CIRA Case of the Week

Case Courtesy of Drs. Aran Sritharan and David A. Valenti
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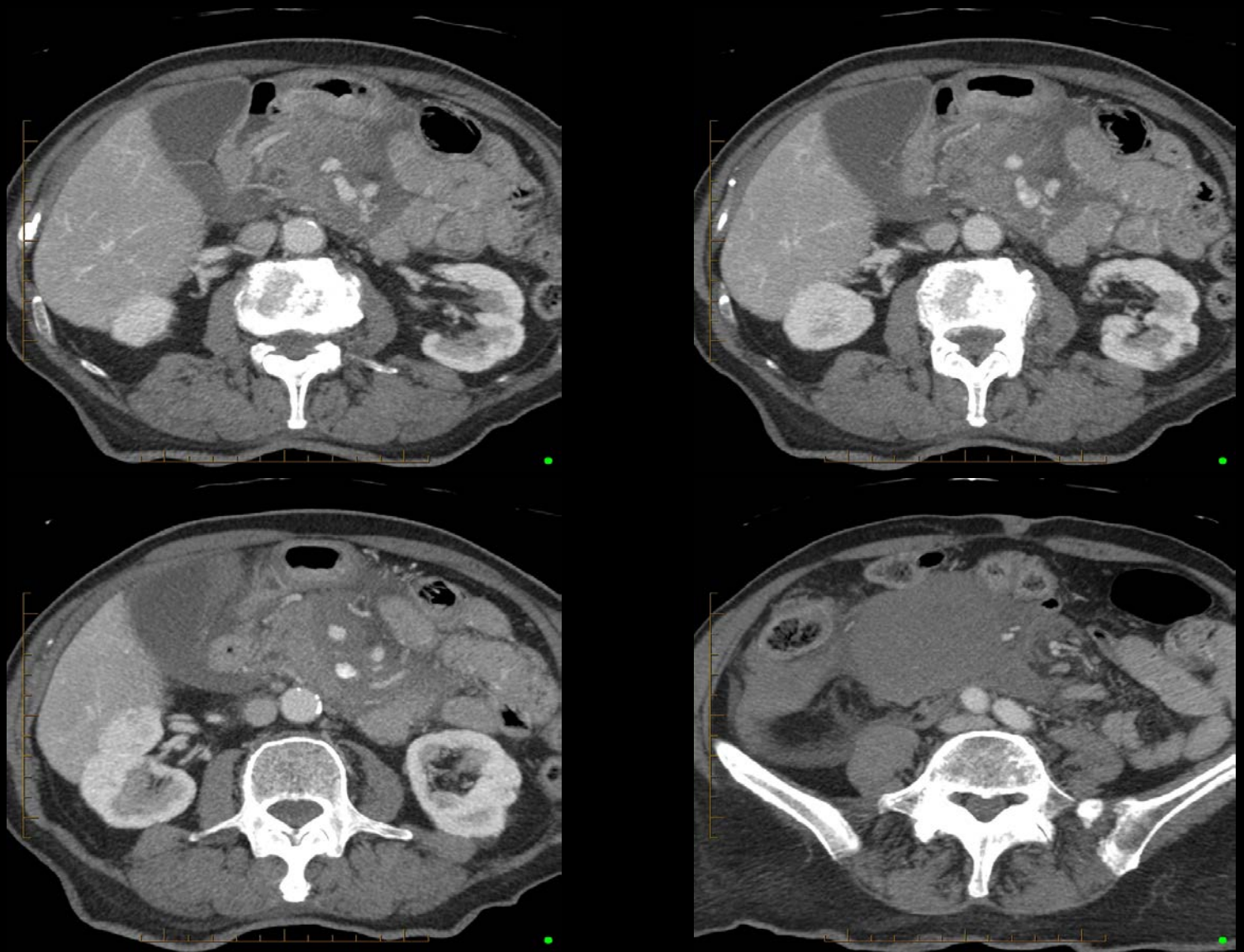
Clinical History

