AMSER Case of the Month May 2025

67-year-old female with blunt abdominal trauma

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Patient Presentation

71 yoF with no pertinent past medical history presenting with acute abdominal pain after a ground-level fall

- Reports falling onto her left side
- No loss of consciousness
- Severe abdominal pain beginning one hour after incident
- Tachycardic to 140 bpm, BP Stable
- Tenderness to palpation with guarding on abdominal exam
- Hgb of 12.5 at presentation



What Imaging Should We Order?



ACR Appropriateness Criteria

Variant 5: Major blunt trauma. Hemodynamically stable. Suspected bowel trauma. Initial imaging.		
Procedure	Appropriateness Category	Relative Radiation Level
CT abdomen and pelvis with IV contrast	Usually Appropriate	ଡିଡିଡ ି
CT whole body with IV contrast	Usually Appropriate	****
Radiography trauma series	Usually Appropriate	ଡିଡିଡ ି
US FAST scan chest abdomen pelvis	Usually Appropriate	0
CTA abdomen and pelvis with IV contrast	May Be Appropriate	େଚଚଚଚ <
CT whole body without IV contrast	May Be Appropriate (Disagreement)	****
CT abdomen and pelvis without IV contrast	May Be Appropriate	ଡିଡିଡ ି
CT abdomen and pelvis without and with IV contrast	Usually Not Appropriate	ବବବ ବ
MRI abdomen and pelvis without and with IV contrast	Usually Not Appropriate	0
MRI abdomen and pelvis without IV contrast	Usually Not Appropriate	0
US abdomen	Usually Not Appropriate	0

This imaging modality was ordered by the ER physician



Findings: (unlabeled)







Findings: (labeled)





- Splenic lacerations <3cm and subcapsular hematoma covering >50% of surface area consistent with grade 3 splenic injury
- Small volume hemoperitoneum



Patient Progress

- Because of stable presentation and hemoglobin, no operation needed
- On day 2, hemoglobin falls to 10.9
- 8.7 on day 3
- 8.5 on day 4
- Anemia suspected from continued blood loss
- CTA abdomen pelvis with and without contrast reordered



Findings (unlabeled)







Findings (labeled)



MASER

• Lobulated areas of contrast enhancement measuring up to 1.2 cm associated with splenic lacerations. No enlargement on delayed phase, concerning for splenic pseudoaneurysm.

Final Dx:

Acute blood loss anemia second to splenic laceration with development of multiple splenic pseudoaneurysms



What is the next step for this patient?



Pre and Post IR Embolization





 Catheterization of splenic artery demonstrating multiple large pseudoaneurysms with subsequent coil embolization



Case Discussion

Splenic Lacerations

- After trauma, FAST exam can be performed first to assess for free fluid, but absence does not rule out splenic injury
- CT is the imaging of choice for assessing splenic trauma
- Lacerations appear as branching or linear hypodensities seen best on portal venous phase¹

Subcapsular Hematoma

• Low-density fluid adjacent to the spleen filling splenic capsule²



Case Discussion

Grading of Splenic Lacerations³

AAST Grade and	
Type of Injury	Description
I	
Hematoma	Subcapsular, <10% of surface area
Laceration	Capsular tear, <1 cm of parenchymal depth
II	
Hematoma	Subcapsular, 10%–50% of surface area; intraparenchymal, $<$ 5 cm in diameter
Laceration	1–3 cm in parenchymal depth
III	
Hematoma	Subcapsular, >50% of surface area; ruptured subcapsular or parenchymal hematoma; intraparenchymal hematoma, >5 cm in diameter
Laceration	>3 cm parenchymal depth or involving trabecular vessels
IV	
Laceration	Laceration involves segmental or hilar vessels producing major devascularization (>25% of spleen)
V	
Laceration	Completely shattered spleen
Vascular	Hilar vascular injury that devascularized spleen



Case Discussion

Splenic Pseudoaneurysms

- Occur from trauma, pancreatitis, PUD, and iatrogenic causes
- Involve only the intimal and medial layers, in comparison to true aneurysms
- CTA is the modality of choice for assessing splenic injury
- Similar appearance as active hemorrhage, however, no enlargement on delayed phases and follows the blood pool on all phases⁴
- More likely to rupture or grow compared to true aneurysms, and always require surgical or endovascular treatment^{5,6}



References:

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