



Role of Porto-Systemic Shunt Embolisation in Liver Transplant Eligibility

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Clinical Information

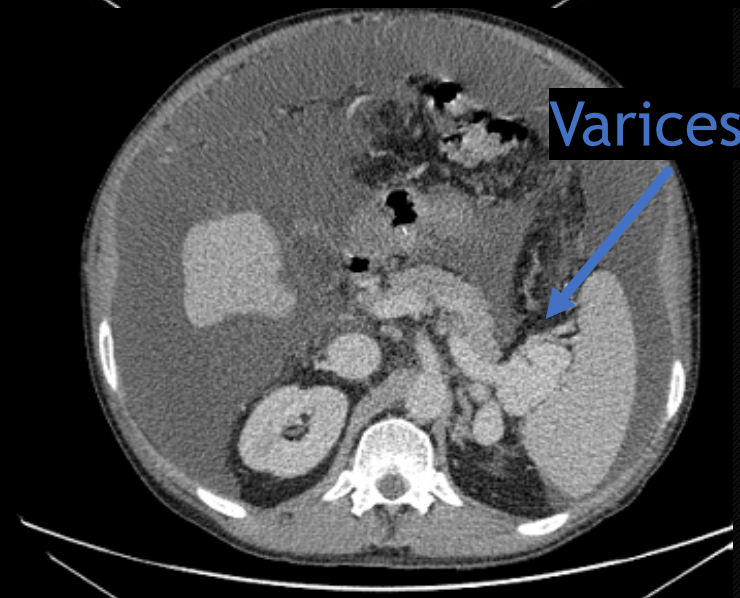
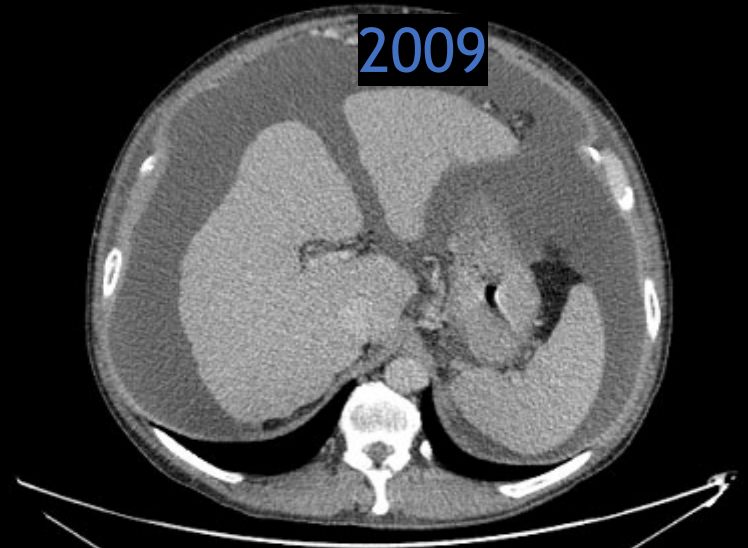
60-year-old male

OLTx in 2009 for cirrhosis

Graft re-cirrhosis: ischemic cholangiopathy, longstanding CHD + R biliary strictures

Causing refractory hepatic encephalopathy and decompensated cirrhosis

Listed for second OLTx



Ischemic Cholangiopathy

Most commonly occurs in people who have had a liver transplant

- Vascular injury during orthotopic liver transplantation or laparoscopic cholecystectomy
- Graft-rejection injury, chemoembolisation, radiation therapy

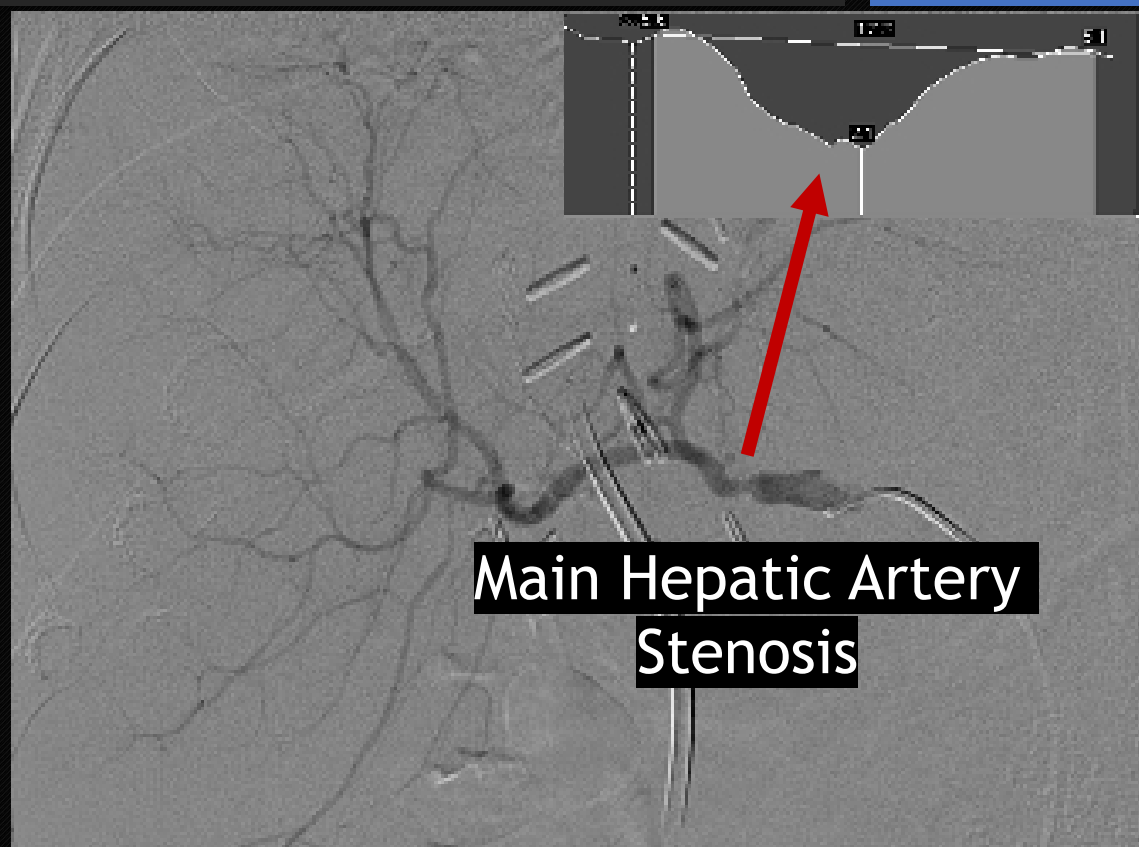
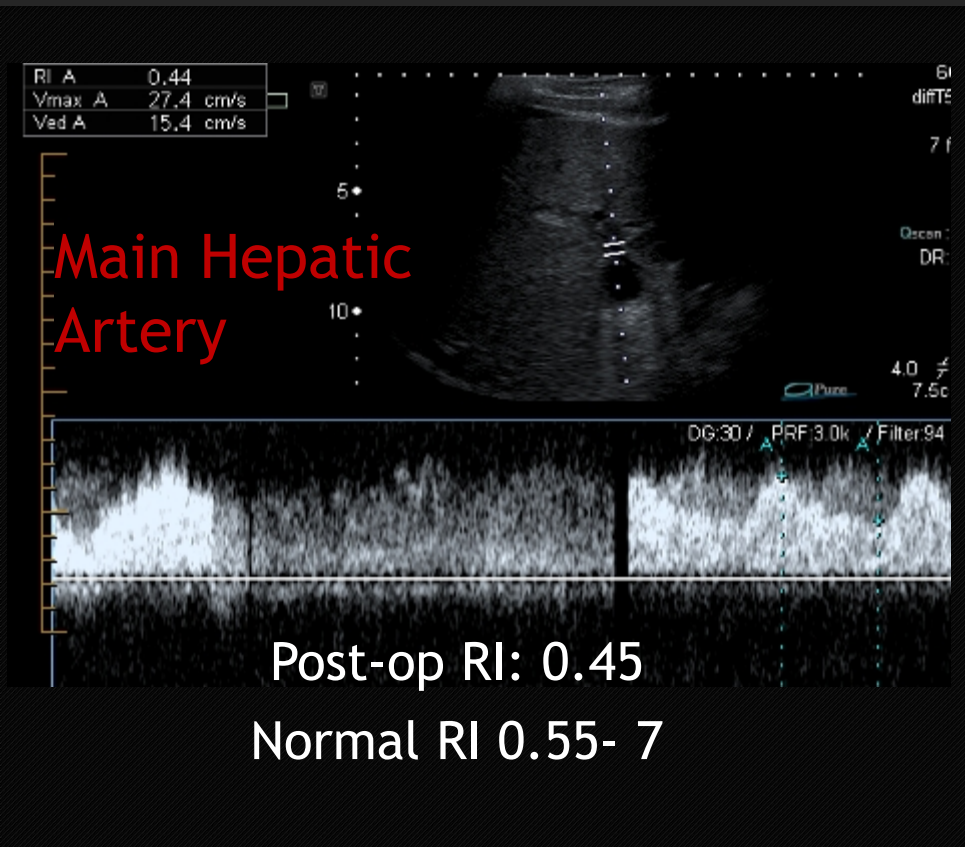
Bile duct injury (ischemic necrosis)

- Causes cholestasis
- Cholangitis
- Biliary strictures (often multiple)

