

# Detecting Vascular Complications of Pancreatitis in the Emergency Setting: the Common, the Obscure and the Deadly

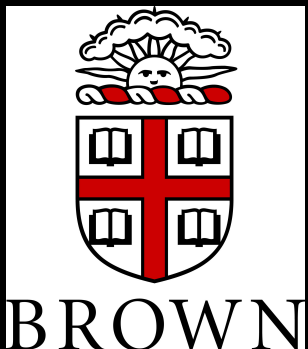
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## Learning Objectives:

- Review the various vascular complications related to pancreatitis including:
  1. Pseudoaneurysm and rupture.
  2. Occult pancreatic duct bleeding (hemosuccus pancreaticus).
  3. Duodenal hemorrhage.
  4. Splenic venous thrombosis.
- Describe the potential treatment options and role for interventional radiology.

Target Audience: ER radiologists, radiology residents

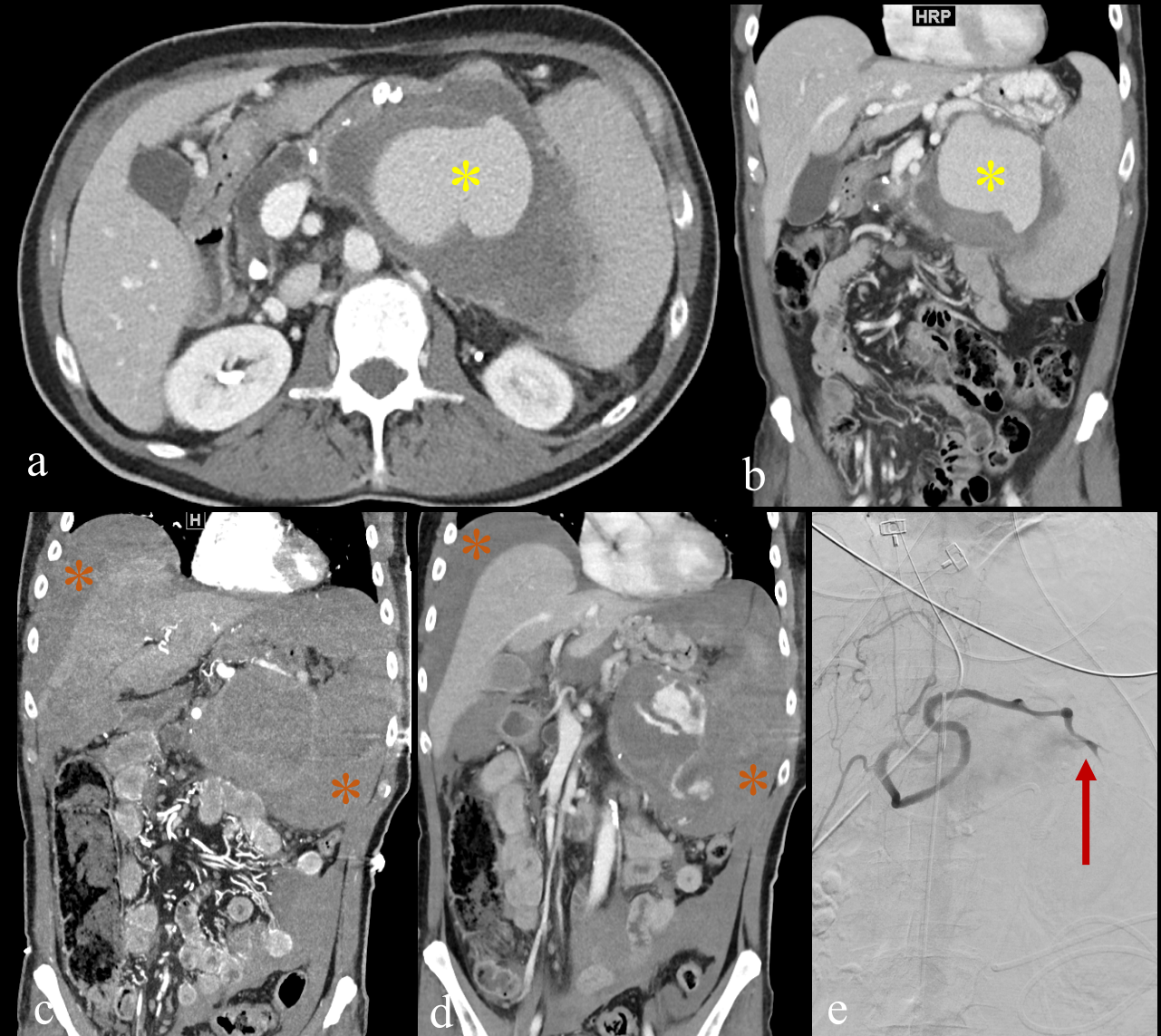


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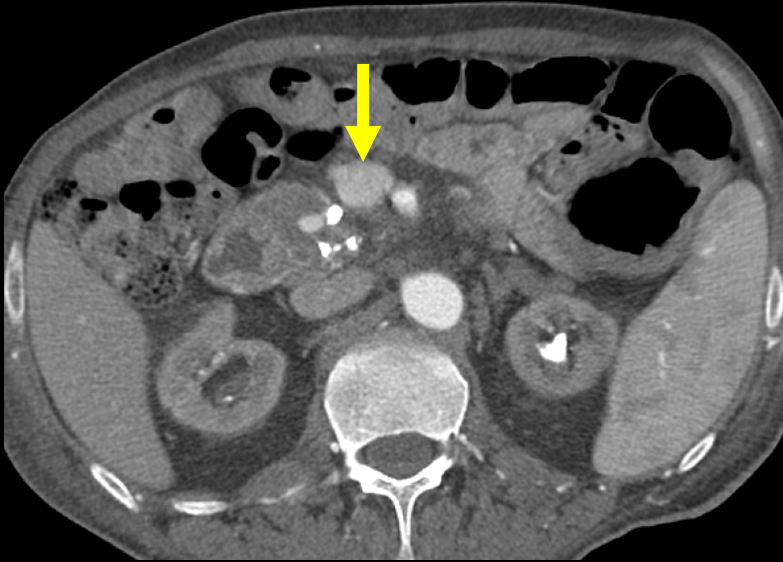
# Pseudoaneurysm

- Pancreatitis can result in a variety of vascular complications.
- Severe hemorrhage is a complication that has been reported as high as 6.7% in a retrospective series of 541 patients (Bergert et. al)
- **Pseudoaneurysm** is the **most common cause of hemorrhage**.
- Splenic artery > pancreaticoduodenal > gastroduodenal.
- Hemorrhage can occur into GI tract, peritoneum, retroperitoneum or into pseudocysts.

- Top CT images (a, b) demonstrate a large **pseudoaneurysm** with expansion into the splenic hilum. Note: pancreatic calcifications and pancreatic ductal dilation with intraluminal calculi consistent with chronic pancreatitis.
- Bottom CTA images (c, d) obtained 9 hours later after clinical deterioration demonstrate active extravasation from pseudoaneurysm with new **hemoperitoneum**.
- DSA image from celiac artery angiogram (e) demonstrates active extravasation from the **splenic artery** which was subsequently coiled.



# Hemosuccus pancreatitis

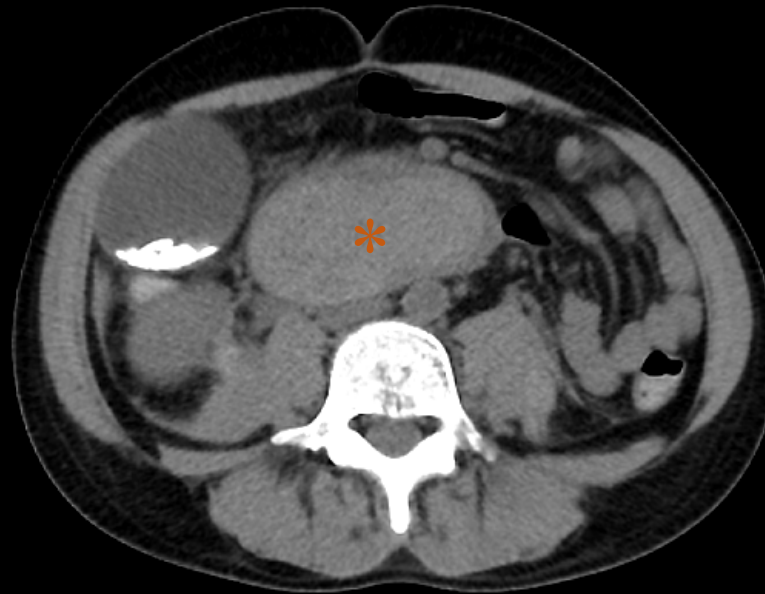


- A 60-year-old male patient with history of pancreatitis presented with upper GI bleeding. Hemosuccus pancreaticus was identified on upper GI endoscopy.
