AMSER Case of the Month
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54 y/o Hypotension and Abdominal Pain Post-Paracentesis

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Patient Presentation

- HPI:
  - 54 y/o male w/ history of alcoholic cirrhosis with portal hypertension admitted to hospital for bleeding esophageal varices (treated with banding), abdominal distension related to large amount of ascites and shortness of breath.
  - Patient status post diagnostic and therapeutic paracentesis with 2750cc ascitic fluid removed.
  - Soon after paracentesis, patient complained of severe abdominal pain and worsening abdominal distension.
  - Patient was hypotensive and hemoglobin went from 9.8 gm/dL pre-paracentesis to 4.0 gm/dL post-paracentesis.

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What Imaging Should We Order?

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Applicable ACR Appropriateness Criteria

Variant 4: **Postsurgical and traumatic causes of nonvariceal upper gastrointestinal bleeding; endoscopy contraindicated.**

Radiologic Procedure	Rating	Comments	RRL*
Arteriography visceral	9	This procedure is comparable to CTA and is comparable to CT abdomen with IV contrast.	☢☢☢
CTA abdomen with IV contrast	8	This procedure is comparable to arteriography and is an alternative to CT abdomen with IV contrast.	☢☢☢
CT abdomen with IV contrast	7	This procedure is comparable to arteriography and is an alternative to CTA abdomen with IV contrast.	☢☢☢
CT enterography	5		☢☢☢☢
CT abdomen without IV contrast	4		☢☢☢
CT abdomen without and with IV contrast	3		☢☢☢☢
RBC scan abdomen and pelvis	2		☢☢☢
X-ray upper GI series	1		☢☢☢
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