Treatment

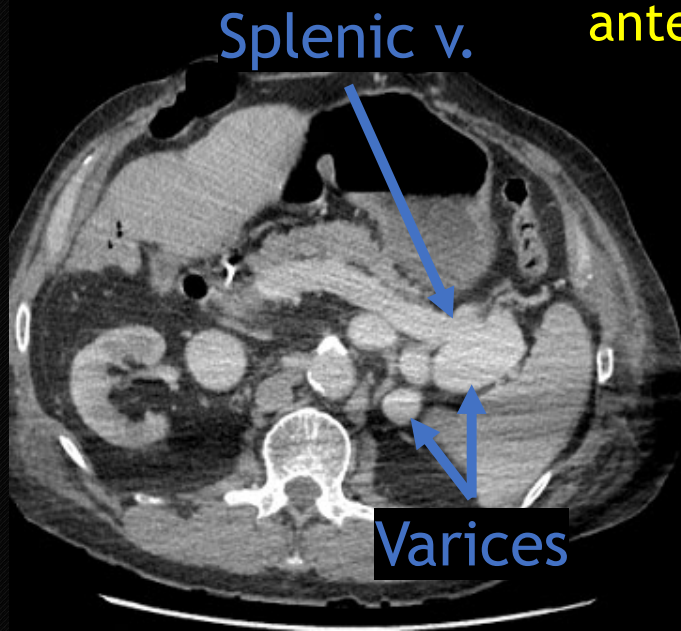
- For rejection, antirejection therapy and possibly retransplantation
- For biliary strictures, balloon dilation and stenting

Ischemic Cholangiopathy



Latest CT

Persistent portosystemic shunting with varices due to chronic portal hypertension



Circumaortic L renal v.
anterior branch (more superior)



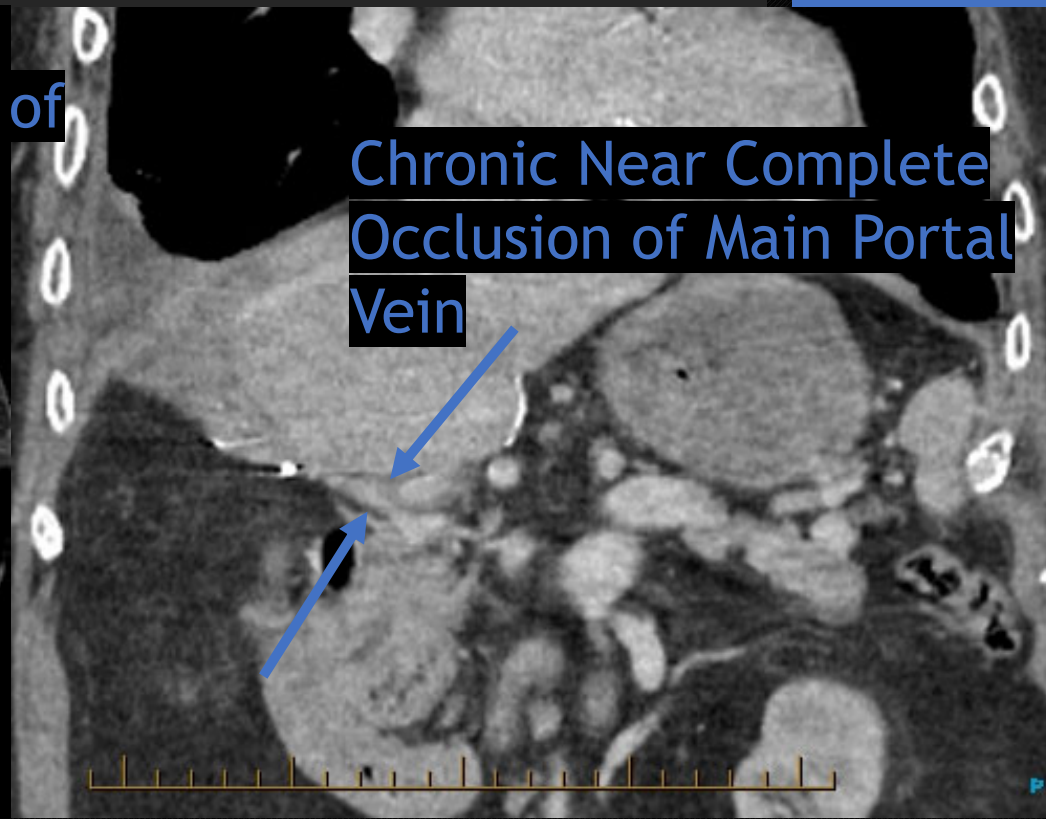
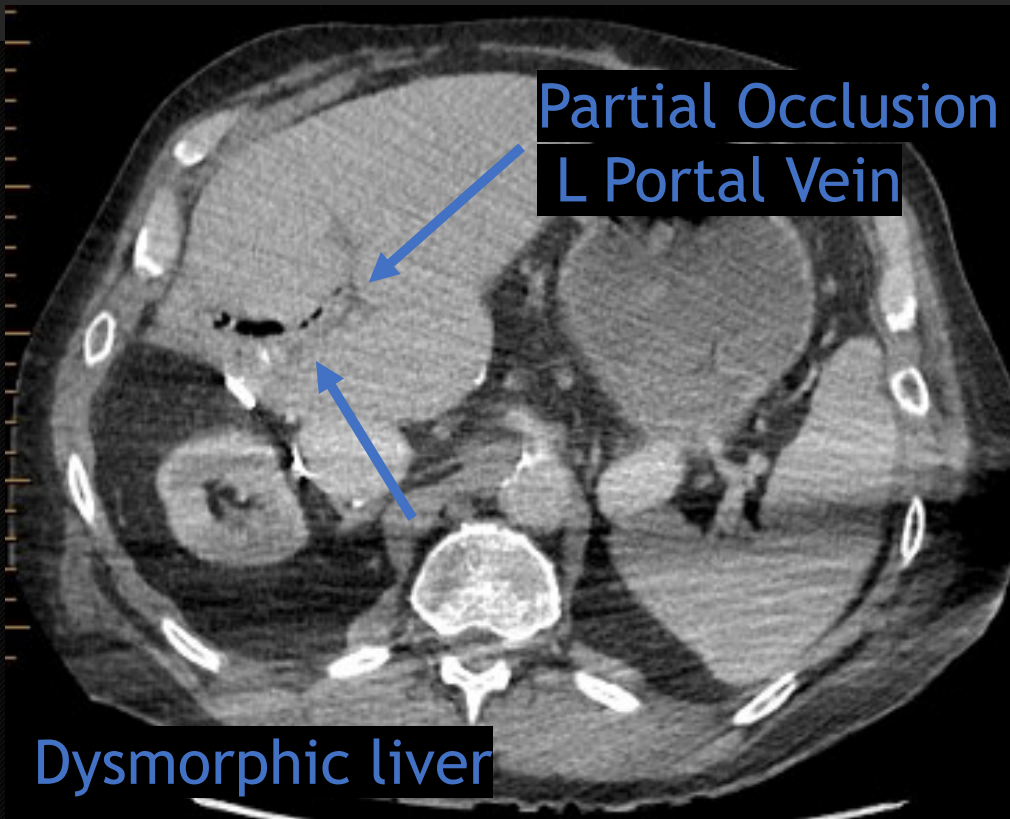
This axial CT scan shows the anterior branch of the circumaortic left renal vein. A blue arrow points to the vessel, which is seen anterior to the aorta. The text 'Circumaortic L renal v. anterior branch (more superior)' is positioned above the arrow.

Circumaortic L renal v.
retroaortic branch



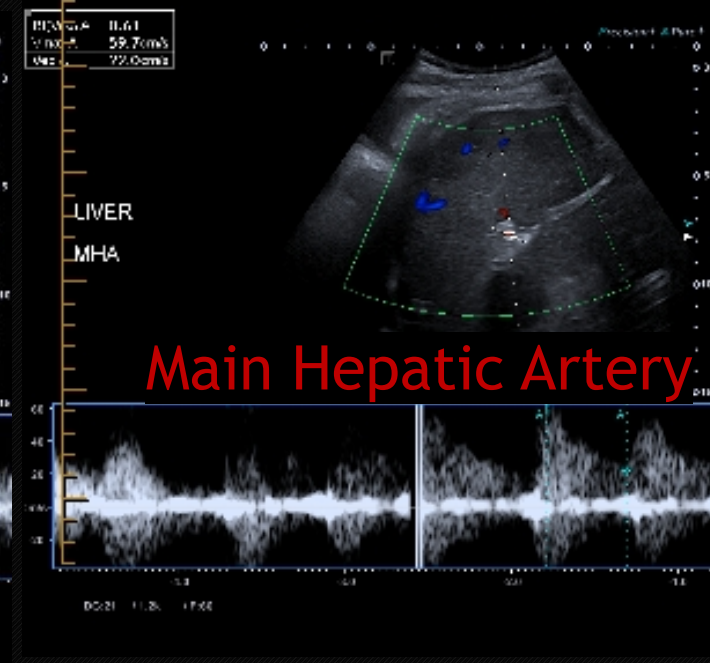
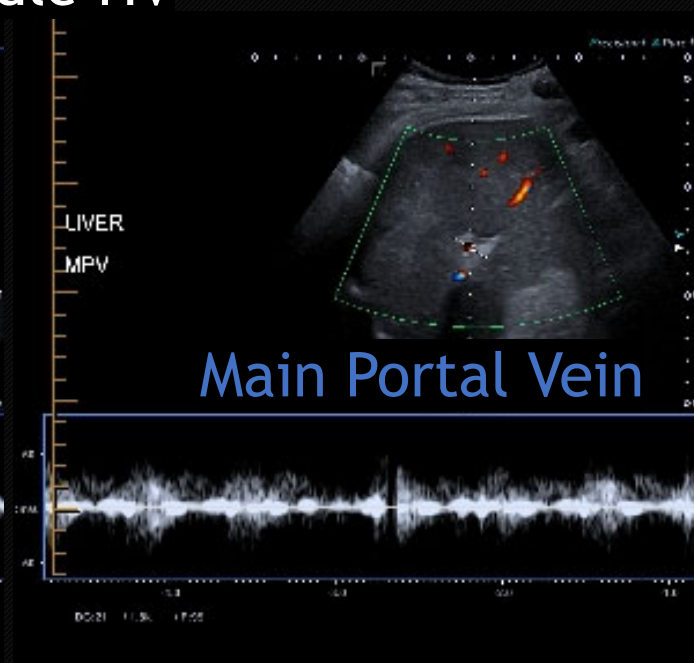
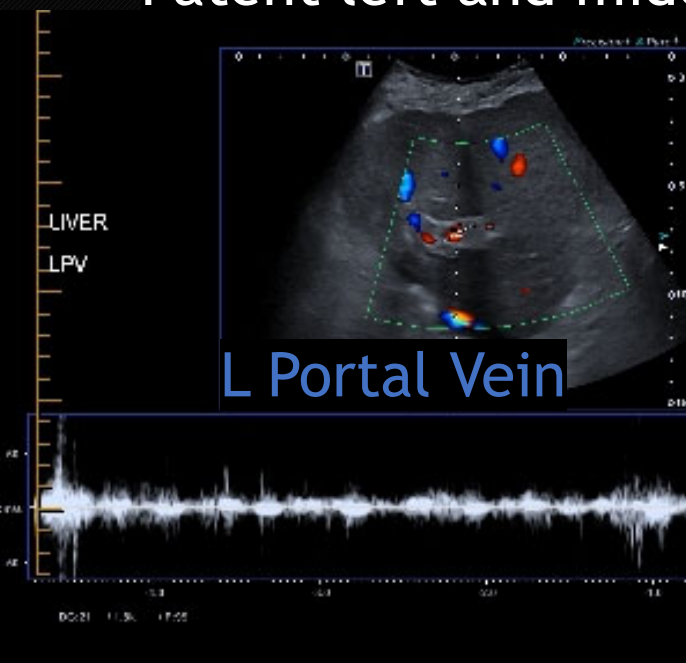
This axial CT scan shows the retroaortic branch of the circumaortic left renal vein. A blue arrow points to the vessel, which is seen posterior to the aorta. The text 'Circumaortic L renal v. retroaortic branch' is positioned above the arrow.

