CIRA Case of the Week

Case Courtesy of Drs. Ruairi Meagher, Pierre Perreault and Juliette Vanoverschelde

CHUM

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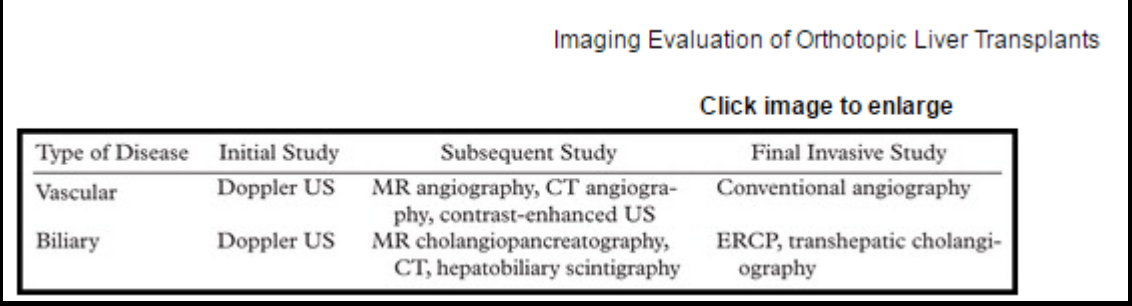
Clinical History

- 52 year old male 3 weeks post liver transplant for Hep C cirrhosis presents with increasing confusion
- Labwork: CBC and lytes– plts 108, no leukocytosis, total bili 17, albumin 19, AST 20, ALT 14, ALP 106, Cr 116, INR 1.6, PTT 62
- Abdominal ultrasound suboptimal
- A CT scan of the abdomen/pelvis was performed



Imaging Evaluation of Orthotopic Liver Transplants

Click image to enlarge

Type of Disease	Initial Study	Subsequent Study	Final Invasive Study
Vascular	Doppler US	MR angiography, CT angiography, contrast-enhanced US	Conventional angiography
Biliary	Doppler US	MR cholangiopancreatography, CT, hepatobiliary scintigraphy	ERCP, transhepatic cholangiography

