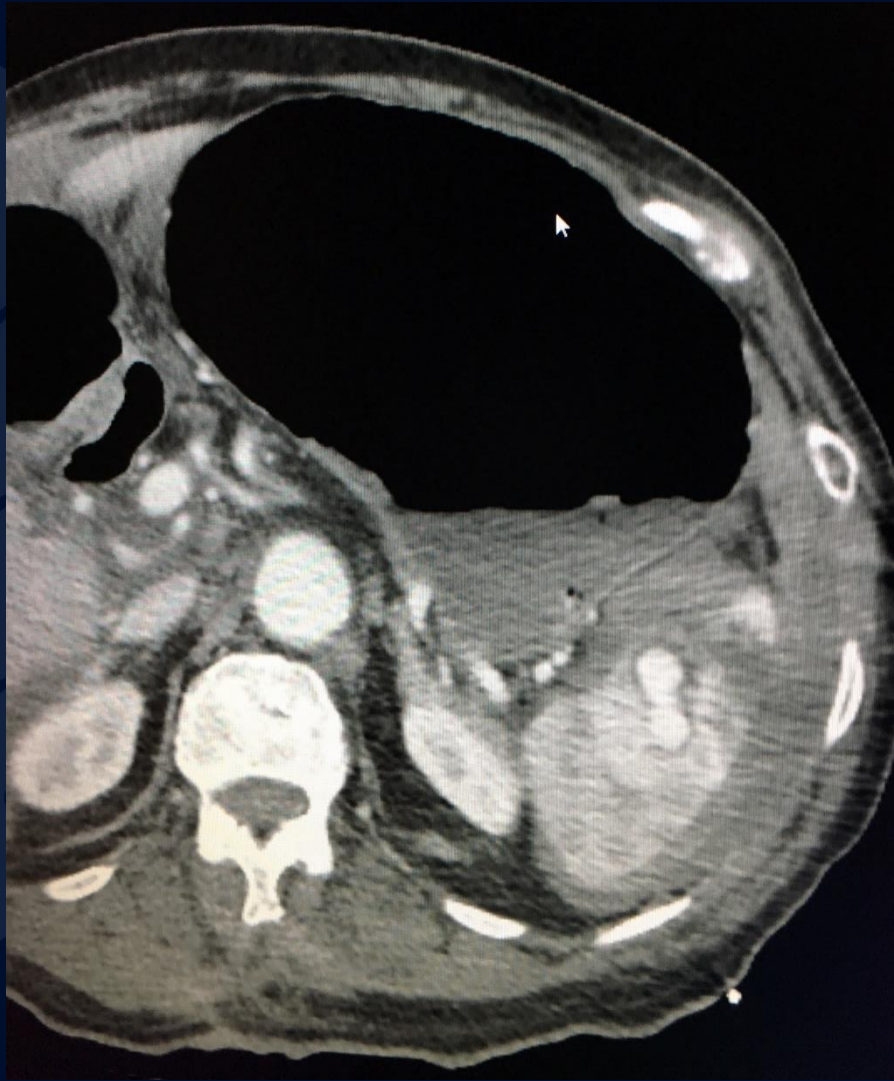
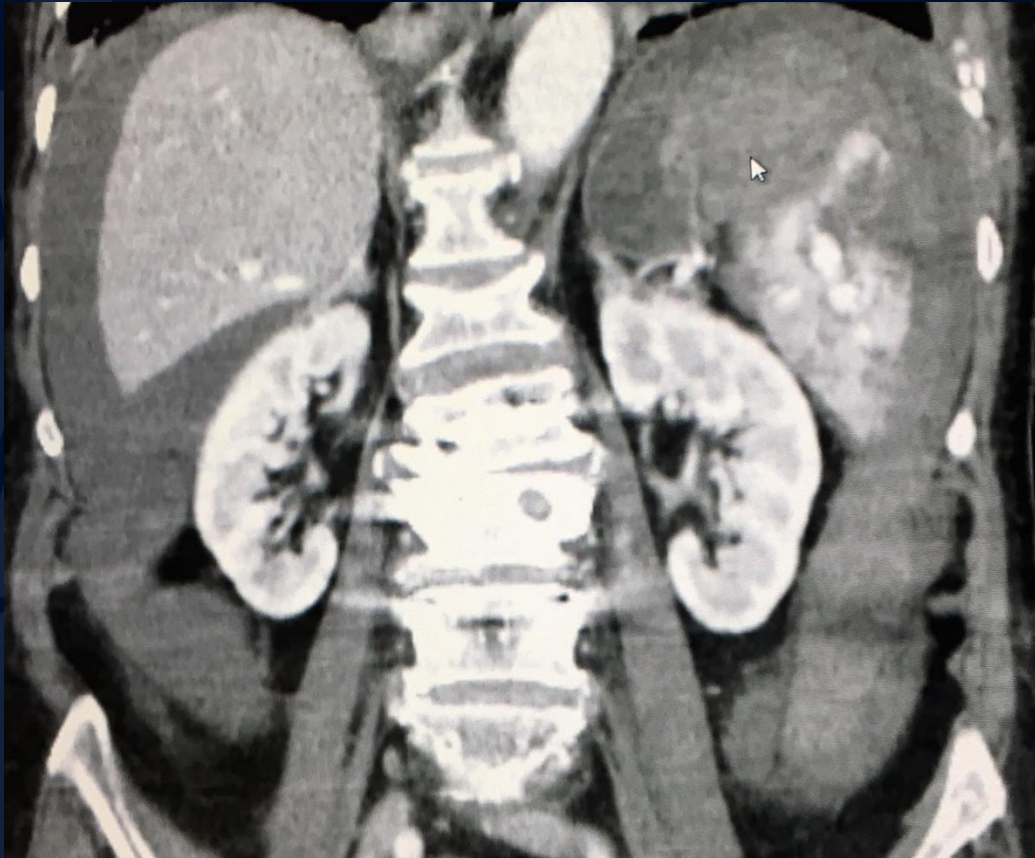


