

CIRA Case of the Week

December 2015

Case Courtesy of Drs. Mollie Ferris and Jason Wong

University of Calgary

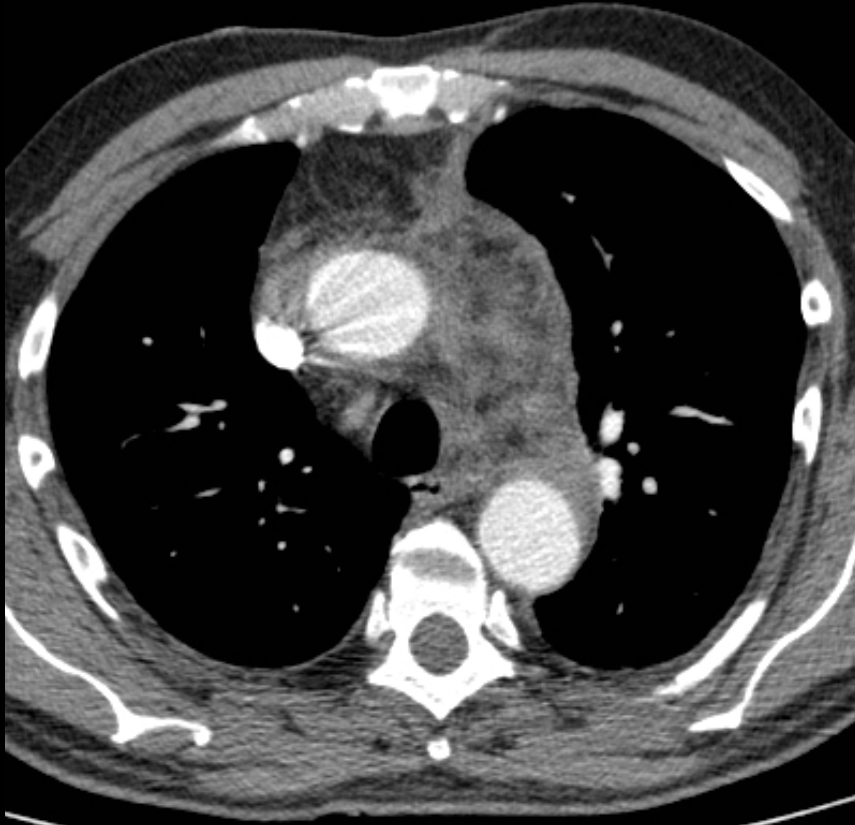
Clinical Presentation

- 69 year old male
 - Acute severe back, chest and abdominal pain
 - Severe hypertension
- PMHx
 - Obesity
 - HTN
 - Atrial fibrillation
 - Chronic renal failure (creatinine: 133 umol/L; eGFR: 49)
- PSHx
 - Open fundoplication for paraesophageal hernia repair
 - Redo-fundoplication
- Initial Imaging: Non-gated CTA CAP

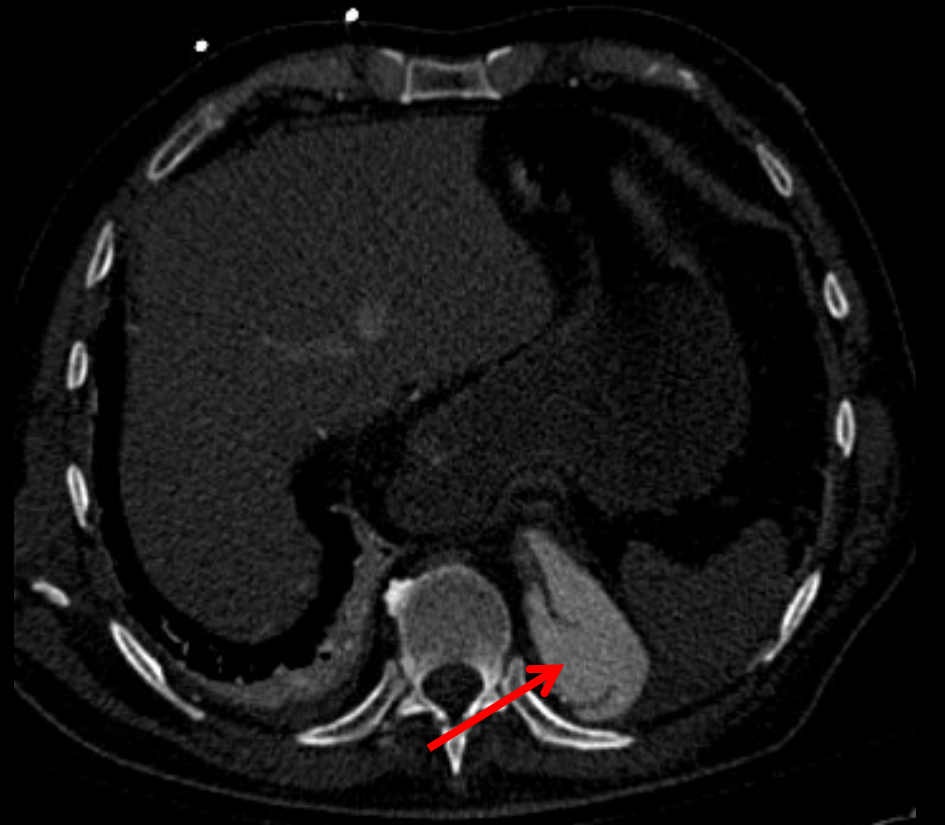
Stanford Type B Aortic Dissection (TBAD)



