Retrograde Embolization of a Symptomatic Hypogastric Artery Aneurysm

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Disclosures

• None
Case

• 88 yo male with history of open AAA repair 20 years ago presents with acute onset lower back and left groin pain.

• Very functional otherwise, cares for himself, mild aortic stenosis, HTN

• Exam: AFVSS, tender in LLQ, palpable distal pulses

• Labs: Cr 1.1  Hgb 10.1  Hct 32
• CTA with >8cm left internal iliac aneurysm, possible contained rupture
• Occluded hypogastric origin, possibly from previous open AAA repair
• Left side hyroureter
Plan

• OR for aortogram with attempted embolization, high likelihood of open repair of symptomatic/ruptured large internal iliac artery aneurysm
• 4Fr sheath Antegrade left CFA
• 4fr angled Glidecatheter to select medial circumflex femoral artery
• 2.7 fr ProGreat through the medial-circumflex to obturator artery collateral pathway
• Detachable coils deployed to fill sac and inflow, 2 large framing coils, 6 hydrocoils (CX and Azur coils; Terumo)
• 2k units of heparin given at start, reversed with 10 mg protamine
• Pressure held at arteriotomy sites
• To ward
POD 1

• Pain resolved
• Stable H/H
CTA POD 1
• Discharge POD 2

• One month CTA with slight decrease in sac size, persistent R CIA and IIA aneurysms

• Doing well at 6 mo followup
Pre-op 6mo f/u
Internal Iliac Artery Aneurysms

• Isolated hypogastric aneurysms are rare and account for .04 to 0.4% of intra-abdominal aneurysms\(^1\)
  • Usually involve the common iliac artery
• Present with rupture in 40% of cases with 30-50% mortality\(^2\)
• Difficult to control surgically
  • Deep in pelvis, often history of prior AAA repairs

Ruptured Hypogastric Artery Aneurysms

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Aneurysms of systemic arteries have been successfully resected with increasing frequency during the past decade. Review of the literature reveals a definite prolongation of life when these large aneurysms are susceptible to elective surgical therapy [1, 2]. The isolated

Hemoglobin was 12.8 gm. per cent, hematocrit 39 per cent, and white blood cell count 9,150 per mm³. Urinalysis gave normal results except for 100 mg. per cent of albumin. Serum amylase on admission was less than 320 units. X-ray examination of the abdomen revealed multiple distended loops of small bowel suggestive of intestinal obstruction. Consultation with the Urology Department was obtained and no evidence of genitourinary tract ob-

Piedmont HEART
Internal iliac aneurysms

• Relationship between diameter and rupture is not well established
• SVS recommends treating when greater than 3-4cm

• Can usually be treated with endovascular repair
  • Distal flow embolized and proximal treated with covered stent
  • Commonly treated with iliac branch device endoprosthesis with good results\(^2\)
    • Preservation of flow may diminish risk of buttock claudication, erectile dysfunction or less commonly colonic ischemia or spinal cord ischemia

Management of iliac artery aneurysms

  • Mayo clinic experience, 438 patients with 715 CIAAs
    • 15 patients had associated hypogastric artery aneurysms
  • Similar 30 day mortality between open and endo repair (1% for elective, 27% for emergency)
  • Higher complication rate and hospitalization after open repair
  • Similar 5 year primary (95%) and secondary (99.6%) patency

• No subgroup analysis of patients with concomitant IIAA
Isolated iliac artery aneurysms: A contemporary comparison of endovascular and open repair

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Objective: Iliac artery aneurysms are rare but associated with significant morbidity and mortality when ruptured. This study compares recent open and endovascular repairs of iliac aneurysms at a single institution.

Methods: Patients were identified and charts reviewed using ICD-9 and CPT codes for iliac artery aneurysm and open or endovascular repair performed between January 2000 and January 2006. Baseline characteristics, procedure-related variables, and follow-up data were retrospectively reviewed.

Results: A total of 71 patients were treated with isolated iliac artery aneurysms. There were 19 open and 52 endovascular repairs. Seven presented with acute ruptures and were treated by open (4) or endovascular (3) repair. Preoperative

- JVS 2008
- Endovascular repair with decreased length of stay, less need for transfusion, similar intermediate outcomes
- 42% mortality in ruptured cases (2/4 open 1/3 endo)
- 10 cases of hypogastric aneurysms, no subgroup analysis
Management of Iliac Artery Aneurysms

• Dix et al. Eur J Vasc Endovasc Surg 2005 30, 119-129
  • Review of the isolated internal iliac aneurysm, 82 papers
    • 40% present with rupture, 30% mortality

• Pitoulias et al. JVS 2007; 48:648-54
  • Compared open vs endovascular repair of solitary iliac aneurysms
  • Better early post-op outcomes with durable mid-term results with endovascular repair

  • Review of endovascular treatment for isolated internal iliac artery aneurysms
  • 55 pts with treatment of 59 IIAA
    • 2% mortality, 20% 30day morbidity (pelvic insufficiency), one aneurysm related death, 5 pts required open intervention
Management of Iliac Artery Aneurysms

• Morris et al. Vasc and Endovasc Surg 2013; 47(3) 239-244
  • Contemporary review on outcomes of ruptured internal iliac aneurysms (case studies and very small series)
  • 61% mortality for open repair, 18% for endovascular, no comments on durability
  • Cases with visceral involvement (Rupture of hypogastric into bladder, colon or rectum) with only reports of open repair

  • Describes techniques and outcomes of treatment if IAA
  • Endovascular repair as first choice for anatomically suitable aneurysms

• No mention of retrograde access in above cited studies
Retrograde access for endovascular repair

- Antegrade access may not always be feasible
- With antegrade occlusion, collateral pathways will dilate with time
- Collateral pathways have been described:
  - Medial femoral circumflex => obturator artery
  - Ascending branch of lateral circumflex => superior gluteal
  - Common anatomic variant is Corona mortis “crown of death” direct collateral from EIA or epigastric to obturator artery

- Trans-venous access may also be an option
  - No literature yet
Conclusions

• Hypogastric artery aneurysms are rare and often present with rupture.

• Literature supports endovascular repair in suitable cases

• Previous open surgical ligation or coverage of the origin after EVAR may preclude more common endovascular treatment methods

• Embolization via femoral artery-hypogastric collaterals can be a helpful adjunct and should not be overlooked
ANEURYSM OF THE HYPOGASTRIC ARTERY PRODUCING URINARY TRACT OBSTRUCTION: REPORT OF A CASE

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The causes of urinary tract obstruction and the anatomical locations of aneurysms are legion, but the occurrence of a pelvic aneurysm that produced urinary obstruction in an elderly patient is unusual.

- 1947, J Urol

- 77 yo male with pelvic pain, inability to void, pulsatile mass on DRE
Fig. 2. A, Drawings of aneurysm and the urinary tract as seen at autopsy. B, Lateral view. C, Posterior view of aneurysm and its relation to iliac and hypogastric arteries.
Corona Mortis Artery as a Cause of a Type II Endoleak in an Internal Artery Aneurysm

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