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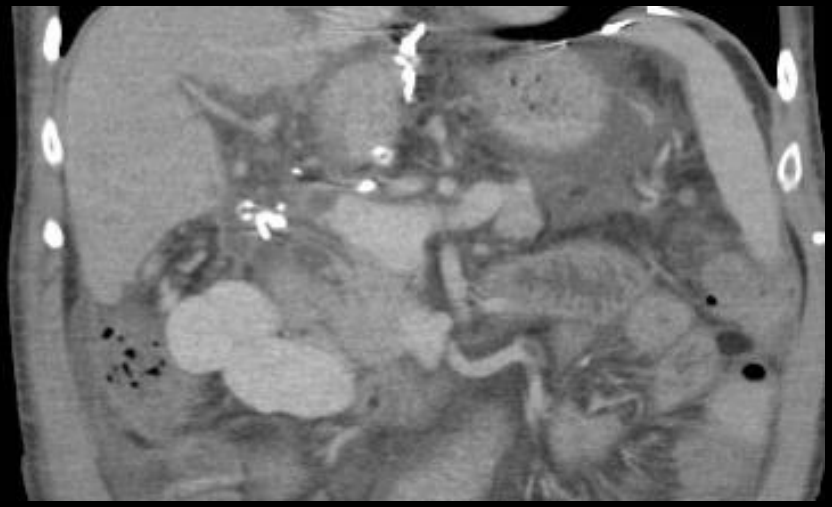
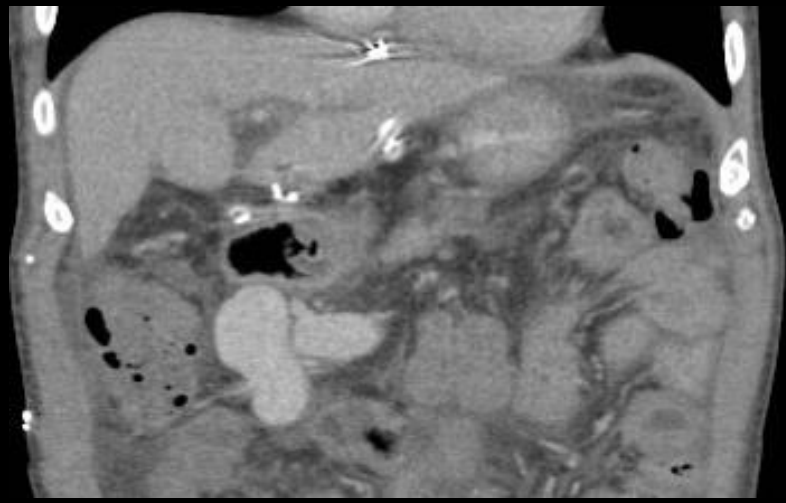
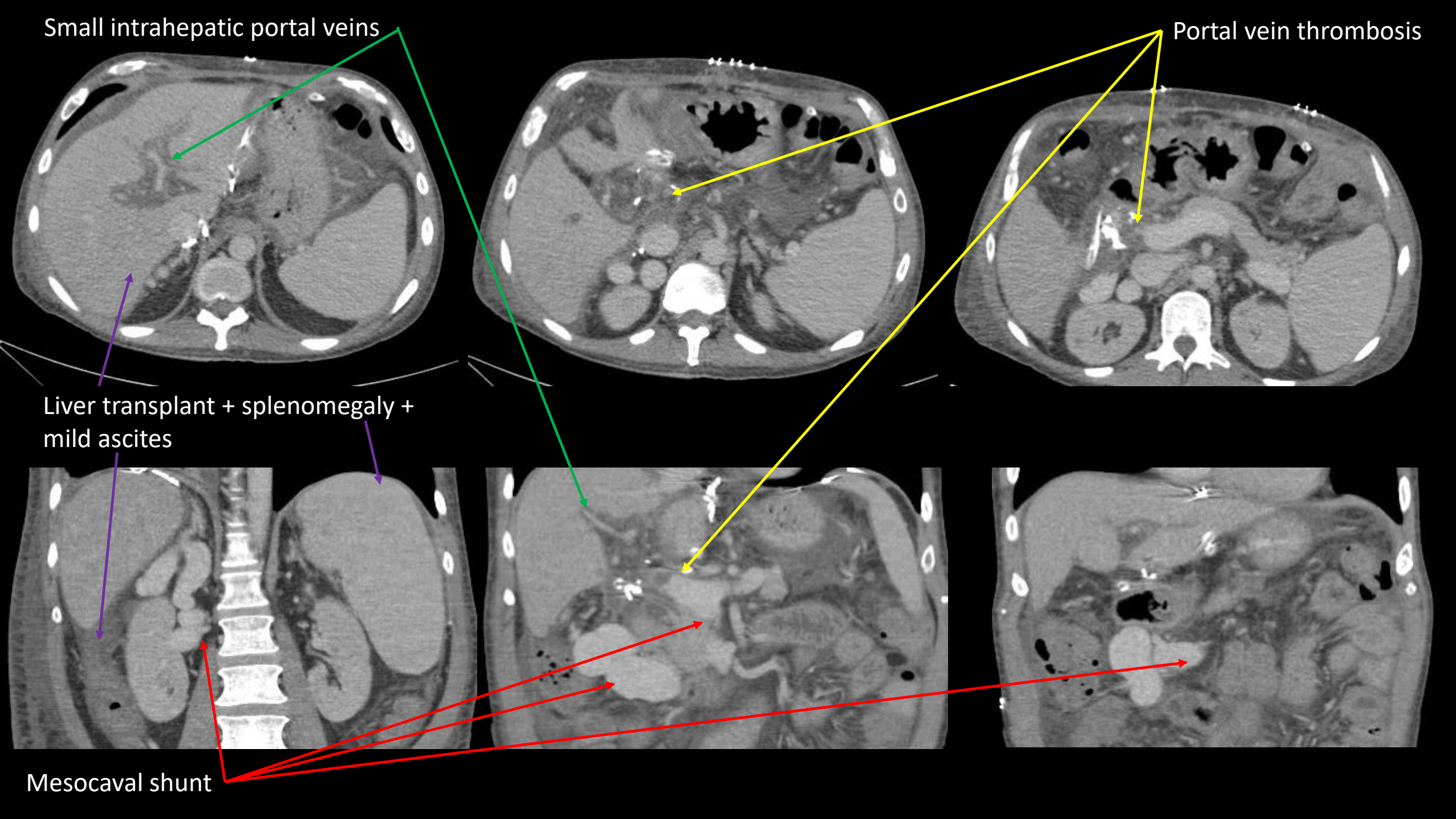



Findings?


Small intrahepatic portal veins
Portal vein thrombosis
Liver transplant + splenomegaly + mild ascites
Mesocaval shunt

