MESENTERIC CASE PRESENTATION

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WVES

PRESENTER DISCLOSURE

Presenter: Cierra Stiegelmar

I have no current relationships with commercial entities

CLINICAL PRESENTATION

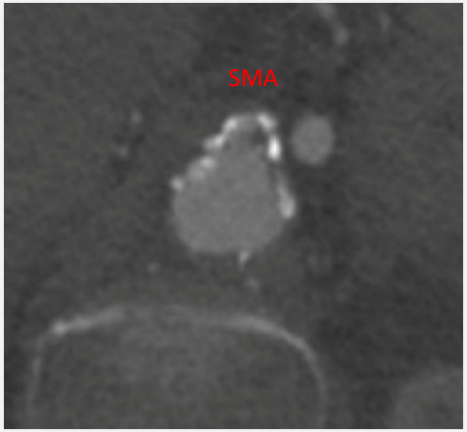
- April 2025: outpatient consult for 84M with claudication
  - No CLTI symptoms, no wounds
- Incidentally noted to have a cachectic appearance
  - On further inquiry, endorsed 1yr generalized abdominal discomfort, anorexia and 40lb weight loss
  - Denied postprandial pain

CLINICAL PRESENTATION

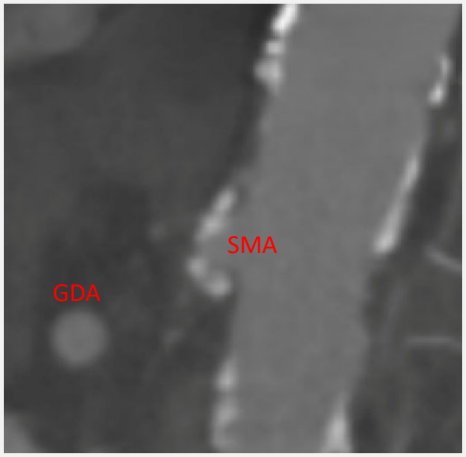
- PMH: CAD with prior cath, NIDDM, HTN, DLD, COPD, hypothyroidism
- Surgical history: CABG, bioprosthetic AVR and MVR, no abdominal surgery
- Social Hx: independent with (i)ADLs, 15 pack years
- Medications: ASA, statin, BB, ramipril, metformin, Symbicort, amitriptyline, levothyroxine, quetiapine
- Exam:
  - Appeared well, vitals stable
  - Cachectic with scaphoid nontender abdomen
  - Unable to palpate distal pulses

CLINICAL PRESENTATION

- CTA with runoff:
  - Moderate length atherosclerotic occlusion of proximal SMA
  - Patent IMA and celiac arteries
  - Large GDA and other collaterals
  - Atherosclerotic lower extremity disease



axial



sagittal

LIKELY DIAGNOSIS?

LIKELY DIAGNOSIS?
CHRONIC MESENTERIC ISCHEMIA

ADDITIONAL INPUT

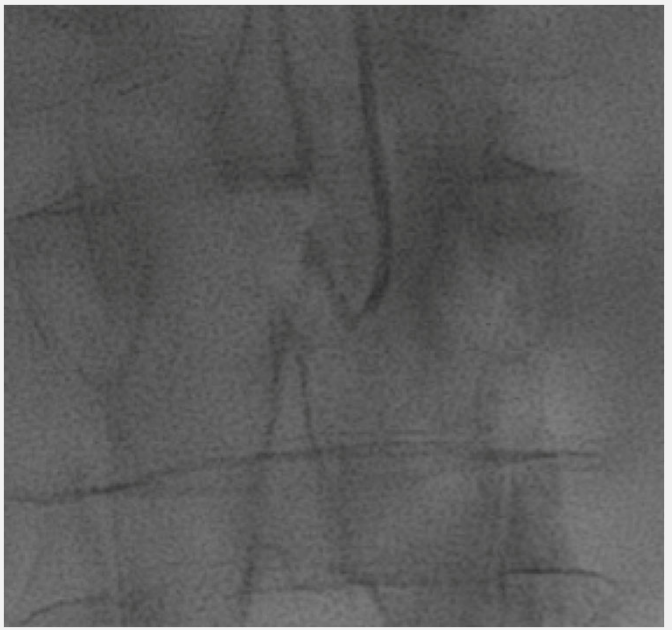
- Discussion with on-call Rads: no evidence of malignancy on CTA
  - Pulmonary nodules noted on CT in 2018
- GIM consulted for second opinion
  - Bilateral leg swelling, exercise intolerance, extensive cardiac history → recommended repeat TTE (most recent LVEF 65% 2023)
  - Weight loss, smoking, nodules → recommended non-urgent CT chest
  - No other barriers to proceeding to intervention

