UNCONVENTIONAL PARTO

HISTORY:

- Alcoholic for 11 years consuming 180 ml/day. Stopped since 6 months. Non smoker.
- K/c/o EHPVO with portal cavernoma cholangiopathy (PCC), chronic pancreatitis and anemia.
- Patient presented to ED with 4 day history of melena. Hb 34 on admission.
- Endoscopy demonstrated numerous isolated gastric varices (IGV). Due to the number of varices, endoscopic glue injection could not be performed.
- Patient was referred to IR for opinion. Baseline CECT was advised.

CECT ABDOMEN FINDINGS:

- Pancreas is atrophic with few tiny intraparenchymal calculi and dilated MPD in its entire extent, suggestive of **chronic calcific pancreatitis**.

- **Chronic thrombosis of portal vein and its right and left branches** which are replaced by multiple dilated collaterals along its course s/o **portal cavernoma formation**.

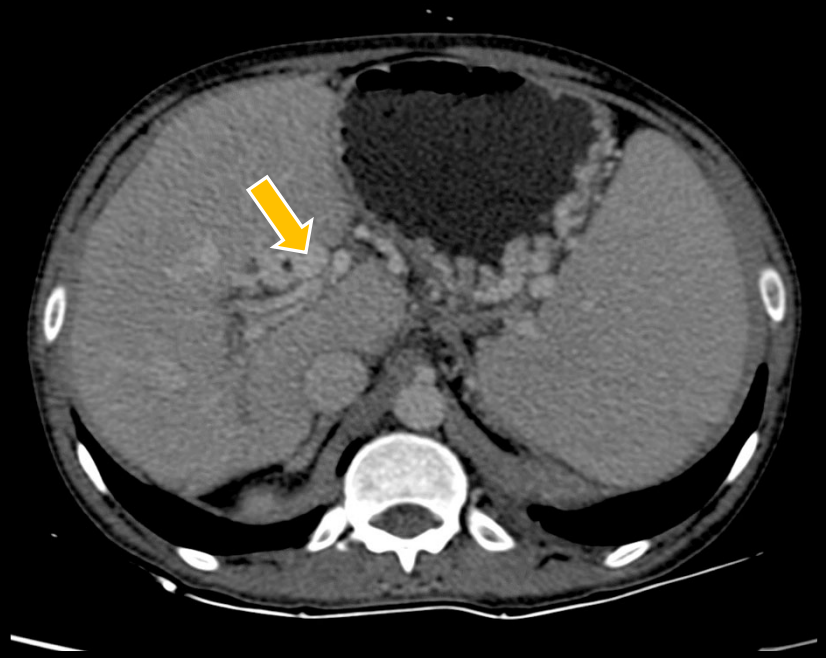
- Portal cavernoma causing minimal mass effect in the form of compression of the CBD with resultant **portal biliopathy**.

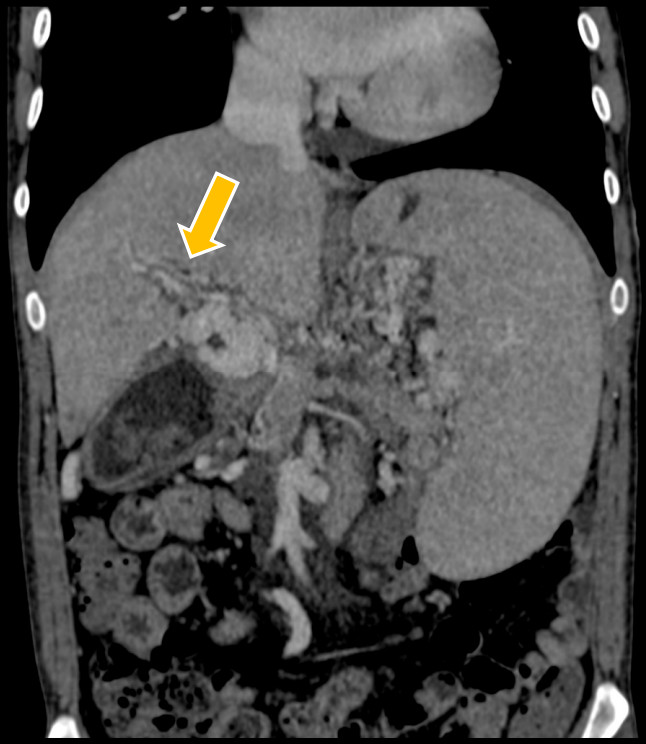
CECT ABDOMEN FINDINGS:

- **Thrombosis of the splenic vein** in entire extent with thrombosis of the proximal SMV. Mid and distal SMV are recanalized via collaterals.