This imaging modality was ordered by the physician

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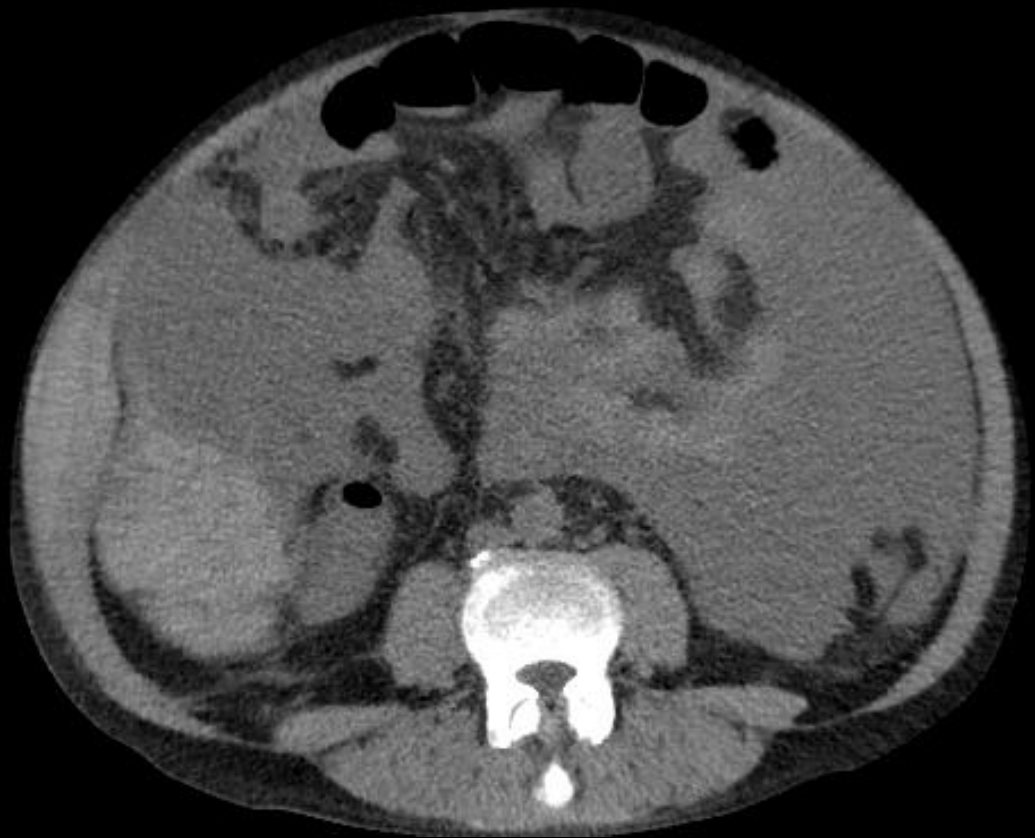
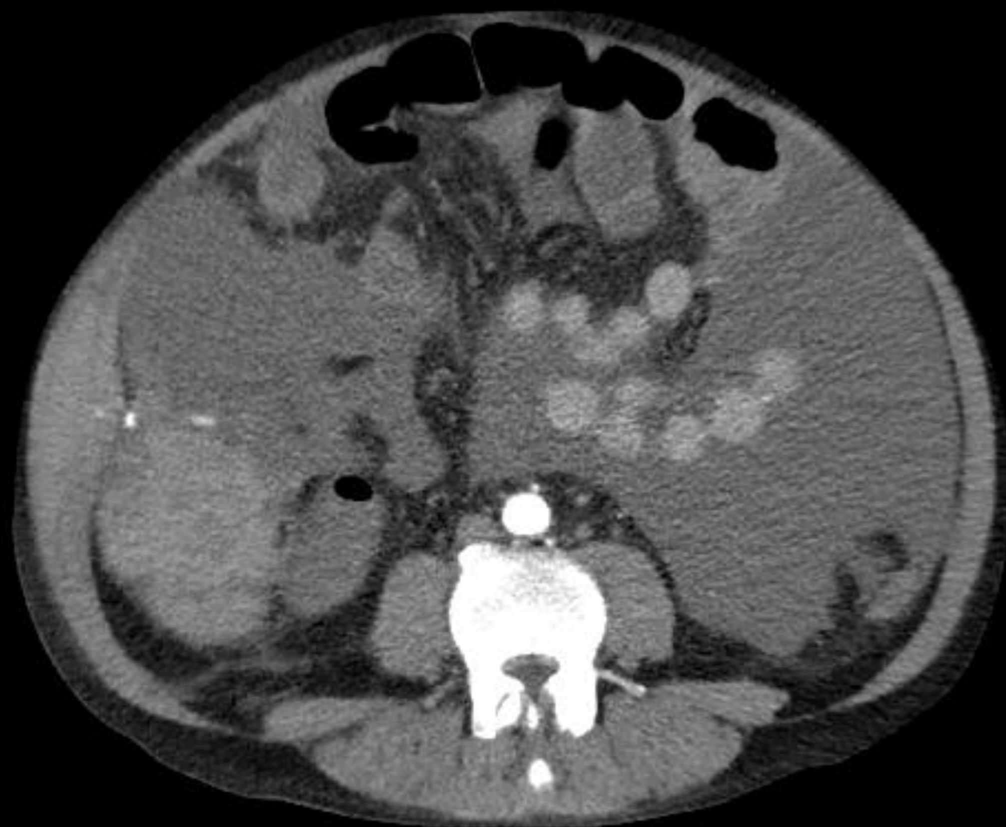
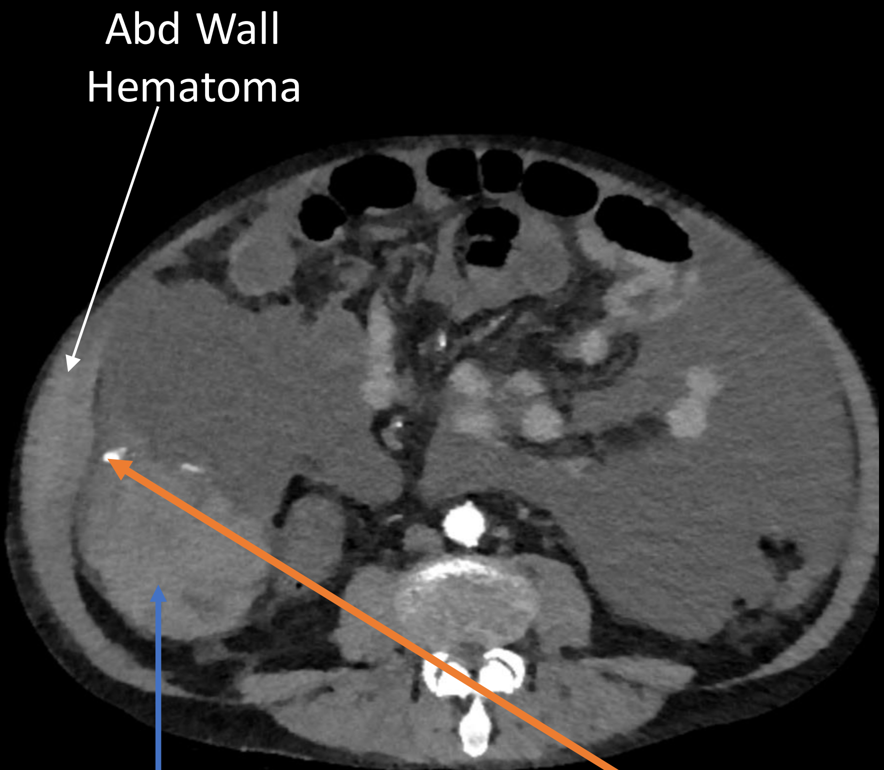
Pre - Contrast

