

AMSER Case of the Month

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58-year-old-female with epigastric abdominal pain,
nausea, and PO intolerance

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Patient Presentation

- **HPI:** 58-year-old female presents with worsening severe diffuse abdominal pain, nausea, and PO intolerance. She presented to the ED yesterday for similar but milder symptoms, and a CT abdomen/pelvis without contrast was performed revealing nonspecific findings. She was discharged home on cefalexin for suspected UTI per UA and ondansetron for nausea.
- **ROS:** Denies vomiting, diarrhea, constipation, black or bloody stools, fever, chills, or dysuria.
- **PMHx:** HTN, GERD, hypothyroidism
- **PSHx:** Cholecystectomy
- **Medications:** Amlodipine, HCTZ, labetalol, losartan, omeprazole, levothyroxine

Pertinent Physical Exam and Lab Findings

- **Physical exam**
 - Abdomen: Soft and non-distended. Severe tenderness to palpation diffusely with guarding present. Exam limited by patient distress.
- **BMP/CBC**: Hemoglobin 11.9, Hematocrit 35.6, Platelets 125,000. Otherwise within normal limits
- **Hepatic Function Panel**: Alkaline Phosphatase 136, AST 43, ALT 42, Globulin 5.6 (elevated). Otherwise within normal limits
- **Lactate, serial troponin I, lipase**: Within normal limits
- **Urinalysis**: Cloudy appearance, 2+ protein, 5-10 RBC/hpf, otherwise normal