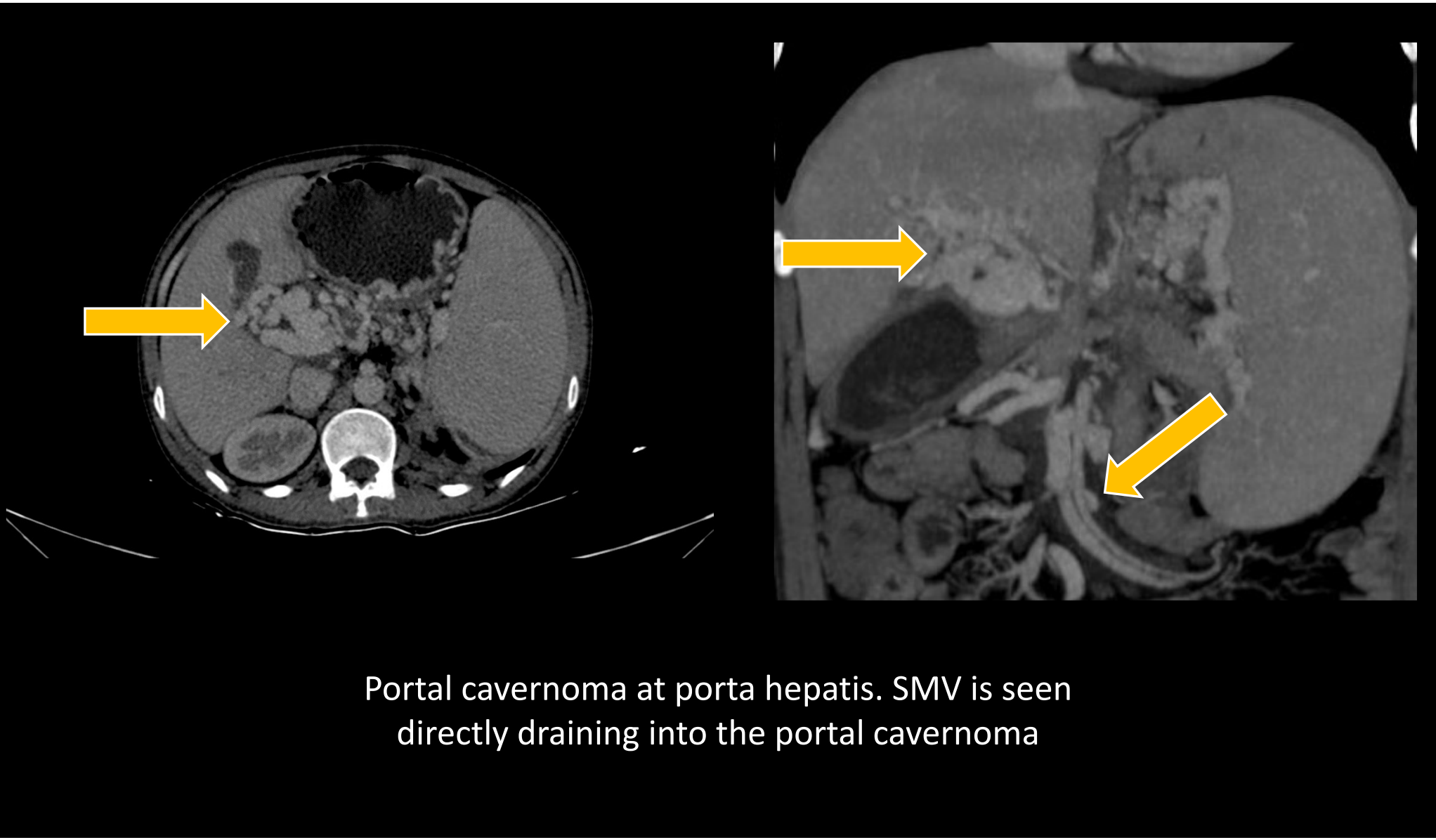
- Multiple tortuous **portosystemic collaterals** including paraumbilical, peri-splenic and intramural gastric varices.

- A 3.7 x 1.8 x 3 cm sized non-enhancing isodense area in the gastric antrum s/o a **hematoma**.