- 86 year old female
- Simple mechanical fall
- Background of AF on dabigatran, otherwise in good health
- Labs:
  - Hgb 103
  - INR, PTT, Plt – Normal

Imaging

- Chest and pelvic x-ray
  - NAD
- CT head
  - Post-traumatic subarachnoid hemorrhage, mainly in frontal region
  - No acute fracture
  - Chronic small vessel ischemia
- CT Chest
  - NAD
- CT Abdomen performed

CT Abdomen - 12/01/2017

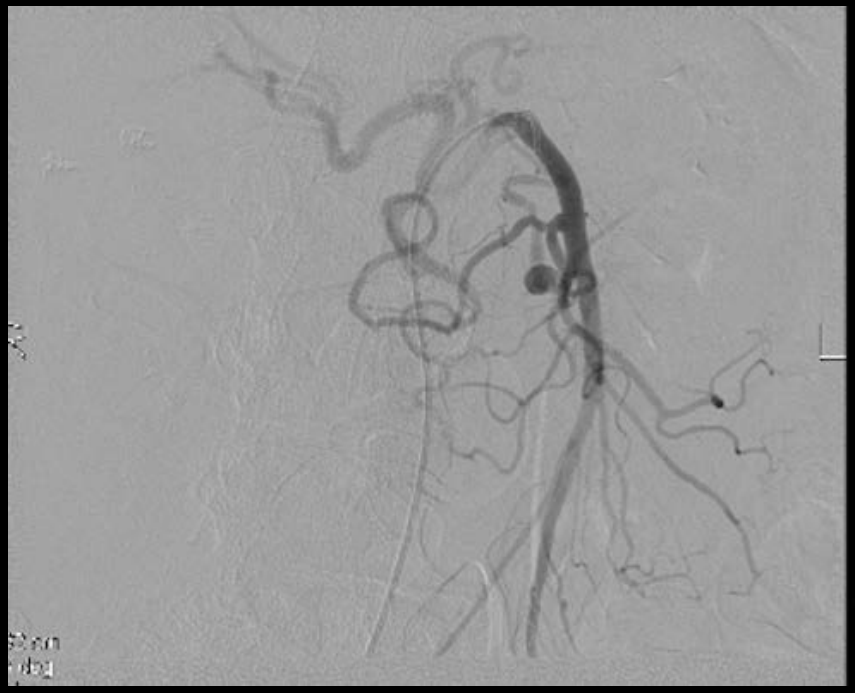


CT Abdomen - 12/01/2017

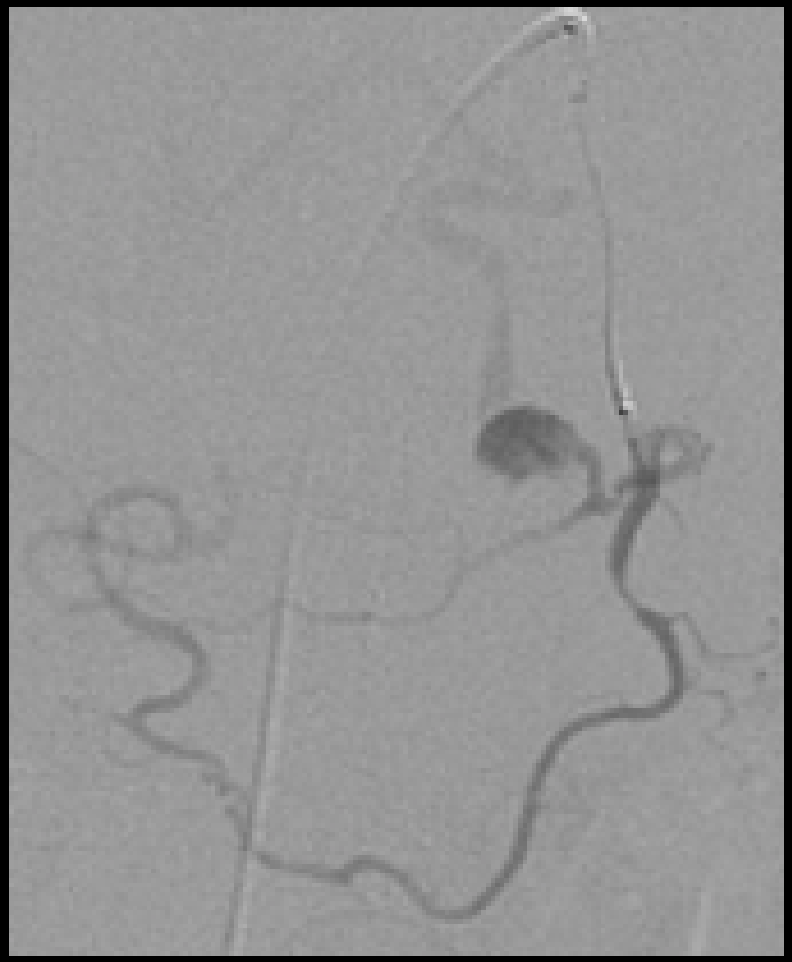
CT Abdomen - 12/01/2017

- **Findings:**
  - Large acute mesenteric hematoma measuring 5.2 x 7.7 x 7.9 cm
  - Intimately related with the common hepatic artery
  - Questionable traumatic pseudoaneurysm or rupture of pre-existing saccular aneurysm
  - No previous imaging available for comparison
  - IR was consulted for advice

Abdominal Angiogram - 12/01/2017



Abdominal Angiogram - 12/01/2017



Abdominal Angiogram - 12/01/2017

- **Findings:**
  - Arc of Buhler aneurysm – anomalous communication between the SMA and celiac axis
  - Tortuous fragile vessels
  - Dissection upon catheterizing the inflow vessel of the aneurysm