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

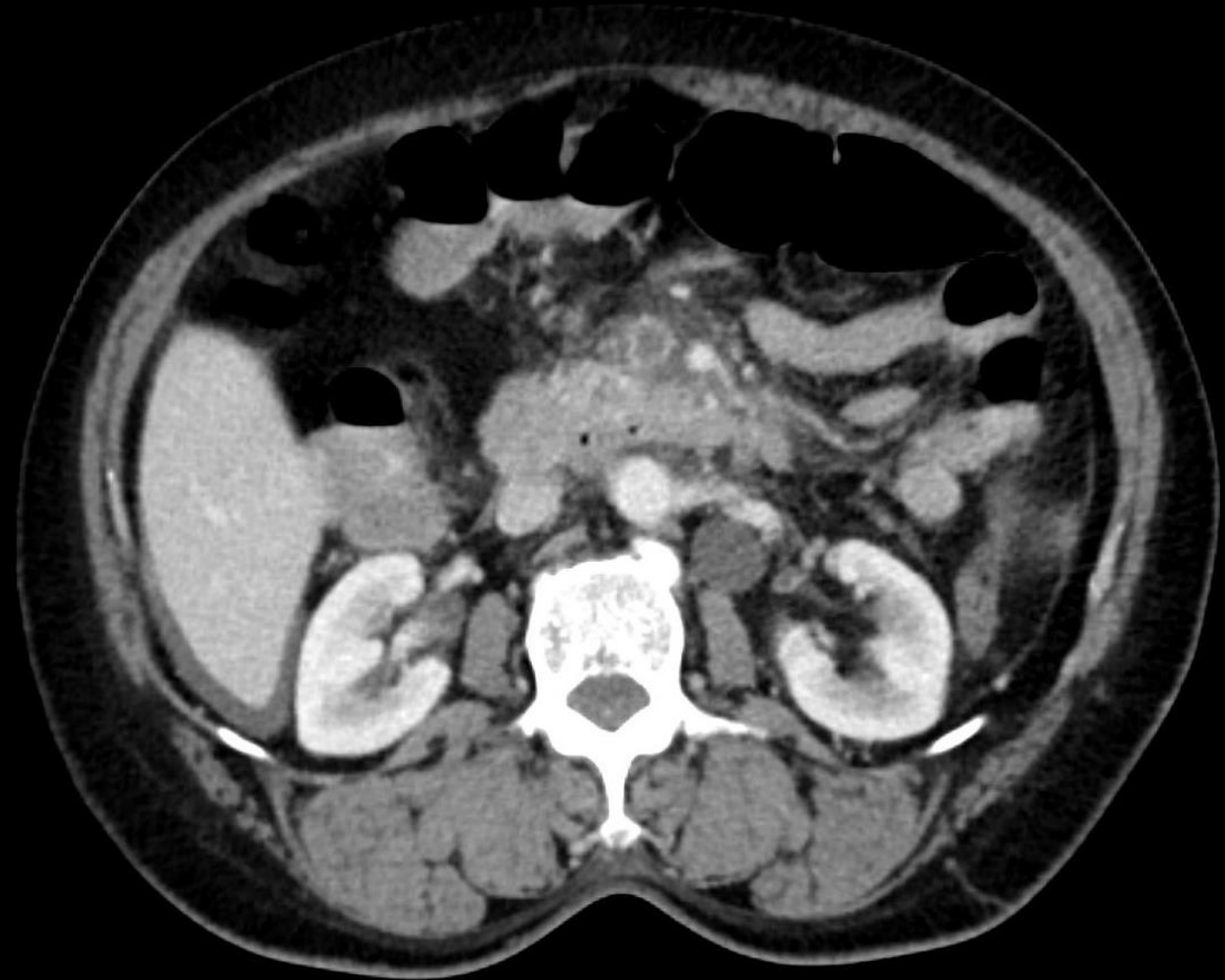
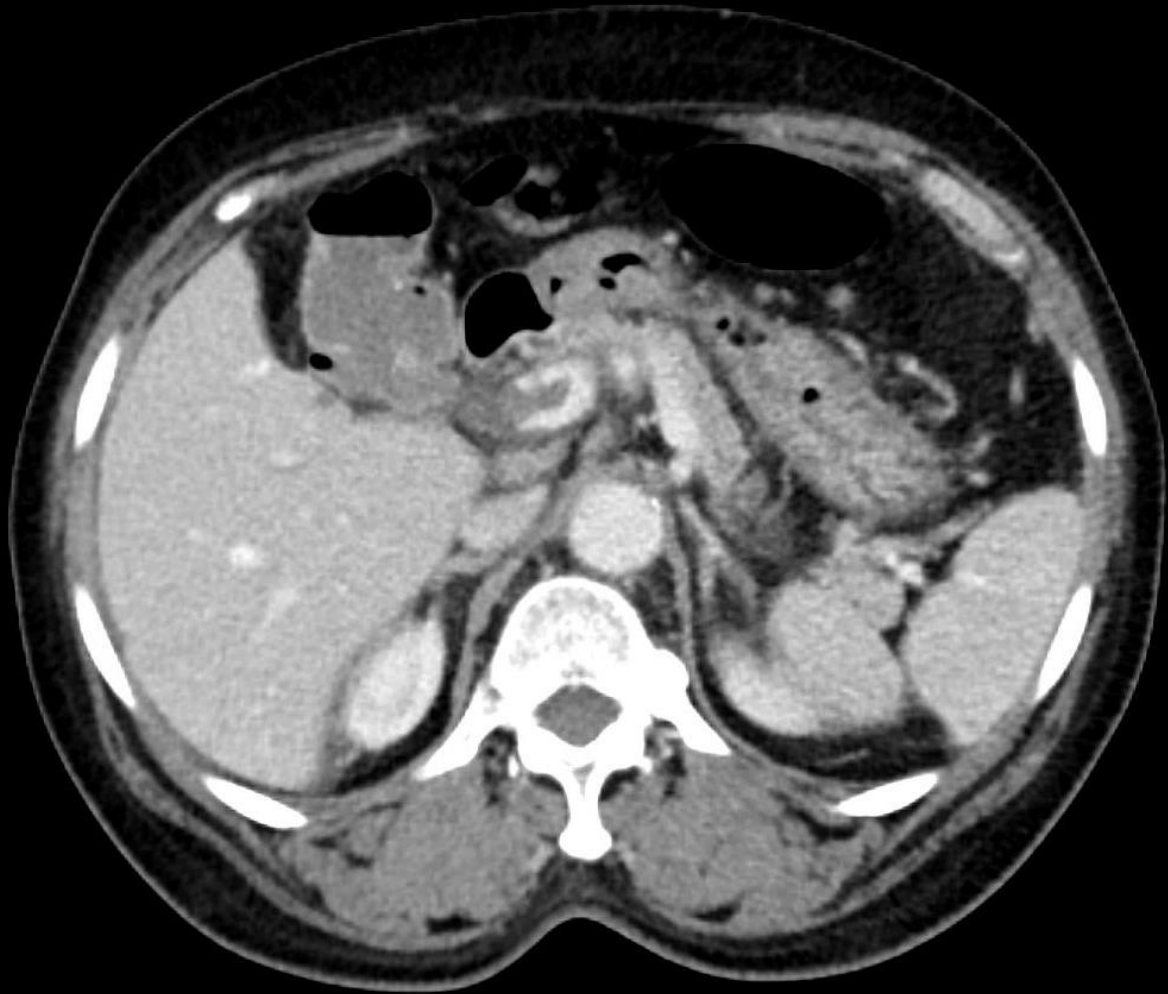
Variant 4: Acute nonlocalized abdominal pain. Not otherwise specified. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
CT abdomen and pelvis with IV contrast	Usually Appropriate	☼☼☼
CT abdomen and pelvis without IV contrast	Usually Appropriate	☼☼☼
MRI abdomen and pelvis without and with IV contrast	Usually Appropriate	○
US abdomen	May Be Appropriate	○
MRI abdomen and pelvis without IV contrast	May Be Appropriate	○
CT abdomen and pelvis without and with IV contrast	May Be Appropriate	☼☼☼☼
Radiography abdomen	May Be Appropriate	☼☼
FDG-PET/CT skull base to mid-thigh	Usually Not Appropriate	☼☼☼☼
WBC scan abdomen and pelvis	Usually Not Appropriate	☼☼☼☼
Nuclear medicine scan gallbladder	Usually Not Appropriate	☼☼
Fluoroscopy upper GI series with small bowel follow-through	Usually Not Appropriate	☼☼☼
Fluoroscopy contrast enema	Usually Not Appropriate	☼☼☼



