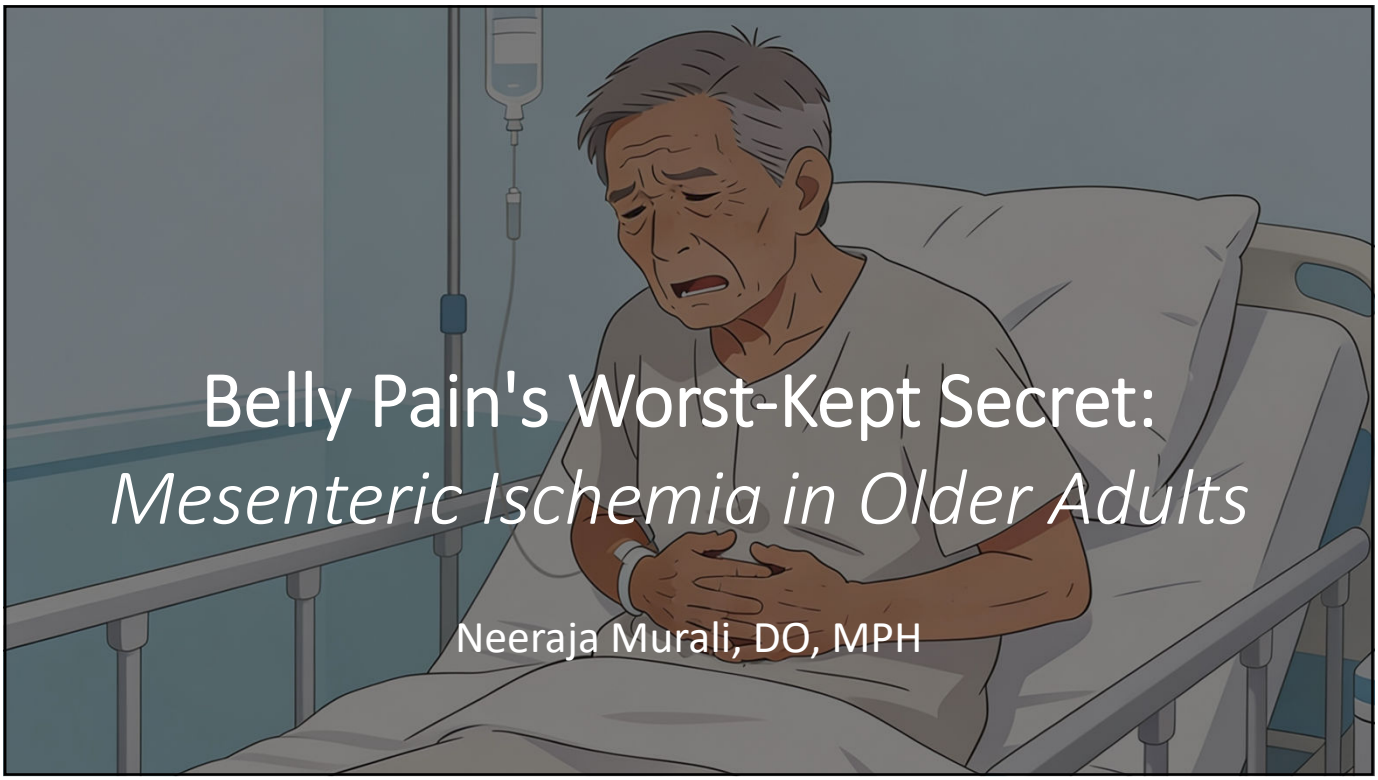

Belly Pain's Worst-Kept Secret: *Mesenteric Ischemia in Older Adults*

Neeraja Murali, DO, MPH

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Learning Objectives

- Recognize the four distinct etiologies of acute mesenteric ischemia (AMI)
- Identify key risk factors and clinical presentations for each AMI subtype
- Understand diagnostic strategies including appropriate imaging modalities
- Apply the "3 Rs" treatment framework for AMI management

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"Classic" Presentation

- 82 year old with a history of atrial fibrillation
- Presents with sudden onset diffuse abdominal pain, vomiting and diarrhea
- Mildly tachycardic but vitals are otherwise unremarkable
- Exam shows a soft, nondistended abdomen with mild tenderness and no peritonitis, but patient reports "11/10" pain
- Lactate is elevated to 3.0, so you obtain CTA instead of CT with IV contrast
- CTA confirms SMA embolus