CT demonstrates

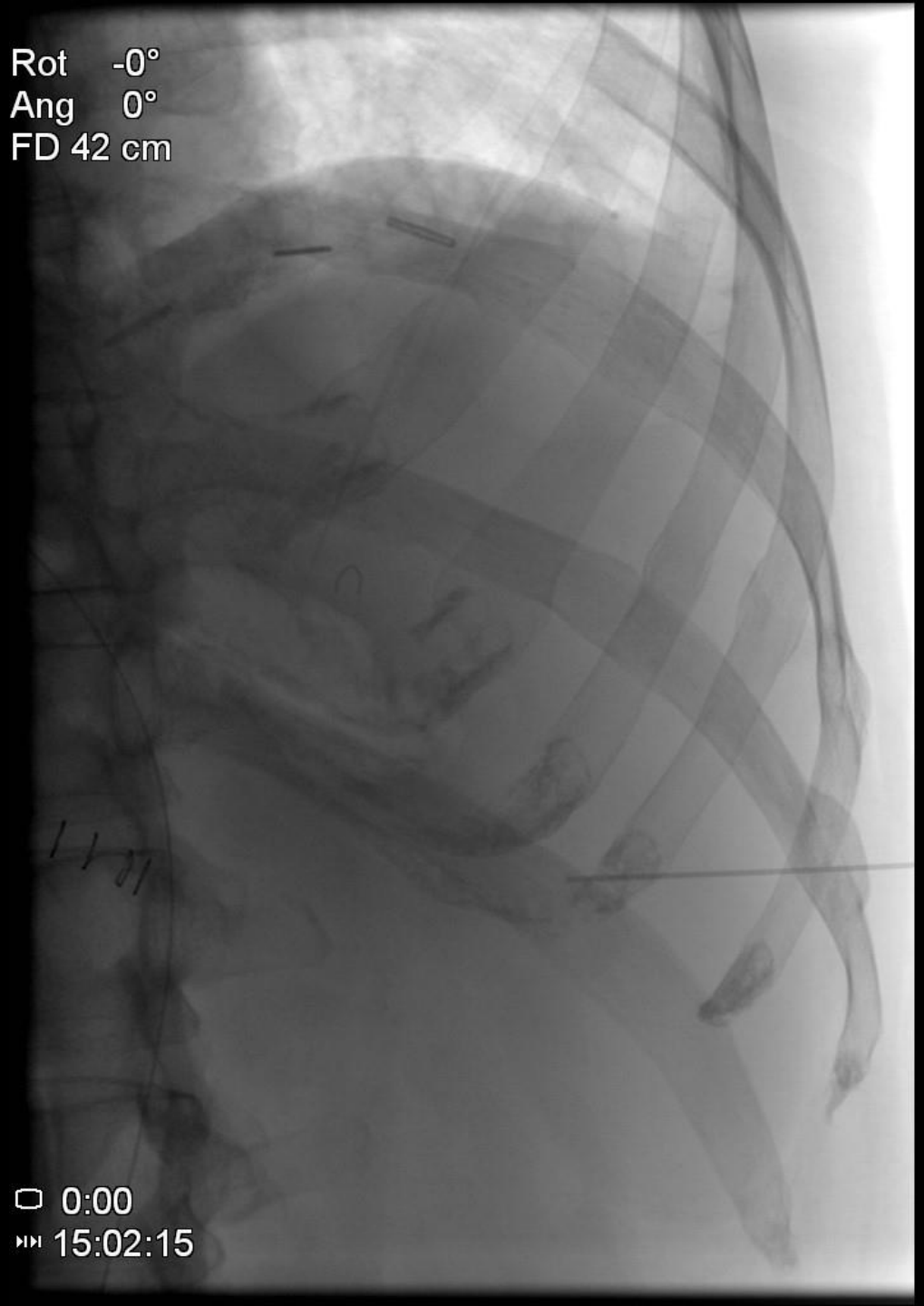
- Liver transplant
- Main portal vein thrombosis and small intrahepatic portal veins
- Extensive mesocaval shunt and findings of portal hypertension
- Probable stenosis at level of portal vein anastomosis
- No evidence of active bleed

Course in hospital

- Admitted to transplant service
- Trial of anticoagulation; however, encephalopathy worsening
- Request to intervene