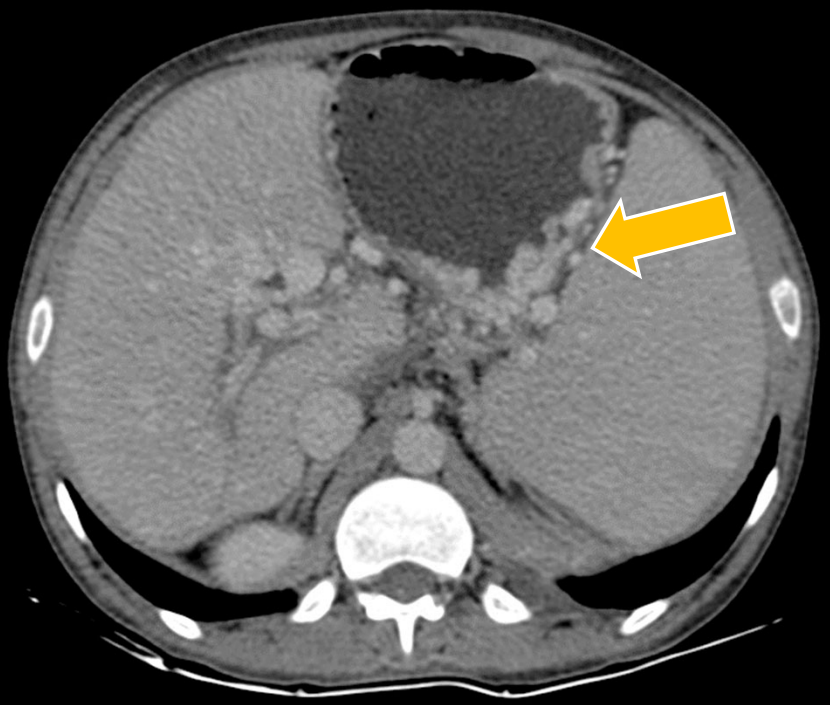




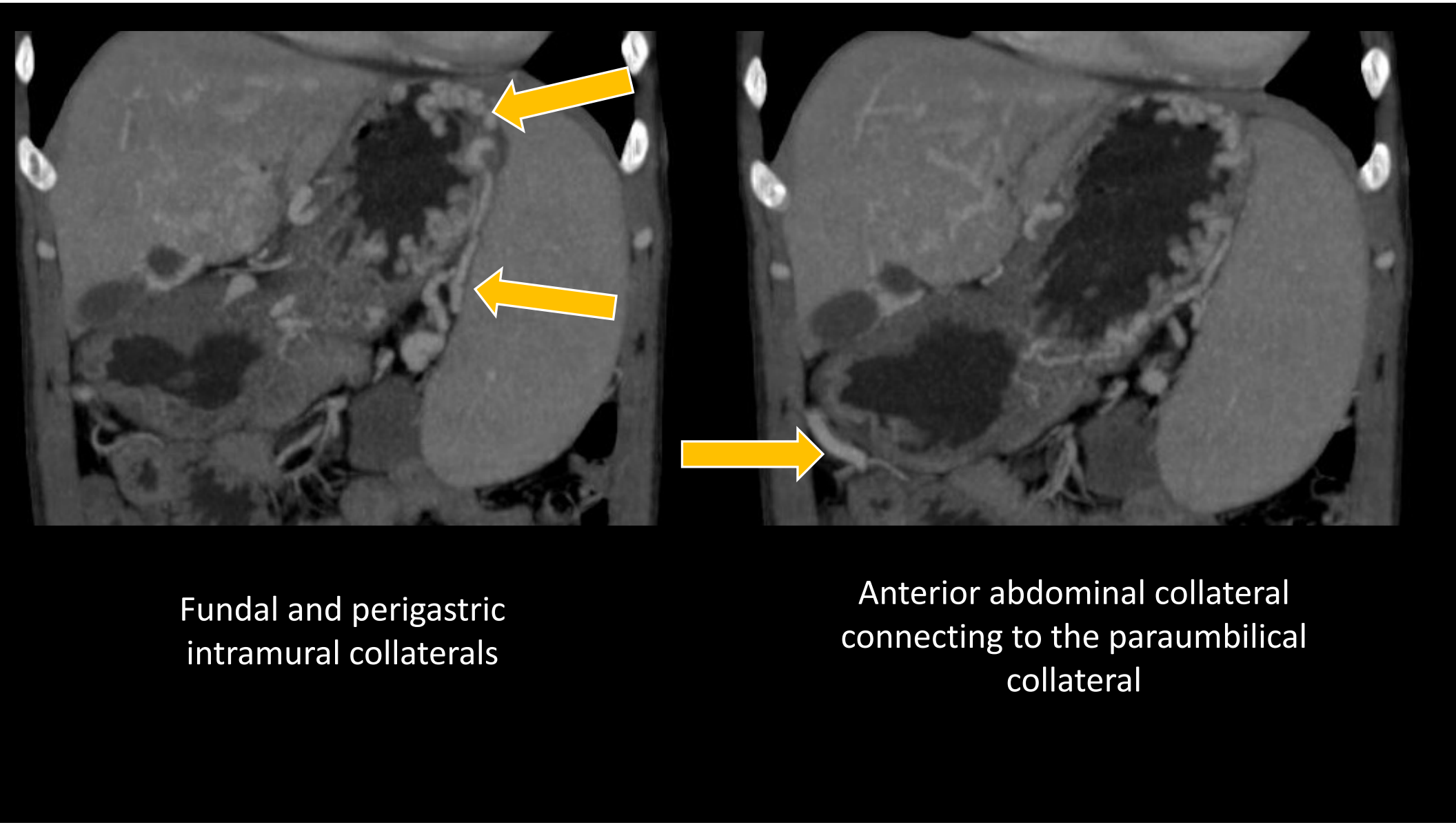
Chronically thrombosed portal veins



Portal cavernoma at porta hepatis. SMV is seen directly draining into the portal cavernoma