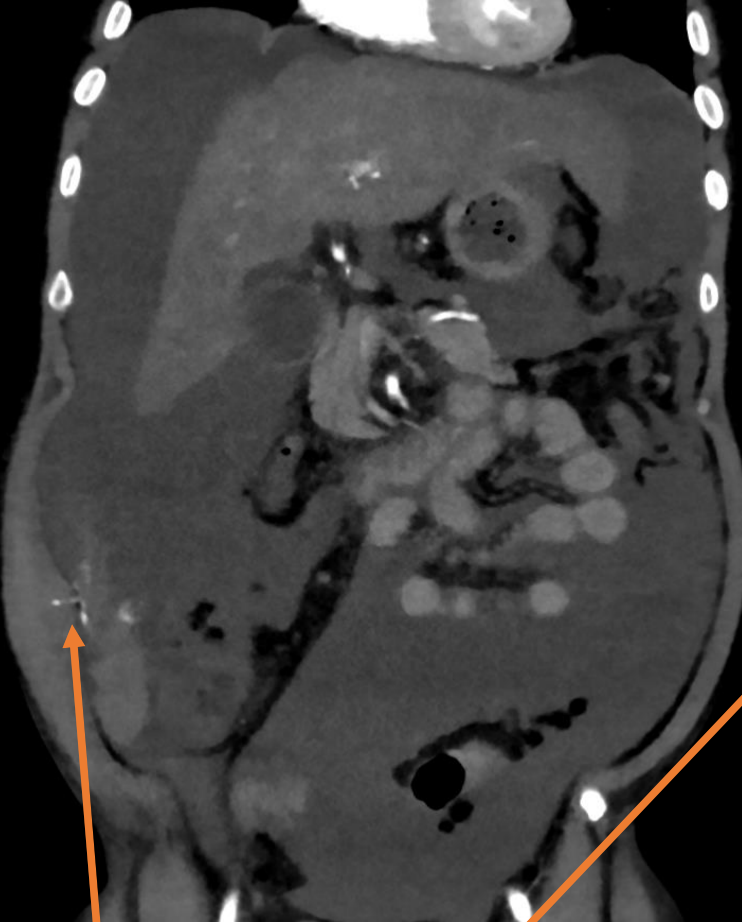


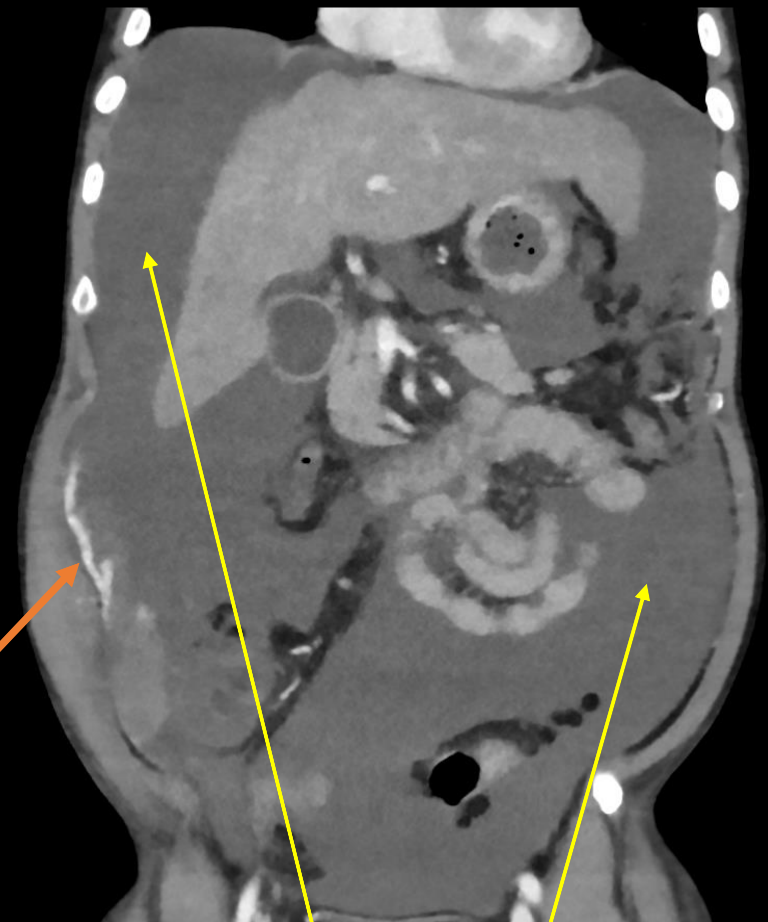
Post Contrast – Arterial Phase



Axial Arterial Phase | Coronal Arterial Phase | Coronal Venous Phase







Final Dx:

Active Arterial Extravasation from Right Lateral Circumflex Artery with Hemoperitoneum and Small Abdominal Wall Hematoma

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Discussion: Paracentesis

- Paracentesis is frequently performed in patients with end-stage liver disease to relieve tense abdominal distension and dyspnea
- Paracentesis is considered a safe procedure despite coagulopathy and thrombocytopenia associated with liver failure.
- Major bleeding complications is uncommon, reported in 0.2 – 1.7% of paracenteses.
- Higher rates of complications described in patients with higher MELD and Child-Pugh score (more severe liver disease) with increased risk of bleeding in patients with lower fibrinogen levels.
- Increased risk of hemorrhage also seen in patients with acute renal injury, probably related to platelet dysfunction.
- Use of 2 probe ultrasound guidance technique (high and low frequency ultrasound transducers) may help avoid abdominal wall vessels and provide necessary depth to see ascites pocket and avoid hollow viscus

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Discussion: Complications Post- Paracentesis

- Complications
  - Ascitic fluid leak from puncture site
  - Infection : Wound or Peritonitis
  - Bleeding
  - Bowel or Bladder perforation
  - Catheter laceration and loss in abdominal cavity
  - Paracentesis Induced Circulatory Dysfunction
    - Postparacentesis hypotension
    - Dilutional hyponatremia
    - Hepatorenal syndrome