TREATMENT STRATEGIES

- Goal:
  - Relieve symptoms, restore weight, prevent AMI
- Options:
  1. Supportive management
     - Bowel rest, parenteral nutrition → serves as bridge to therapy
  2. Endovascular management
     - Can be diagnostic and therapeutic (SMA stent)
  3. Open surgical management
     - Antegrade bypass (aorto-SMA)
     - Retrograde bypass (ileo-SMA)
     - Transaortic mesenteric endarterectomy
  4. Hybrid approach
     - Retrograde open mesenteric stenting (ROMS)

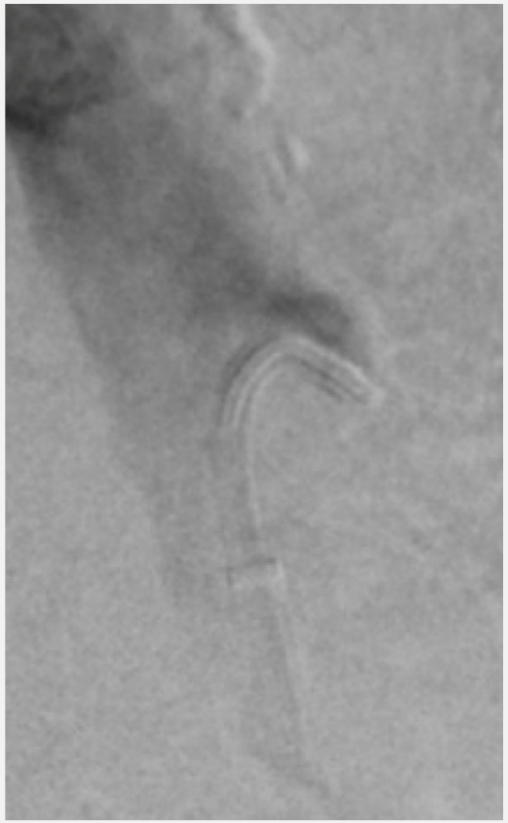
ENDOVASCULAR APPROACH

- June 2025: IR attempted endovascular approach (L radial access)
  - Difficult to appreciate SMA
  - After several attempts with various wires/catheters, they were unable to cross lesion (CTO)



ENDOVASCULAR APPROACH #2

- July 2025: Patient is admitted for re-attempt via femoral approach
  - Required cutdown and CFA/EIA repair due to ++ scar tissue, atherosclerosis, chronic EIA dissection (prior cardiac cath)
  - Difficult to localize SMA, required steep RAO
  - After several attempts, able to engage SMA and cross CTO
    - Found to be in subintimal plane → aborted to avoid dissection or further complication