Initial Imaging



Mediastinal hemorrhage

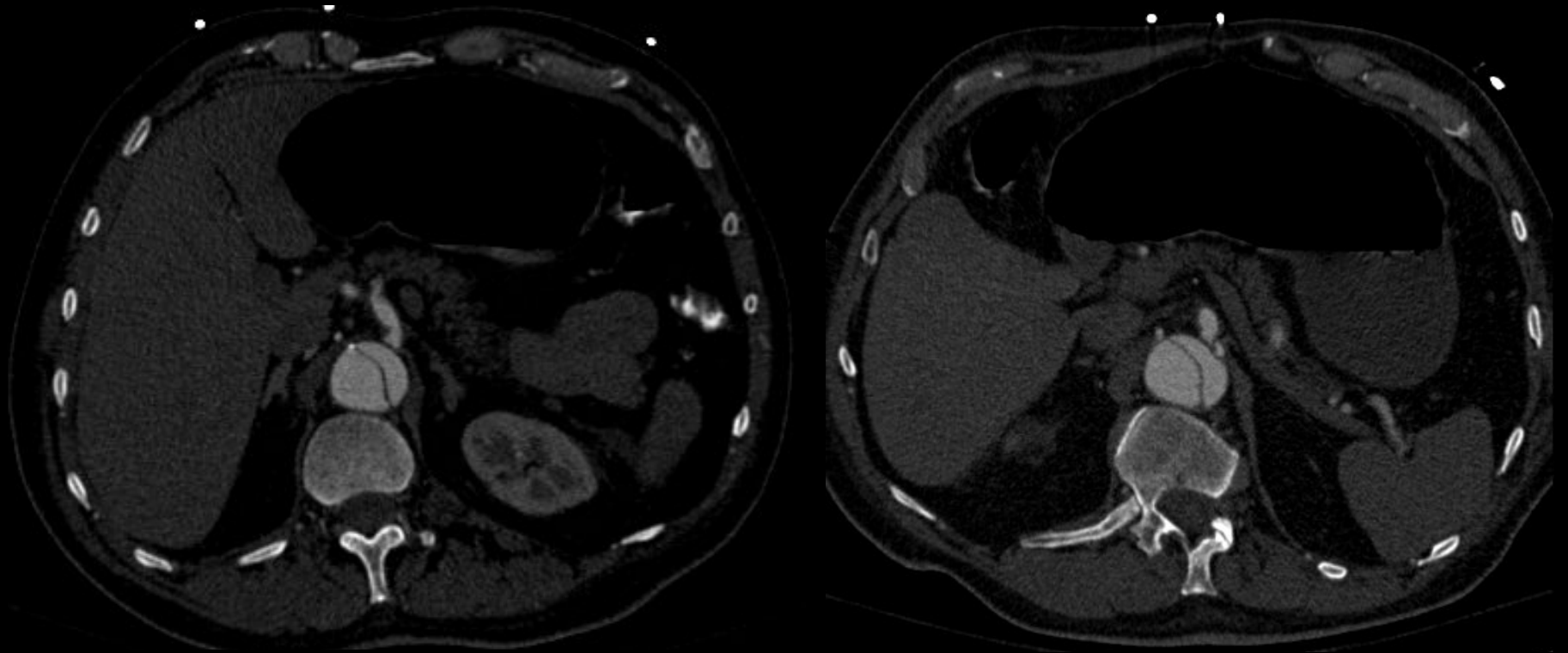


Intimal tear

Initial Management

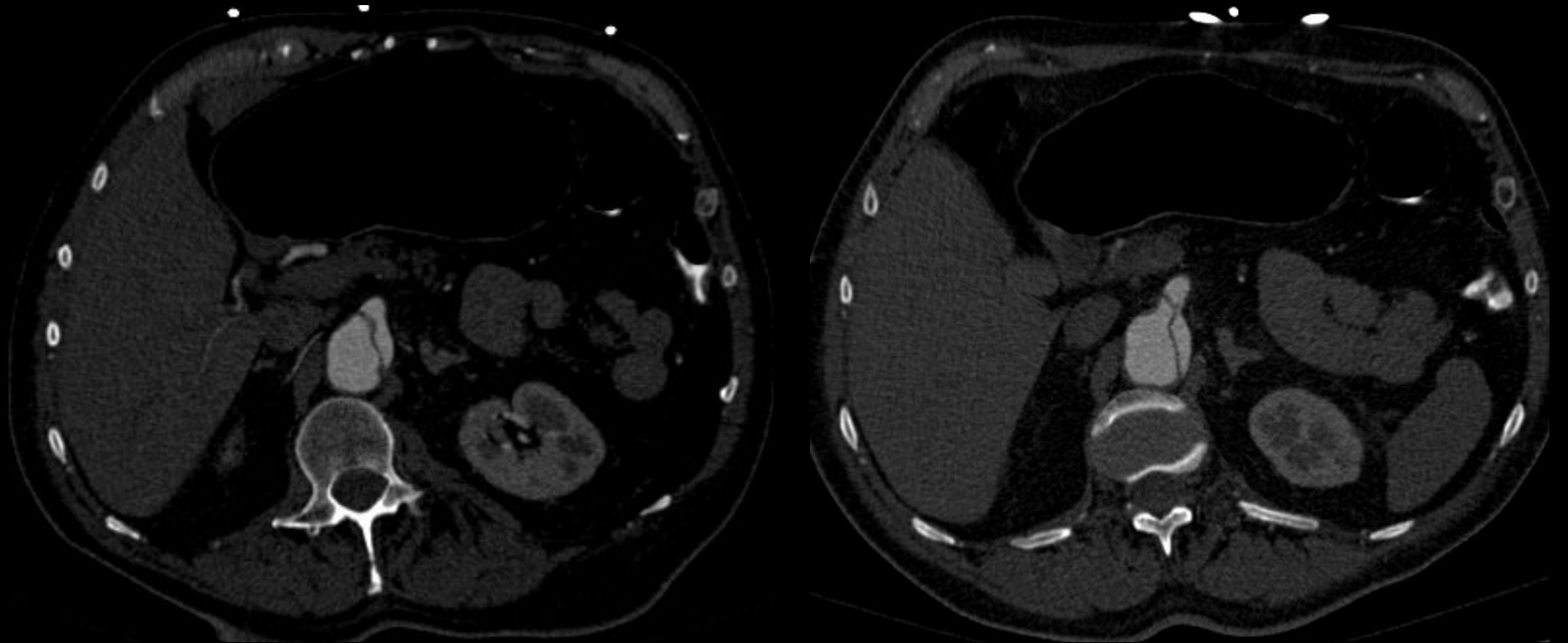
- Transferred to CV-ICU from rural hospital
- Medical Management
 - Anti-hypertensive therapy
 - IV labetalol, nitroglycerin
 - Supportive care
- Within 12 hours...
 - Increasing lactate levels: up to 4 mmol/L
 - Progressive abdominal pain

Initial Imaging



Celiac axis origin

Initial Imaging



SMA origin

Initial Imaging: Sagittal

Celiac & SMA origins
showing complex intimal
flap





Coronal oblique reconstruction:
Celiac axis



Coronal oblique reconstruction:
SMA

Multidisciplinary Review

- Acute Stanford type B aortic dissection
- Acute bowel ischemia suspected
 - General Sx opinion: reversible
- Hemodynamically stable
- Consensus Plan
 - Initial Tx:
 - Thoracic endovascular aortic repair: TEVAR