Abdominal Angiogram - 13/01/2017

Abdominal Angiogram - 13/01/2017

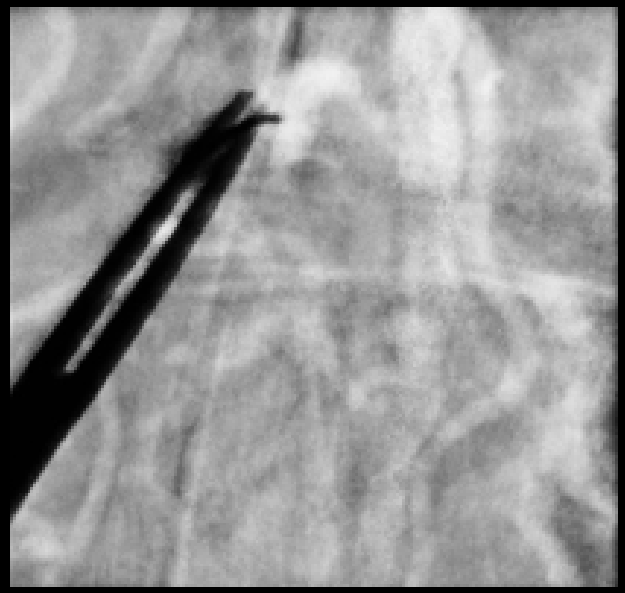
Abdominal Angiogram - 13/01/2017

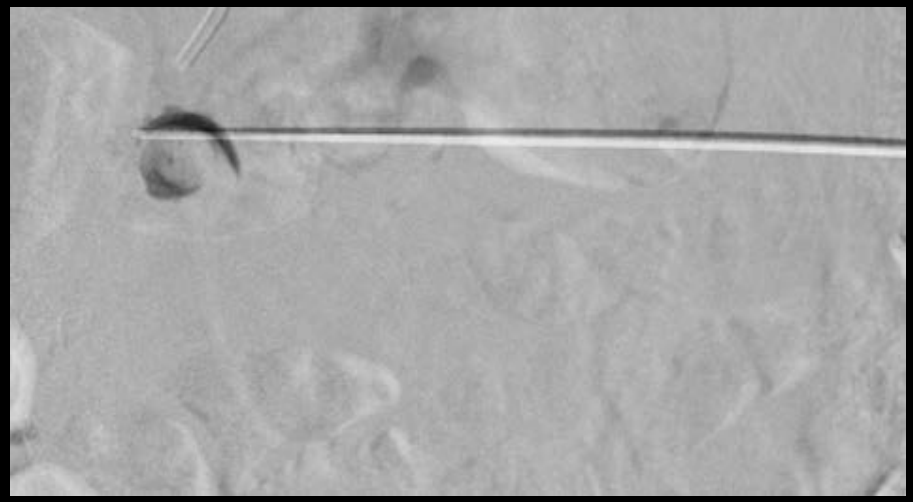
- Again dissection upon catheterizing the inflow vessel of the aneurysm
- Outflow vessel too small for cannulation

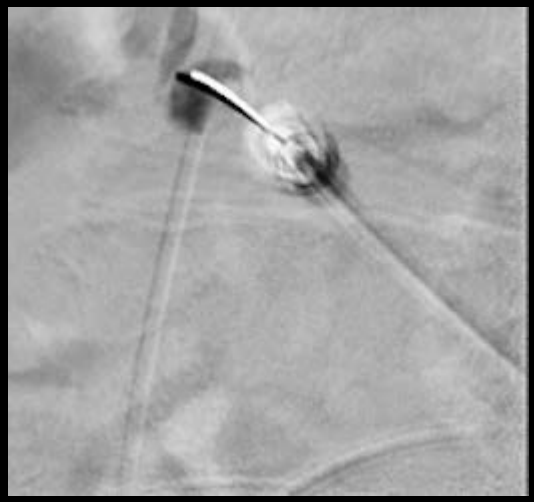
Where to go from here?

- 2 unsuccessful attempts
- Options
  - 3rd endovascular attempt
  - Percutaneous approach
    - DSA
    - Roadmap
    - i-guide
  - Surgery