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Why This Matters

- Mortality rate 50-90%
- More common than appendicitis or AAA in patients >75
- Rapid diagnosis reduces mortality by 50%

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Epidemiology

- Annual incidence: 12.9/100,000 person-years
- Peak incidence: 70-79 years (50-60/100,000)
- Equal distribution between men and women
- Increased incidence in:
  - Heart Failure
  - Uncontrolled Afib
  - PAD with occlusion
  - Recent Surgery

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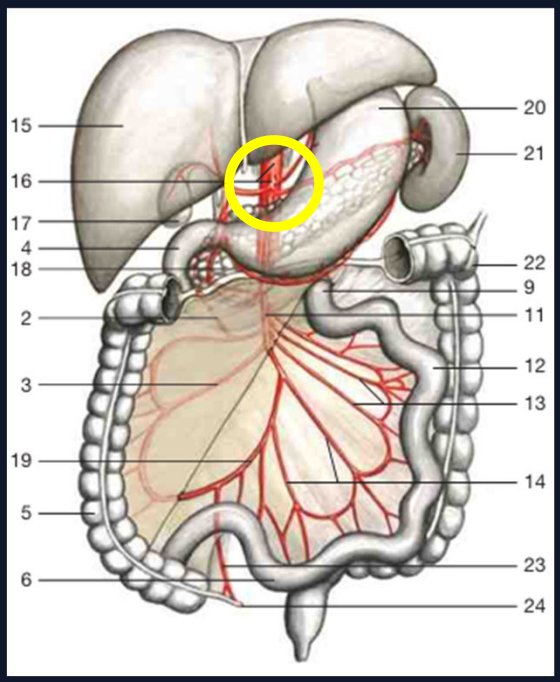
Key Vascular Anatomy

- Celiac artery
- Stomach, proximal duodenum, spleen



Rohen et al 2011

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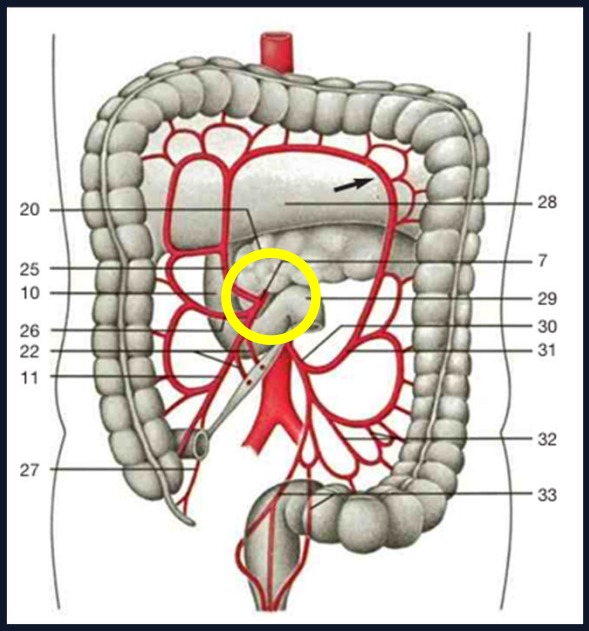
Key Vascular Anatomy

- Superior Mesenteric Artery (SMA)
- Pancreas, duodenum → transverse colon



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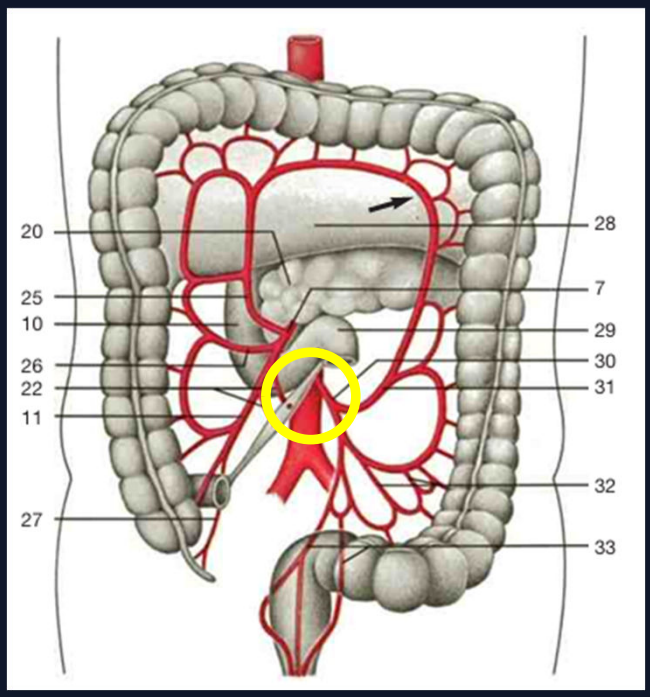
Key Vascular Anatomy