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TEVAR Procedure

- Percutaneous access to right common femoral artery (CFA) with placement of 7F sheath; pigtail catheter & J-wire advanced to mid abdominal aorta; abdominal aortogram performed
- Surgical access to left CFA with placement of 5F sheath; pigtail catheter & J-wire advanced to abdominal aorta – initially into false lumen then manipulated into true lumen via intimal tear shown previously; then positioned in the ascending aorta
 - Pigtail catheter exchanged for endovascular graft – deployed just distal to left subclavian
 - Second endovascular graft deployed with distal end 3 cm upstream from celiac origin
 - Endovascular grafts overlapping by 10 cm
- A closure device was used at the R CFA percutaneous access site with surgical closure of the L CFA & inguinal incision





Arch Aortogram: LAO Projection

Abdominal Aortogram



Pre Stent Deployment
Markedly delayed filling celiac axis & SMA

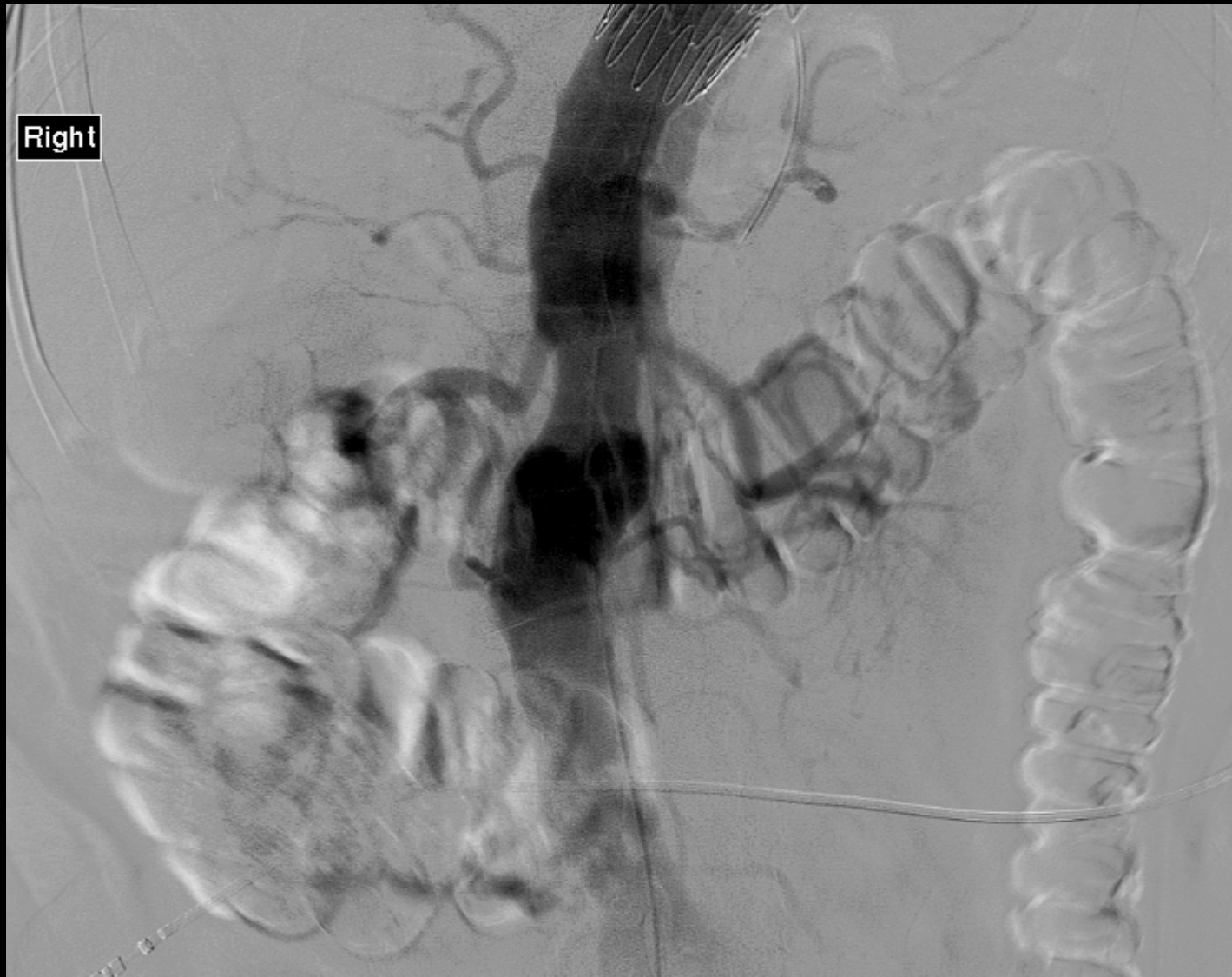


Post Stent Deployment
Improved filling of celiac axis & SMA

Post TEVAR

- Initial clinical improvement
 - Decreased pain
 - Decreasing lactate:
 - from 4.0 mmol/L to 1.5 mmol/L
- At 20 hours post TEVAR
 - Increasing abdominal pain
 - Increasing lactate:
 - From 1.5 mmol/L to 2.1 mmol/L
- Consensus decision: IR suite to reassess +/- individual stenting of the celiac axis & SMA origins