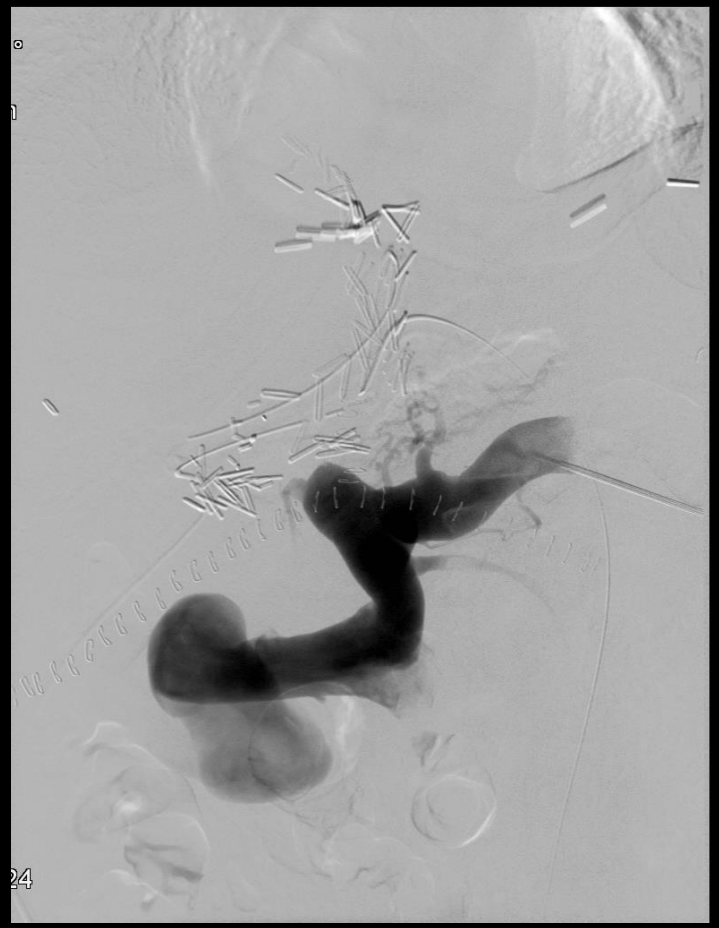
Reason for intervention

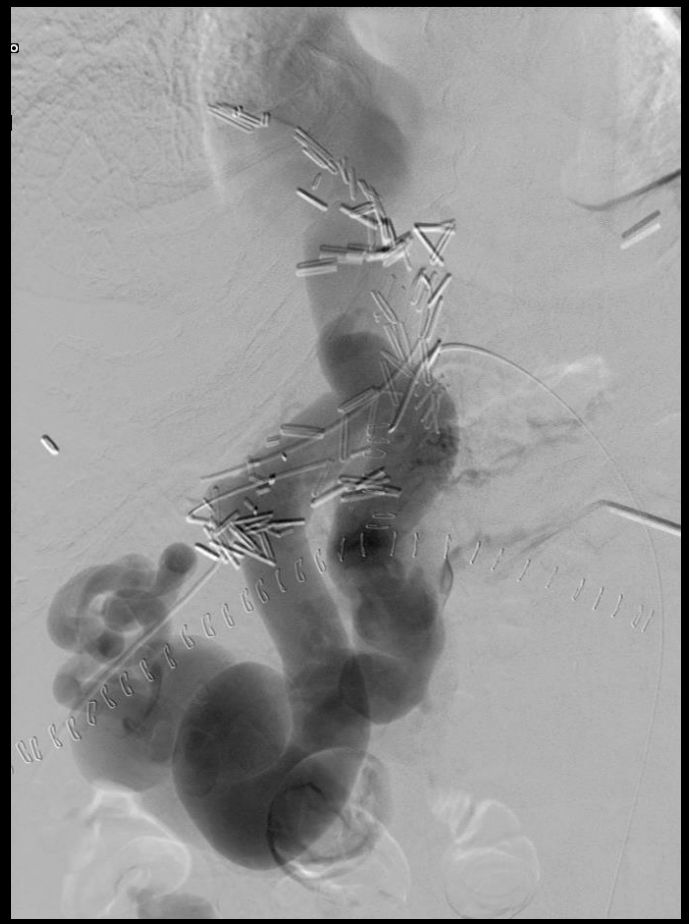
- Increase portal flow and decrease shunting reducing encephalopathy
- Correct anatomic cause for thrombosis to hopefully avoid life long anticoagulation

