Endovascular treatment of hypogastric artery aneurysm using an internal branch

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Disclosure

Speaker name:

I have the following potential conflicts of interest to report:

- [ ] Consulting
- [ ] Employment in industry
- [ ] Stockholder of a healthcare company
- [ ] Owner of a healthcare company
- [ ] Other(s)

☐ I do not have any potential conflict of interest
Introduction

• Most commonly seen with AAA or CIAA (5-10%)
• Incidence of isolated hypogastric artery aneurysm is rare 0.03%
• 0.3% of all aortoiliac aneurysms
• High mortality rate in case of rupture
Introduction

• Treatment:
  • Exclusion (surgical, embolisation)
  • Preservation (endovascular, surgical)
Introduction

• Exclusion:
  • Surgical resection
  • Trans-arteriel embolisation, coverage
  • Trans-gluteal embolisation

• Preservation:
  • Surgery: difficult access in deep pelvis, considerable morbidity
  • Endovascular:
    • Internal Branch device
    • Sandwich technique
Introduction

- Many ischemic complications are related to hypogastric artery exclusion:
  - Buttock claudication (28%)
  - Erectile dysfunction (5-10%)
  - Spinal cord ischemia, Ischemic colitis, Pelvic skin ischemia (0-3%)

Methods

• Between 2017 and 2018:
  • 5 patients with hypogastric artery aneurysms
  • Mean age 73 (66-81)
  • 4 bilateral, 1 isolated bilateral hypogastric aneurysms.
  • Size 3.5-6 cm
  • 2 previously treated with aorto-aortic or aorto-biiliac bypass
Methods

• Intervention and technical notes:
  • 4 patients had a bifurcated graft with bilateral internal branch device
  • 1 patient had isolated branch device (previous aorto-bi-iliac graft)
  • All patients percutaneous femoral approach.
  • 1 patient left brachial approach
Methods

- Intervention and technical notes:
  - Position of IBD
  - Catching the preloaded catheter guidewire from contralateral femoral artery (0.018” Wire!)
  - Cross-over using a 12 Fr sheath.
  - Hypogastric artery cannulation using 8 Fr Sheath (to fit Viabahn stentgraft)
  - Superior gluteal artery cannulation, +/- embolization of anterior division of HA
  - Stent graft placement from distal to proximal (Viabahn followed by BX stent graft)
Methods

• Material used:
  • IBD: ZBIS from Cook 5/5
  • Aortic stent grafts:
    • Zenith alpha 3/5
    • Endurant IIs 1/5
    • No aortic stent graft 1/5
  • Hypogastric artery stents:
    • Viabahn (7-8 mm) 5-10 cm long
    • Begraft plus (8mm)
    • Advanta V12 (8mm)
• Coils
Results

• 9 hypogastric artery aneurysms were treated.
• Technical success in 8/9:
  • Difficult cannulation in tortuous anatomy, stent lost in aneurysm
  • One hypogastric artery branch perforation: coiled
• Mean Operation time 188 min (140-240)
Results

• Hospital stay 48-72 hours for 4 patients, 1 week for one patient (unsuccessful cannulation)
  • Iliac limb occlusion treated by embolectomy and Bx stent
• buttock claudication in one patient
Results

• Control CT (1-12 months):
  • All stents were patent, one type II endoleak in 1 hypogastric artery (1 month CT)
  • Persistence of Buttock claudication in one patient
• Reintervention at 6 months in one patient for severe iliac limb stenosis (additional Bx stent)
Outcomes of open and endovascular repair for ruptured and nonruptured internal iliac artery aneurysms

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Objective: To evaluate outcomes of open (OR) and endovascular repair (EEVAR) of internal iliac artery aneurysms (IIAAs) with or without preservation of internal iliac artery (IIA) flow.

Method: We reviewed the clinical data of consecutive patients treated for IIAs between 2001 and 2012. End-points were morbidity, mortality, graft patency, and freedom from pelvic ischemic symptoms (buttock claudication, ischemic colitis, and spinal cord injury).

Results: There were 97 patients, 87 male and 10 female, with mean age of 74 ± 8 years. A total of 125 IIAs (71 unilateral and 27 bilateral) with mean diameter of 3.6 ± 2 cm were treated. Eighty-two patients (86%) had elective repair and 15 (14%) required emergent repair (mean size, 6.7 ± 2.4 cm range, 3.6-10 cm). OR in 60 patients (62%; 49 elective, 11 emergent) included IIA bypass in 36 (60%) patients and endovascular repair in 24 (40%). EEVAR in 37 patients (38%; 30 elective, 4 emergent) required IIA embolization in 29, iliac branch device in five or open IIA bypass in three, combined with bifurcated aortic stent grafts in 17. Early mortality was 1% for elective (1/49 open, 0/33 endovascular) and 7% for emergent repair (1/11 open, 0/4 endovascular). Early morbidity (43% vs 8%; P < .001) and length of stay (9 vs 1 day; P < .001) were significantly higher for OR as compared with EEVAR. Pelvic ischemic complications occurred in 25 patients (26%), including hip claudication in 23, ischemic colitis in two, and paraplegia in one. Freedom from buttock claudication at 2 years was 25% in patients with no IIA preserved, 68% with preservation of one, and 95% with preservation of both IIAs (P = .002). Freedom from buttock claudication was higher after OR than after IIAn (79% vs 59%; P = .05). Primary and secondary patency rates of IIAs bypasses were 95%, and 80% at 1 and 3 years, respectively.

Conclusions: EEVAR of IIAs is associated with fewer complications and shorter hospital stay compared with OR. Open and endovascular IIAs reconstructions have very good long-term patency, and preservation of IIA flow is associated with higher freedom from buttock claudication. (J Vasc Surg 2014;59:634-44.)

Internal iliac artery aneurysms (IIAs) are rare. Most frequently these are found in conjunction with abdominal aortic aneurysms (AAAs) and/or common iliac artery aneurysms (CIAAs). We have previously reported in our patients an incidence of IIAs in association with 5% of
Discussion

- Mayo clinic 2001-2012:
  - 97 patients, 125 hypogastric aneurysms
  - 71 unilateral, 27 bilateral
  - 60 open repair, 37 Endovascular repair

- 37 Endovascular (5 Bilateral):
  - 29 embolization
  - 3 open bypass with EVAR
  - 5 IBD, all unilateral
Discussion

- 5 Bilateral endo repair:
  - 1 bilateral exclusion
  - 4 unilateral exclusion with:
    - Contralateral revascularization by open bypass: 1
    - Contralateral revascularization by IBD: 3
  - None bilateral IBD
Discussion

• Hypogastric artery patency:
  • 95% at 1 year
  • 80% at 3 years
  • No difference between open bypass and IBD

• Freedom from buttock claudication at 2 years:
  • 95% if both Hypogastric preserved
  • 68% if one hypogastric preserved
  • 25% if none are preserved
Conclusion

• Bilateral endovascular repair of Hypogastric artery aneurysms with flow preservation is feasible using IBDs

• Efforts should be made to preserve the flow in at least one Hypogastric artery
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