However, progressing

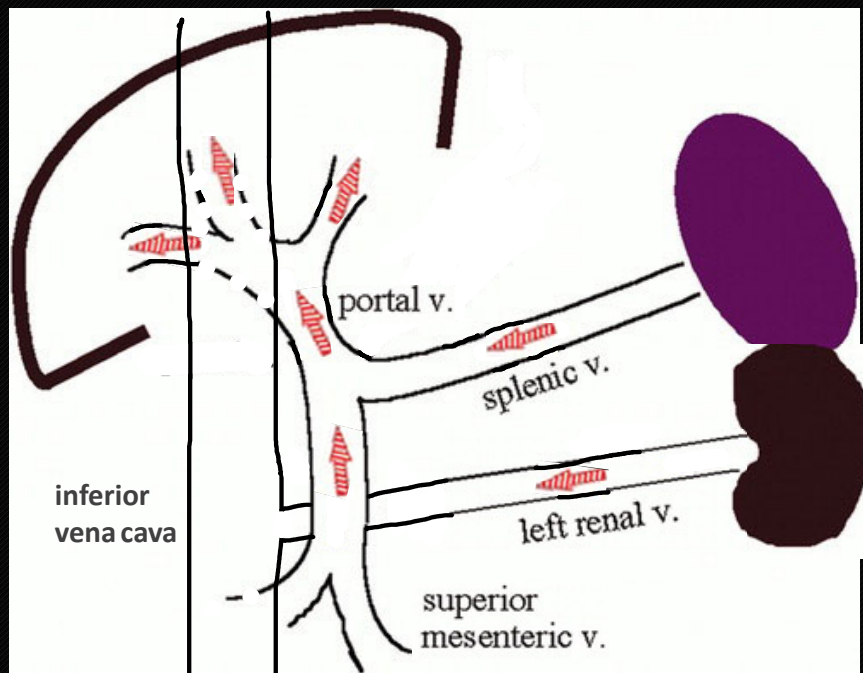


Latest Liver Doppler US

- Dominant hepatic artery
- Millimetric MPV with residual **sluggish** flow
- Patent left and middle HV

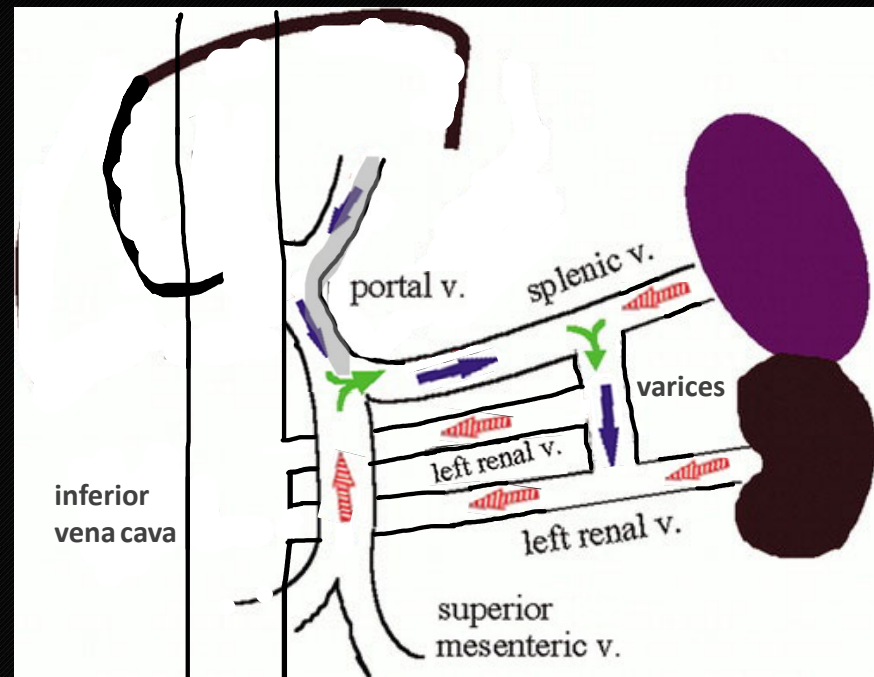


Hepatopedal flow



Hepatopedal flow

Hepatofugal flow Portosystemic Shunt (Varices)



IR Consultation

- Hepatologist had listed patient for OLTx given clinical deterioration
- However, near complete MPV thrombosis increases morbidity and is linked with poor outcome post transplant
- Given progression of MPV thrombosis, pt **removed from transplant list**
- IR asked to find a way to restore flow in main portal vein
- TIPS requested



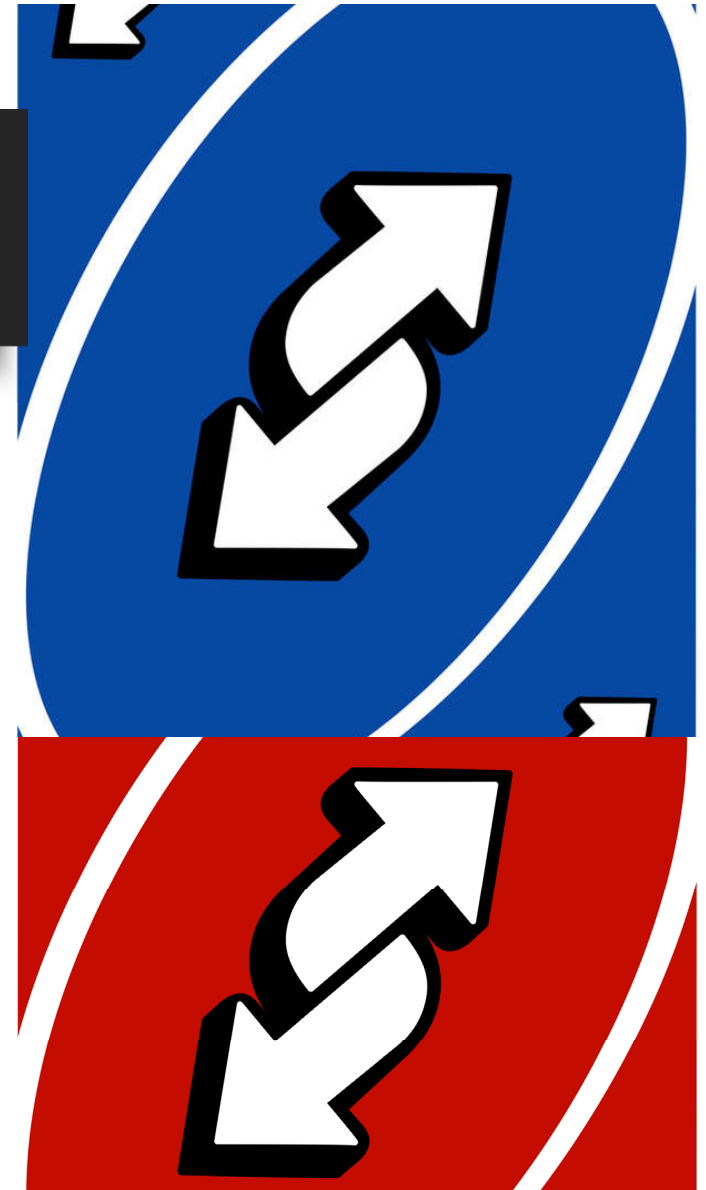
IR Plan

TIPS is not the optimal solution

- Chronic PV thrombosis makes it technically challenging
- Already encephalopathic
- Minimal ascites, no refractory bleeding

IR plan

- Embolise portosystemic shunt to reduce flow diversion from portal system, **reverse** hepatic flow, and improve encephalopathy
- Recanalize portal vein 1-2 weeks later PRN