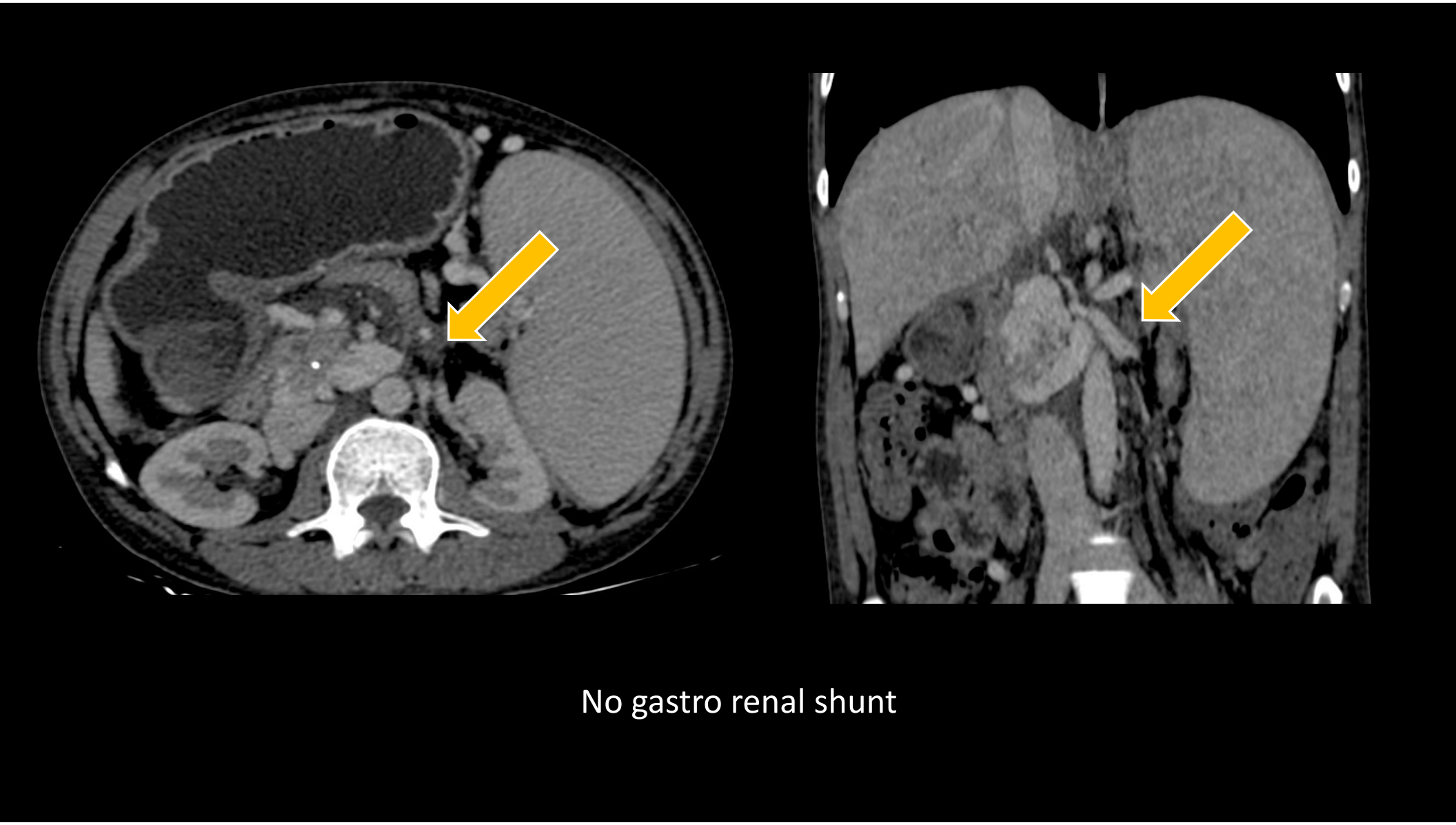


Fundal intramural gastric varices



Fundal and perigastric intramural collaterals

Anterior abdominal collateral connecting to the paraumbilical collateral

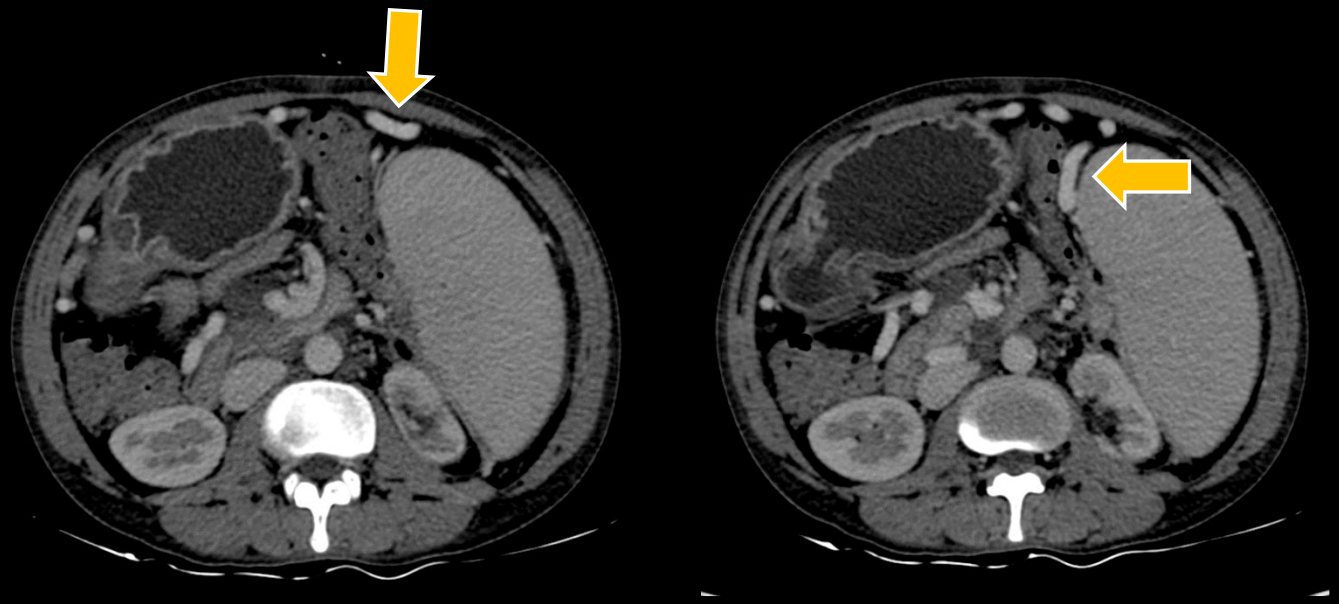


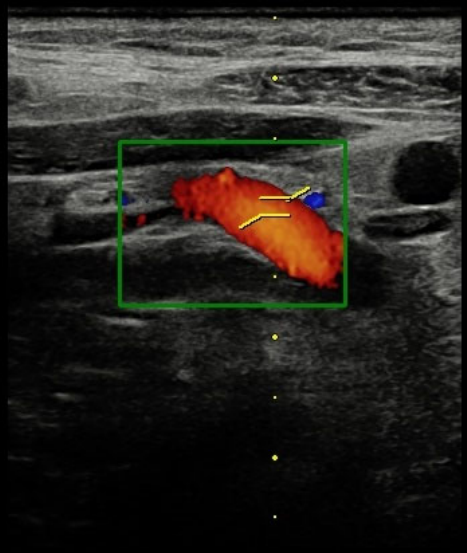
No gastro renal shunt

TREATMENT APPROACH

- CT demonstrated chronically thrombosed portal veins, splenic vein and proximal SMV with large portal cavernoma – TIPS could not be performed.
- Additionally, there was no gastro-renal, lienorenal or gastrocaval shunt.
- Due to the number of gastric varices (IGV), endoscopic glue injection could not be done.
