

AMSER Case of the Month

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52-year-old male s/p liver transplant presenting for transjugular liver biopsy due to concern for rejection



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Patient Presentation

HPI: Patient is a 52-year-old male s/p liver transplant who presented for biopsy due to concern for rejection. He underwent a transjugular liver biopsy without immediate complications but presented six days later with weakness and presyncope. Imaging revealed a right hepatic artery pseudoaneurysm.

PMHx: Alcoholic cirrhosis, portal hypertension, esophageal varices without bleeding, portal vein thrombosis, CKD, pancytopenia

PSHx: ventral hernia repair - 11/2024, liver transplant - 9/2024

Pertinent Labs

Prior to transplant biopsy:

- Hgb 12.2
- AST 60
- ALT 68

At presentation:

- Hgb 10.6

What imaging should we order for suspected vascular injury/post-procedural bleeding?

Select the applicable ACR Appropriateness Criteria

Scenario	Scenario ID	Procedure	Adult RRL	Peds RRL	Appropriateness Category
Abd pain, acute, nonlocalized, fever, post op, initial exam	3074175	<input checked="" type="radio"/> CT abdomen and pelvis with IV contrast	1-10 mSv ☼☼☼	3-10 mSv [ped] ☼☼☼☼	Usually appropriate
		<input type="radio"/> US abdomen	0 mSv O	0 mSv [ped] O	May be appropriate
		<input type="radio"/> Radiography abdomen	0.1-1 mSv ☼☼	0.03-0.3 mSv [ped] ☼☼	May be appropriate
		<input type="radio"/> Fluoroscopy contrast enema	1-10 mSv ☼☼☼	3-10 mSv [ped] ☼☼☼☼	May be appropriate
		<input type="radio"/> Fluoroscopy upper GI series with small bowel follow-through	1-10 mSv ☼☼☼	3-10 mSv [ped] ☼☼☼☼	May be appropriate
		<input type="radio"/> MRI abdomen and pelvis without and with IV contrast	0 mSv O	0 mSv [ped] O	May be appropriate
		<input type="radio"/> MRI abdomen and pelvis without IV contrast	0 mSv O	0 mSv [ped] O	May be appropriate
		<input type="radio"/> CT abdomen and pelvis without IV contrast	1-10 mSv ☼☼☼	3-10 mSv [ped] ☼☼☼☼	May be appropriate
		<input type="radio"/> CT abdomen and pelvis without and with IV contrast	10-30 mSv ☼☼☼☼	10-30 mSv [ped] ☼☼☼☼☼	May be appropriate
<input type="radio"/> Nuclear medicine scan gallbladder	0.1-1 mSv ☼☼		Usually not appropriate		

This imaging modality was ordered

No specific ACR guideline exists for post–liver biopsy bleeding. This recommendation uses the “acute, nonlocalized postoperative abdominal pain” variant as the closest applicable scenario.

