Pancreaticoduodenal Artery Aneurysms: New Insights Into Their Natural History And Treatment (Endo Versus Open)

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Disclosures
• None.

Outline: pancreaticoduodenal artery (PDA) aneurysms
• Prevalence & natural history
• Etiology (including celiac axis occlusion)
• Surgical approach
  • Endovascular
  • Open
  • Hybrid approach

PDA aneurysms
• 2% of visceral artery aneurysms

False aneurysms
• Pancreatic inflammation—pancreatitis
• Tumor
• Infection

True aneurysms
• Celiac stenosis or occlusion (often from median arcuate ligament, but sometimes from atheroembolism)
• FMD, CAA, other arteriopathies
• Atherosclerosis


PDA aneurysms: presentation & rupture risk
• More than 50% present with rupture (82%).
• Rupture seems to be independent of size.
• 33% (or more) of PDA aneurysms are associated with celiac occlusion.


Illustration by: Emily Bugg MD 2006-2008 PGY-5
Management: PDA aneurysms

- Endovascular therapy:
  - Transcatheter arterial embolization
  - Revascularization of celiac axis alone – case reports support this approach
  - Both

- Open surgery
  - Resection/exclusion
    - Interposition graft, aneurysmorrhapy, pancreaticoduodenectomy
    - With bypass
      - Aorta-hepatic, aorto-gastro-duodenal, retro-hepatic as necessary for hepatic revascularization

- Hybrid approach

Preferred approach to hepatic revascularization

- 60 yo male with incidentally discovered and asymptomatic 3 cm PDA aneurysm
- Celiac occlusion & normal right renal artery

- Surgical bypass to revascularize the liver
  - Endovascular exclusion of the SMA inflow to the aneurysm

- R renal-to-hepatic artery bypass with rGSV
- Subsequent open resection of PDA aneurysm arising from proximal SMA branch
Hybrid approach

- 49 yo male with incidentally discovered 2.6 cm PDA aneurysm arising from a proximal branch of SMA.
- Celiac axis occlusion & 2 small right renal arteries.

- Aorto-to-common hepatic artery bypass.
- Ligation of GDA.

- Angiogram and stent grafting of SMA.

- One month postop, CTA shows patent stent graft and thrombosed aneurysm.
Are we obligated to revascularize the liver?

- 68 yo woman with 5 cm PDA arising from SMA and smaller 3 cm PDA in head of pancreas proper.
- Celiac chronically occluded.

Are we obligated to revascularize the liver?

- SMA arteriogram.

Are we obligated to revascularize the liver?

- Coil embolization of both PDA aneurysms.
Are we obligated to revascularize the liver?

- Stent grafting of SMA.

One month postop: CTA shows patent stent graft and thrombosed aneurysm.

Summary

- PDA aneurysms often present with rupture, are at risk of rupture regardless of size, and are often associated with celiac occlusive lesions.
- CT and catheter angiography are always indicated.
- Many different approaches, but consider hybrid approaches presented here.
- R renal-to-hepatic bypass using reversed GSV preferred mode of hepatic revascularization.

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