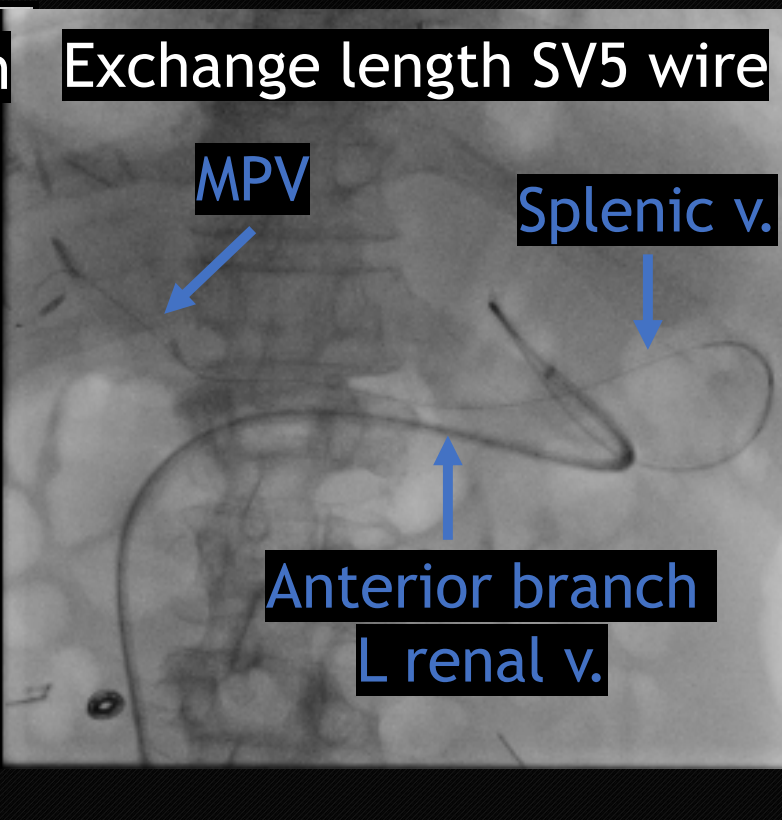
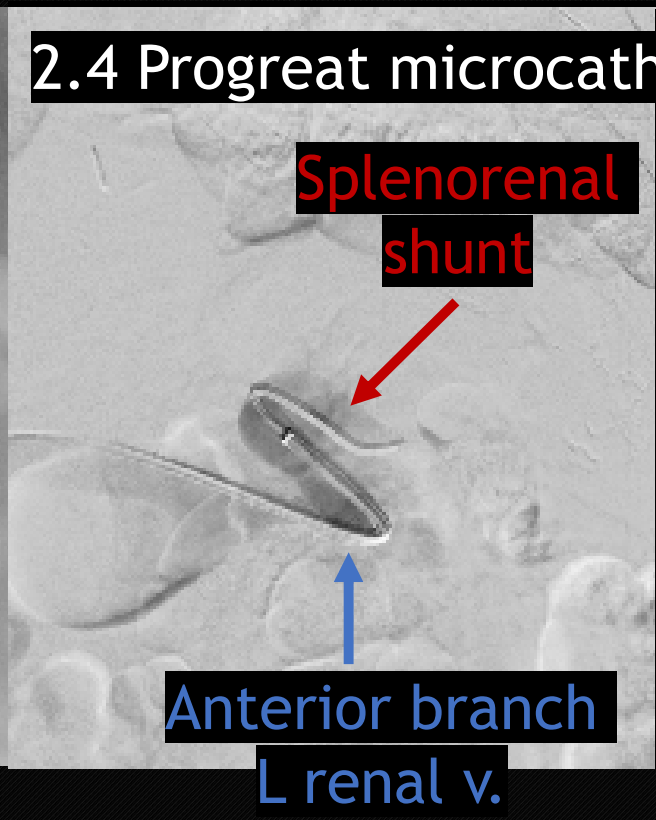
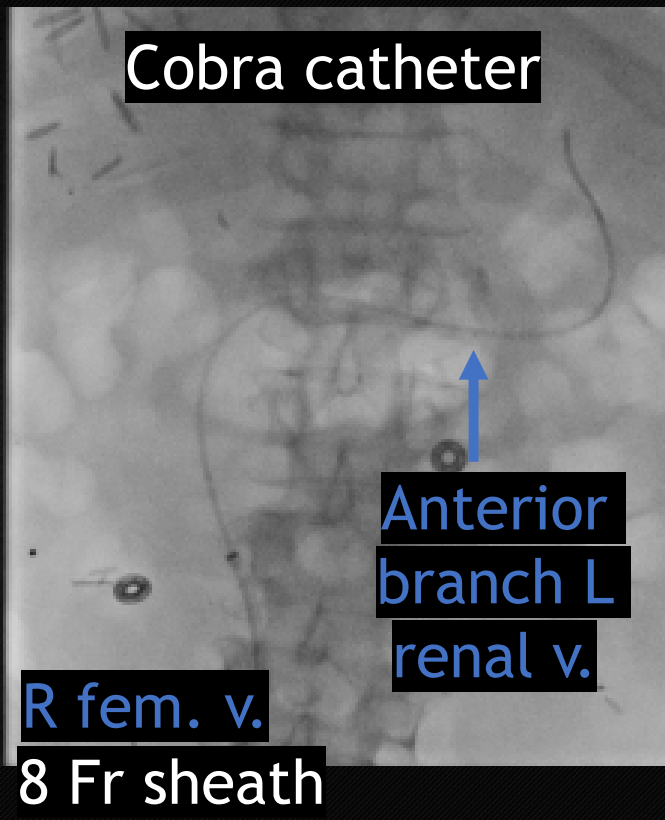


IR Procedure

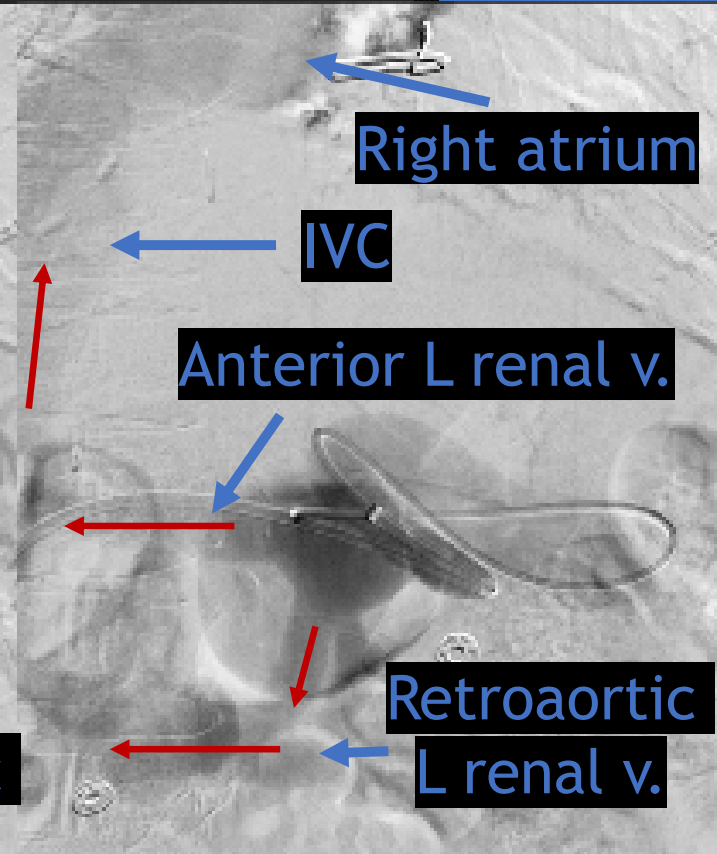
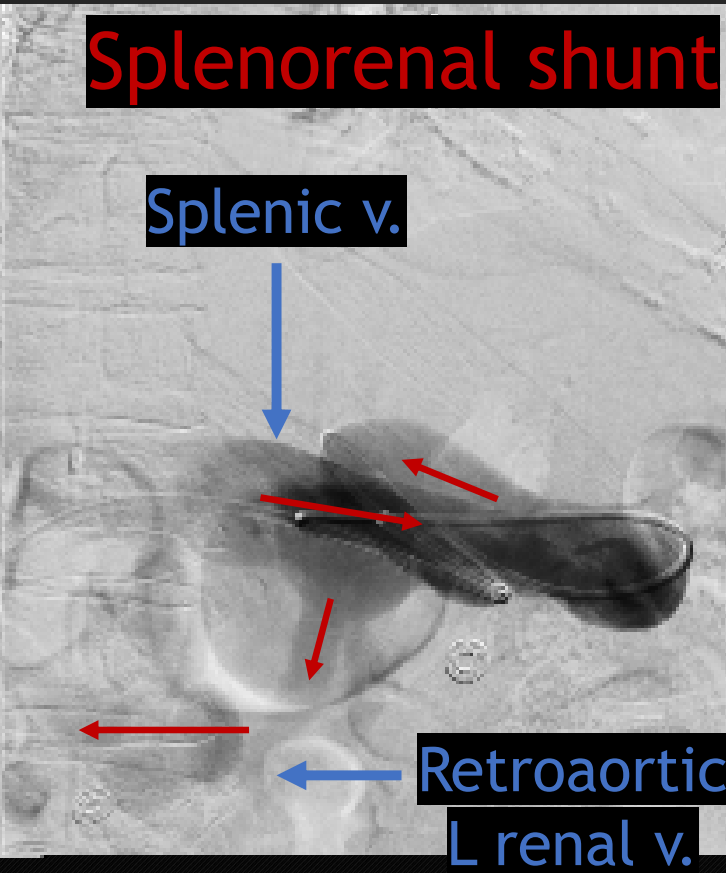
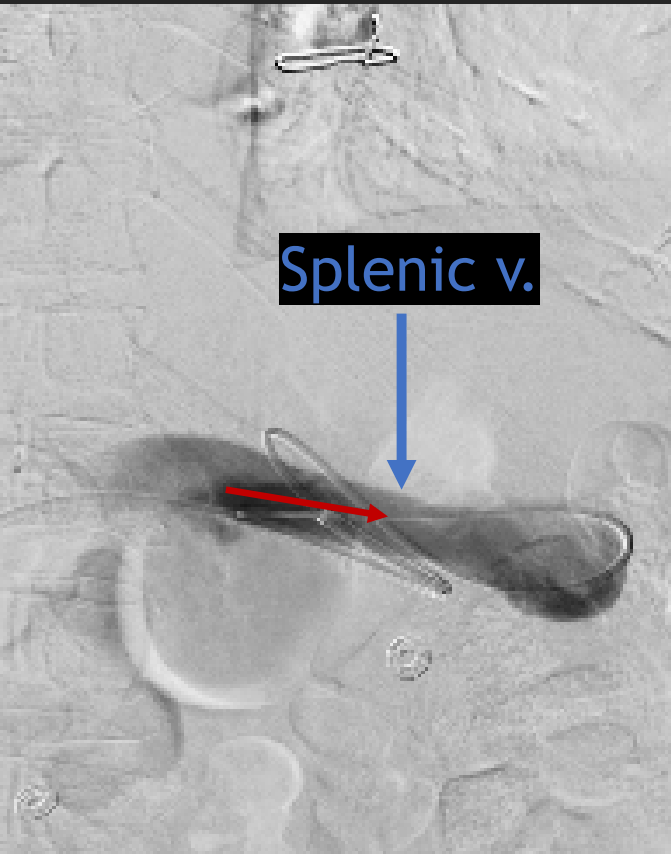
Cobra catheter