PREOPERATIVE WORKUP

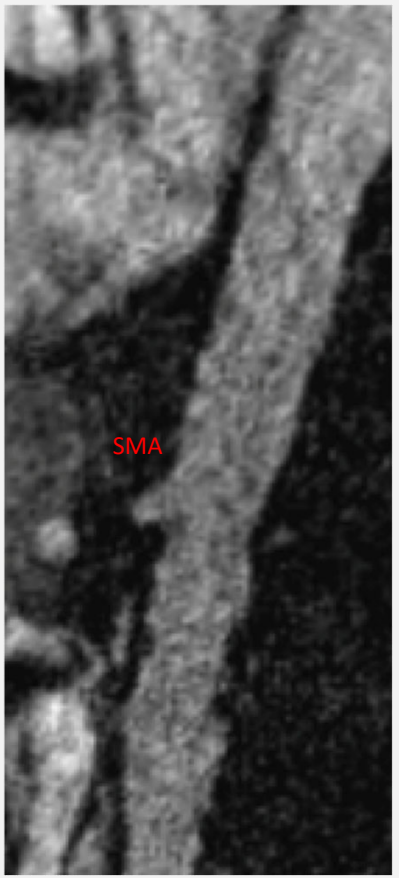
- July 2025: Preoperative consults → cleared for OR
  - Cardiology: reduction in LVEF on repeat TTE (65% in 2023 to 45% in 2025)
    - No ischemic events, asymptomatic → recommended TTE postop
  - Vascular GIM: preop assessment
    - Recommended postop MINS monitoring, perioperative nutrition
    - Already on ASA, BB, statin
  - Anesthesia: preop assessment
    - Recommended epidural anesthetic
  - Gastroenterology: New-onset dysphagia
    - performed EGD → duodenitis, path nil
    - No lower GI symptoms → outpt colonoscopy
- Patient underwent MRI to confirm physiologic parameters of CMI

PREOPERATIVE WORKUP: CMI MRI

- CMI MRI Protocol
- Indicated in diagnostic uncertainty for mesenteric disease (single-vessel stenosis/occlusion, atypical history)
- Protocol:
  - MR splanchnic venogram completed pre- and post- meal challenge (Ensure)
    - MRV → drink slowly for 45 mins → 15 mins rest → repeat MRV
  - Physiologic assessment compares proximal SMV flow pre- and post-meal
    - Pre-bolus (mL/min)
    - Post-bolus (mL/min)
    - Percent augmentation (“normal” = 50-100%)

PREOPERATIVE WORKUP: CMI MRI

- Results:
  - Baseline SMV flow rate: 560 ml/min
  - Post-meal challenge: 680 ml/min
  - Percent augmentation: 21%



HYBRID / OPEN SURGICAL APPROACH

- July 2025: Patient taken to the OR for possible ROMS, possible ileo-SMA bypass
  - Segment of SMA isolated, determined to be significantly diseased → ROMS abandoned
- The patient underwent ileo-SMA bypass
  - R CIA ++ diseased, required endarterectomy and repair to tolerate clamping
  - SMA also endarterectomized, tacking sutures placed to prevent dissection
  - Intact SMA and distal pulses at end of case

POSTOPERATIVE COURSE

- Cardiology:
  - Asymptomatic LBBB (intermittent in past), Afib with RVR → placed on 3 mo AC with outpt Holter
  - Mild elevated troponin → likely demand ischemia
  - Stopped beta agonist inhalers
- GIM:
  - RLE DVT → AC
  - HAP, UTI → tazocin
  - Overload → Lasix
- RD → PN
- Discharged POD19

FOLLOW UP

- August 2025: Seen at 1 month
- Denied further mesenteric angina
- Denied lower extremity ischemic symptoms
- MRI CMI:
  - Baseline SMV flow rate: 540 ml/beat
  - Post-meal challenge: 920 ml/beat
  - Percent augmentation: 70%

FOLLOW UP

- April 2026 (most recent update):
  - Recurrent GIB with multiple presentations to ED, pRBC and iron transfusions
    - No lesion seen on upper/lower scope or CT colonography
    - Anticoagulation discontinued
- Now experiencing poor appetite, nausea
  - No AMI symptoms
  - Pending imaging

REVIEW: CHRONIC MESENTERIC ISCHEMIA

- Demographics
  - Usually 60s (40-90), F:M ratio ~3:1
- Etiology
  - Atherosclerosis (90%), vasculitis, SLE, thromboangiitis obliterans, spontaneous dissection, FMD, neurofibromatosis, radiation arteritis, coarctation, mesenteric venous stenosis/occlusion, drug-induced arteriopathy (cocaine, ergot)
- Diagnosis
  - History: post-prandial pain, food fear, weight loss
  - Exam: cachectic, scaphoid abdomen
  - Imaging
    - Duplex, CTA, MRA/MRV, angio, (scope)
- Treatment
  - Supportive, endovascular, open surgical, hybrid

