AMSER Case of the Month
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50-year-old female with Hematemesis and Melena

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Patient Presentation

- HPI: 50-year-old female presenting after an episode of large volume bright red vomitus and two melanotic stools
- PMH: cerebral palsy, intellectual disability, seizure disorder, GERD
- PSH: cholecystectomy, g-tube placement
- Vitals: afebrile, normotensive, tachycardic
- Labs: hgb 6.7

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant: 3 Adult. Endoscopy confirms nonvariceal upper gastrointestinal bleeding without a clear source. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
CTA abdomen and pelvis without and with IV contrast	Usually Appropriate	☢☢☢☢
Arteriography visceral	May Be Appropriate	☢☢☢
CTA chest without and with IV contrast	May Be Appropriate	☢☢☢
RBC scan abdomen and pelvis	May Be Appropriate	☢☢☢
CT enterography	May Be Appropriate	☢☢☢☢
Fluoroscopy upper GI series	Usually Not Appropriate	☢☢☢
MR enterography	Usually Not Appropriate	O
CT abdomen and pelvis with IV contrast	Usually Not Appropriate	☢☢☢
CT abdomen and pelvis without IV contrast	Usually Not Appropriate	☢☢☢
CT abdomen with IV contrast	Usually Not Appropriate	☢☢☢
CT abdomen without IV contrast	Usually Not Appropriate	☢☢☢
CTA abdomen with IV contrast	Usually Not Appropriate	☢☢☢
CTA chest with IV contrast	Usually Not Appropriate	☢☢☢
CT abdomen and pelvis without and with IV contrast	Usually Not Appropriate	☢☢☢☢
CT abdomen without and with IV contrast	Usually Not Appropriate	☢☢☢☢
CTA abdomen and pelvis with IV contrast	Usually Not Appropriate	☢☢☢☢
CTA abdomen without and with IV contrast	Usually Not Appropriate	☢☢☢☢

This imaging modality was ordered by the ER physician

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Findings: (labeled)

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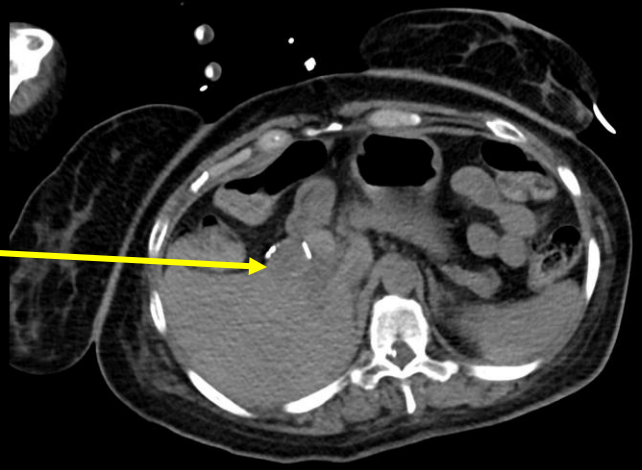
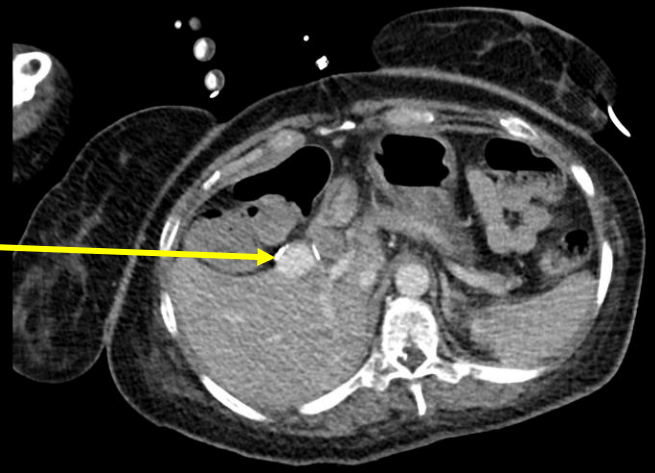
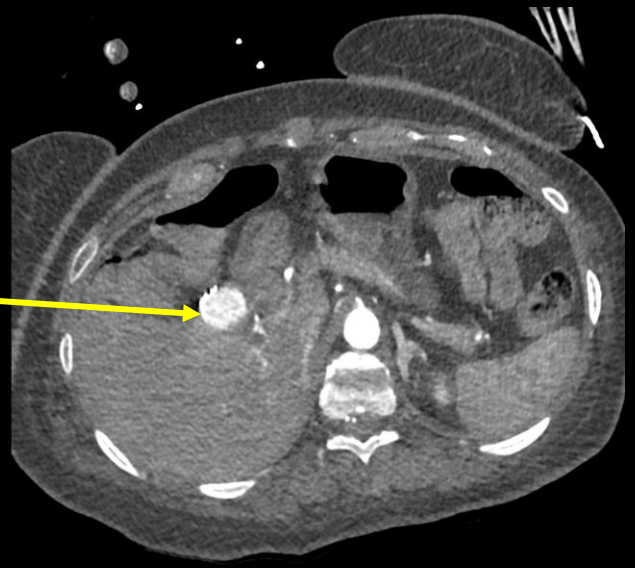
Cholecystectomy clips around a circular lesion measuring 45 HU (non-contrast)



