



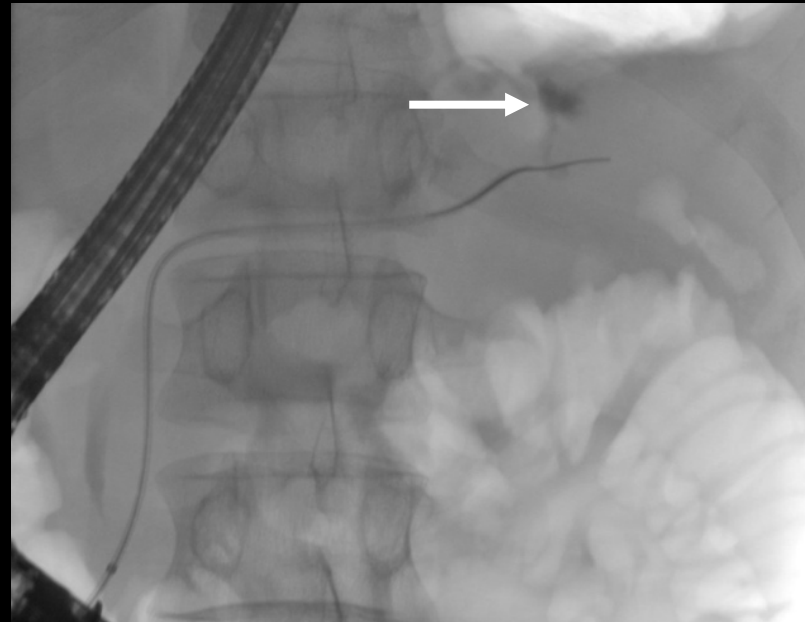
Multimodality imaging of pancreatic trauma

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Evaluation of pancreatic trauma

- Contrast enhanced CT is the first line imaging for diagnosing pancreatic injury¹.
- However, sensitivity of detecting pancreatic injury on CT is 47-60%².
- The pancreatic duct is typically NOT well seen on CT. Thus, if the laceration depth is >50%, a pancreatic duct injury is suspected³.
- MRCP +/- secretin allows for improved assessment of pancreatic duct injuries².
- ERCP is the most sensitive test for detecting duct injuries, and can be both diagnostic and therapeutic⁴.
- Due to possible complications, ERCP is only indicated if there is a high suspicion of duct injury.



40-year male kicked by a horse. Axial contrast enhanced CT shows a full thickness laceration through the tail of the pancreas (yellow arrow). The laceration involves the main pancreatic duct with contrast extravasation (white arrow) on ERCP (Grade 3 injury). The patient was treated non-operatively with a pancreatic stent insertion.

MDCT evaluation of pancreatic trauma

CT Findings ^{6,7}:

Direct

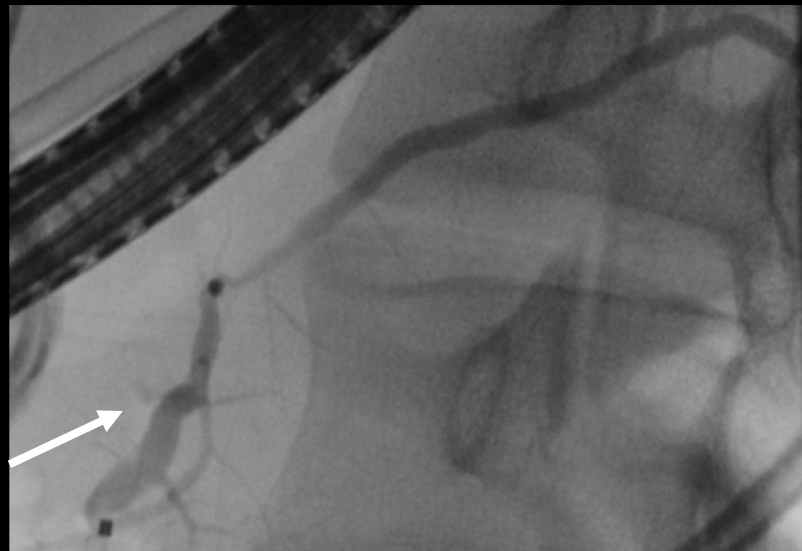
- Laceration – linear low attenuation
- Contusion - ill defined low attention +/- gland expansion
- Hematoma- focal region of high density

Indirect

- Retroperitoneal free fluid
- Fluid between pancreatic parenchyma and splenic vein
- Peripancreatic stranding
- Fluid in the lesser sac

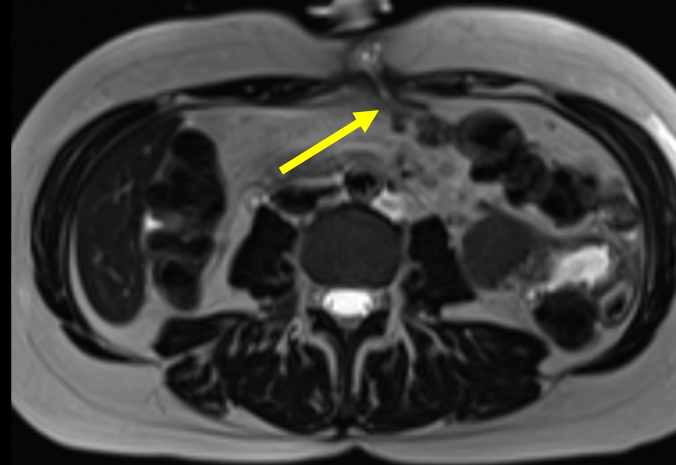
MDCT imaging parameters ^{8,9}:

- 100-150mls IV contrast (300-370mg/ml) injected at 3-6mls/s
- Portal venous phase acquisition (60-70 post contrast injection)
- <3mm slice thickness reconstruction at 2-3mm intervals
- Axial, coronal and sagittal reformats
- Optional*
- Pancreatic parenchymal phase (35-40s)
- Arterial and/or delayed phase imaging
- 1.5mm slice thickness, curved MRP and MIP reformats



22-year-old male involved in a high-speed MVA. Axial contrast enhanced CT shows a complex laceration through the pancreatic neck (yellow circle). ERCP shows a contour deformity of the main pancreatic duct at the head and neck with subtle contrast extravasation (white arrow) (Grade 4 injury). The patient was treated non-operatively with insertion of a pancreatic stent.

MRI evaluation of pancreatic trauma

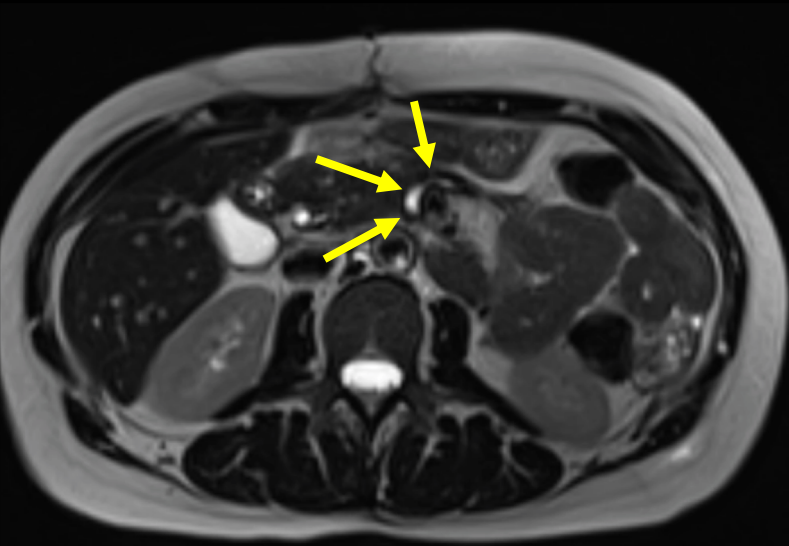


MRI Findings: ^{10, 11}

- Laceration – linear T2 increased intensity
- Contusion – ill-defined T2 increased intensity
- Hematoma –heterogenous T1 high signal
- Discontinuity of the pancreatic duct.