REVIEW: CHRONIC MESENTERIC ISCHEMIA

- Outcomes
  - Symptom improvement in ~ 88% after endovascular ~93% after open
  - 5-yr primary patency of open bypass ~75-90%
    - Lower for endovascular (restenosis in 20-60%), although secondary patency ~90%
      - Covered stents improved results
  - Survival
    - Predictors of poor outcomes: advanced age, severe cardiac, pulmonary, or renal disease
    - No mortality benefit for endovascular or open procedures
- Post-intervention
  - Smoking cessation, antiplatelet, ASA (DAPT)
  - Imaging surveillance (Duplex) recommended q6 mo during the first year, then annually

QUESTIONS?

REFERENCES

1. Conrad, M. F. (2023). Chronic mesenteric ischemia: epidemiology, pathophysiology, clinical evaluation, and management. *Sidaway AN, Perler BA, Vascular Surgery and Endovascular Therapy. Elsevier*, 1760-1778.

SUPPLEMENTAL MATERIAL

Chronic Mesenteric Ischemia Protocol

Indications:

- Post-prandial pain, weight-loss, and food aversion
- Only 1 vessel severe stenosis
- Differentiate CMI from other causes of abdominal pain – Biliary colic, peptic ulcer disease, IBD, etc.

Patient set up:

- ECG Leads
- Monitor HR and BP at time of 2D Phase Contrast

Protocol:

1. 3 plane loc
2. Axial T2 3-5mm from dome of the liver to the iliac crest
3. Flow assessment:
    a. Rad to determine axial slice position perpendicular to proximal SMV just below splenic vein confluence
    b. Record BP and HR on multidisciplinary form during next step
    c. Axial 2D ECG gated phase contrast cine on inspiration (Venc 100 cm/s)
    d. Axial 2D ECG gated phase contrast cine on expiration (Venc 100 cm/s)
4. MRA
    a. Sag 3D CE MRA pre
    b. Care Bolus
    c. Sag 3D CE MRA post early arterial phase – end inspiration (manual breath hold)
    d. Sag 3D CE MRA post late arterial phase – end expiration
    e. Cor T1 VIBE PG
5. Patient is removed from the scanner for 1 hour and given Ensure to drink.
    a. Drink slowly for 45 mins, then rest for 15 mins
    b. Record how much they drank on multidisciplinary form
6. Repeat Step 1 and 2
7. Repeat Flow assessment with a Venc of 150cm/s.
    a. Record BP and HR on multidisciplinary form during next step

Post-processing:

- Axial reformats of Sag MRA and Cor T1 VIBE PG

CMI Protocol

-AX T2 TRUFI, 340 FOV, 5.00MM SLICE THICKNESS

-COR T2 TRUFI, 500 FOV, 5.00 MM SLICE THICKNESS

-PHASE CONTRAST, 300 FOV, 6.00 MM SLICE THICKNESS, 20% GAP

-FIRST ACQUISITION ON INSPIRATION = VENC 100 CM/S

-SECOND ON EXPIRATION = VENC 100 CM/S

-ANGIO SAG 3D PRE CONTRAST, 340 FOV, 1.00 MM SLICE THICKNESS, 20% GAP

-COR CARE BOLUS, 450 FOV

-ANGIO SAG 3D POST CONTRAST INSPIRATION, 340 FOV, 1.00 MM SLICE THICKNESS, 20% GAP

-ANGIO SAG 3D POST CONTRAST EXPIRATION, 340 FOV, 1.00 MM SLICE THICKNESS, 20% GAP

-COR T1 FS VIBE POST CONTRAST, 325 FOV, 3.00 MM SLICE THICKNESS, 20% GAP

PT DRINKS

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