- Consequently, a decision to obtain collateral access was made to attempt plug assisted retrograde transvenous occlusion **(Unconventional PARTO)**
- Possibility for collateral access :
  - Paraumbilical route through a dilated collateral channel in epigastric region
  - Direct portal cavernoma puncture with perigastric collateral cannulation

Collateral access pathway was identified on CT and access approach confirmed on US

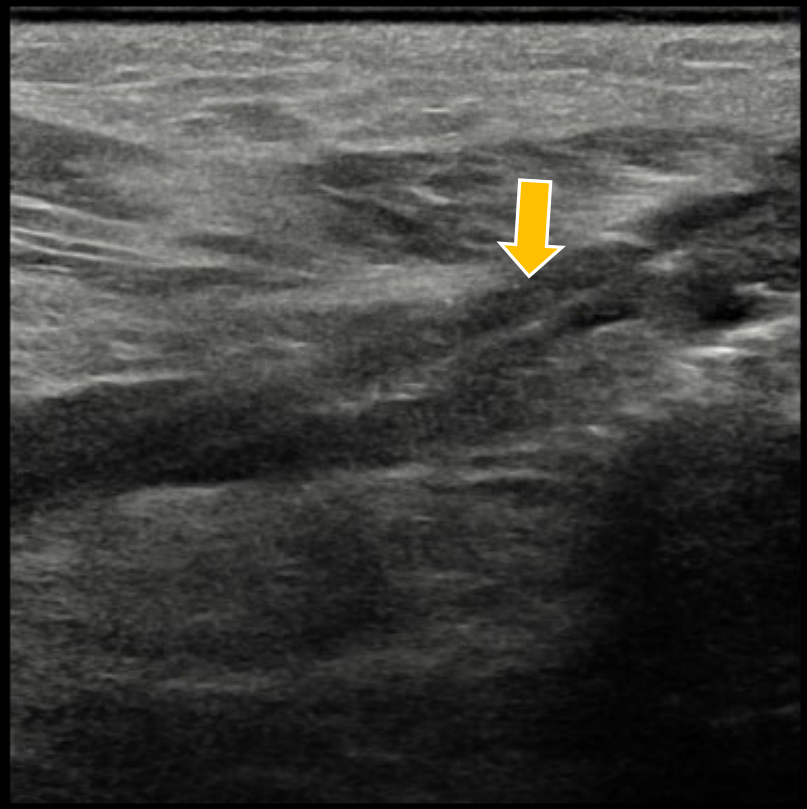




Given the friable nature and pressure within portosystemic collaterals and difficult cannulation of the gastric varices via this route, a decision was made to access the superficial collateral in the paraumbilical region (as opposed to the portal cavernoma) in order to achieve post procedure hemostasis.