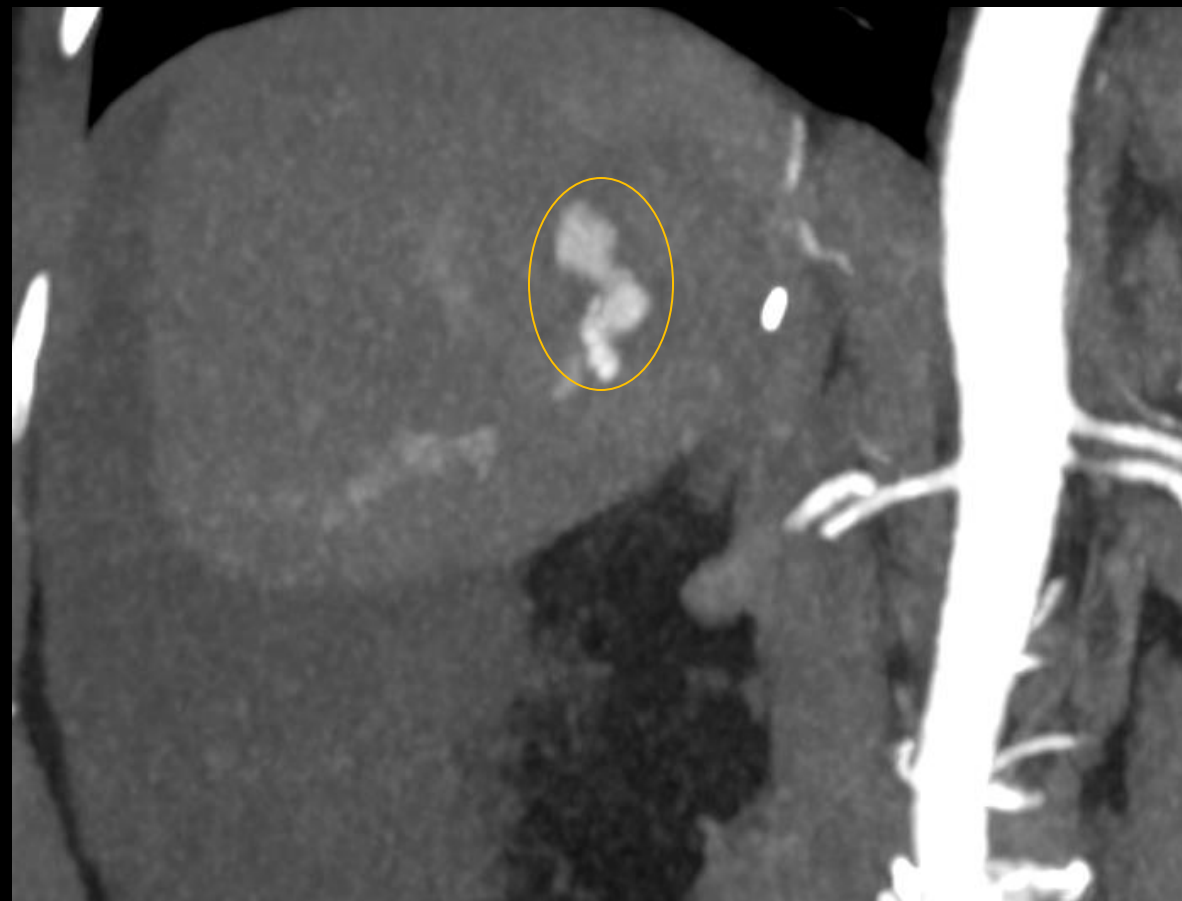
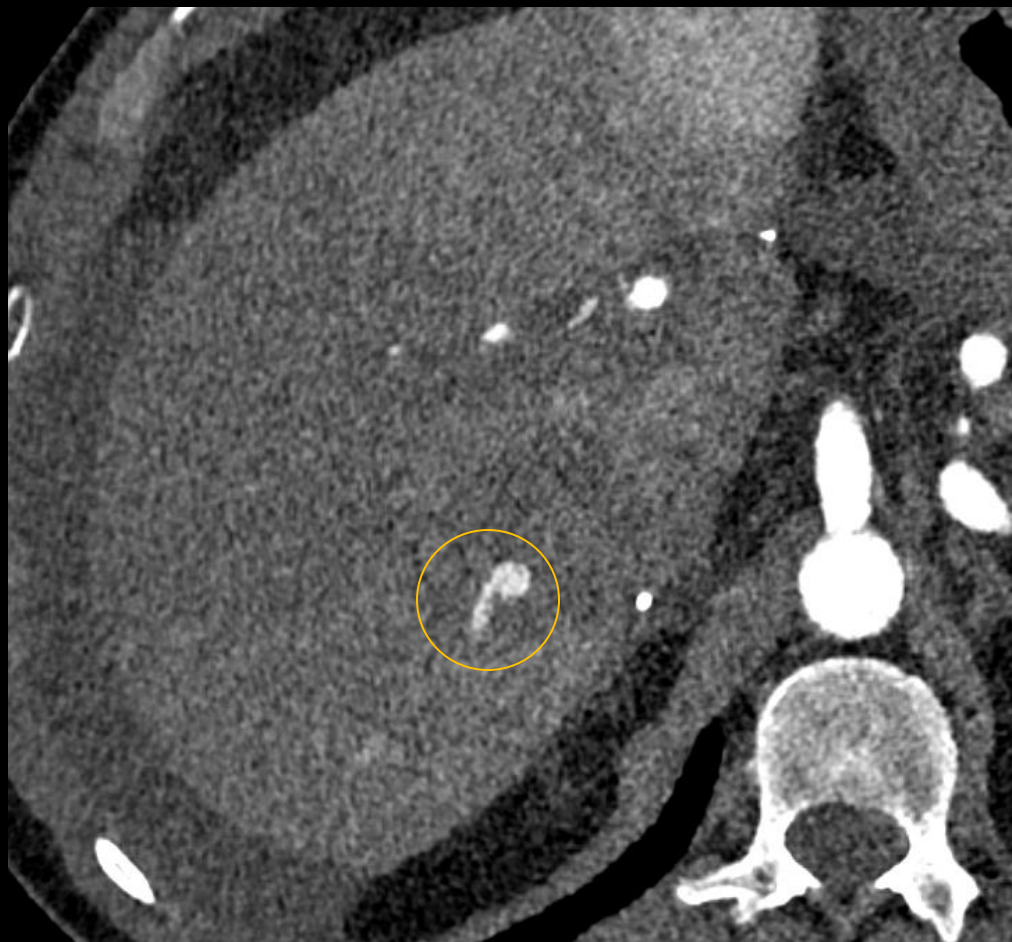
IR fluoroscopy image showing biopsy needle
in place during biopsy