2.4 Progreat microcath

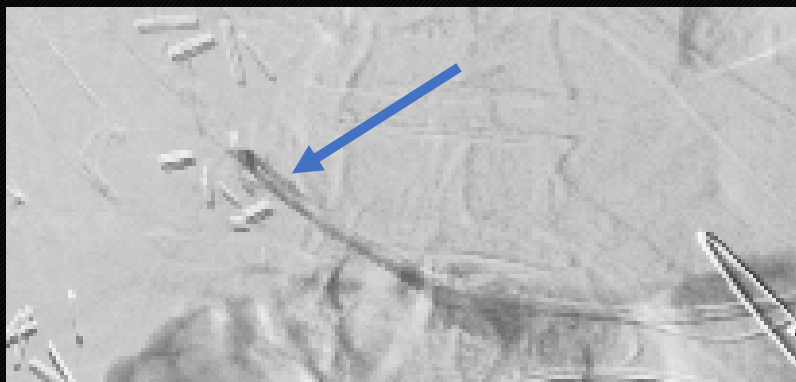
Exchange length SV5 wire



Splenorenal shunt

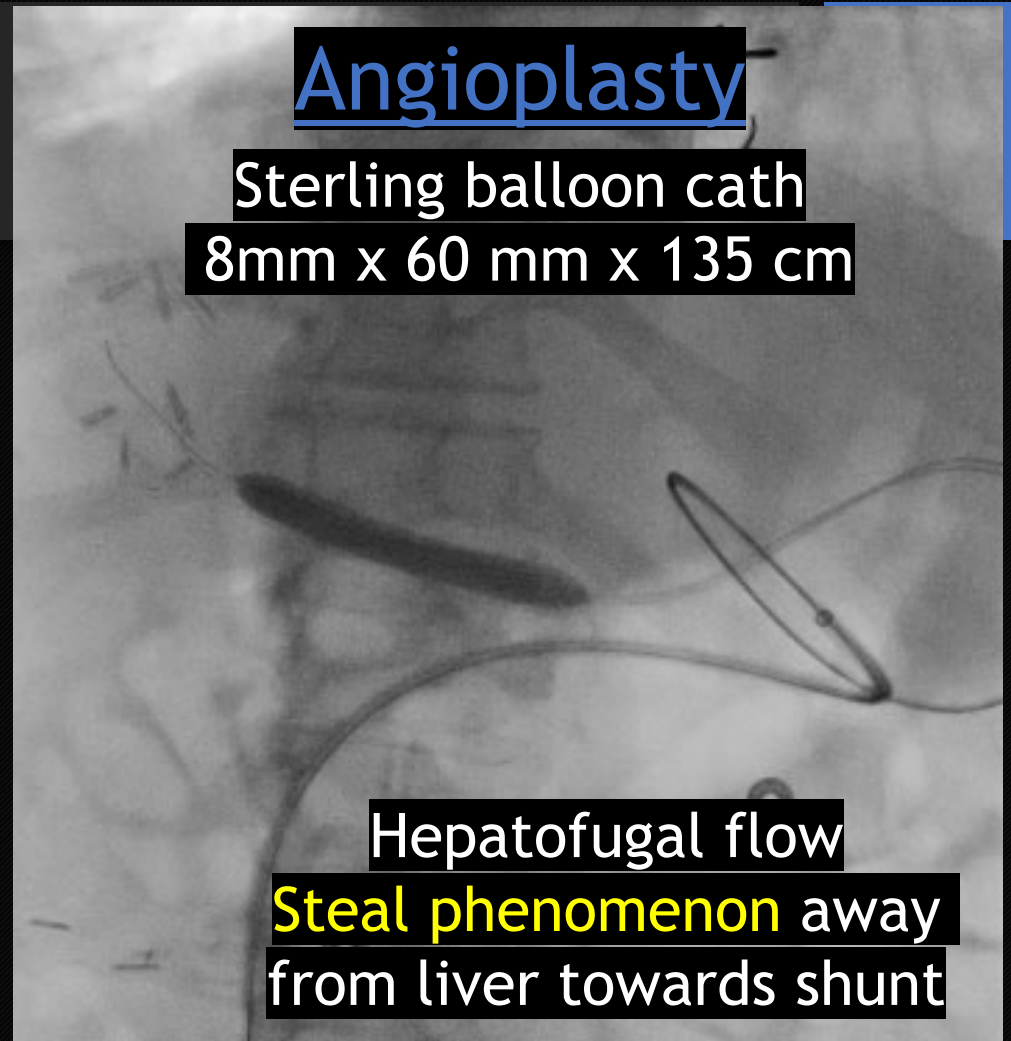


Near complete **MPV** thrombosis
with **hepatofugal** flow



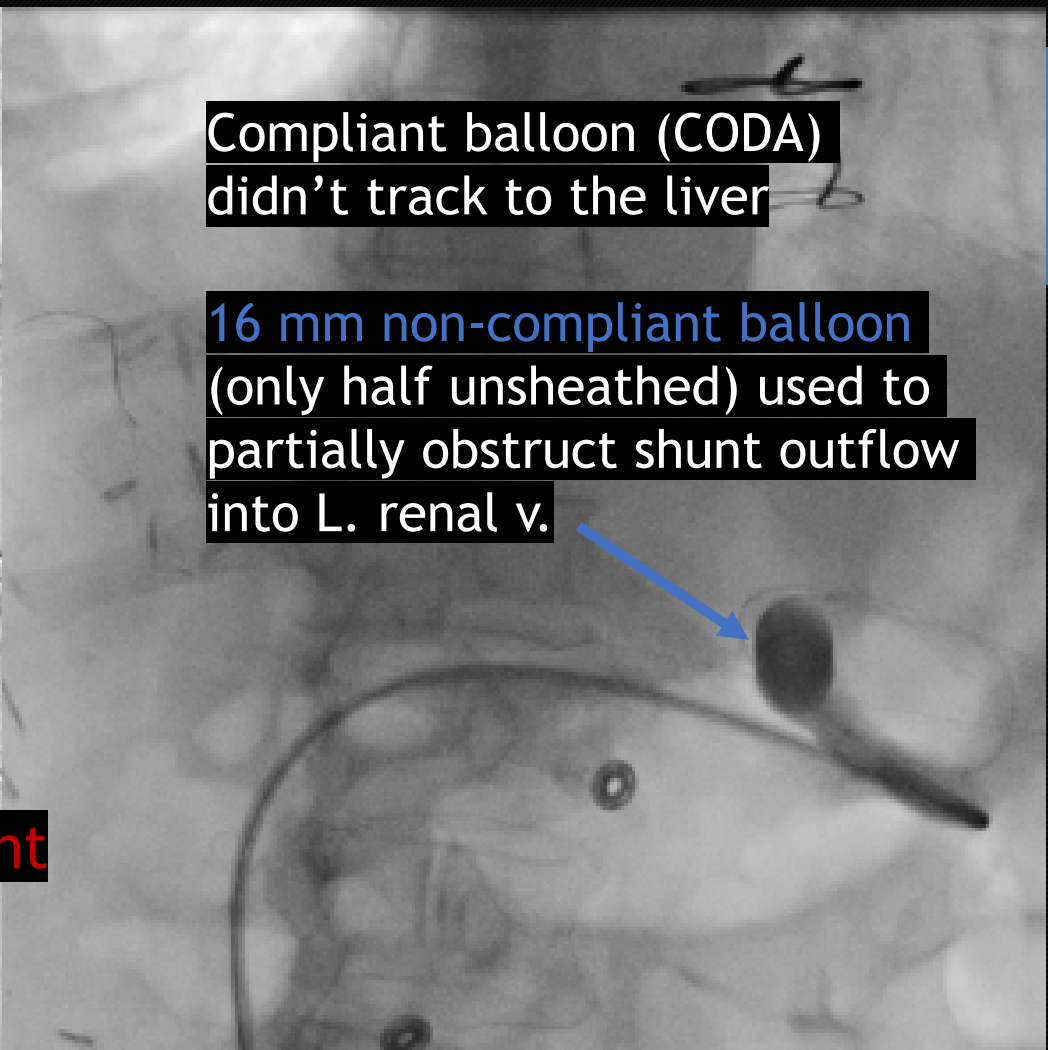
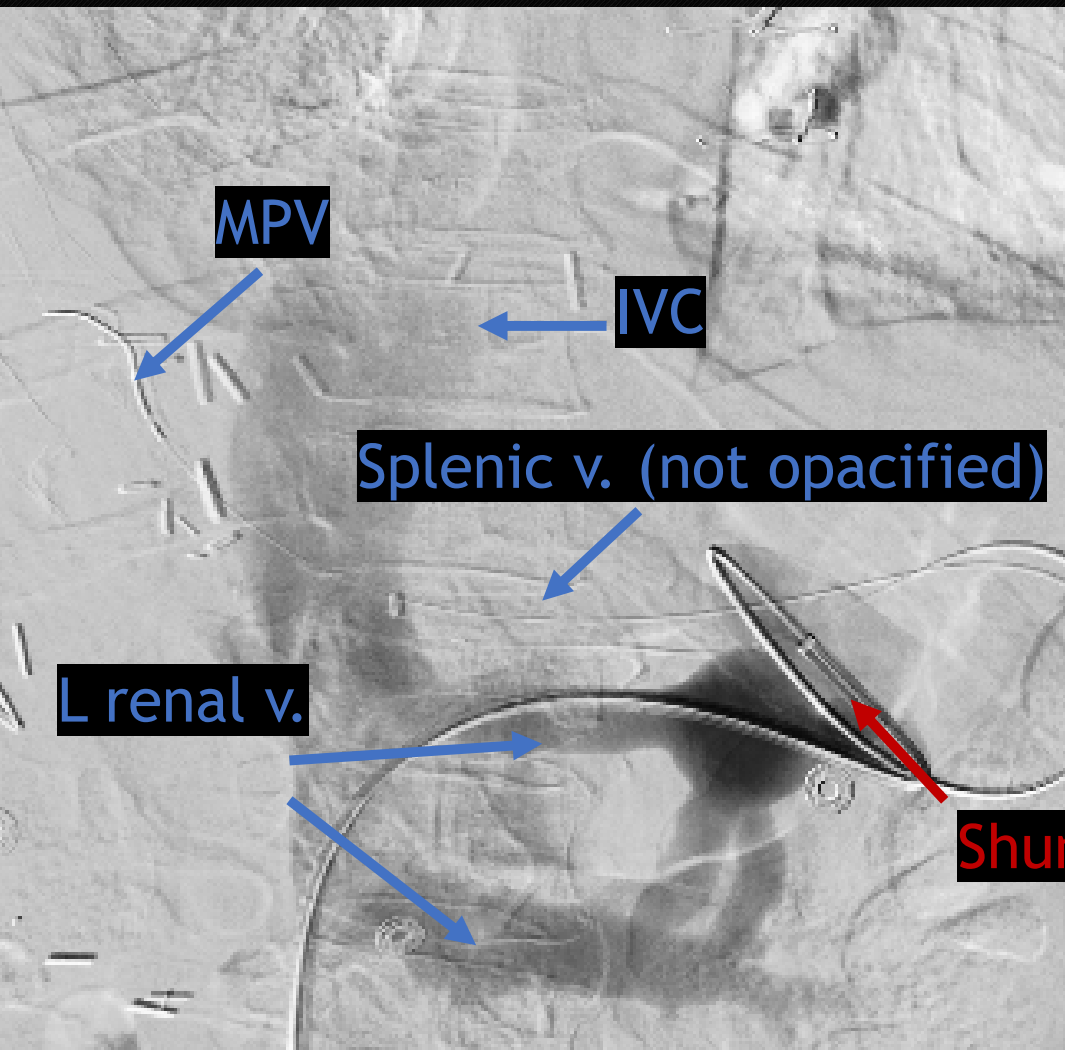
Angioplasty