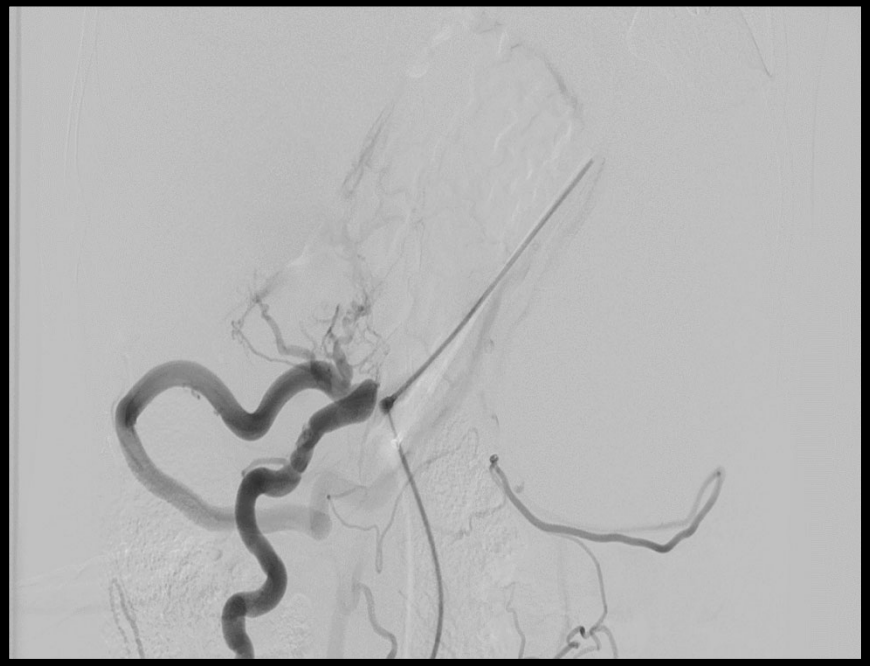
HARDWARE:

- 6 Fr radial access sheath
- 4 Fr Head hunter (H1) catheter
- 0.035” guidewire
- 6 Fr long sheath
- Amplatz stiff guidewire
- 8 mm type 2 vascular plug
- 2.7 Fr microcatheter with microwire
- Gelfoam contrast slurry for embolization

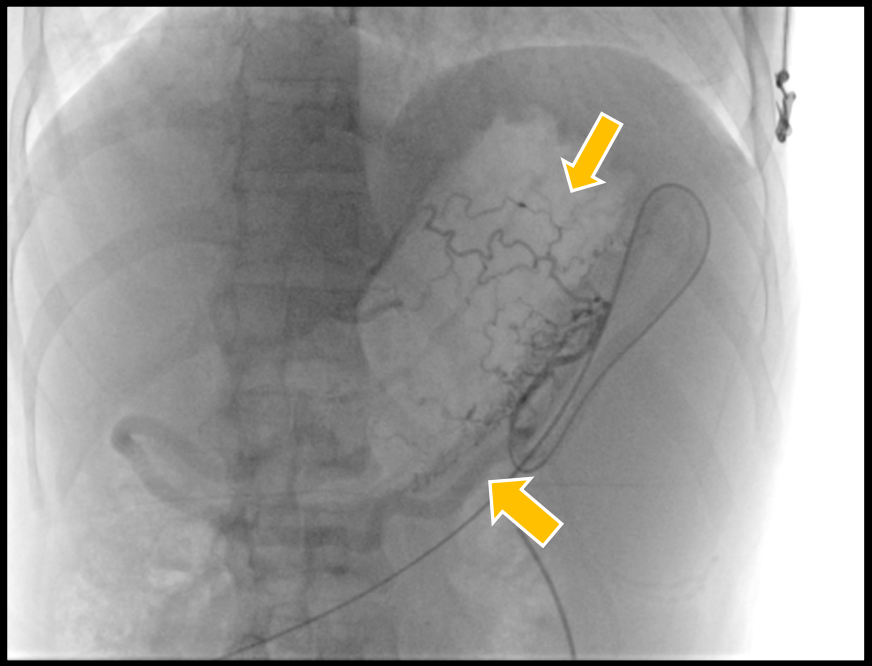


US guided access was obtained and 6Fr sheath inserted (arrow)

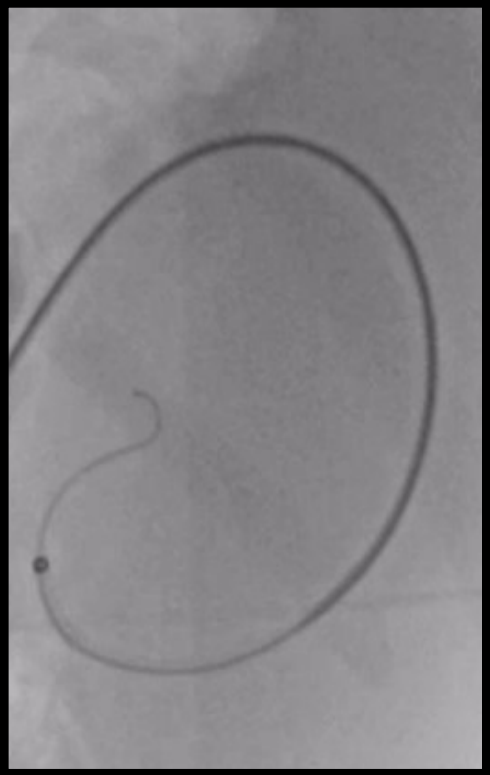
Initial run after gaining access demonstrates suspected antegrade flow from the gastric varices into the paraumbilical collateral (arrow).