- Axial (top) and coronal (bottom) CT images from CTA of the abdomen demonstrate calcifications within the pancreatic head and uncinata process indicating chronic pancreatitis. Additionally, there is a **pseudoaneurysm** in the pancreatic head, which was successfully embolized.

- Rare cause of upper GI bleeding via the ampulla of Vater via the pancreatic duct.
- Most commonly due to **rupture** of splenic artery **aneurysm into pancreatic duct**.
- Oftentimes can be a difficult diagnosis given intermittent bleeding, so having a high suspicion is vital.



# Duodenal Hemorrhage



Patient presented with acute on chronic pancreatitis. Coronal noncontrast (left) demonstrates hyperdense **thickening** of the first and second portions of the duodenum consistent with hematoma. Contrast-enhanced axial (middle) and coronal (right) images demonstrate the duodenal wall **thickening**. Notable, no evidence of aneurysm or active extravasation.

- Duodenal hemorrhage is a rare entity, most commonly seen in pediatric blunt abdominal trauma, or less commonly in the setting of anticoagulation.
- Pancreatitis-related duodenal hemorrhage has been rarely reported in the setting of pancreatitis.

# Splenic Vein Thrombosis and Gastric Varices



Axial image (left) demonstrates multiple **gastric varices**. Coronal images (middle) demonstrates splenic vein **filling defect** and atrophy of the pancreatic body. Right coronal image again shows multiple **gastric varices** in a patient with pancreatitis.

- Venous thrombosis is a well-recognized complication of acute pancreatitis.
- Pathophysiology believed to result from stasis, spam and mass effect from surrounding inflammation.
- Series of 100 patients reported rates of thrombosis of **splenic vein** (19%) > superior mesenteric vein (14%) > portal vein (13%).
- Venous thrombosis → varices formation → can result in severe hemorrhage.

## Selected References

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