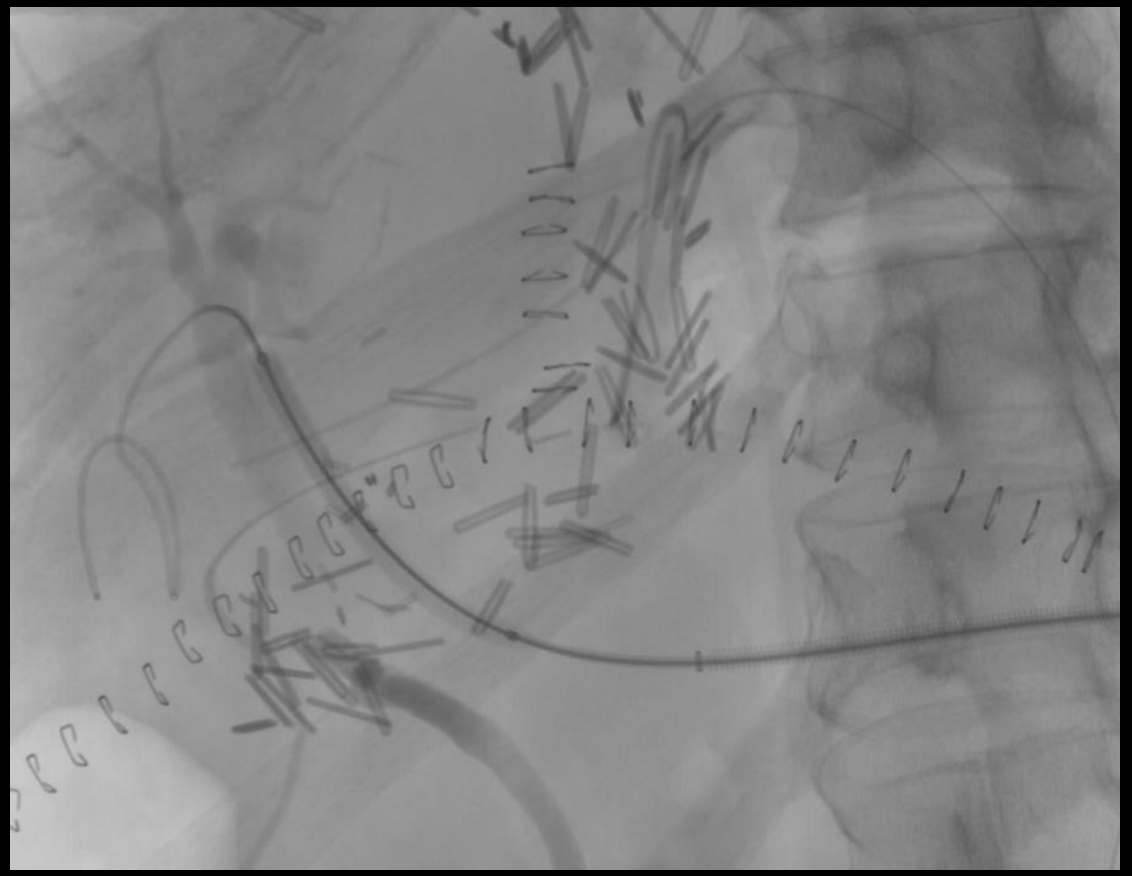


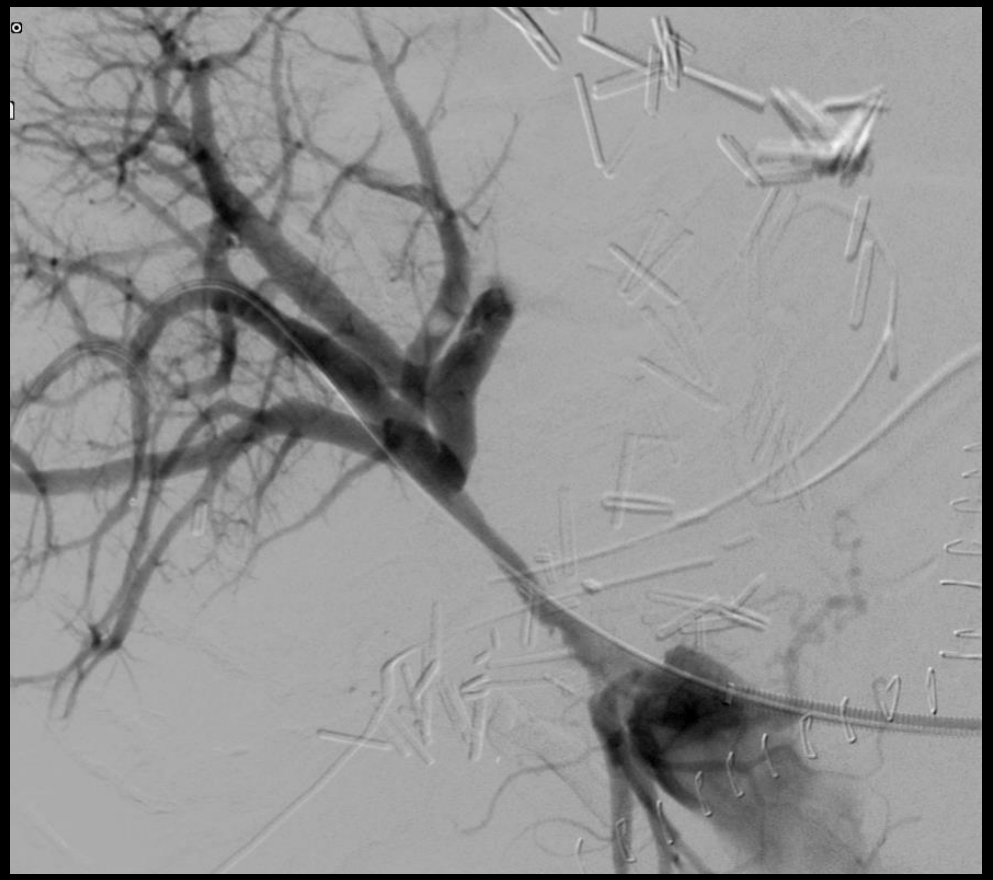
22G
Ultrasound-guided
transplenic access of lower pole

Phlebography demonstrates preferential flow through large mesocaval shunt and thrombosed main portal vein at level of portal anastomosis