A large, stylized oak leaf graphic in a dark blue color, positioned on the left side of the slide, partially overlapping the text.

Fall down stairs. Left rib fractures.

John A Cieslak III, MD, PhD
Charan Singh, MD





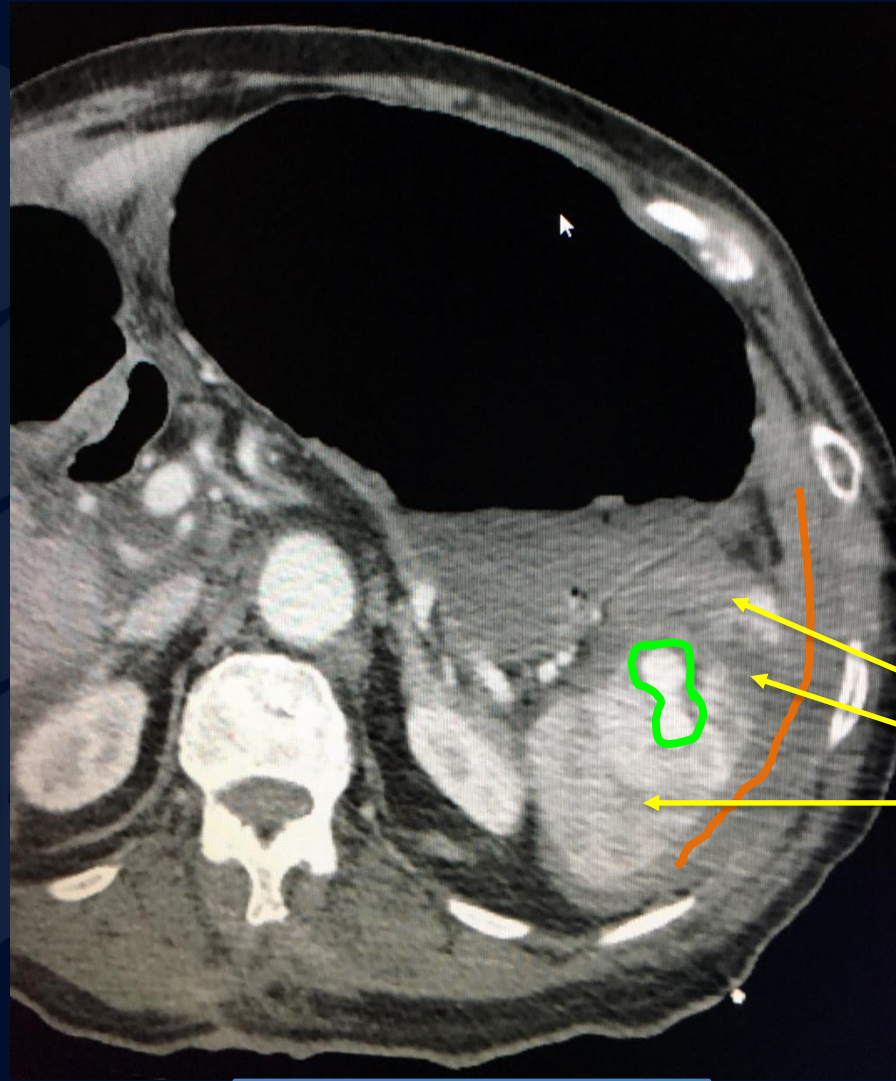




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Splenic lacerations,
hemoperitoneum, and traumatic
pseudoaneurysm formation.