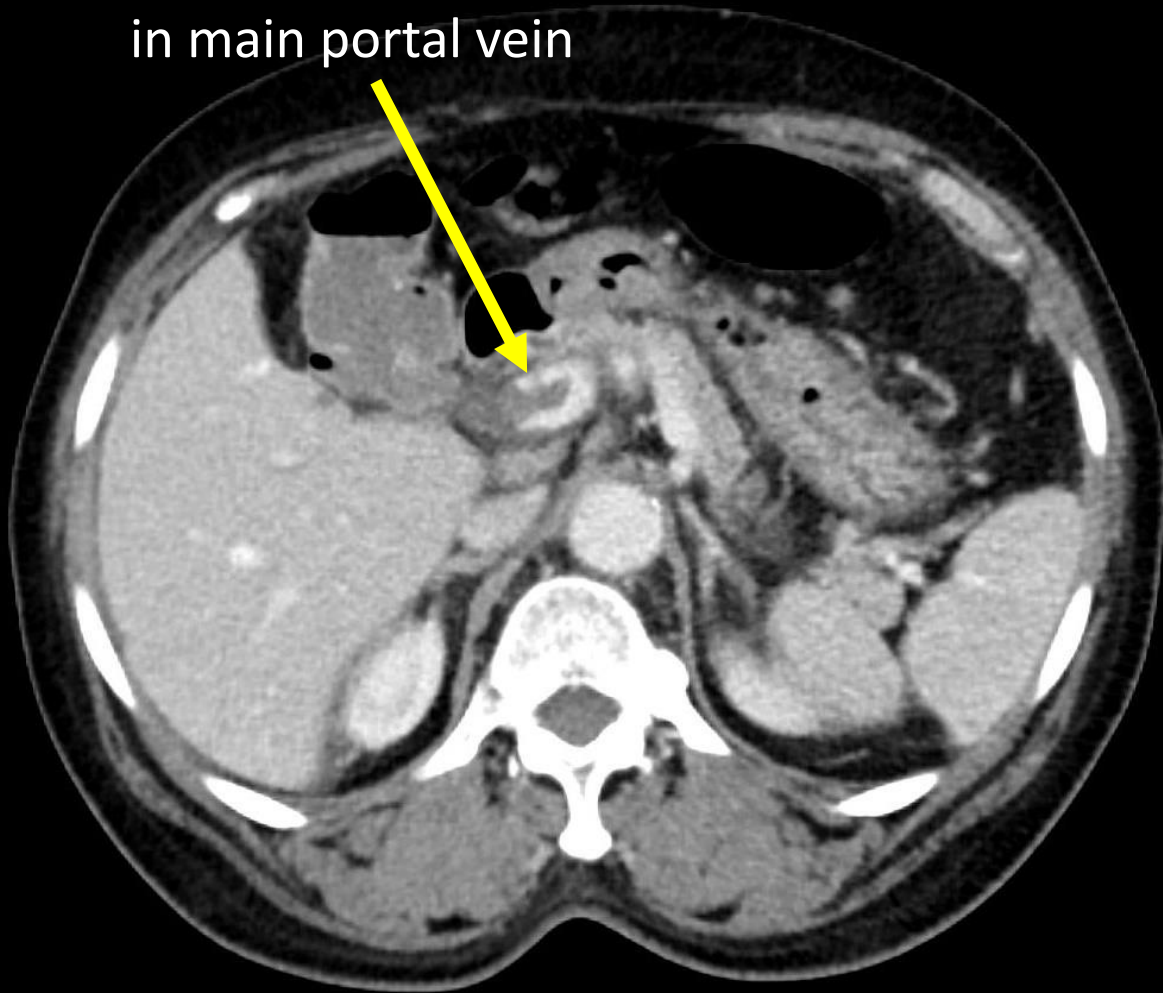
This imaging modality was ordered by the ED physician

