Mesenteric Ischemia

Pain out of proportion to the exam · image early · a normal lactate proves nothing

CT angio
now, not after labs

THE ONE SENTENCE THAT MAKES THE DIAGNOSIS

Severe, unrelenting abdominal pain with a soft and unimpressive abdomen is mesenteric ischemia until imaging says otherwise. The mismatch exists because **early ischemia is visceral pain with no peritoneal irritation yet**; by the time there is guarding and rebound, the bowel is infarcted and the mortality is enormous. **Mortality runs 60 to 80% and is driven almost entirely by delay**, so the diagnosis is made by suspicion and a scanner, not by a period of observation.

FOUR MECHANISMS *listed most to least common; the history usually tells you which one before the scan does*

Mechanism	Share	Who gets it, and how it presents	What is specific to it
Arterial embolic	**~50%**	**Atrial fibrillation**, recent MI, prosthetic valve, endocarditis. **Sudden, severe** pain with vomiting and often diarrhea.	Lodges in the **SMA**, characteristically **just distal to the origin**, so the proximal jejunum and colon are often spared. **Embolectomy** and lifelong anticoagulation.
Arterial thrombotic	**~20–25%**	Diffuse **atherosclerosis**. Often a prodrome of **chronic mesenteric angina: postprandial pain, food fear and weight loss**. Slower onset.	Occludes at the **SMA origin** on pre-existing plaque, so the ischemic territory is larger. Needs **stenting or bypass**, not simple embolectomy.
Non-occlusive (NOMI)	**~20%**	The **ICU diagnosis**: shock, high-dose vasopressors, hemodialysis, severe heart failure. Insidious, often in a sedated patient.	**No occlusion on CT**, just splanchnic vasoconstriction. **Treat the low-flow state**: restore output, cut vasoconstrictors where possible, consider intra-arterial vasodilator. Surgery does not fix the physiology.
Venous thrombosis	**~5–10%**	**Younger patients.** Hypercoagulable state, malignancy, cirrhosis with portal hypertension, recent abdominal surgery, oral contraceptives. **Subacute**, over days.	Best seen on the **portal venous phase**, so say what you are looking for when you order. Usually managed with **anticoagulation alone**, and it has the best prognosis of the four.

DIAGNOSE *the single most important decision is to scan before you are sure*

CT ANGIOGRAPHY IS THE TEST

Order a CT angiogram with arterial and portal venous phases, and say mesenteric ischemia is the question. **Do not withhold contrast for the creatinine**: the risk of contrast nephropathy is far smaller than the risk of missing infarcted bowel. **Skip oral contrast**, which delays the scan and obscures bowel wall enhancement.

LACTATE IS A LATE AND FALSE COMFORT

A normal lactate does not exclude mesenteric ischemia. It rises only once the bowel is infarcted and the liver can no longer clear it, so **it is a marker of a diagnosis you have already missed**. The same applies to leukocytosis, amylase and D-dimer: suggestive when abnormal, worthless when normal.

WHAT YOU MAY SEE

Bowel wall thickening, poor or absent mural enhancement, mesenteric fat stranding, and a filling defect in the SMA or portal vein. Late and ominous: **pneumatosis intestinalis and portal venous gas**. Plain films are normal early and must never be used to rule out.

MANAGE *resuscitate, anticoagulate, revascularize, then look again*

1. **Resuscitate and call surgery in the same breath as the scan request.** Fluids, **broad-spectrum antibiotics** (translocation across ischemic bowel is why these patients become septic), correct the acidosis, and **NG decompression**. Keep them nil by mouth. **Minimize vasopressors where you can**, since splanchnic vasoconstriction is part of the disease.
2. **Start IV heparin early** unless there is active bleeding, in every mechanism including venous. It limits clot propagation while the definitive plan is arranged, and it is often the entire treatment in venous thrombosis.
3. **Revascularize by mechanism. Embolic:** open embolectomy or endovascular aspiration. **Thrombotic:** stenting or bypass. **Venous:** anticoagulation alone in most. **NOMI:** correct the low-flow state and consider an intra-arterial vasodilator such as papaverine. **Peritonitis means the abdomen is opened regardless** of the mechanism, because dead bowel has to come out.
4. **Plan a second-look laparotomy at 24 to 48 h** whenever bowel viability was uncertain. **Marginal bowel declares itself over the next day**, and committing to a massive resection at the first operation costs bowel that would have survived, while leaving dead bowel behind is fatal. Deciding this up front, rather than waiting for deterioration, is the point.

AFTER THE OPERATION

ANTICOAGULATE FOR THE CAUSE

Lifelong anticoagulation for embolic and venous disease, and treat the source: rate or rhythm control and anticoagulation for atrial fibrillation, thrombophilia and malignancy workup in the young, secondary prevention for atherosclerosis.

EXPECT A HARD RECOVERY

Prolonged ileus, and short bowel syndrome after extensive resection, with lifelong parenteral nutrition dependence in the worst cases. Involve nutrition early, and be honest with the family about prognosis from the outset.

DO NOT CONFUSE IT WITH ISCHEMIC COLITIS *similar words, opposite urgency: one is a laparotomy, the other is usually bowel rest*

Feature	Acute mesenteric ischemia	Ischemic colitis
Vessel and territory	**SMA or mesenteric vein**, small bowel and right colon	**No large-vessel occlusion.** Low flow in **watershed zones**: splenic flexure and rectosigmoid
Presentation	**Severe pain, soft abdomen**, vomiting, minimal bleeding early	**Milder left-sided pain then bloody diarrhea** within 24 h. Pain and tenderness match each other
Who	Atrial fibrillation, atherosclerosis, shock on pressors, thrombophilia	Older, often after **hypotension, marathon running, constipation or vasoconstrictor drugs**
Test and treatment	**CT angiography**, then heparin and **revascularization or resection**	**Colonoscopy** once stable. **Bowel rest, fluids, treat the trigger**; over 80% resolve without surgery
Why it matters	**Treating mesenteric ischemia as colitis kills the patient**, while rushing colitis to laparotomy resects colon that would have recovered. **Bloody diarrhea early points to colitis; severe pain without bleeding points to mesenteric ischemia.**	

PEARLS & PITFALLS

- **Pain out of proportion to a soft abdomen is the whole diagnosis.** A benign exam is the classic finding, not reassurance.
- **A normal lactate never rules it out.** By the time it rises, bowel is dead.
- **Do not delay the CT angiogram for renal function or oral contrast.** Delay is the main cause of death here.
- **Think NOMI in the ICU patient on pressors** who develops a distended, tender abdomen. There will be no occlusion to find.

References: American Gastroenterological Association guideline on acute mesenteric ischemia · World Society of Emergency Surgery guidelines · European Society for Vascular Surgery guidelines on mesenteric artery disease · contemporary reviews of acute mesenteric ischemia.

Educational aid; verify doses against local protocol, renal function, and patient factors.