- Inferior Mesenteric Artery (IMA)
- Descending colon, sigmoid, rectum



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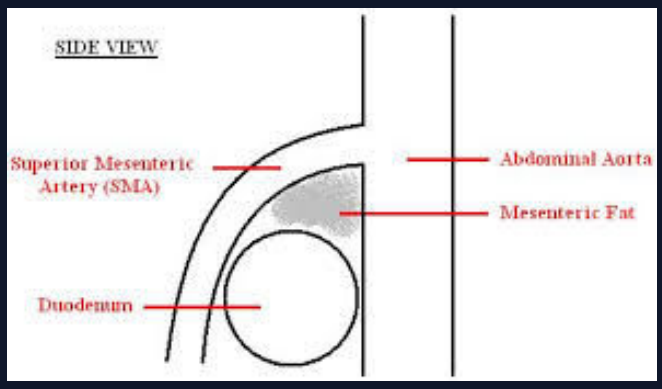
A Note about the SMA

- Large caliber with direct angle from aorta
- Most susceptible to embolic occlusion



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The Four Etiologies of AMI

- **Arterial Thromboembolic Disease** — ~2/3 of cases
  - **Arterial Embolism (70%)**
  - **Arterial Thrombosis (30%)**
- **Non-Occlusive Mesenteric Ischemia** — ~1/6 of cases
- **Mesenteric Venous Thrombosis** — ~1/6 of cases

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Arterial Embolism

- Most often atrial fibrillation with emboli to the viscera
  - Also consider in: Prior MI, cardiac thrombus, prior or concurrent embolism
- "Classic" picture (80%)
  - Sudden onset pain out of proportion
  - Emptying of the bowel
  - Source of embolus
- Often postprandial: visceral blood flow increases in 10-30 min and lasts ~ 3h

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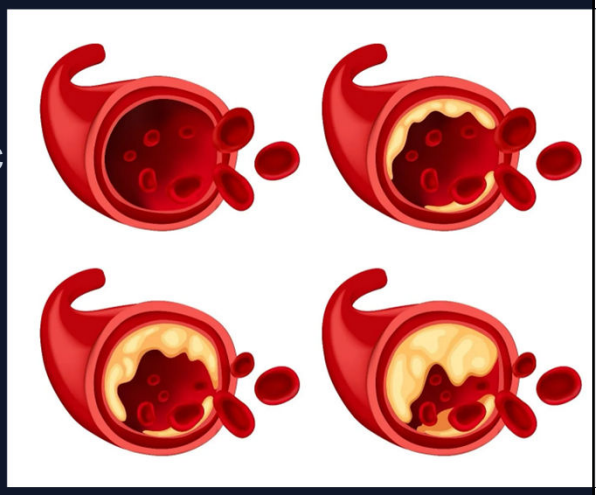
Arterial Thrombosis

- Occurs at SMA origin due to atherosclerosis
- History of chronic mesenteric ischemia common
- Prior postprandial pain and weight loss
- Vomiting, diarrhea, melena
- May present with acute-on-chronic symptoms
- "ACS of the Abdomen"
  - Atherosclerosis with rupture of cap



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Non-Occlusive Mesenteric Ischemia

- Can occur when cardiac output can't meet metabolic demands
- Low-flow states: shock, heart failure, hemodialysis
  - Leads to mesenteric vasoconstriction and intestinal hypoperfusion
- Critically ill patients with nonspecific symptoms
- May present as worsening of underlying disease or abdominal symptoms
- Diagnosis often based on exam or lab changes