CT Abdomen/Pelvis with IV contrast (unlabeled)

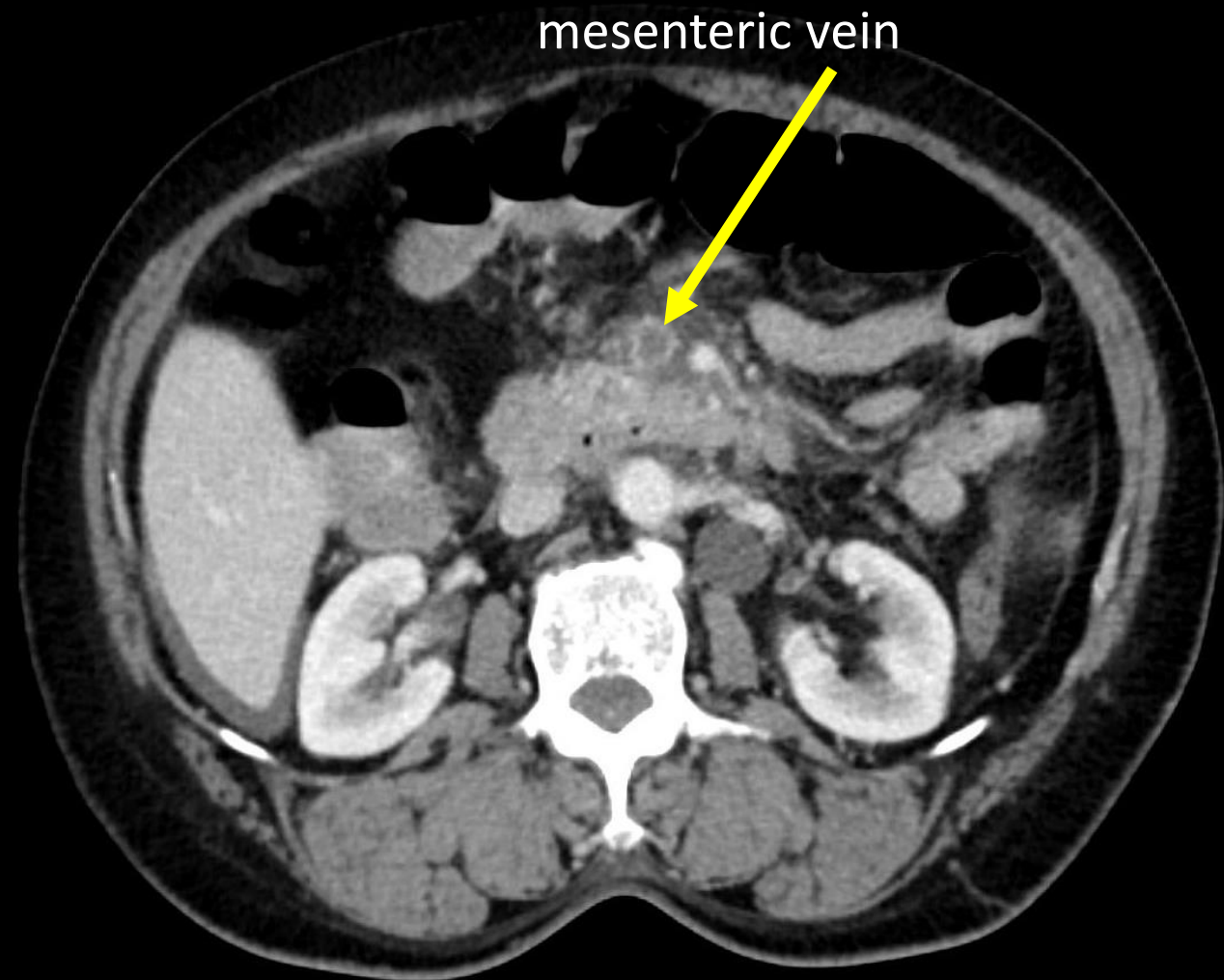


CT Abdomen/Pelvis with and without contrast (labeled)

Subocclusive thrombus
in main portal vein



Occlusive thrombus in superior
mesenteric vein



Interval History

- Heparin drip and empiric antibiotics were initiated
- Patient was brought to the OR for diagnostic laparoscopy
 - No non-viable bowel was discovered, so bowel resection was not performed
- She was continued on systemic anticoagulation for treatment of superior mesenteric vein (SMV) thrombus with partially occlusive extension to the portal vein.