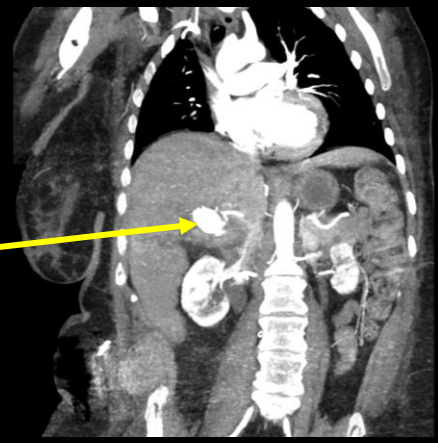
Round circular lesion now measures 183 HU (venous phase)



Round circular lesion now measures 374 HU (arterial phase)



Focal outpouching off the right hepatic artery (arterial phase)



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Right Hepatic Artery Pseudoaneurysm

Case Discussion

- The patient has radiographic findings of a contrast-filled outpouching arising from the right hepatic artery.
- Pseudoaneurysms follow blood pool Hounsfield units on all phases (45 HU noncontrast, 300-400 HU arterial, 100-200 HU venous).[2]
- Pseudoaneurysms do not increase in size on delayed imaging as compared to active bleeds.
- CTA of the abdomen and pelvis is the diagnostic tool of choice for suspected hepatic artery pseudoaneurysm.[2]
- The main risk factor for hepatic artery pseudoaneurysm is history of hepatobiliary procedure.[1]
  - This patient underwent cholecystectomy two months prior.
- It is critical to distinguish pseudoaneurysm from active bleeding.

Case Discussion

Pseudoaneurysm vs Active Bleeding on CT Angiography

Feature	Pseudoaneurysm	Active Bleeding
Appearance	Well-defined contrast-filled focus	Extravascular contrast extravasation
Arterial Phase	Enhances same as artery	May be focal initially
Delayed Phases	Persists without significant enlargement	Increases in size/attenuation
Shape	Round/ovoid sac	Irregular, amorphous
Margins	Sharp, discrete	Poorly defined
Behavior	Contained vascular injury	Ongoing hemorrhage
Key Clue	Connection to adjacent artery	Contrast 'blush' spreading over time
Management Implication	Requires prompt repair/embolization	Urgent hemorrhage control