High attenuation extraluminal contrast material, suggesting active extravasation.



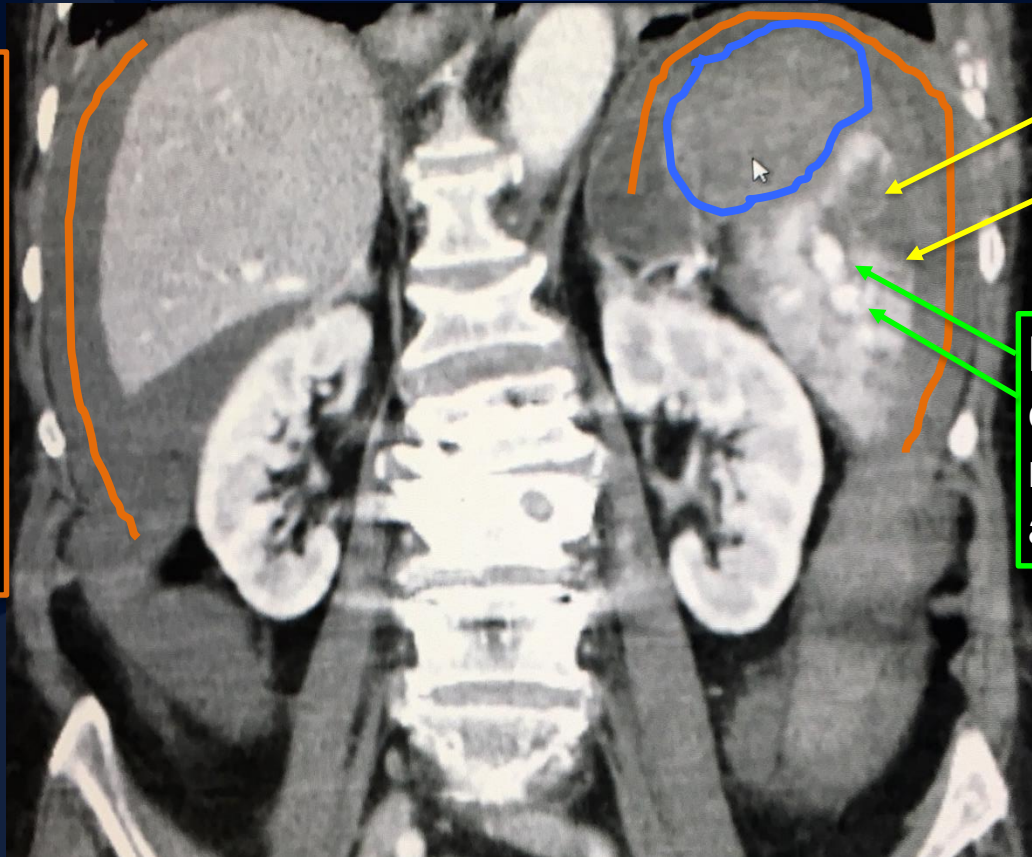
Homogeneous, intermediate density material, consistent w/ hemoperitoneum

Linear hypoattenuation within the splenic parenchyma, consistent with lacerations

CT abdomen with contrast, axial

Low attenuation of the superior portion of the spleen suggesting intraparenchymal hematoma vs. infarction.