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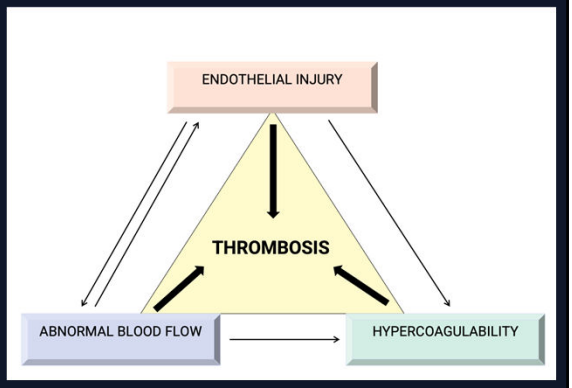
Mesenteric Venous Thrombosis

- Suspect in patients with VTE history or hypercoagulable states
- Symptoms for days to weeks before diagnosis (nonspecific abdominal pain)
- Venous thrombosis → congestion → impaired arterial inflow
- Consider in younger pts



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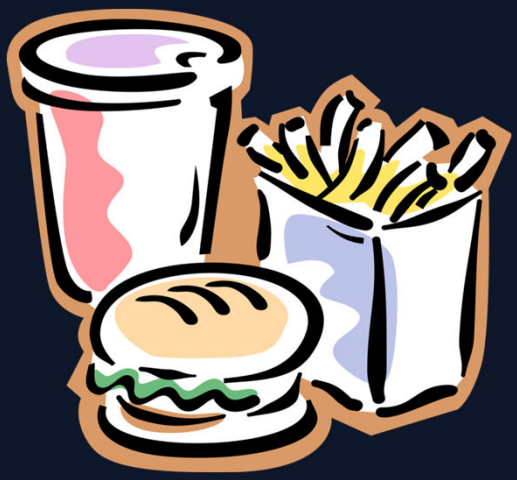
Chronic Mesenteric Ischemia

- Progressive atherosclerosis of 2 or more major arteries
- Can precede AMI
- Prevalence in pts with known disease 7-70%
- Supply/demand mismatch→"abdominal angina"
- Can take years to diagnose



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Laboratory Testing

- D-dimer sensitivity 95, but low specificity
- L-lactate normal in 48-50% of early cases
- Doesn't reflect lactate in portal venous circulation
- No definitive lab test

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Imaging

- Biphasic MDCTA
- Arterial + portal venous phases with pre-contrast scan
- Shows vascular occlusion and bowel wall abnormalities
- Provide clinical indication "AMI" to radiologist
  - Pooled sensitivity: 93.3% | Specificity: 95.9%

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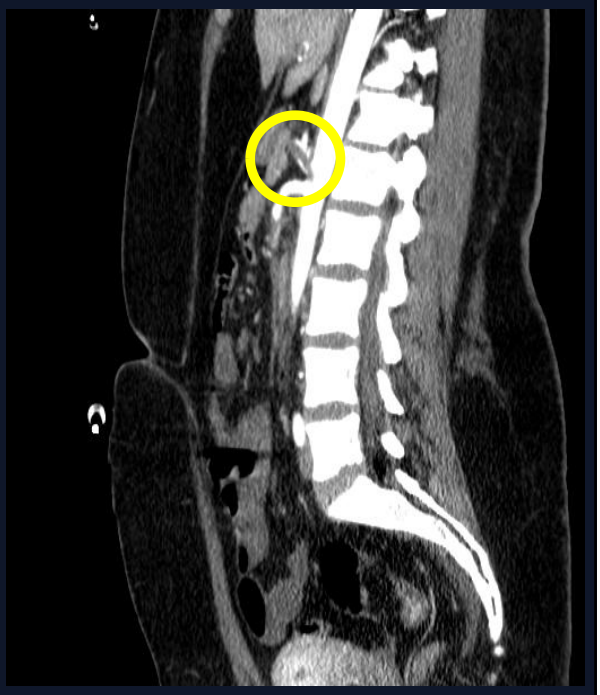
What to Look For on CTA

- Embolus: Ovoid filling defect in mid/distal SMA
- Spares proximal SMA (lodges where vessel narrows)
- Thrombus: Clot at SMA origin on calcified lesion
- Bowel changes: wall enhancement, pneumatosis (late)