CT showing the suspected pseudoaneurysm



Pseudoaneurysm confirmed on CT angiogram



Celiac angiography



Premature venous filling is the hallmark of an arterioportal fistula

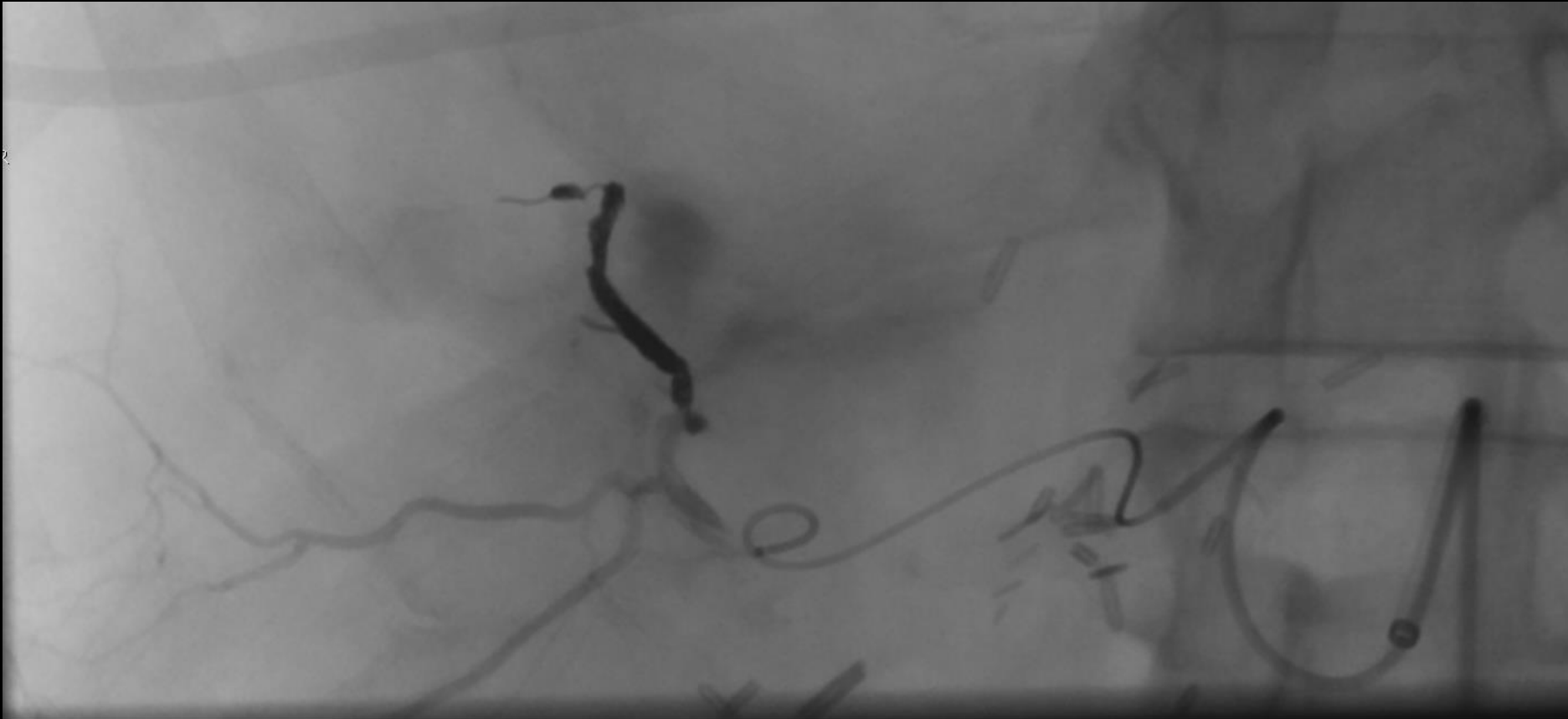
Performed 6 days later as an outpatient. Imaging demonstrated tortuous transplant common hepatic artery anatomy, along with an incidental arterioportal fistula in the left lobe related to the transplant (unrelated to the biopsy).