Interval History

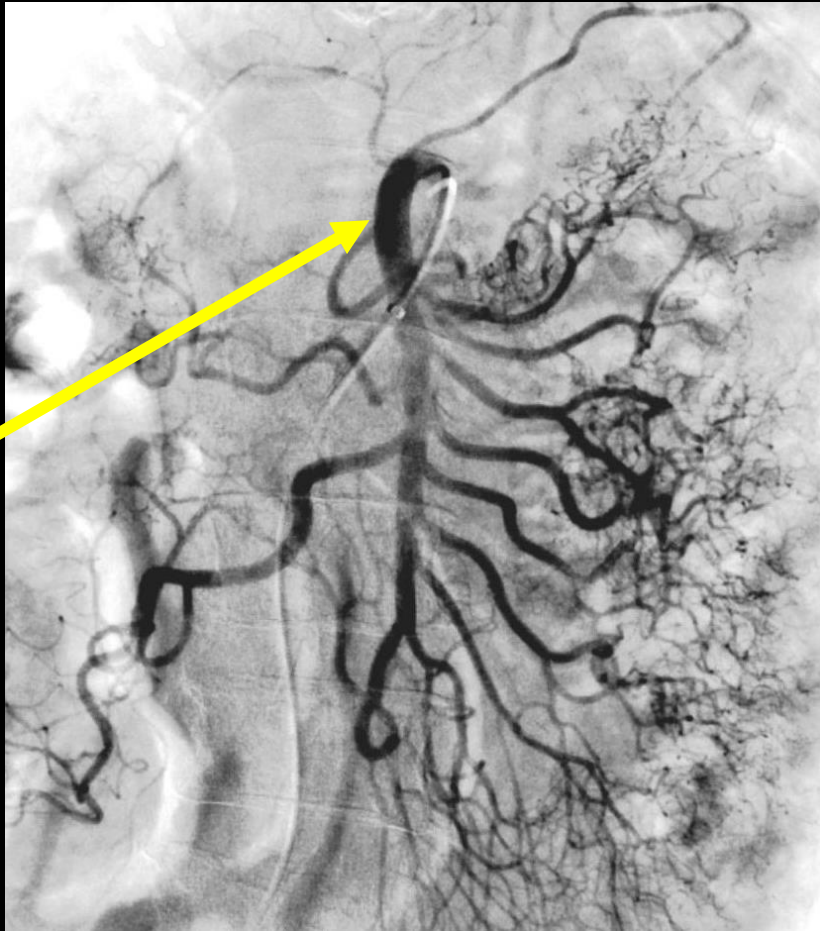
- Over the next 6 days, however, she continued to have persistent abdominal pain and inability to tolerate PO
- TPN was initiated and Interventional Radiology was consulted.
- The decision was made to perform Catheter-directed thrombolysis (CDT) through the superior mesenteric artery for indirect SMV thrombolysis

SMA angiogram (unlabeled)



SMA angiogram (labeled)

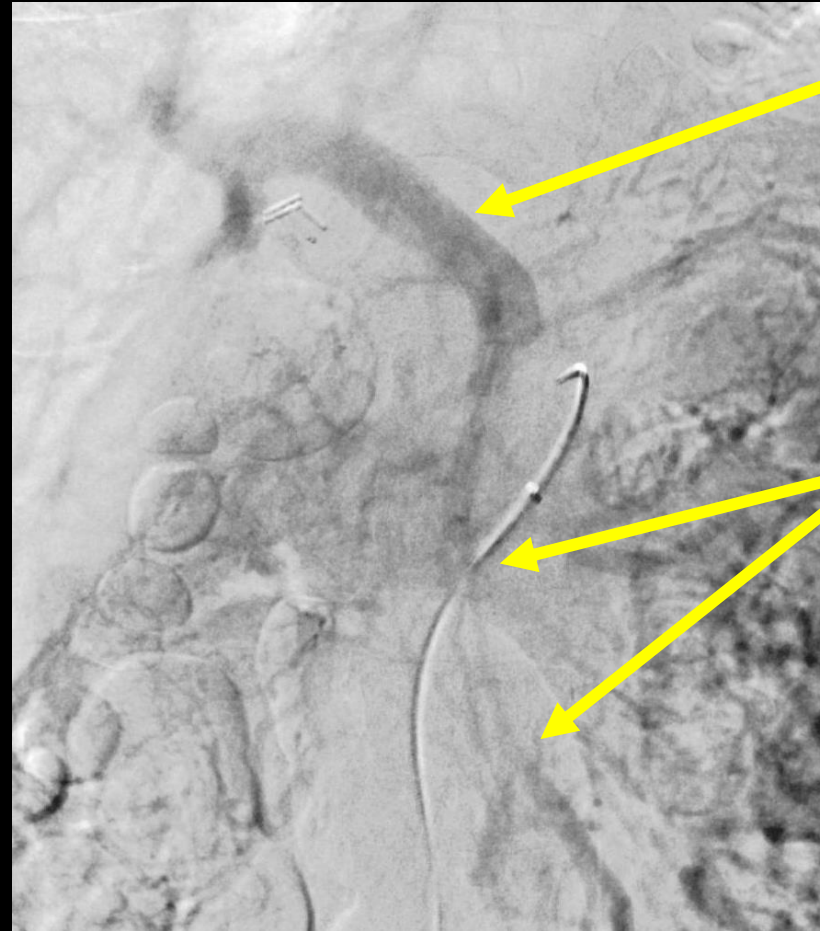
Patent superior mesenteric artery (SMA) and branches