Abdominal Angiogram - 14/01/2017



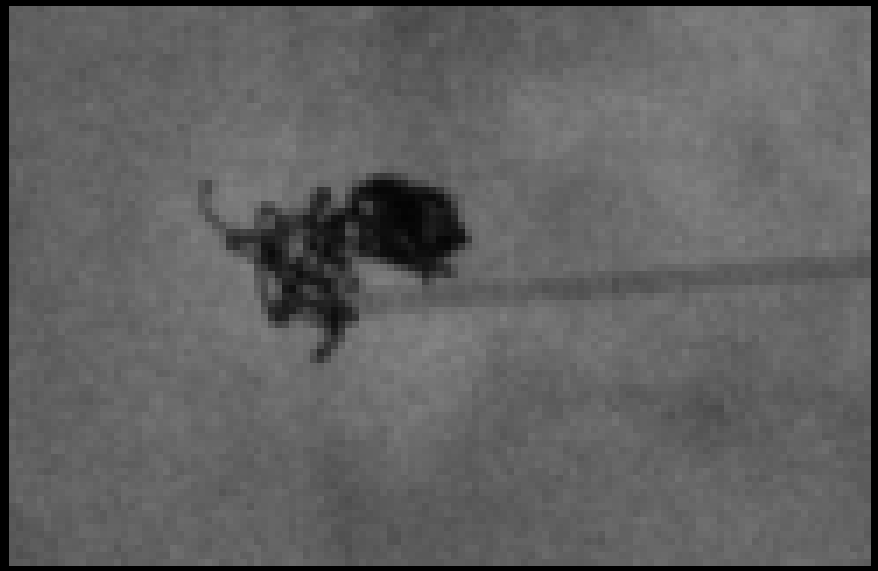




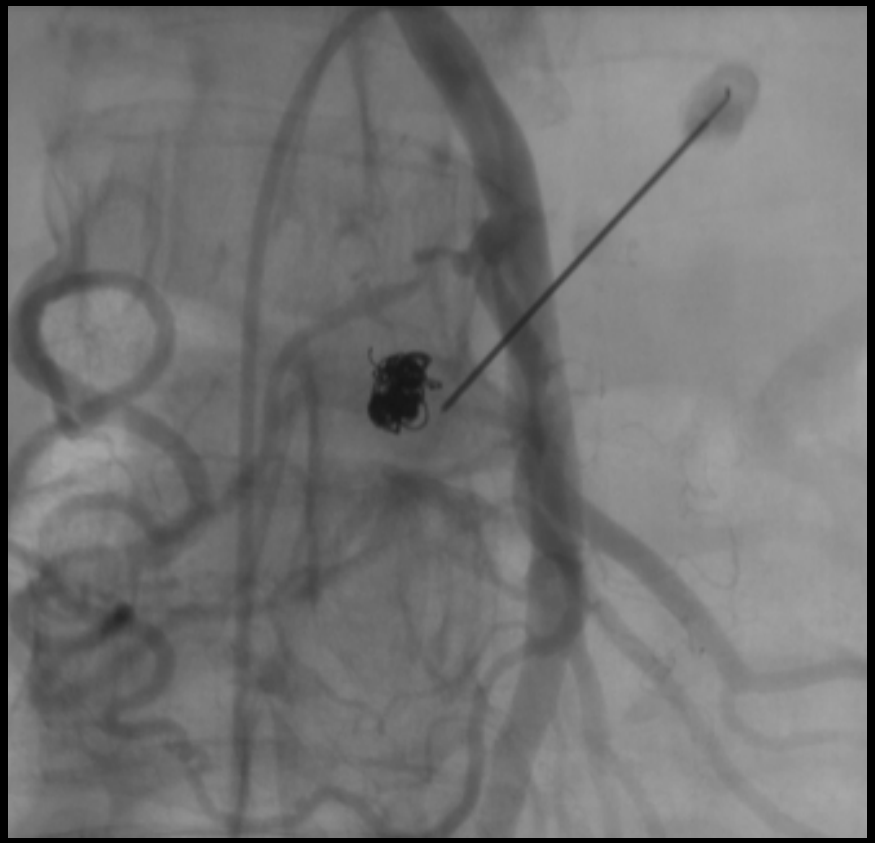
Materials Used

- 5F sheath
- 5F Cobra catheter
- 21 gauge spine needle
- Coils
  - 3 mm and 6 mm vortx
  - 4 mm and 6 mm micronester