Sterling balloon cath
8mm x 60 mm x 135 cm

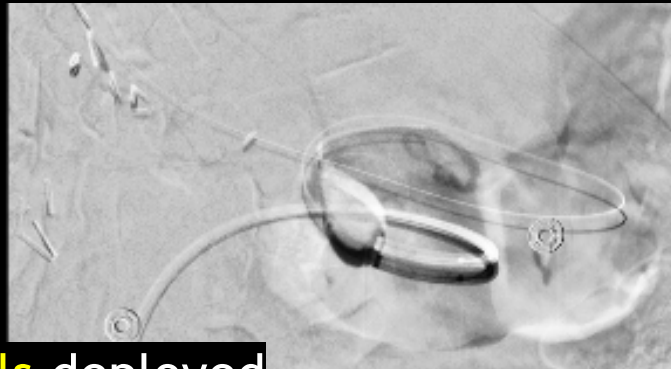


Hepatofugal flow

Steal phenomenon away
from liver towards shunt

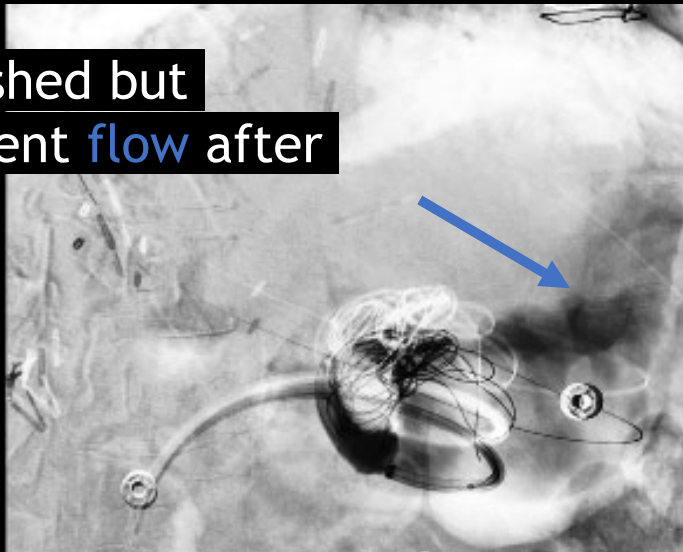


Embolisation with Coils

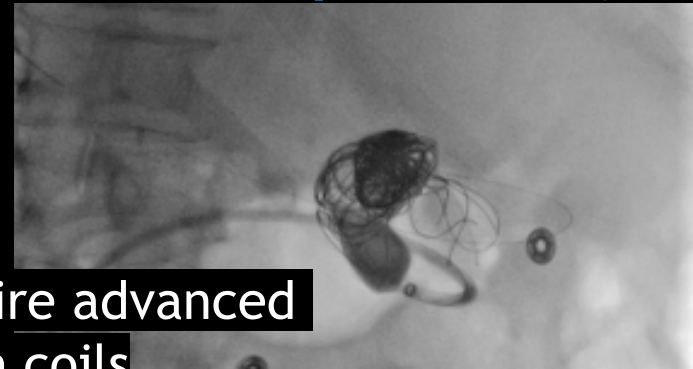


>15 coils deployed

Diminished but
persistent flow after
coils

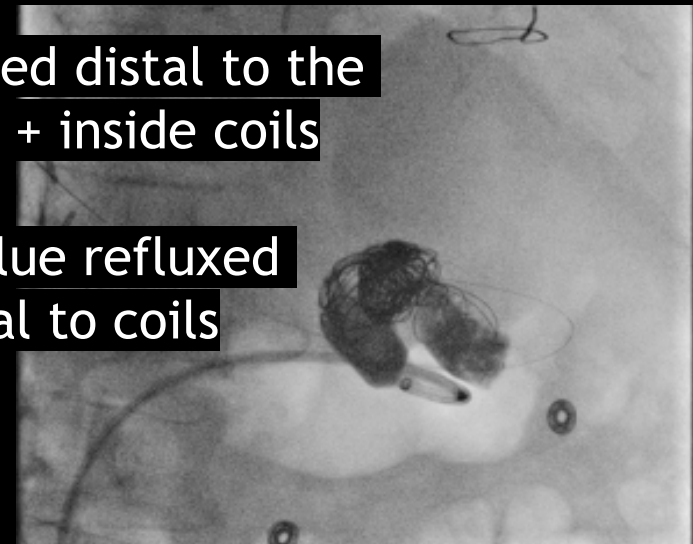


+ Glue/Lipiodol (1:1)



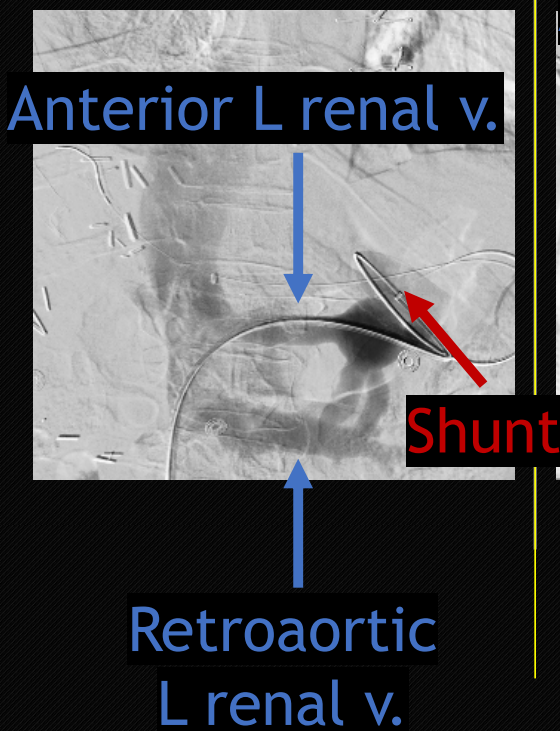
Microwire advanced
through coils

Glue used distal to the
balloon + inside coils

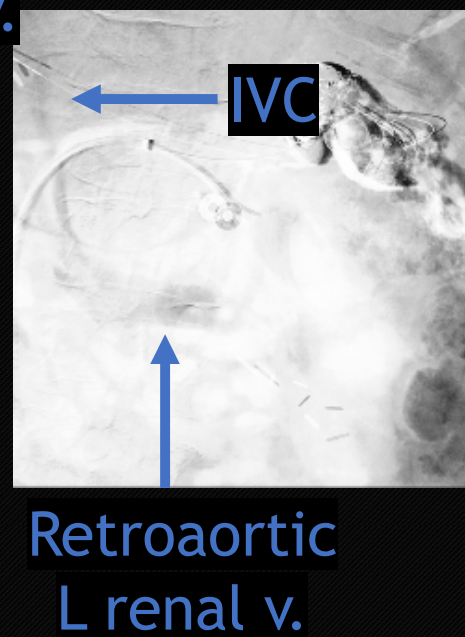
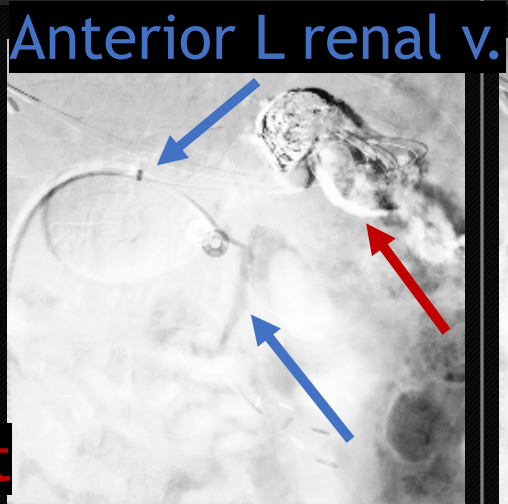