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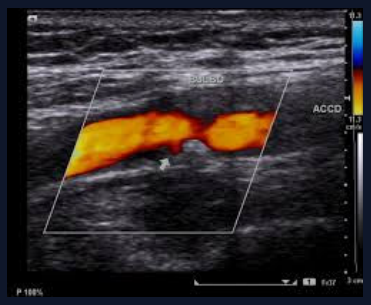
Other Imaging

- Ultrasound
  - Operator dependent, cannot ID distal lesions
  - Used for monitoring in CMI



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Other Imaging

- Digital Subtraction Angiography
  - Can differentiate subtypes
  - Invasive, but can be therapeutic

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The "3 Rs" of AMI Management

Resuscitation
Aggressive fluids, antibiotics, optimize perfusion

Rapid Diagnosis
Early imaging, high suspicion

Revascularization
Restore blood flow urgently

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Revascularization in Arterial Occlusion

- Early → Endovascular intervention
  - Embolectomy, thrombolysis, recanalization and stenting
  - Stents are at high risk for restenosis (post-stent mortality up to 50%)
- Late → ex lap
  - Bowel viability must be assessed, may need a second look
- Restoration of blood flow is mainstay
- SMA > celiac
- “Intestinal stroke”

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MVT and NOMI Management

- MVT
  - Early: Bowel rest + anticoagulation (UFH or LMWH)
  - Severe: Exploratory laparotomy + anticoagulation
  - Endovascular options not well-established
- NOMI
  - Optimize cardiac output, stop vasoconstrictors
  - Catheter-directed vasodilators (papaverine)
  - Bowel compromise may require surgery

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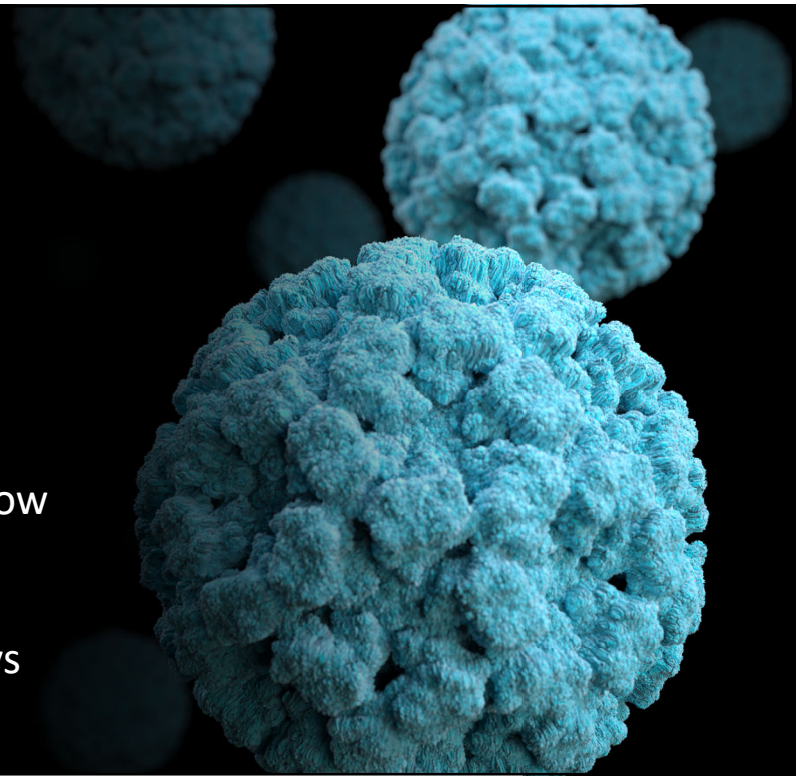
Clinical Pearls

- Gastroenteritis most common misdiagnosis in elderly
- Intestine tolerates 75% flow reduction for 12 hours
- When AMI noted on imaging indication: 97% vs 81% detection rate



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Key Takeaways

- HPI and comorbidities should be considered in elderly patients with abdominal pain
- Don't rely on normal labs to exclude AMI
- Pain out of proportion may be subtle or absent
- Biphasic MDCTA (with clear indication) is diagnostic study of choice
- Urgent multidisciplinary management saves lives
- Remember the 3 R's: Resuscitation, Rapid Diagnosis, Revascularization

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Think AMI
Image Early
Act Fast

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Questions?

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