Right hepatic artery angiography



Arrows indicate pseudoaneurysm in RHA distribution

Post coil embolization showing no residual filling



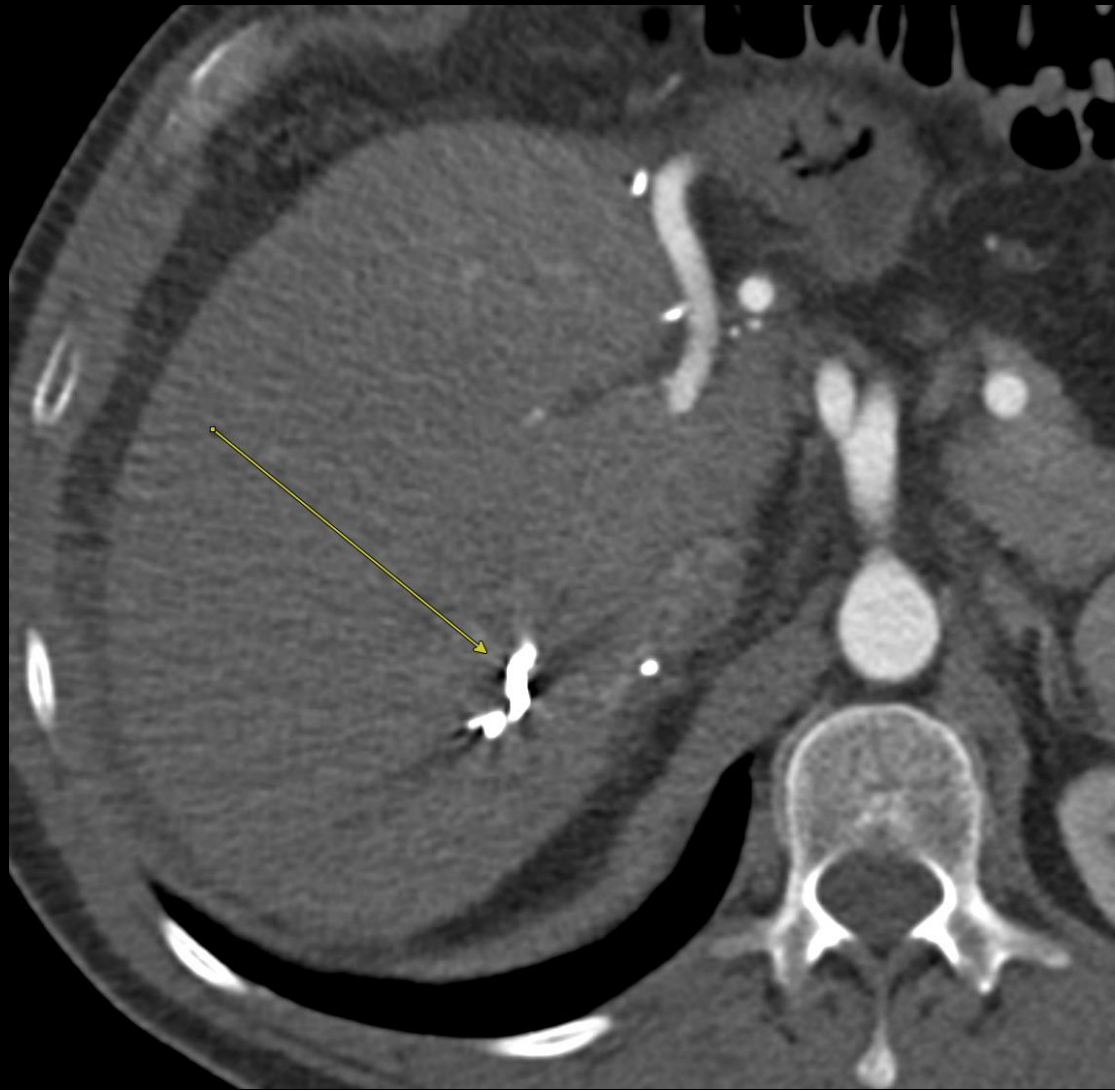
- Pseudoaneurysm sac: 5 x 8 mm on DSA
- Vessel embolized: 1.5 mm posterior branch of RHA supplying segment 6