Abdominal Aortogram



Pre Stent Deployment
Delayed contrast filling of the celiac axis & SMA

Superior Mesenteric Angiogram



Pre Stent Deployment

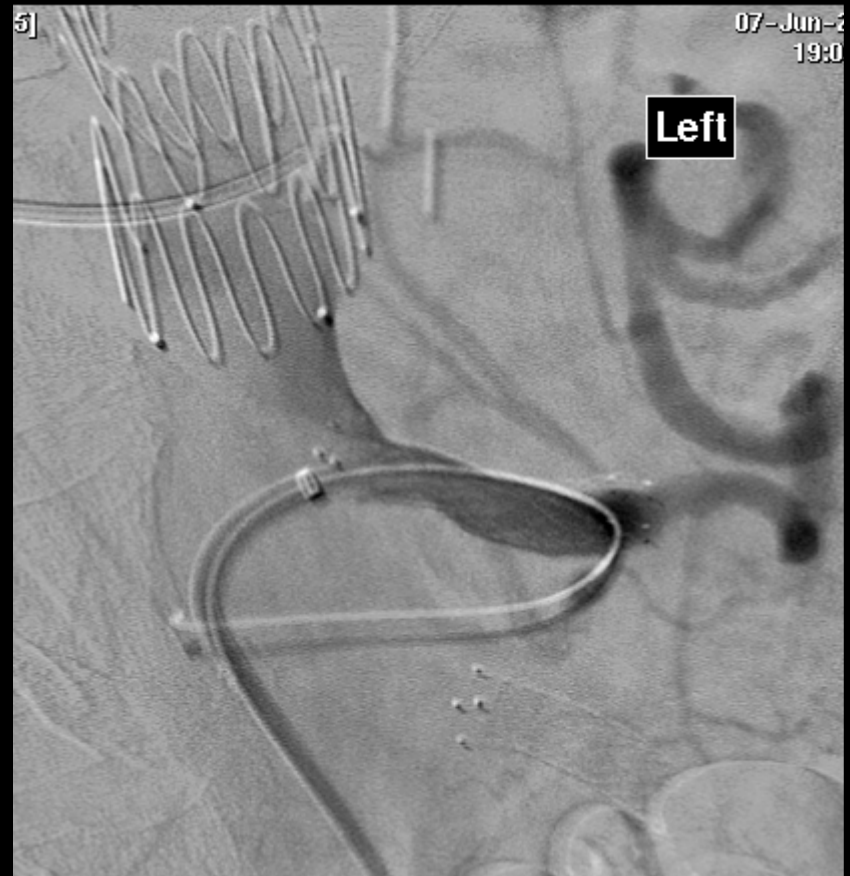


Post Stent Deployment

Celiac Angiogram



Pre Stent Deployment



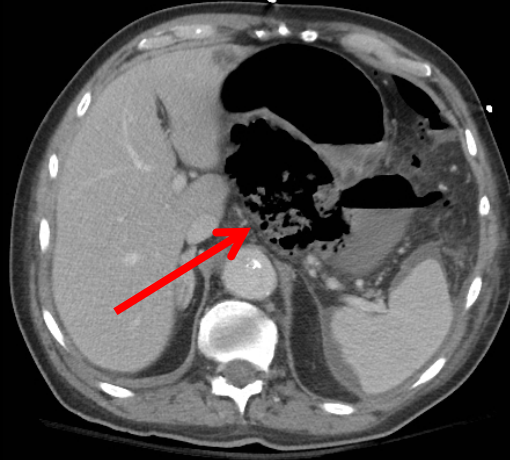
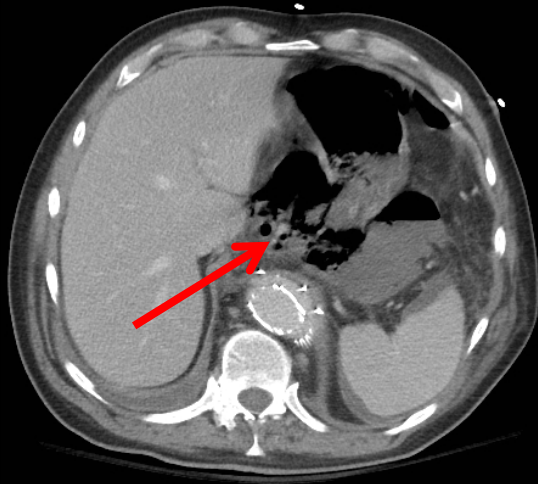
Post Stent Deployment

Repeat Imaging: 3 mo post-TEVAR



Clinical Course

- 5 d post TEVAR / 4 d post celiac/SMA stents