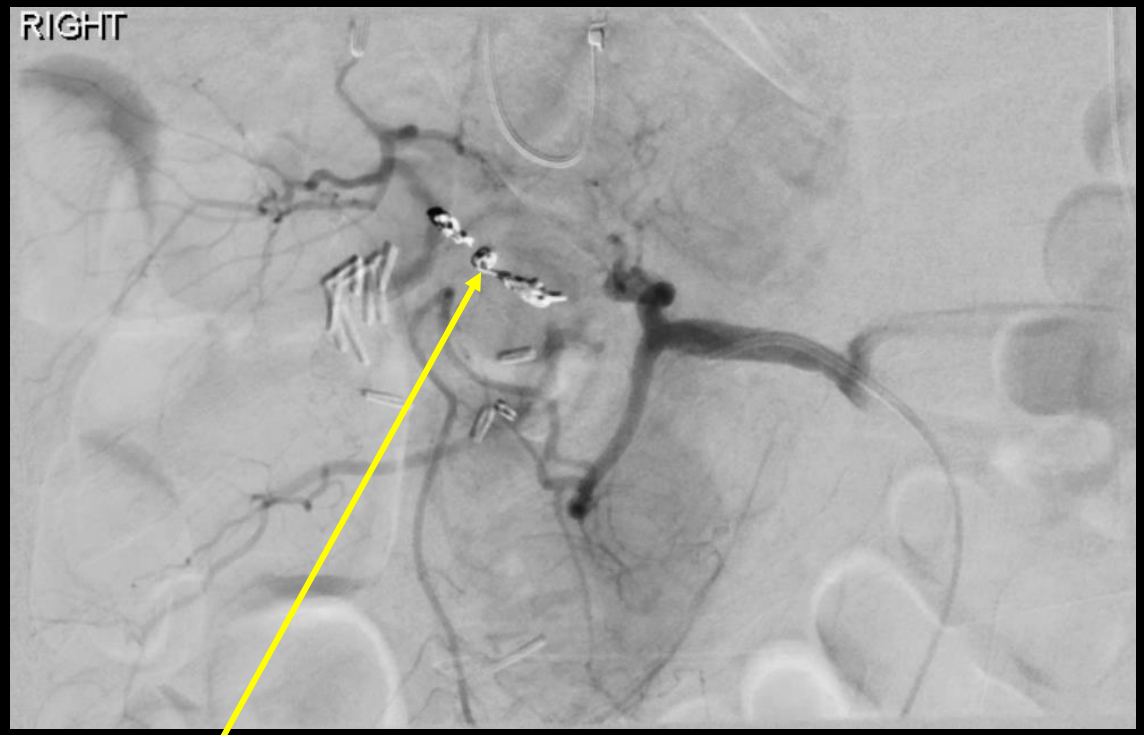
Table 1. Distinguishing pseudoaneurysm from active bleeding on CT angiography[3]

Case Discussion

- **Initial management**: All pseudoaneurysms should be repaired as soon as the diagnosis is made, regardless of size or cause, given the high propensity for rupture and significant associated mortality.[1]
  - Selective endovascular coil embolization is recommended for intrahepatic pseudoaneurysms to preserve arterial supply to the remaining liver parenchyma.[1]
- Postoperative management and considerations: Hepatic ischemia is the most critical concern after embolization. Appropriate monitoring includes Doppler ultrasound and serial liver function tests.[4]

Case Discussion

Right hepatic artery pseudoaneurysm (arrow) adjacent to cholecystectomy surgical clips (pre-coiling).



Right hepatic artery pseudoaneurysm s/p coiling (arrow). Pseudoaneurysm no longer fills with contrast.

Case Discussion

- The patient’s bleeding resolved after embolization.
- There were no complications.

References:

1. Chaer RA, Abularrage CJ, Coleman DM, et al. The Society for Vascular Surgery clinical practice guidelines on the management of visceral aneurysms. *J Vasc Surg*. 2020;72(1S):3S-39S. doi:10.1016/j.jvs.2020.01.039

2. Gavrancic T, Tahir MW, Gorasevic M, et al. Hepatic artery pseudoaneurysm-the Mayo Clinic experience and literature review. *Front Med (Lausanne)*. 2024;11:1484966. Published 2024 Dec 10. doi:10.3389/fmed.2024.1484966

3. Hamilton JD, Kumaravel M, Censullo ML, Cohen AM, Kievlan DS, West OC. Multidetector CT evaluation of active extravasation in blunt abdominal and pelvic trauma patients. *Radiographics*. 2008;28(6):1603-1616. doi:10.1148/rg.286085522

4. Van Holsbeeck A, Dhondt E, Marrannes J, et al. Coil Embolization of True, Common and Proper, Hepatic Artery Aneurysms: Technique, Safety and Outcome. *Cardiovasc Intervent Radiol*. 2023;46(4):480-487. doi:10.1007/s00270-023-03379-0

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