Homogeneous, intermediate density material, consistent w/ hemoperitoneum in the right and left subdiaphragmatic spaces and pericolic gutters.



Linear hypoattenuation within the splenic parenchyma, consistent with lacerations

High attenuation extraluminal contrast material, suggesting active extravasation.

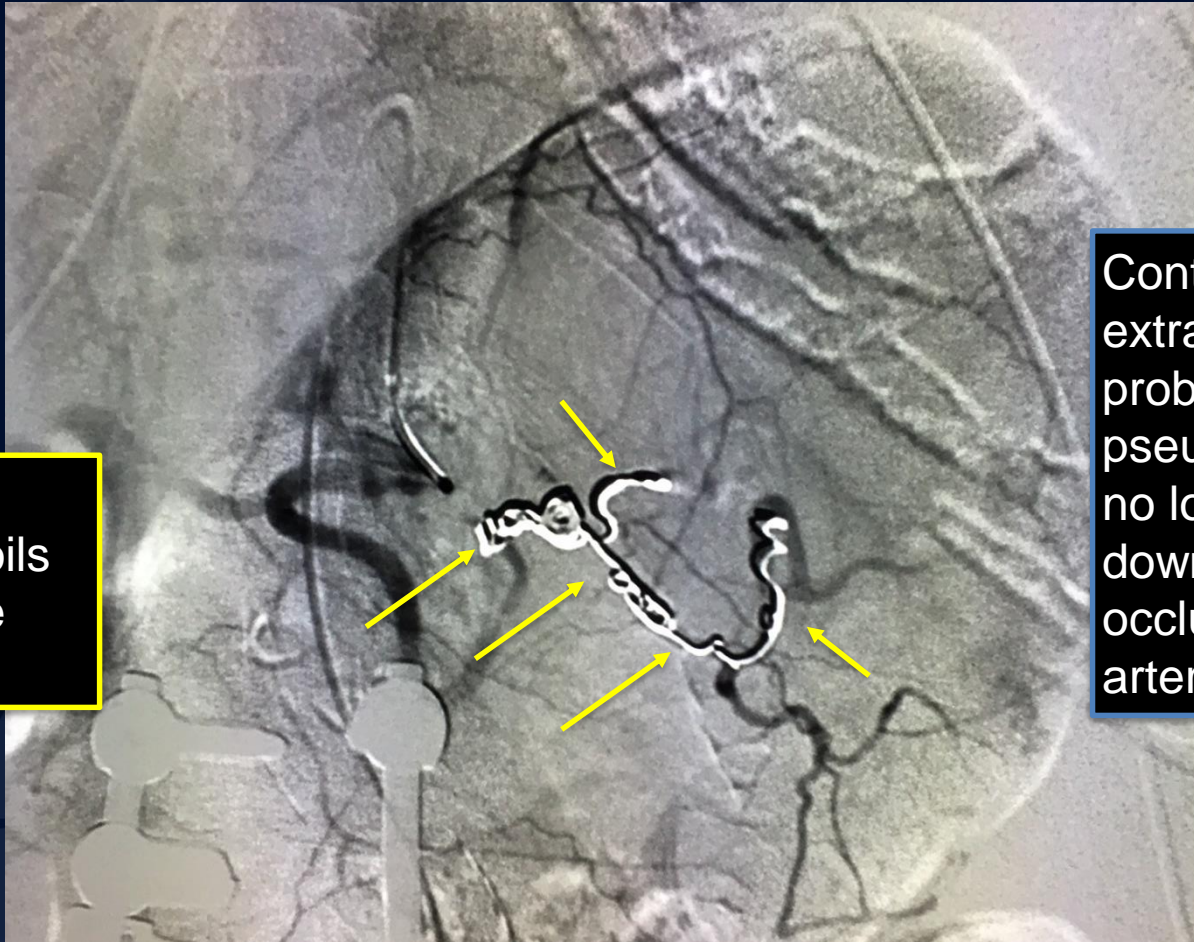
CT abdomen with contrast, coronal

A well-circumscribed, circular focus (dashed-red circle) of contrast dye, similar in density to the blood pool suggests pseudoaneurysm formation.