- Sudden onset severe acute abdominal pain
- CT: pneumoperitoneum & fluid collection adjacent to lesser curvature of stomach



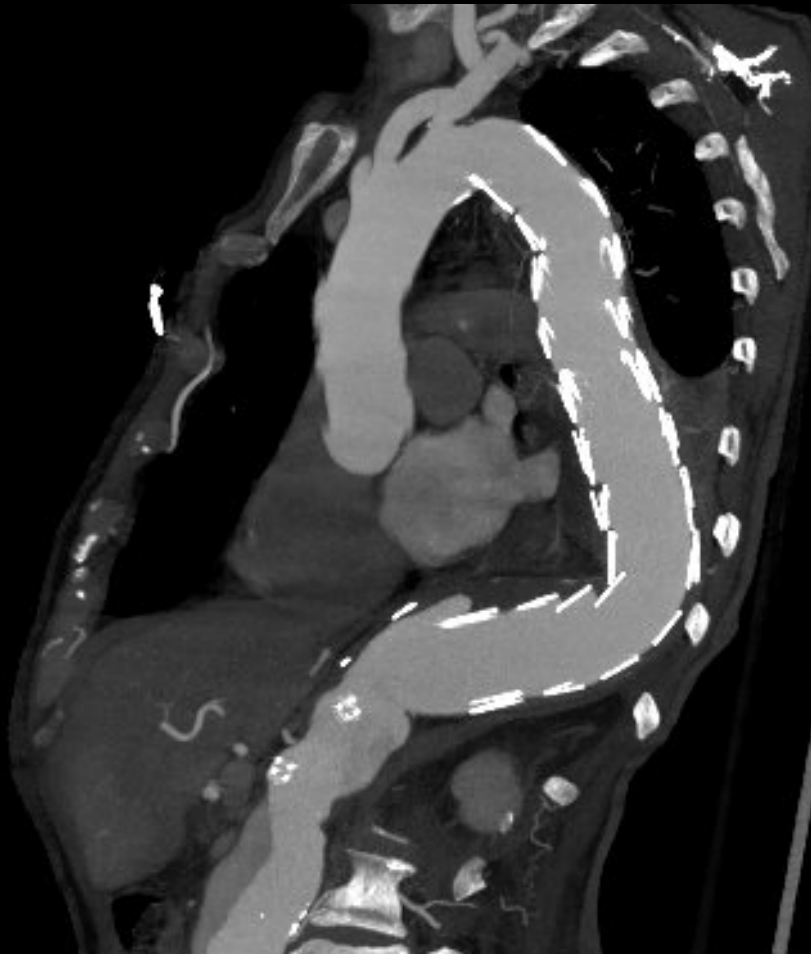
Clinical Course

- Emergent laparotomy revealed 2 cm necrotic perforated ulcer at the lesser curvature of stomach
- This may have been “watershed” area of poor blood supply from 2 prior gastric surgeries
- Pt had long hospitalization and recovery but required no further endovascular intervention or surgery