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Bleeding Post Paracentesis

- Bleeding
  - Abdominal wall hematoma – injury to artery or collateral veins
  - Hemoperitoneum
    - Traumatic : Laceration or Pseudoaneurysm of blood vessel
    - Spontaneous: Mesenteric variceal bleeding after removal >4 liters of ascites

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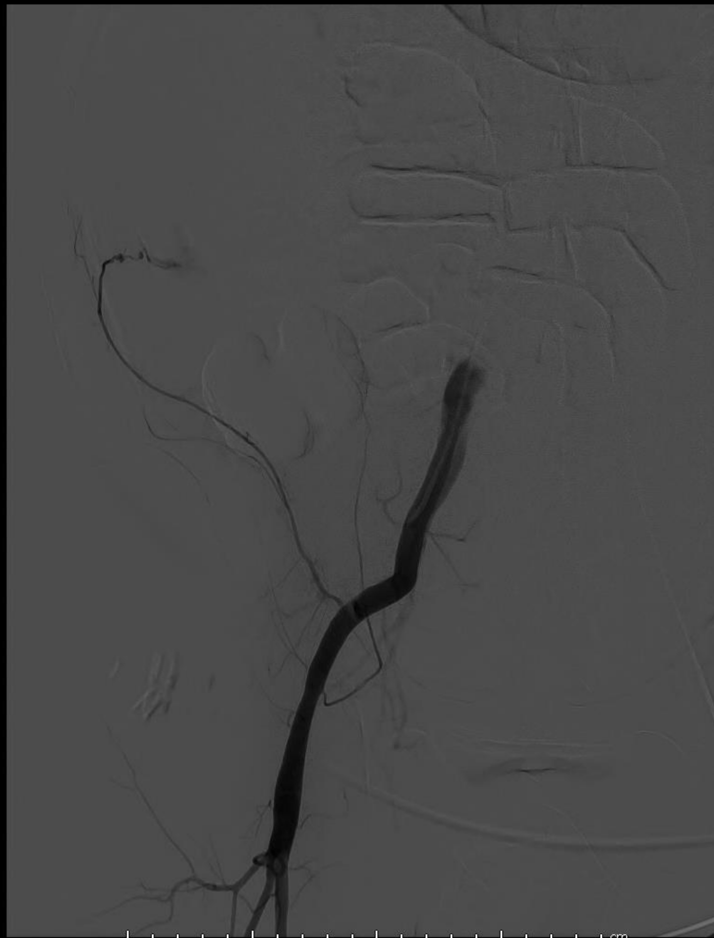
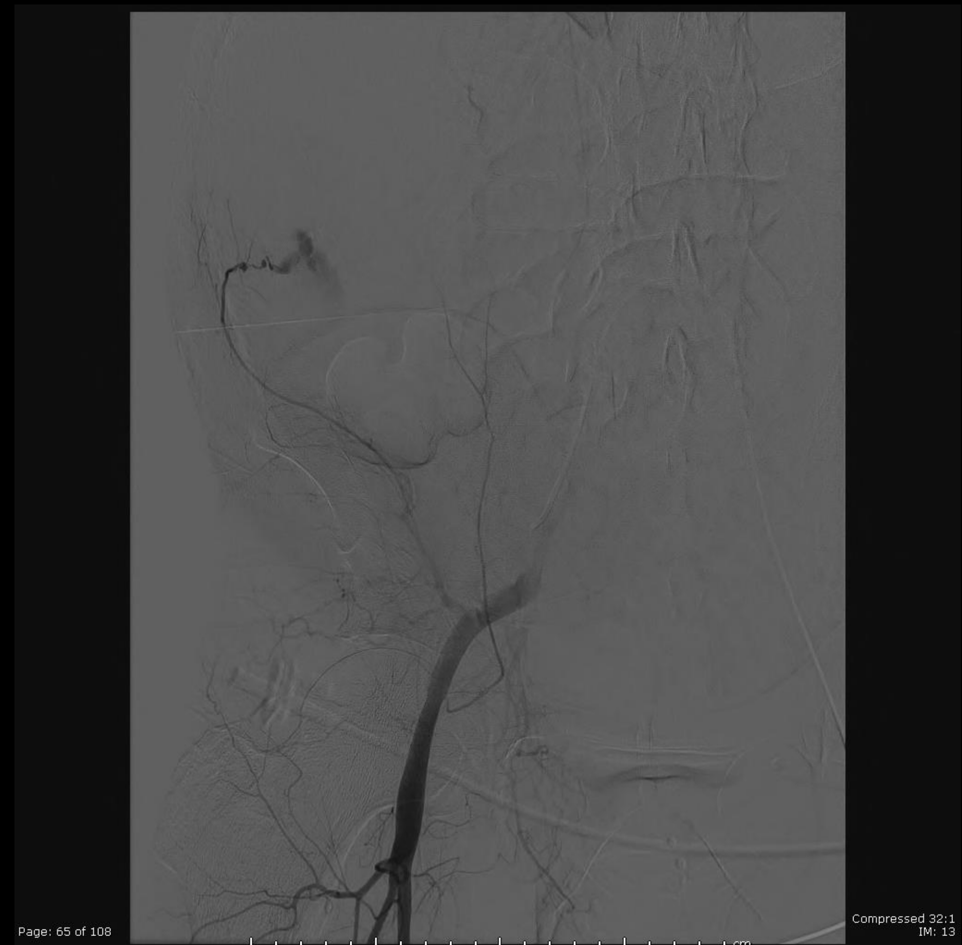
Our Patient's Course – Emergent Right Common Iliac Artery Angiogram performed