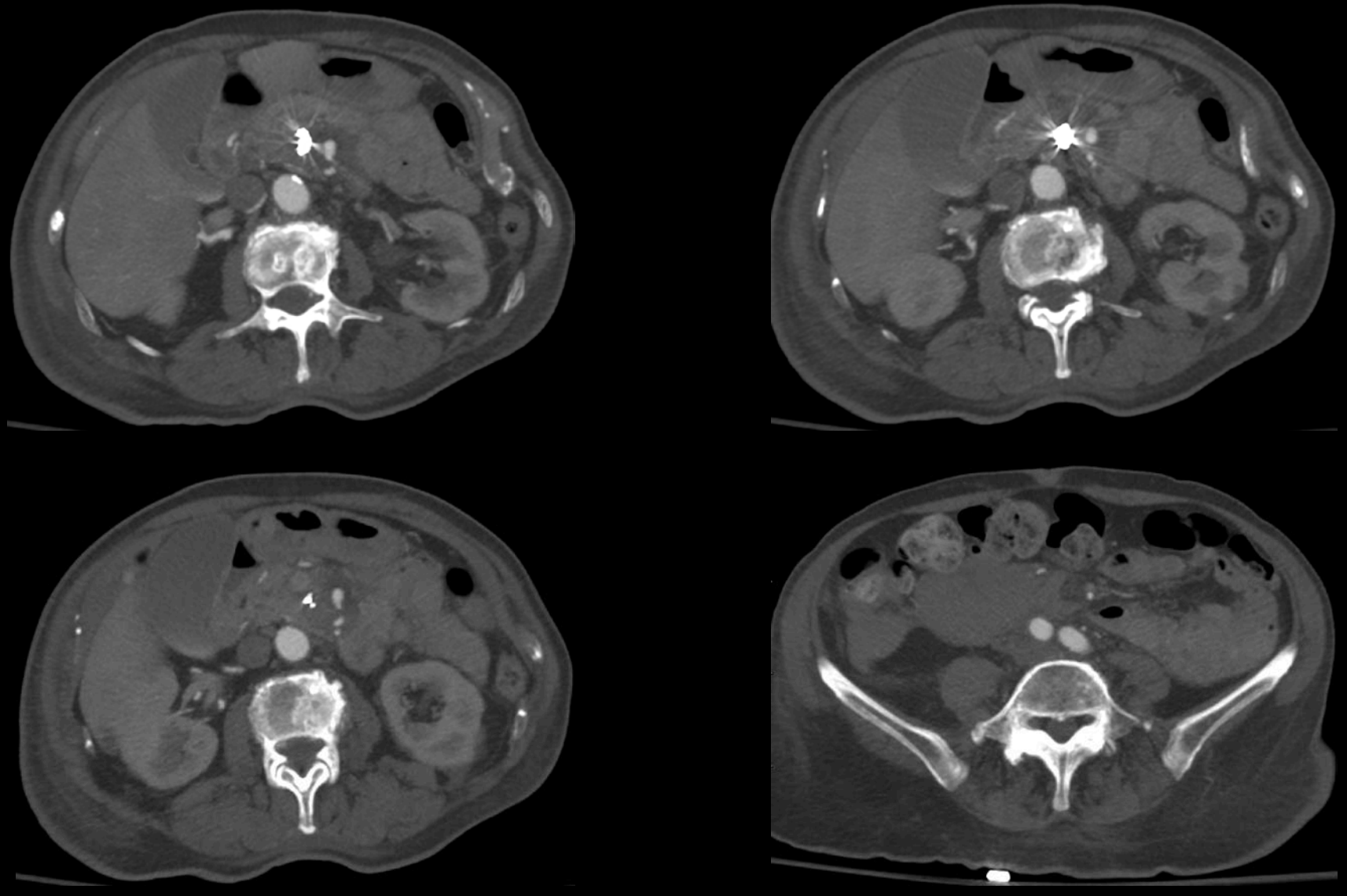
Abdominal Angiogram - 14/01/2017



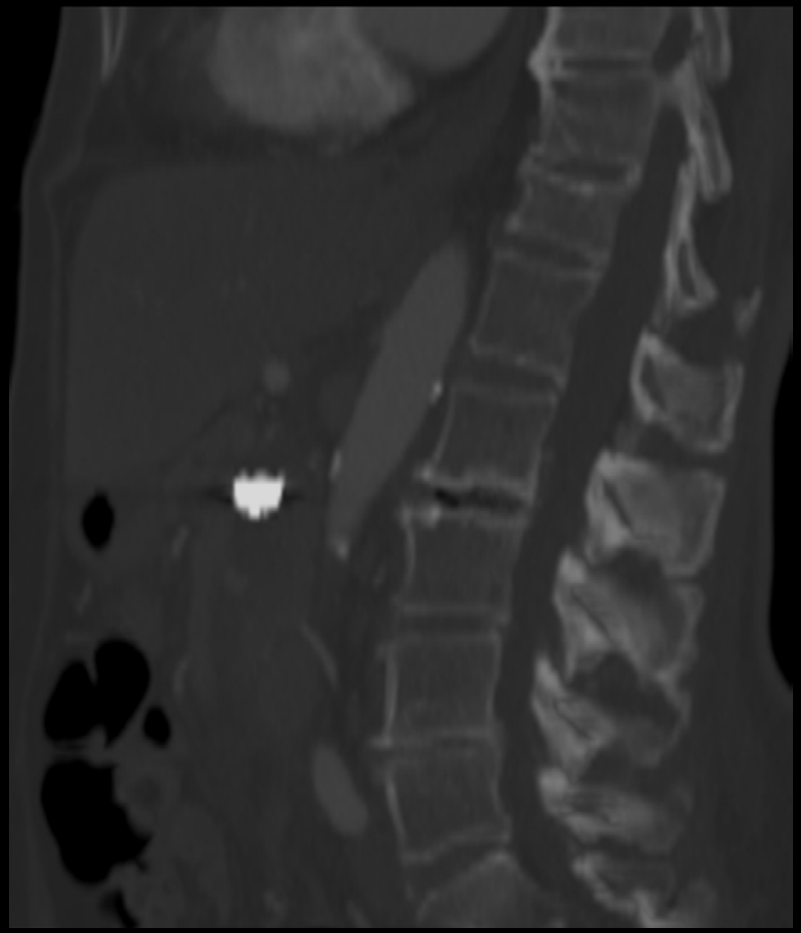
Abdominal Angiogram - 14/01/2017



CT Abdomen – 16/01/2017



CT Abdomen – 16/01/2017



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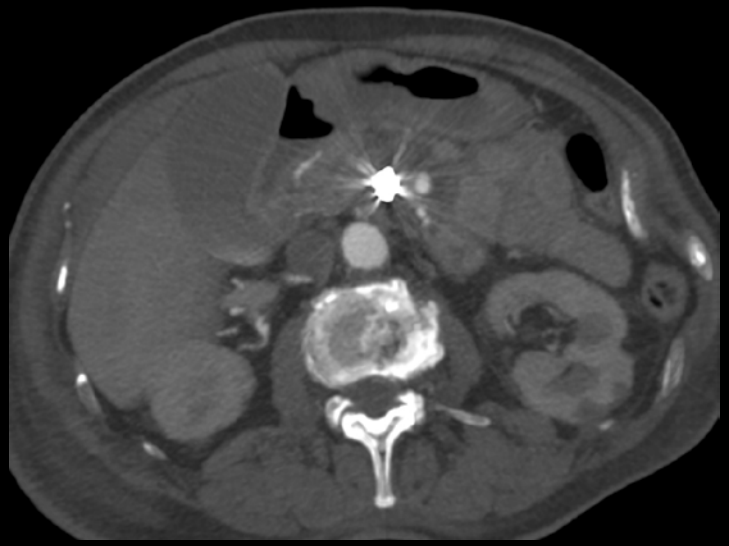

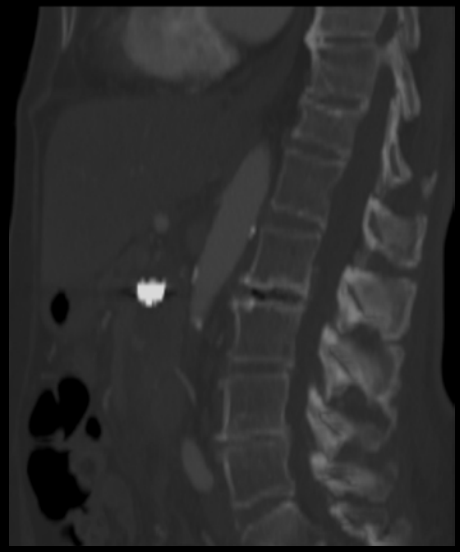

Post Procedure Follow-Up

- Discharged from hospital, with OT supports in place
- Resolution of the bilateral frontal subdural hematomas and subarachnoid hemorrhage
- No residual abdominal symptoms

Discussion

- Visceral artery aneurysms are uncommon entities
- Arise from the celiac, SMA or IMA
- Ever rarer occurrence is the Arc of Buhler aneurysm

PubMed.gov
US National Library of Medicine
National Institutes of Health

Literature

Semin Intervent Radiol. 2007 Mar;24(1):76-81. doi: 10.1055/s-2007-971193.