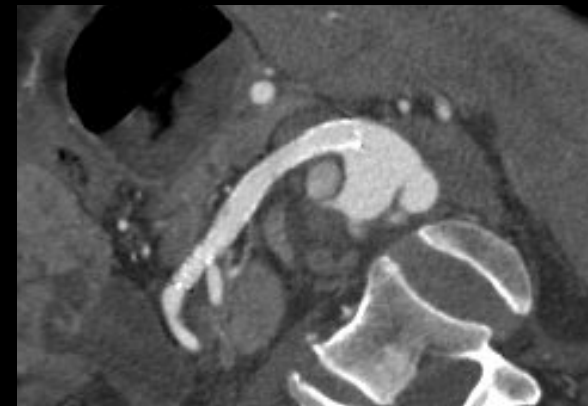


3 Years Later

- Patient is well & lives independently



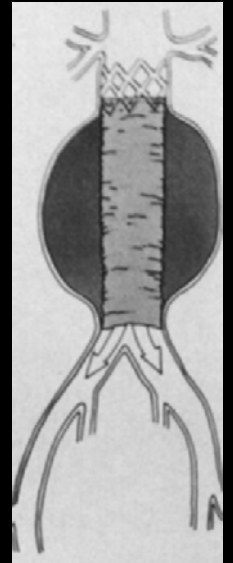
Coronal oblique reconstruction at celiac axis



Sagittal oblique reconstruction at SMA

TEVAR in TBAD

- 1991: Parodi JC et al: 1st intraluminal stent graft for AAA
- 2010: Zeeshan et al (& others): improved outcomes with TEVAR for acute TBAD associated w acute life-threatening complications (malperfusion, rupture)
- Tx of uncomplicated & chronic TBAD remains controversial
 - Medical mgmt: up to 50% mortality at 5 yrs



Endovascular Repair of Type B Aortic Dissection

Long-term Results of the Randomized Investigation of Stent Grafts in Aortic Dissection Trial

Christoph A. Nienaber, MD, PhD; Stephan Kische, MD; Hervé Rousseau, MD, PhD;
Holger Eggebrecht, MD; Tim C. Rehders, MD; Guenther Kundt, MD, PhD; Aenne Glass, MA;
Dierk Scheinert, MD, PhD; Martin Czerny, MD, PhD; Tilo Kleinfeldt, MD;
Burkhard Zipfel, MD; Louis Labrousse, MD; Rossella Fattori, MD, PhD; Hüseyin Ince, MD, PhD;
for the INSTEAD-XL trial

- At 5 yrs, lower aorta-specific mortality (6.9%) with TEVAR + optimal medical tx (OMT) compared to OMT alone (19.3%)
- TEVAR may induce aortic remodeling

References

- Bavaria JE, Szeto WY. Thoracic endovascular aortic repair for type B aortic dissection. A ubiquitous treatment option? *Circ Cardiovasc Interv.* 2013; 6: 326-328.
- Nienaber CA. Influence and critique of the INSTEAD trial (TEVAR versus medical treatment for uncomplicated type B dissection). *Semin Vasc Surg.* 2011; 24: 167-71.
- Parodi JC, Palmaz JC, Barone HD. Transfemoral intraluminal graft implantation for abdominal aortic aneurysms. *Ann Vasc Surg.* 1991. 5(6): 491-9.
- Ulug P, McCaslin JE, Stansby G, et al. Endovascular versus conventional medical treatment for uncomplicated type B aortic dissection. *Cochrane Database Syst Rev.* 2012 Nov 14; 11: CD006512.
- Zeeshan A, Woo EY, Bavaria JE et al. Thoracic endovascular aorta repair for acute complicated type B aortic dissection: superiority relative to conventional open surgical and medical therapy. *J Thorac Cardiovasc Surg.* 2010; 140:S109-15.
- Hughes GC. Management of acute type B aortic dissection; ADSORB trial. *J Thorac Cardiovasc Surg.* 2014; <http://doi.org/10.1016/j.jtcvs.2014.08.083>