Arterial phase

Portal vein

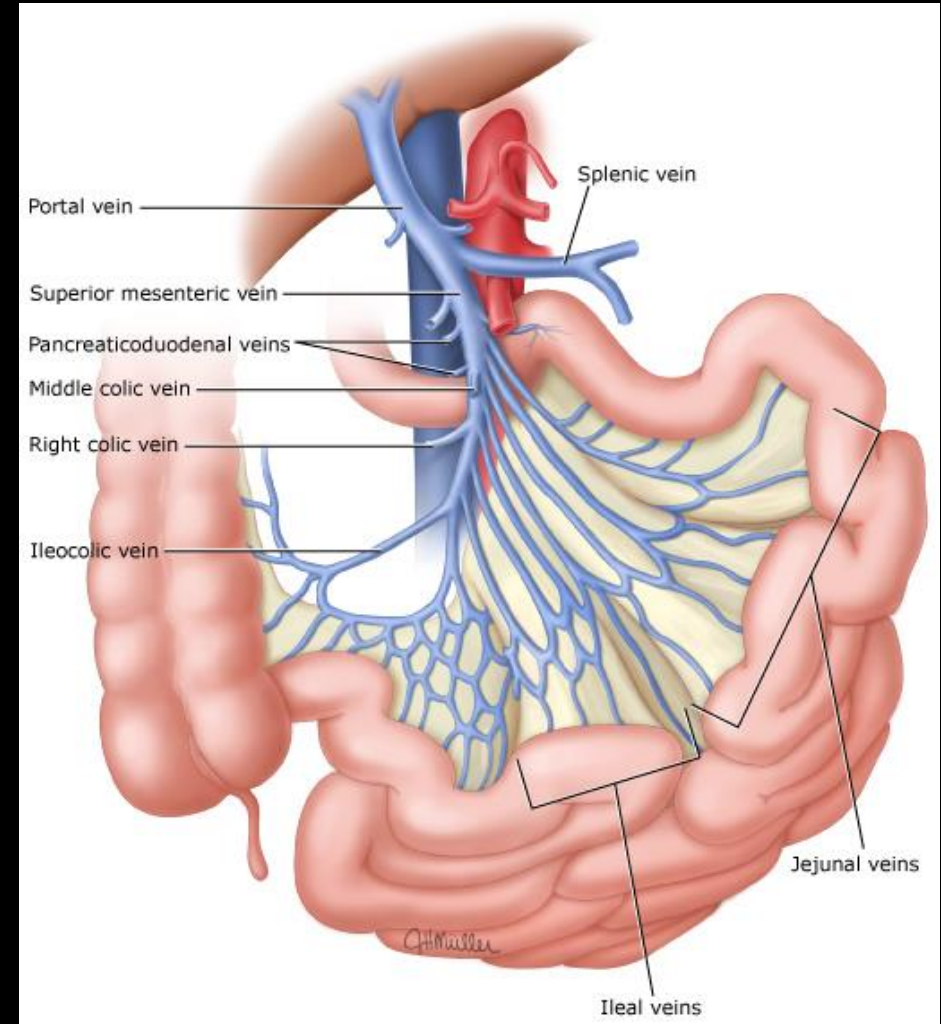
Occlusive thrombus in superior mesenteric vein (SMV)



Delayed portal venous phase

Final Diagnosis:

Superior Mesenteric Vein
thrombosis



Source: UpToDate

Superior Mesenteric Vein Thrombosis

- Intestinal hypoperfusion from mesenteric venous occlusion results in abdominal symptoms, particularly with oral intake
 - More likely to cause abdominal symptoms than portal vein thrombosis alone
 - Can result in severe venous congestion and intestinal ischemia/infarction
- Variable presentation
 - Generalized abdominal pain, nausea, vomiting, pain with eating/PO intolerance
 - Acute, subacute, or chronic presentation
- Risk factors
 - *Abdominal inflammation*: pancreatitis, IBD, diverticulitis
 - *Hypercoagulability*: inherited thrombophilias, malignancy, OCP's, myeloproliferative disorders, personal or family history of thromboembolism

Superior Mesenteric Vein Thrombosis

- Diagnostic Imaging
 - Initial imaging: CT A/P with IV contrast (portal venous phase)
 - Consider: MRI A/P with contrast; US duplex to evaluate the portal veins
- Standard treatment: systemic anticoagulation, bowel rest, frequent monitoring for signs of bowel infarction
 - Long-term anticoagulation depending on provocation and work-up
- Catheter-based techniques - in addition to anticoagulation
 - No large studies, not widely performed
 - Consider in cases of bowel ischemia or persistently symptomatic patients
 - Direct vs. indirect techniques

Superior Mesenteric Vein Thrombosis

- Catheter-directed thrombolysis
 - **Direct infusion**
 - Transjugular or percutaneous transhepatic access
 - Can combine or substitute with percutaneous mechanical thrombectomy
 - More appropriate for occlusive main portal vein/splenic vein thrombus
 - Treatment of thrombosed SMV branches will be less effective
 - **Indirect infusion**
 - Femoral or upper extremity arterial access
 - Infusion catheter placed into the superior mesenteric artery (SMA)
 - More effective lysis of SMV branches

Case Discussion

- After 24 hours of catheter-directed thrombolysis with tPA, the catheter was removed by Interventional Radiology
- Although post-CDT imaging at 24 hours did not show significant change, the patient experienced complete resolution of symptoms within days
 - Diet was slowly advanced to regular 4 days later, w/ no further PO intolerance
 - TPN was discontinued and she was discharged home
- During hospitalization, she had negative coagulopathy workup for unprovoked thrombus
 - Remote history of MGUS possibly contributing
 - Long-term anticoagulation was recommended

References

- American College of Radiology. ACR Appropriateness Criteria. Available at <https://www.acr.org/Clinical-Resources/ACR-Appropriateness-Criteria>. Accessed July 22, 2021.
- Chen C. Direct thrombolytic therapy in portal and mesenteric vein thrombosis. *Journal of Vascular Surgery*. 2012;56(4):1124-1126. doi:10.1016/j.jvs.2012.04.024
- Hollingshead M, Burke CT, Mauro MA, Weeks SM, Dixon RG, Jaques PF. Transcatheter Thrombolytic Therapy for Acute Mesenteric and Portal Vein Thrombosis. *Journal of Vascular and Interventional Radiology*. 2005;16:651–61.
- Liu FY, Wang MQ, Fan QS, Duan F, Wang ZJ, Song P. Interventional treatment for symptomatic acute-subacute portal and superior mesenteric vein thrombosis. *World Journal of Gastroenterology*. 2009;15(40):5028-5034. doi:10.3748/wjg.15.5028
- Singal AK, Kamath PS, Tefferi A. Mesenteric venous thrombosis. *Mayo Clinic Proceedings*. 2013;88(3):285-294. doi:10.1016/j.mayocp.2013.01.012
- Yang S, Zhang L, Liu K, et al. Postoperative Catheter-Directed Thrombolysis Versus Systemic Anticoagulation for Acute Superior Mesenteric Venous Thrombosis. *Annals of Vascular Surgery*. 2016;35:88-97. doi:10.1016/j.avsg.2016.02.019