Some glue refluxed
proximal to coils

Pre-Embolisation

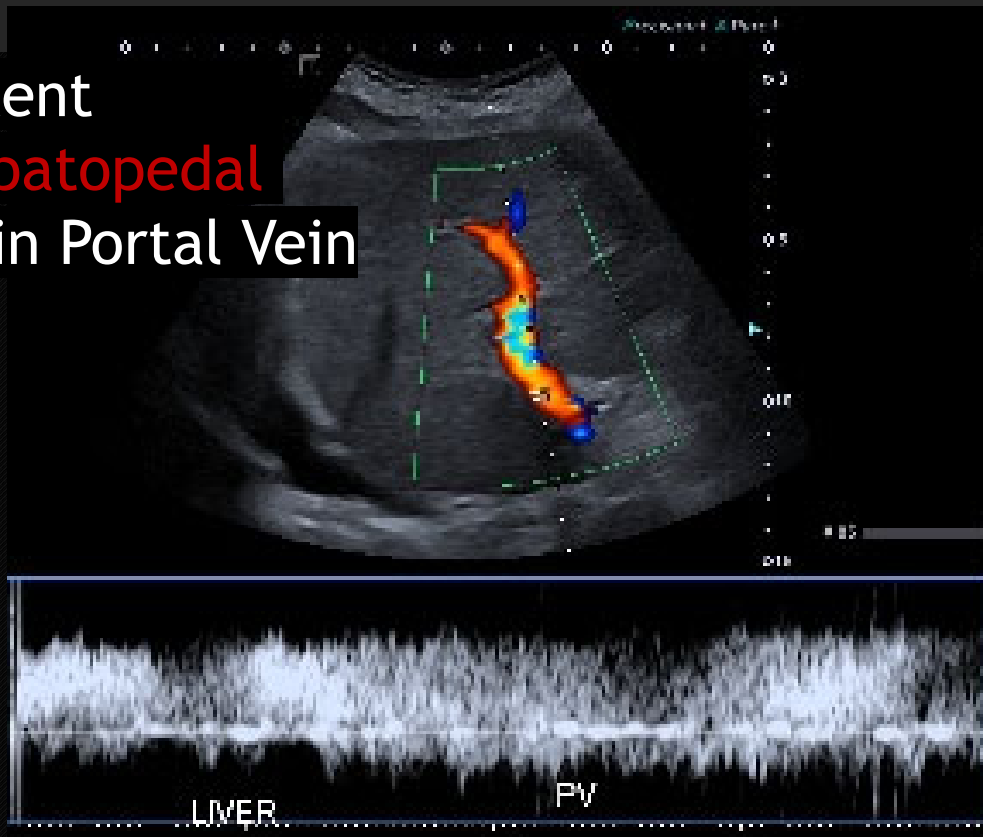


Post-Embolisation

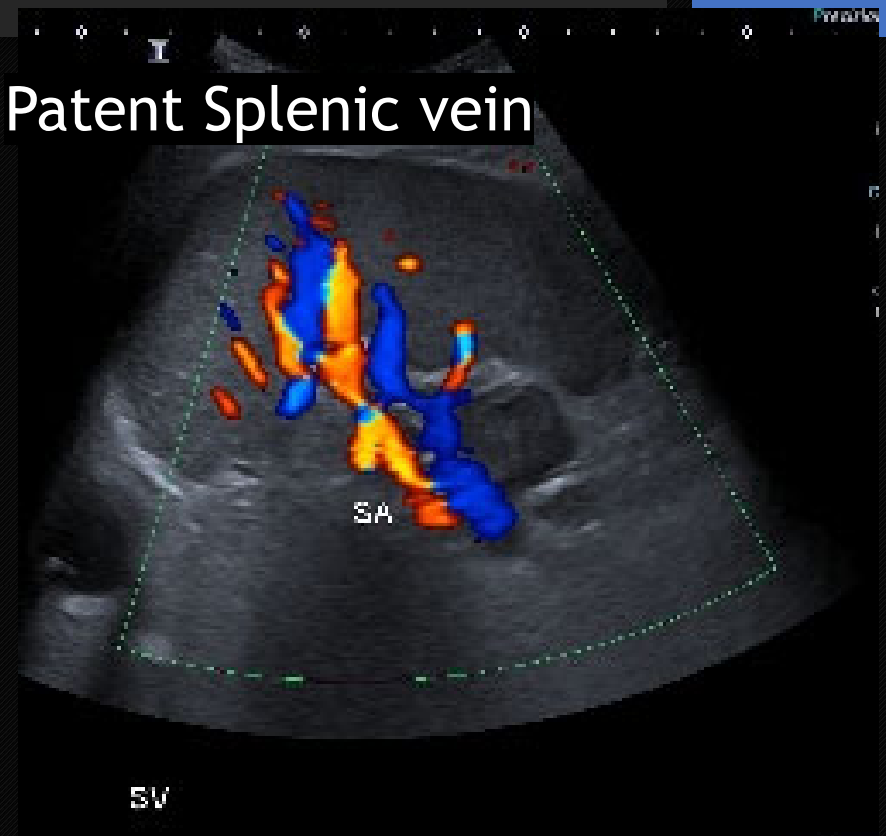


Follow-up 2 days post procedure

Patent
Hepatopedal
Main Portal Vein

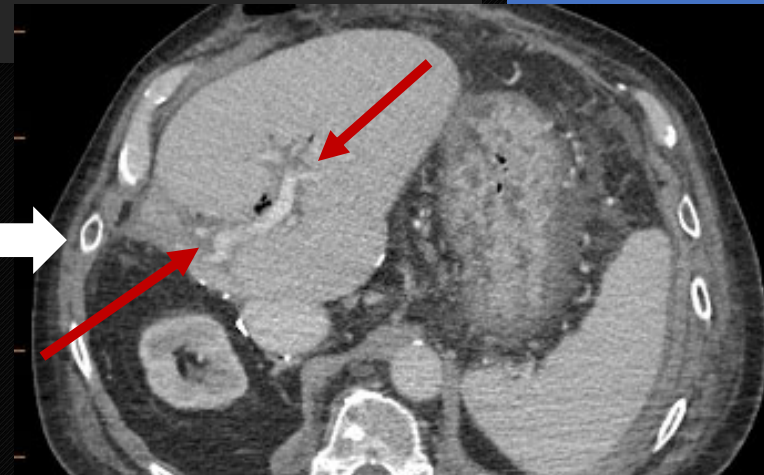
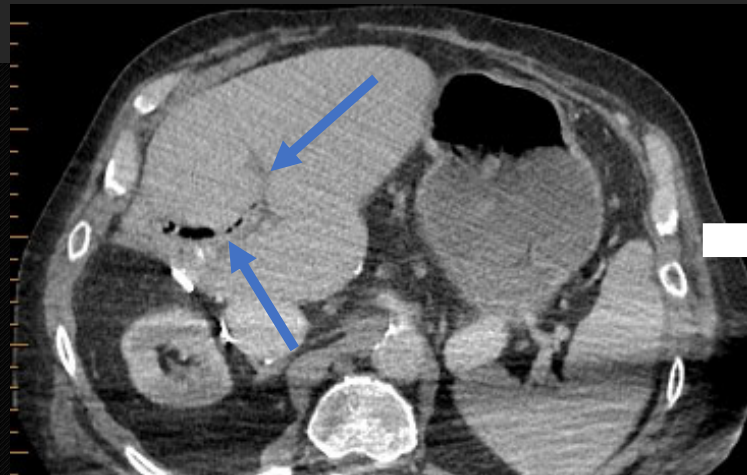


Patent Splenic vein

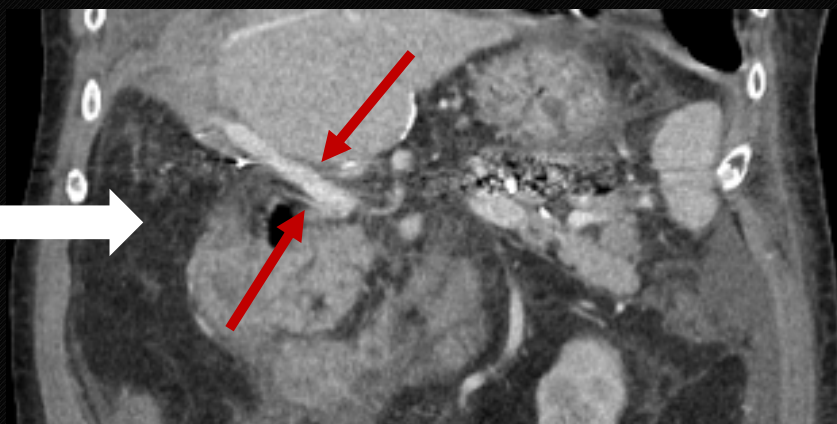
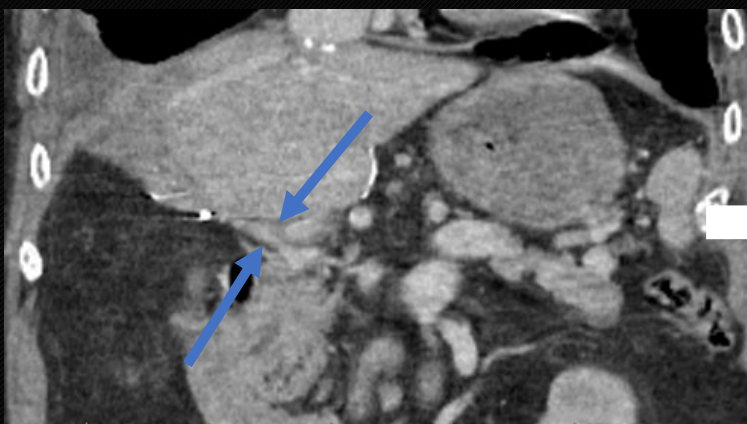