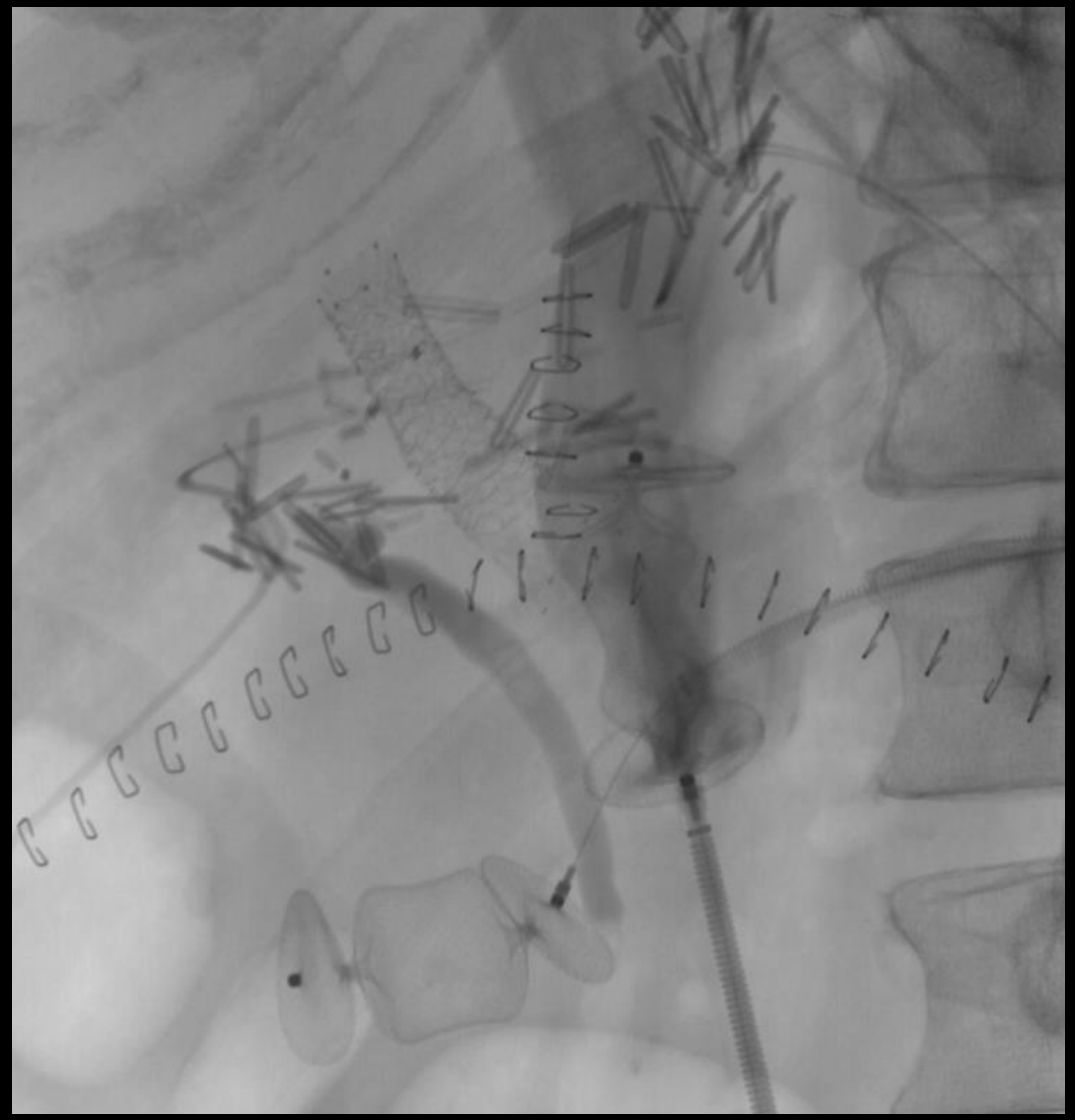


- Occlusion eventually crossed with the back end of a hydrophilic guidewire
- Pre-dilatation 4 mm balloon and 7F braided sheath

- 12 mm covered stent dilated to 10 mm
- Residual thrombus present

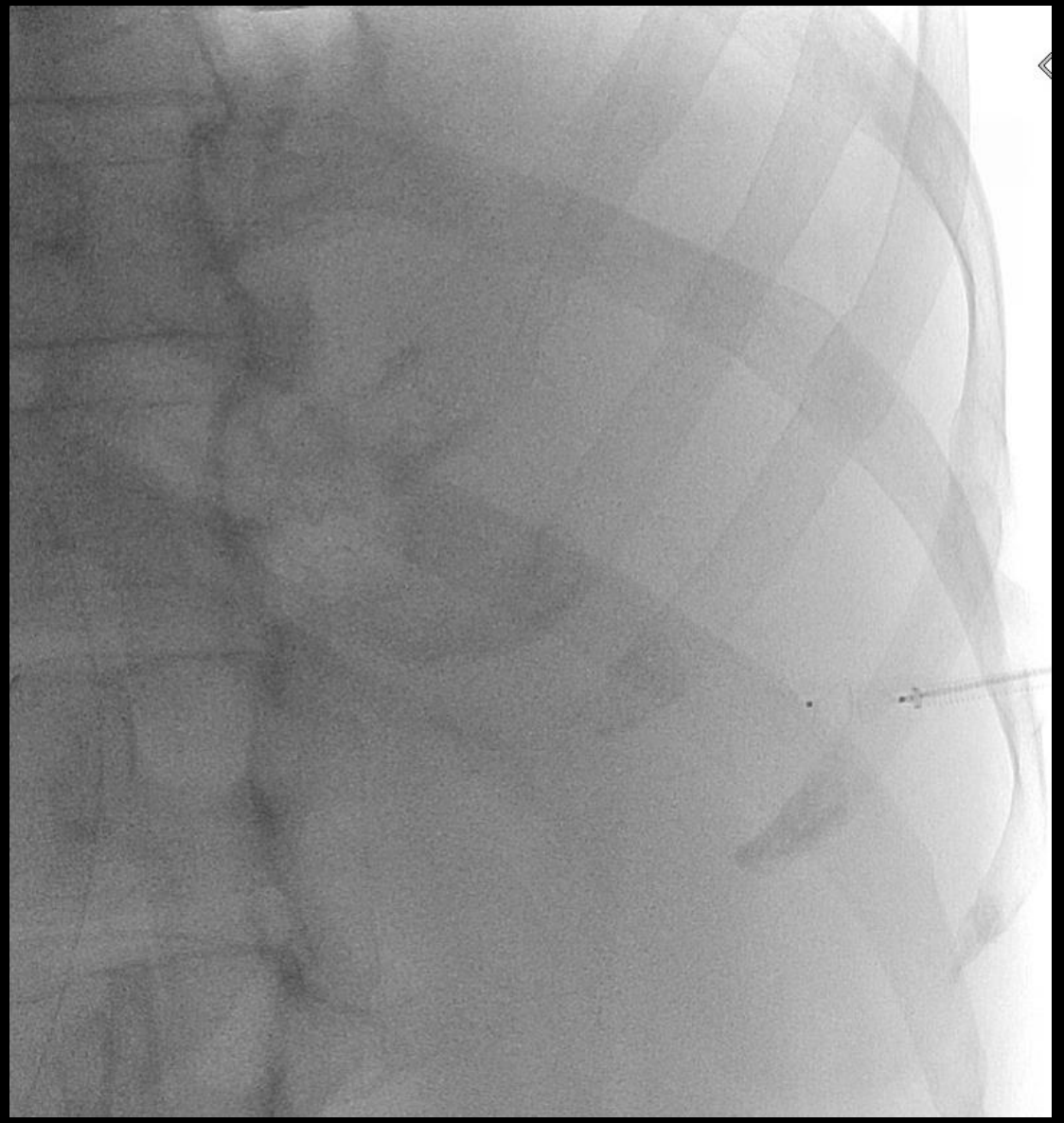
- Stent elongated with 14 mm self-expanding stent to secure residual thrombus

