery of the hypogastric extension.

- A more common strategy for endovascular bypass, however, is the “sandwich technique”
  - The ipsilateral iliac limb extender is deployed into the EIA alongside a Viabahn stent graft (Gore & Associates), which is distally deployed into the hypogastric artery. Proximally, the two stent grafts lie side-by-side within the ipsilateral limb of the main endograft body.

Thirty-nine patients (60.9%) had unilateral CIA and 25 patients (39.1%) had bilateral CIA. Mean CIA diameter on the IBE side was 41.0 mm. Twenty-five patients (39.1%) also had an abdominal aortic aneurysm with a diameter >50 mm (mean, 58.5 mm).

Overall technical success was 95.2%, and there was no procedural mortality.

Data from 61 patients were available for primary and secondary effectiveness end point analysis. Internal iliac limb patency was 95.1%, and there were no new type I or III endoleaks or device migrations observed at 6 months.

The three patients with loss of internal iliac limb patency were asymptomatic and freedom from new onset buttock claudication on the IBE side was 100% at 6 months.
Forty subjects were enrolled at 18 US sites. Iliac aneurysms were bilateral in 25 (62.5%). Mean CIA diameter treated was 37 mm. Deployment success was 100% with a mean procedure time of 167 minutes. There was no 30-day mortality.

Mean follow-up was 12.2 (range, 2-20) months. One death occurred at 167 days due to a pre-existing CHF. There was no aneurysm rupture, conversion to open repair, type I or III endoleak.

HA side-branch patency was 100% with available CT follow-up. Four subjects (10%) required second interventions (SIs), none of which was related to the HA side-branch.
So – What to do…?

- Individualize…..(anatomy, age, functional expectations)
- The majority of CIA and IIA disease may be treated with endovascular techniques
  - Resulting in shorter hospital stays and decreased morbidity and mortality rates
- Preservation of one or both hypogastric arteries during endovascular repair can be accomplished through various techniques.

As experience with iliac branch grafting continues to grow, it will likely become a first-line endovascular treatment option.