Follow-up 7 days post procedure

Patent L Portal Vein +
Branches R
Portal Vein

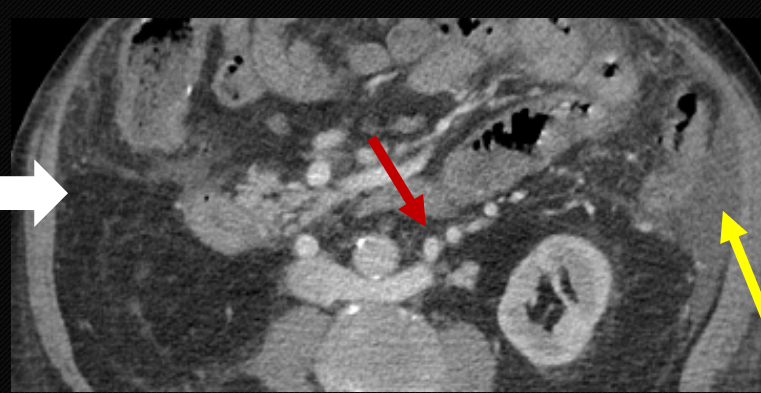
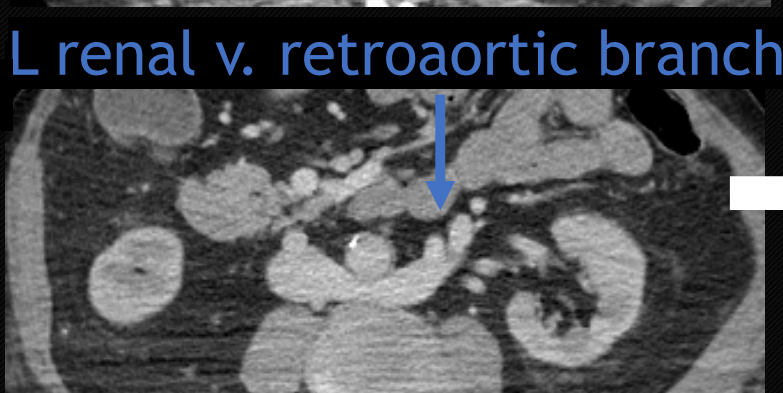
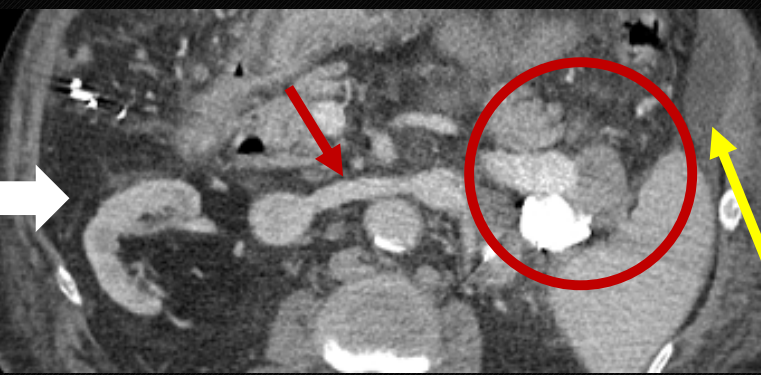
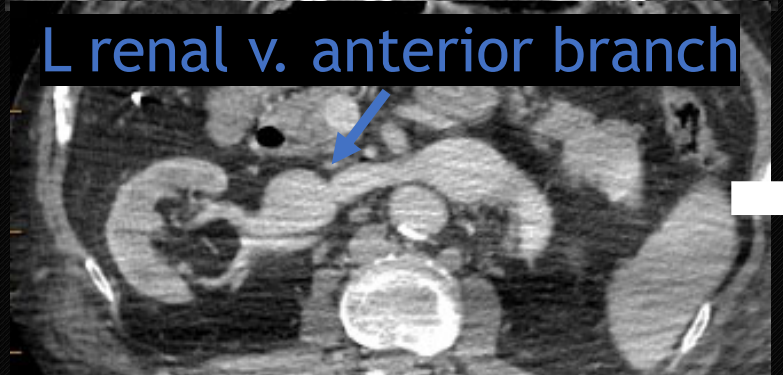
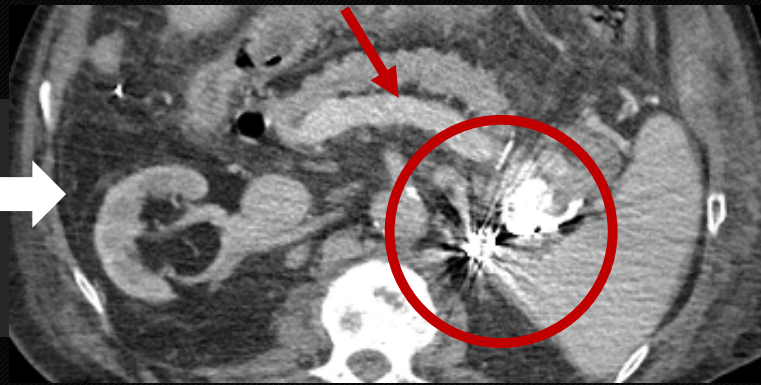
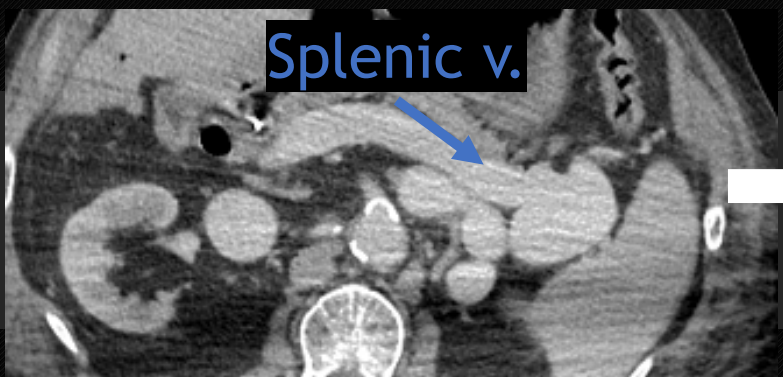


Patent Main
Portal Vein



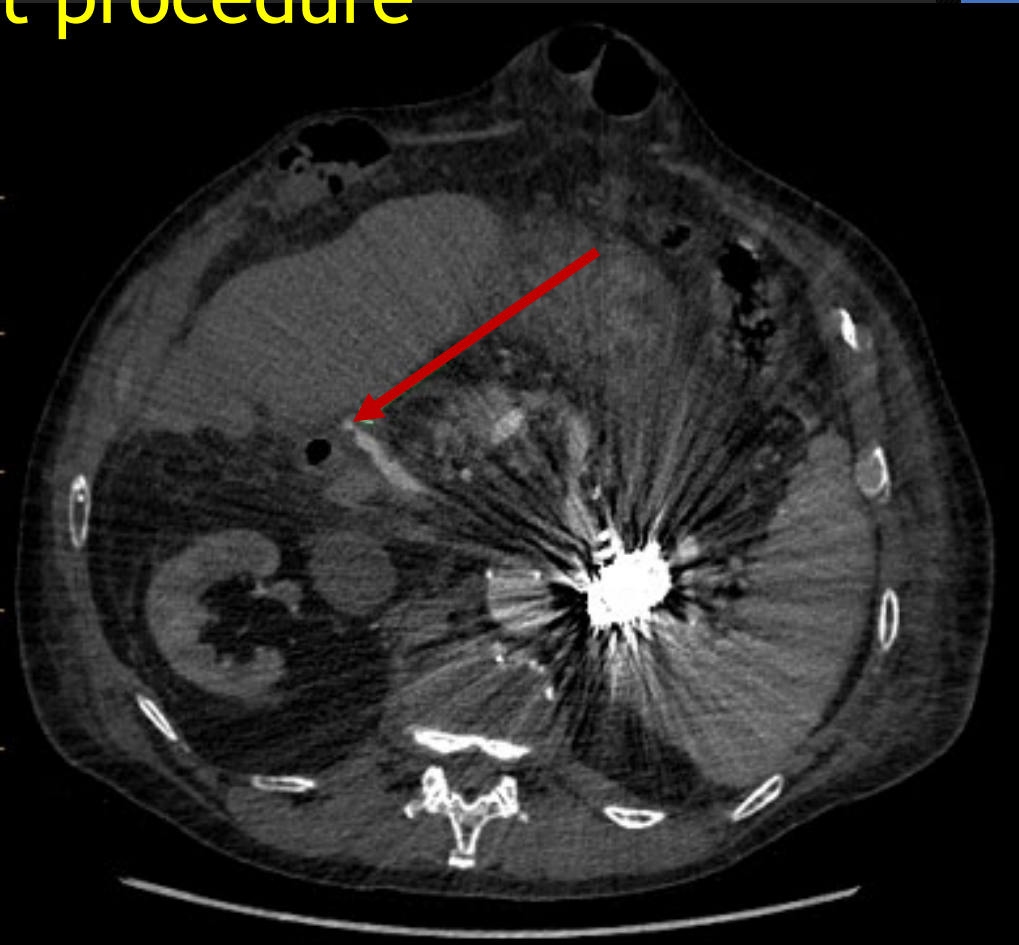
Complete
shunt
embolisation

Increased
portal pressure
= New **ascites**



Follow-up 7 days post procedure

Progressing hepatic
artery stenosis x
2021



Clinical Outcome

No immediate complications

Patient re-listed on transplant list

No longer encephalopathic



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Questions?