- Dual access splenic and right femoral vein with two 7 French braided sheaths
- Guidewires in large mesocaval shunt



- Two 22 mm vascular plugs occluding shunt

- Control phlebography: patent portal vein with reduced flow through shunt



- Embolization of needle tract through spleen with 6 mm vascular plug under ultrasound and fluoroscopic guidance

Post procedure

- Biliary stenosis treated with ERCP and stenting
- Pseudoaneurysm of hepatic artery treated with covered stent
- Follow-up CT at 6 months

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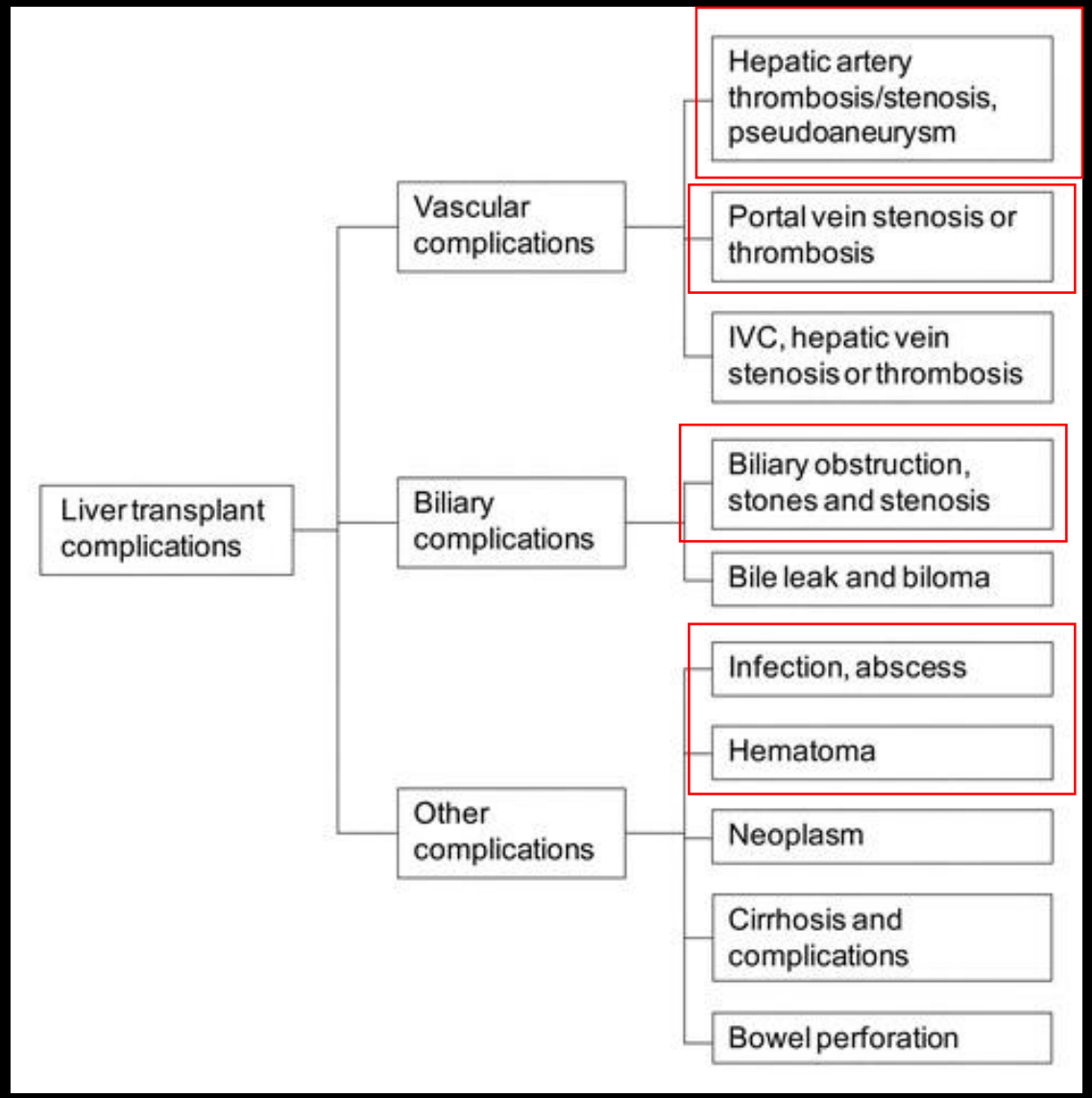
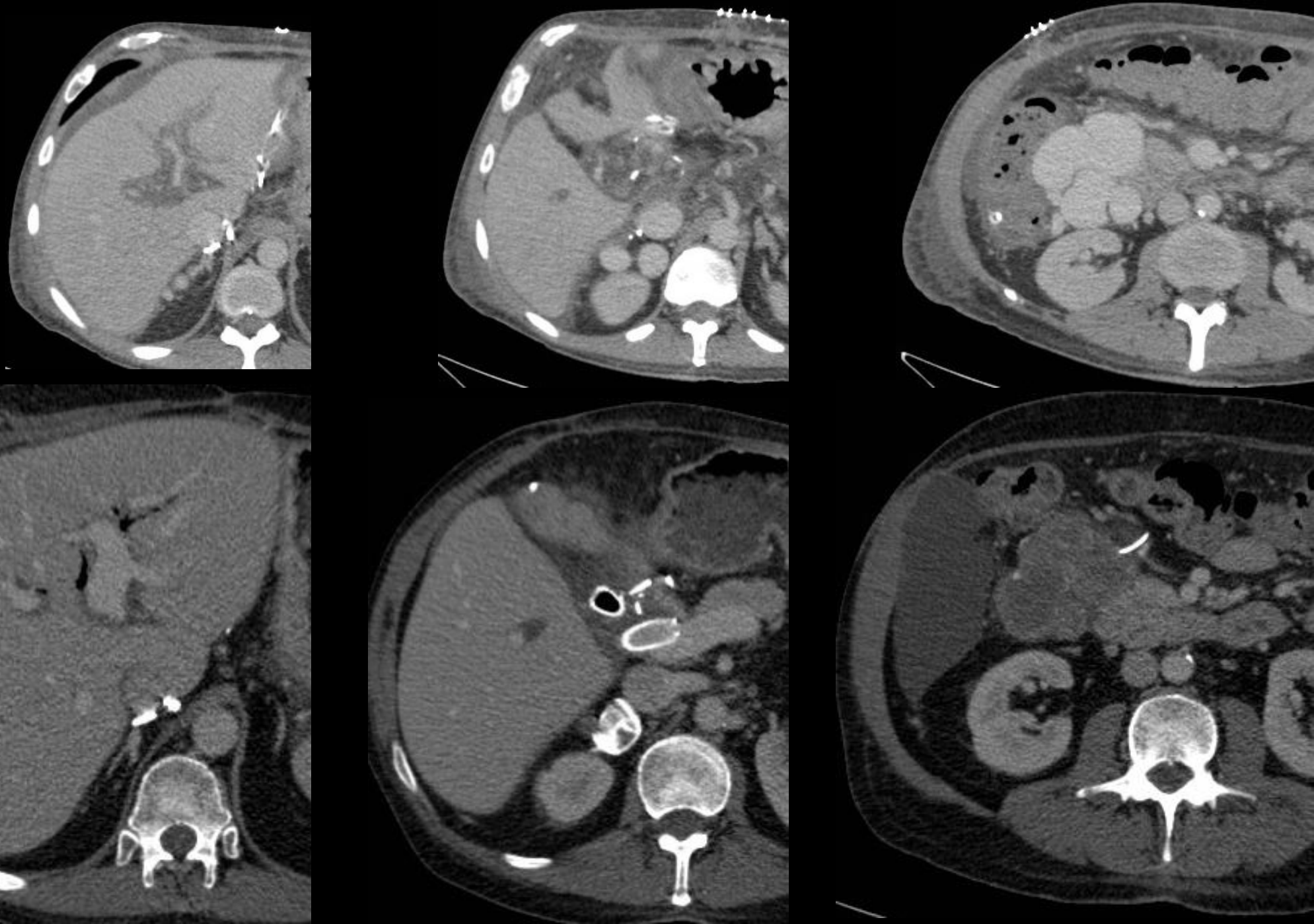


Pre-procedure CT

CT 6 months post



Discussion: splenic access

Cons

- Learning curve
- Fragile organ

Pros

- Improved field of view and ergonomics for the right-handed operator
  - Operator facing patient’s head vs feet
- Inline access with improved pushability for crossing occlusions
- Puncture often easier than hepatic access in cases of portal vein thrombosis, hepatic mass or perihepatic ascites

Consider when

- Portal vein thrombosis
  - +/- pharmacomechanical thrombolysis – greater maneuverability in intrahepatic portal veins if thrombus extensive
  - Straight line access facilitates positioning of large stents or plugs
- Portal vein embolization
  - improved access to all segments and control preserving liver remnant
- Embolization of shunts and varices
- Complex TIPS cases
  - need for portal vein recanalization

References

- Singh A. et al. Postoperative Imaging in Liver Transplantation: What Radiologists Should Know. RadioGraphics. March 2010.
- Atsushi K et al. Portal vein stent placement for the treatment of postoperative portal vein stenosis: long-term success and factor associated with stent failure. BMC Surg. Feb. 2017.