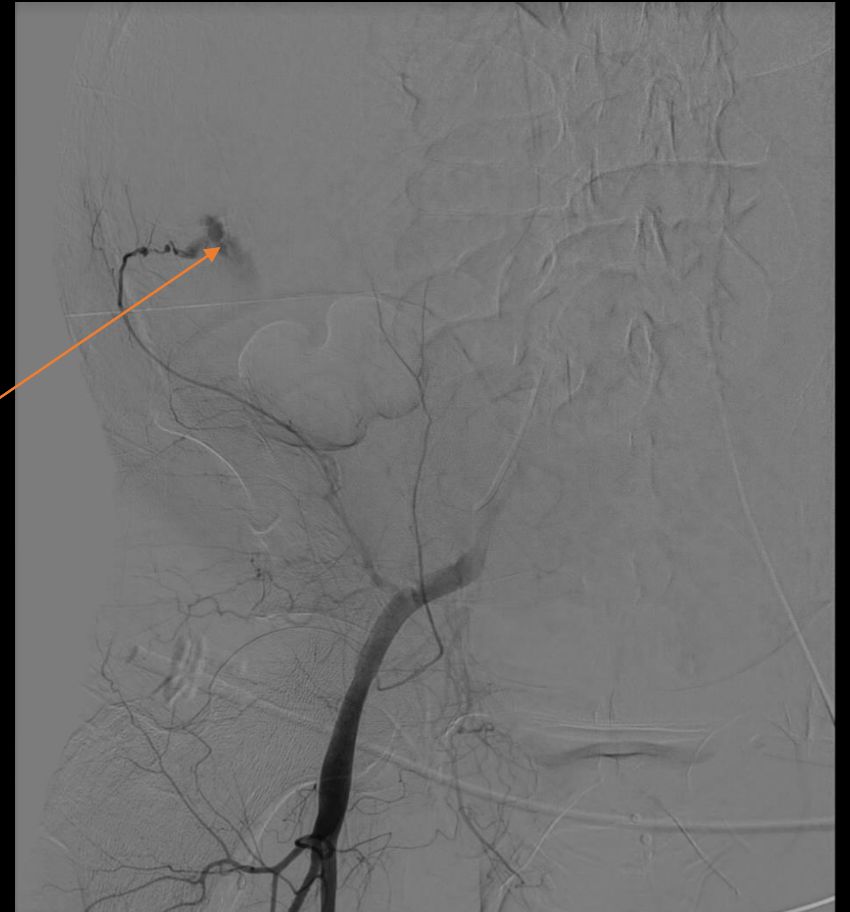




Our Patient's Course

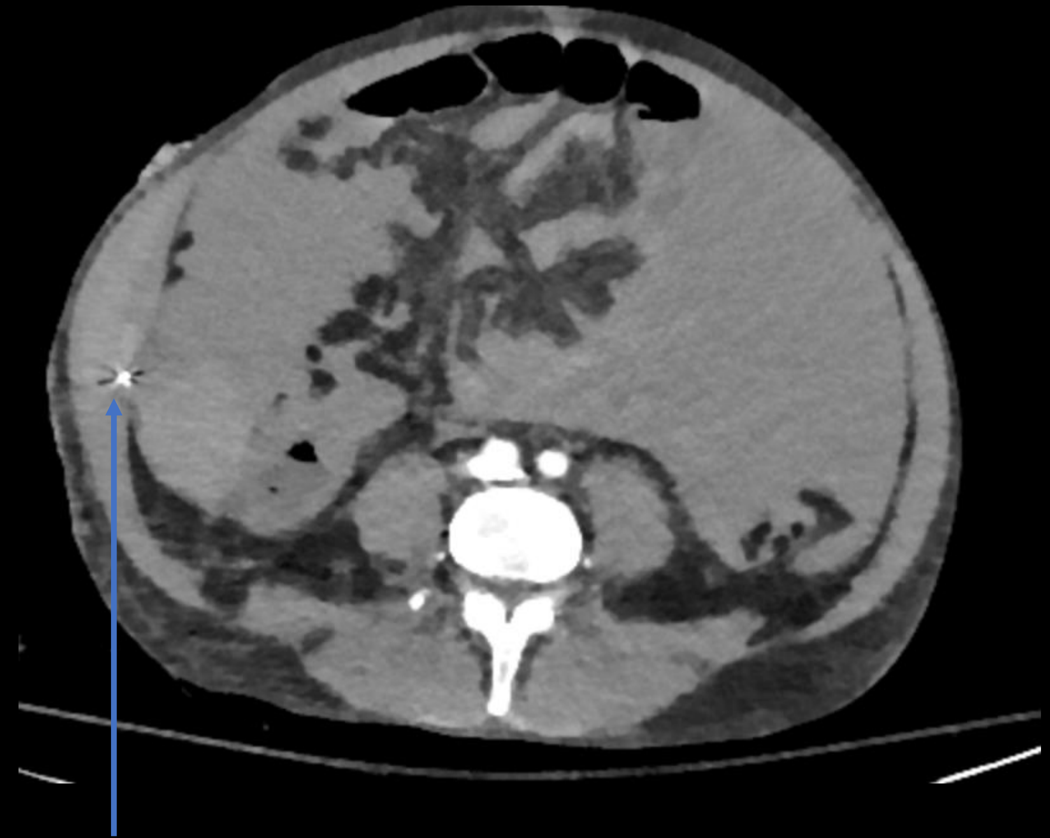
- Emergent right common iliac artery angiography demonstrates active extravasation from the right lateral circumflex artery branch. Embolization of the right lateral circumflex branch with a combination of Gelfoam and embolic coils was performed.

Active Bleed from right lateral circumflex



Post-Embolization CT

- No evidence of active arterial extravasation, status post embolization. Persistent large abdominal ascites and hemoperitoneum with increased density of the ascites likely secondary to a combination of redistribution of blood products as well as mixing of contrast material injected during the embolization procedure.



Embolic Coil

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