Final Dx:

Right Hepatic Artery Pseudoaneurysm

Case Outcome

- Coil embolization of right hepatic artery pseudoaneurysm.
- Four Penumbra Ruby Low Profile coils were deployed:
 - One 2 mm x 10 cm coil
 - Two 15 cm packing coils
 - One 10 cm packing coil
- Patient had an uncomplicated recovery post-embolization.
- Hemoglobin improved from 10.6 to 12.
- Liver function tests at 1 month: AST 44 / ALT 53.
- Liver biopsy pathology negative for rejection.



Follow up CTA showing the coil pack in the posterior branch of the right hepatic artery supplying segment 6, previously embolized with obliteration of the pseudoaneurysm.

Case Discussion

- Hepatic artery pseudoaneurysms are rare but potentially fatal, most often iatrogenic after liver biopsy or surgery. In transplant patients, vascular anastomoses and altered anatomy increase susceptibility to injury.¹
- Our patient's pseudoaneurysm developed after a transjugular liver biopsy, consistent with reported iatrogenic mechanisms. Prompt CT angiography confirmed the diagnosis.
- Endovascular repair is considered first-line in this setting, with coil embolization ± stent graft placement favored for high technical success and lower morbidity compared to open repair.^{2,3}
- In our case, coil embolization led to complete resolution of symptoms and normalization of hemoglobin, with stable liver function at 1 month, which is consistent with the favorable outcomes described in the literature.^{1,3}
- Long-term follow-up is essential to monitor for recurrence or graft compromise.^{1,3}

References:

1. Gavrancic T, Tahir MW, Gorasevic M, et al. Hepatic artery pseudoaneurysm: the Mayo Clinic experience and literature review. *Front Med (Lausanne)*. 2024;11:1484966. doi:10.3389/fmed.2024.1484966
2. Aly AK, Yarmohammadi H, Bajwa R, et al. Stent graft placement for the treatment of hepatic artery injury in patients with cancer: primary patency and clinical outcomes. *J Vasc Interv Radiol*. 2023;34(1):79-85.e1. doi:10.1016/j.jvir.2022.10.020
3. Cheung PL, Lee YS, Tan CB, et al. Endovascular Management of Hepatic Artery Pseudoaneurysms: A Case Series. *Vasc Specialist Int*. 2023;39:1. Published 2023 Feb 13. doi:10.5758/vsi.220053
4. “ACR Appropriateness Criteria®.” | American College of Radiology, www.acr.org/ClinicalResources/ACR-AppropriatenessCriteria.