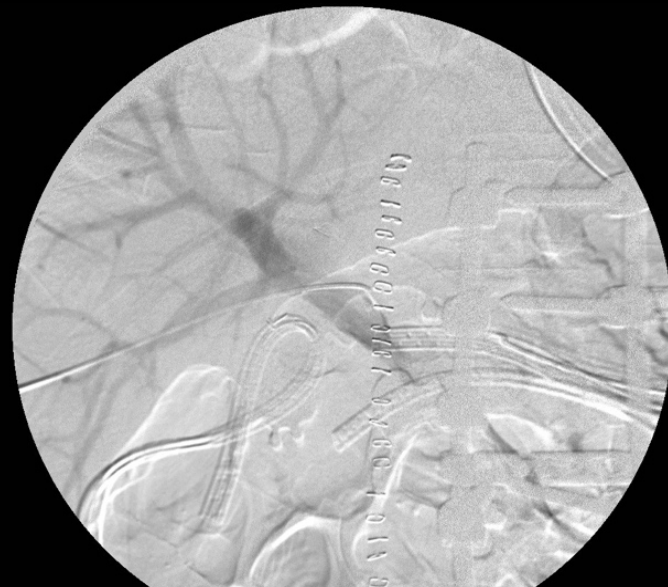
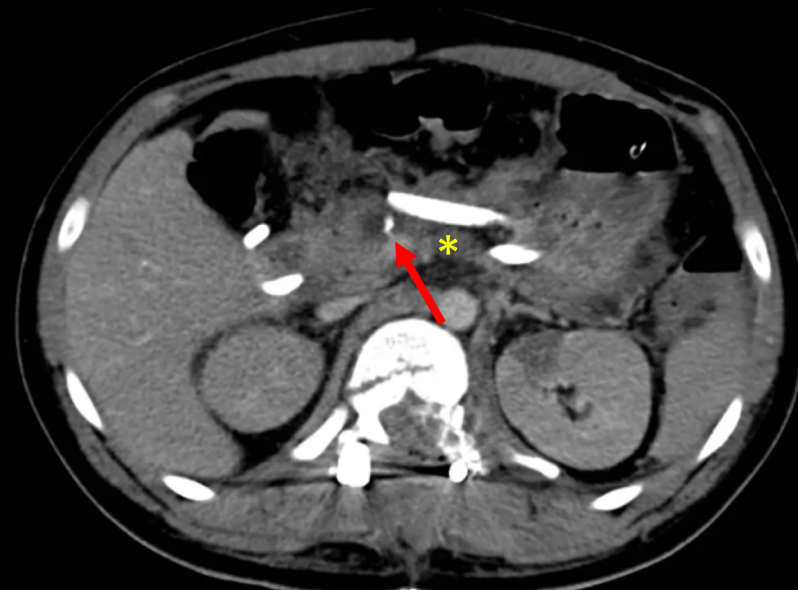
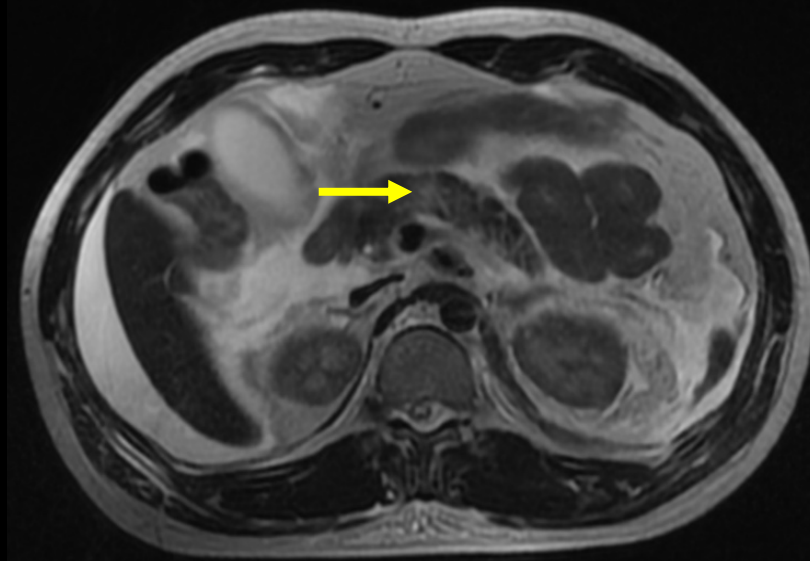
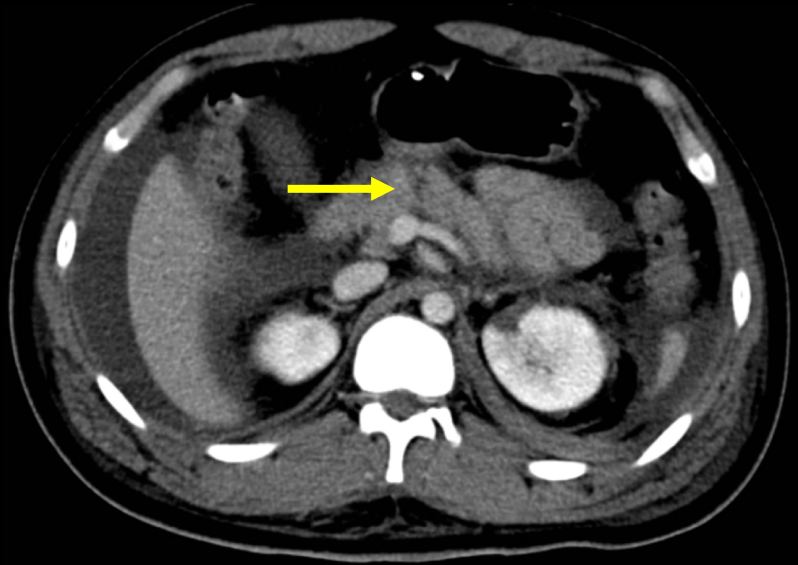
MRI/MRCP sequences ¹²

- Axial T1 and T2 weighted images
- Axial and coronal fast spoiled GE images with SSFP
- Single shot fast spine echo T2-weight images
- Heavily T2-weighted 3D MRCP
- IV secretin administration



55 year old man with abdominal trauma 2 months prior. Axial contrast enhanced CT (top left) shows a large fistula tract (yellow circle) extending to the anterior abdominal wall. Axial T2 images (top right, bottom left) delineates the fistula tract (yellow arrows). Focal discontinuity (white arrow) of the main pancreatic duct is evident on the secretin MRCP images (bottom right), consistent a pancreatocutaneous fistula. The patient successfully underwent a Roux-en-Y procedure.

MDCT and MRI evaluation of pancreatic trauma



20 year old pedestrian struck by a car. Axial contrast enhanced CT (top left) and axial T2 MRI (top right) images show a full thickness laceration through the neck of the pancreas (yellow arrow). The patient underwent a distal pancreatectomy with surgical clips at the site of surgical resection (red arrow) and a small volume of fluid within the pancreatic resection bed (star). At the time of surgery the patient underwent an autologous islet cell transplant into the liver (bottom right) administered via a catheter within the portal vein.