Interventional management of arc of buhler aneurysm.

Dubel GJ[1], Ahn SH, Saeed MA.

Author information

Abstract

The Arc of Buhler (AOB) represents a persistence of the ventral anastomosis between the superior mesenteric artery (SMA) and the celiac arterial systems. The exact incidence of the AOB is not known, but it is believed to be ≤4%. Aneurysms of this rare anomaly are even more uncommon. We report a case of an aneurysm of the AOB with an intact pancreaticoduodenal artery arcade (PDAA) and near occlusive celiac origin stenosis. Stenoses or occlusions of the celiac origin have been reported in association with AOB aneurysms, as well as in patients with PDAA aneurysms. Transcatheter embolization (TCE) was successfully performed, thereby excluding the AOB aneurysm while preserving flow through the PDAA. To our knowledge, this is the first report of successful percutaneous treatment of an AOB aneurysm. The pathophysiology and management AOB and PDAA aneurysms are reviewed. Review of the literature suggests that TCE, when feasible, is at least as effective as conventional surgery in patients with PDAA aneurysms, but with lower morbidity and mortality. Based on this data and our experience, we believe that TCE should be the initial treatment of choice in patients with PDAA or AOB aneurysms.

Semin Intervent Radiol. 2009 Sep; 26(3): 196–206. PMCID: PMC3036493
doi: 10.1055/s-0029-1225670
Visceral Arterial Intervention

Guest Editor Sanjeeva P. Kalva M.D.

Visceral Artery Aneurysms: Diagnosis and Percutaneous Management

Meghna Chadha, M.D.[1] and Chaitanya Ahuja, M.D.[1]

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Visceral artery aneurysms (VAAs) and visceral artery pseudoaneurysms (VAPAs) frequently present as life-threatening emergencies. VAAs are now being diagnosed with increasing frequency, related to routine use of magnetic resonance imaging (MRI), computed tomography (CT), and ultrasound. Both surgery as well as endovascular techniques are well established in their management. Endovascular management includes transarterial deployment of coils, *N*-butyl cyanoacrylate, or stent grafts. Direct percutaneous embolization of visceral aneurysms and pseudoaneurysms may also be performed. Special attention to aneurysmal etiology—congenital, atherosclerotic, infectious, and inflammatory is outlined. Advances in endovascular management with various aneurysmal isolation techniques are discussed. It is concluded that percutaneous endovascular management, now offers a safe and effective alternative to conventional surgery with lower procedural morbidity and mortality and high technical success rates.

Korean J Radiol. 2016 May-Jun; 17(3): 351–363. PMCID: PMC4842855
Published online 2016 Apr 14. doi: 10.3348/kjr.2016.17.3.351

Interventional Radiology in the Management of Visceral Artery Pseudoaneurysms: A Review of Techniques and Embolic Materials

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Abstract Go to:

Visceral artery pseudoaneurysms occur mostly as a result of inflammation and trauma. Owing to high risk of rupture, they require early treatment to prevent lethal complications. Knowledge of the various approaches of embolization of pseudoaneurysms and different embolic materials used in the management of visceral artery pseudoaneurysms is essential for successful and safe embolization. We review and illustrate the endovascular, percutaneous and endoscopic ultrasound techniques used in the treatment of visceral artery pseudoaneurysm and briefly discuss the embolic materials and their benefits and risks.

Discussion

- Increased morbidity and mortality have been attributed following rupture of these aneurysm
- Where conventional methods fail, other alternatives exist
- Safe and efficacious method of treatment

References

- Dubel et al. Interventional management of arc of Buhler aneurysm. Semin Intervent Radiol 2007; 24 (1): 76-81
- Dik et al. Direct puncture approach for embolisation of visceral aneurysms. ECR 2015