Multiple foci of contrast “blush”, suggesting active extravasation.

Digital subtraction angiography, splenic artery superselected.



Multiple intravascular coils injected into the splenic artery.

Contrast extravasation and probable pseudoaneurysm are no longer seen – downstream of the occluded splenic artery.

Digital subtraction angiography, splenic artery superselected, post-coiling.

Splenic Trauma

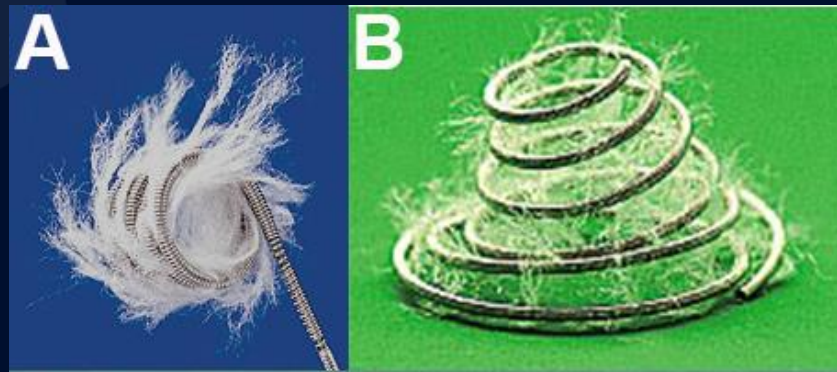
- Can occur after blunt or penetrating trauma. The spleen is the most frequently injured intra-abdominal organ after blunt trauma.
- Types:
 - Laceration
 - Hematoma – subcapsular (more common) or intraparenchymal.
 - Active Hemorrhage
 - Pseudoaneurysm
 - Splenic infarction.
- Evaluation: FAST ultrasound, CT, DSA

Splenic Trauma

- FAST Ultrasonography:
 - Positive for free fluid. May demonstrate disruption to the splenic echotexture indicating laceration, or hypoechoic regions suggesting hematoma formation.
- CT: Modality of choice for assessing splenic trauma:
 - Lacerations – linear or branching hypodensities.
 - Subcapsular hematoma – low-density fluid adjacent to the spleen that disrupts the splenic architecture.
 - Active Hemorrhage – high density extravasated contrast material that increase in size on delayed phases.
 - Pseudoaneurysm – similar in appearance to active hemorrhage but do not increase in size on delayed phases and follow the blood pool.

Splenic Trauma

- DSA:
 - Extravasation of contrast agent (blush) is indicative of active bleeding.
 - A well-circumscribed collection of contrast that does not change size and follows the blood pool contrast is suggestive of pseudoaneurysm formation.
- Treatment:
 - Transcatheter splenic artery embolization
 - Typically performed using coils, but particles and glue also used.



Splenic Trauma

- Splenic artery embolization complications:
 - Left pleural effusion and atelectasis (20-50%)
 - Splenic infarct (~3%) (distal only, with proximal the goal is to completely cut off supply to the spleen).
 - Splenic abscess (~2%)

References:

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2. Rong J-J, Liu D, Liang M, et al. The impacts of different embolization techniques on splenic artery embolization for blunt splenic injury: a systematic review and meta-analysis. *Military Medical Research*. 2017;4:17.
3. Coccolini F, Montori G, Catena F, et al. Splenic trauma: WSES classification and guidelines for adult and pediatric patients. *World Journal of Emergency Surgery : WJES*. 2017;12:40.
4. Singh A, Kumar A, Kumar P, Kumar S, Gamanagatti S. “Beyond saving lives”: Current perspectives of interventional radiology in trauma. *World Journal of Radiology*. 2017;9(4):155-177.
5. Van der Vlies CH, Hoekstra J, Ponsen KJ, Reekers JA, van Delden OM, Goslings JC. Impact of Splenic Artery Embolization on the Success Rate of Nonoperative Management for Blunt Splenic Injury. *Cardiovascular and Interventional Radiology*. 2012;35(1):76-81.