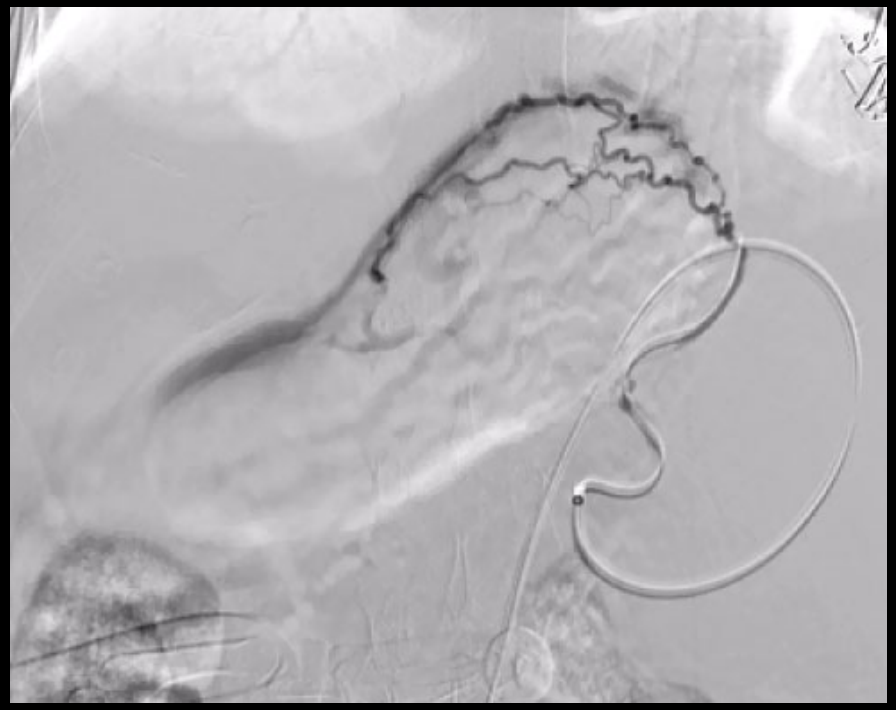


The paraumbilical collateral is seen eventually draining into the portal cavernoma (arrow).



Selective retrograde cannulation of this collateral was performed using 0.035” guidewire and 4F H1 diagnostic catheter. Drainage of gastric venous plexus into this collateral was confirmed (arrows).





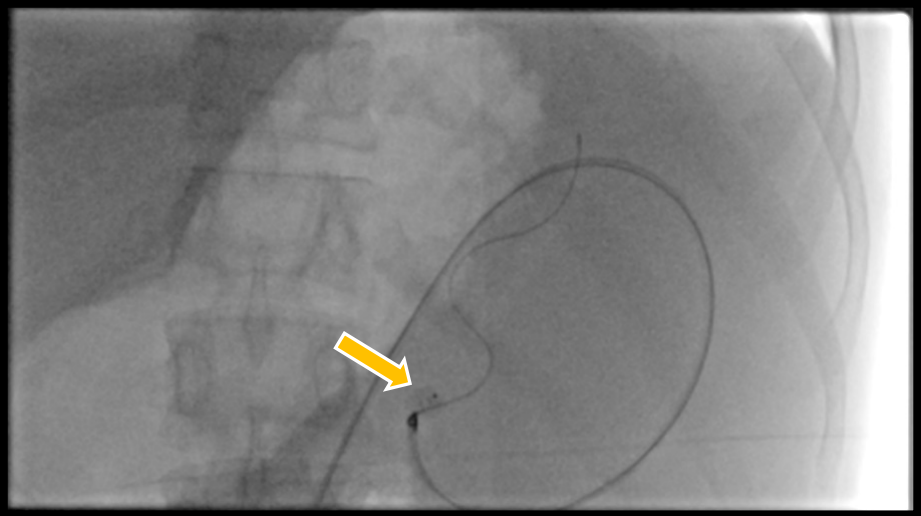
Over stiff guidewire, 6F long Sheath was inserted into previously selectively cannulated vein. Microcatheter was advanced distally. DSA through microcatheter confirmed presence of fundal gastric varices.

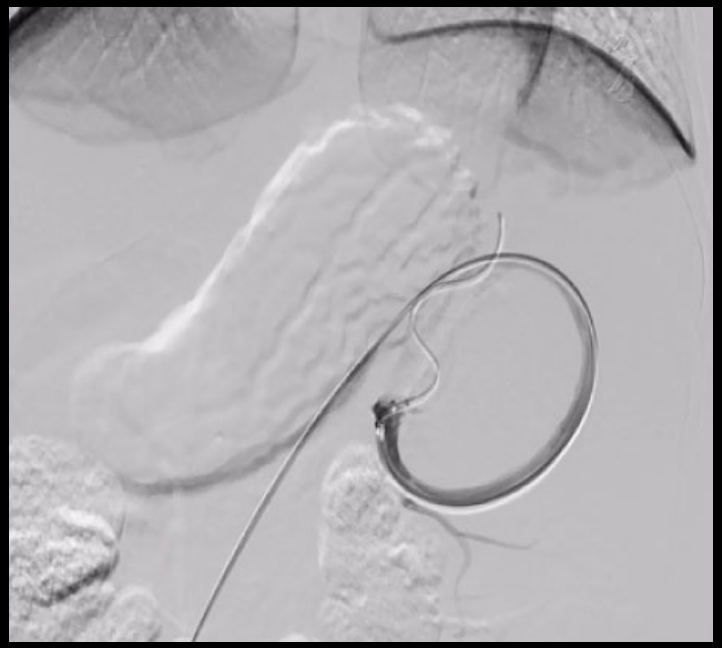
NEXT PLAN OF ACTION:

- PLUG PROXIMALLY
- EMBOLIZE DISTALLY

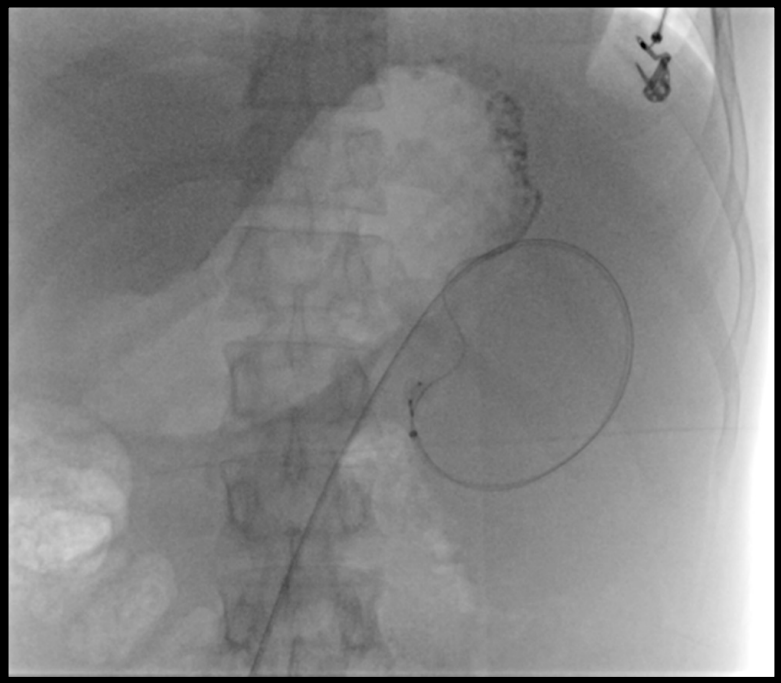
Plan was to perform gelfoam slurry embolization as opposed to using sclerosant to avoid peptic ulceration and further bleeding.

Additionally, NBCA glue embolization could not be performed due to the number of gastric varices.

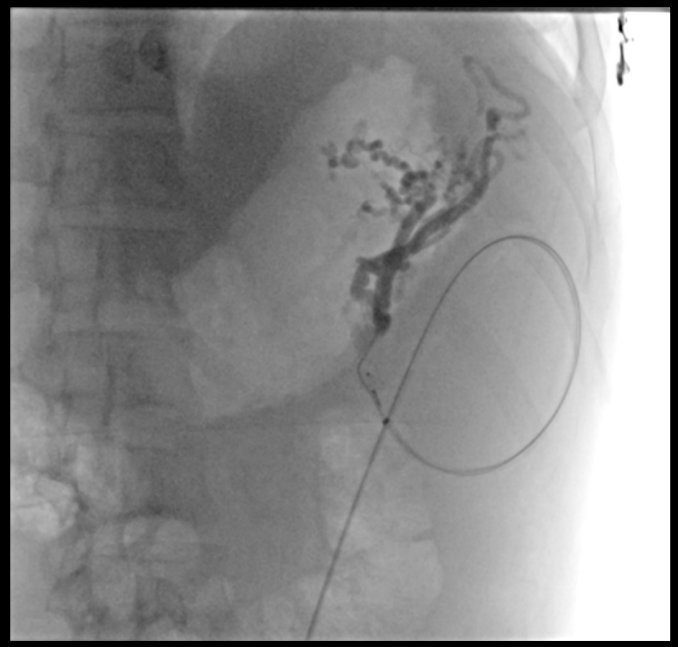


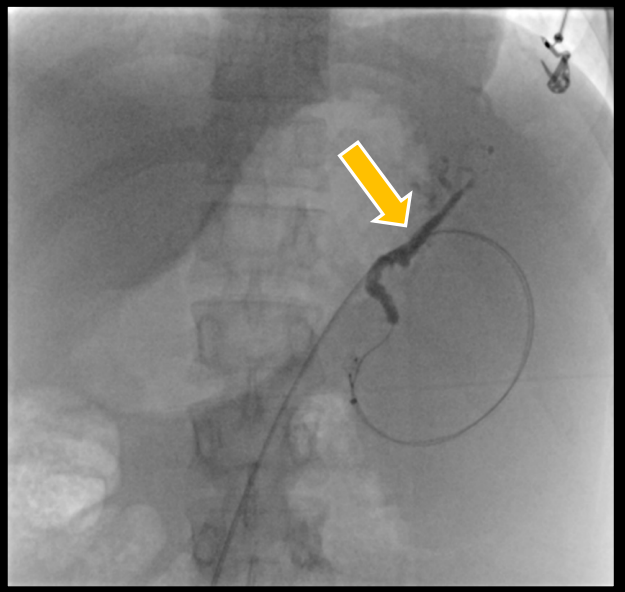


Vascular plug was deployed (arrow). Post deployment check run through the long sheath reveals no forward flow across the plug confirming occlusion of the vein.



Gelfoam slurry embolization was performed.

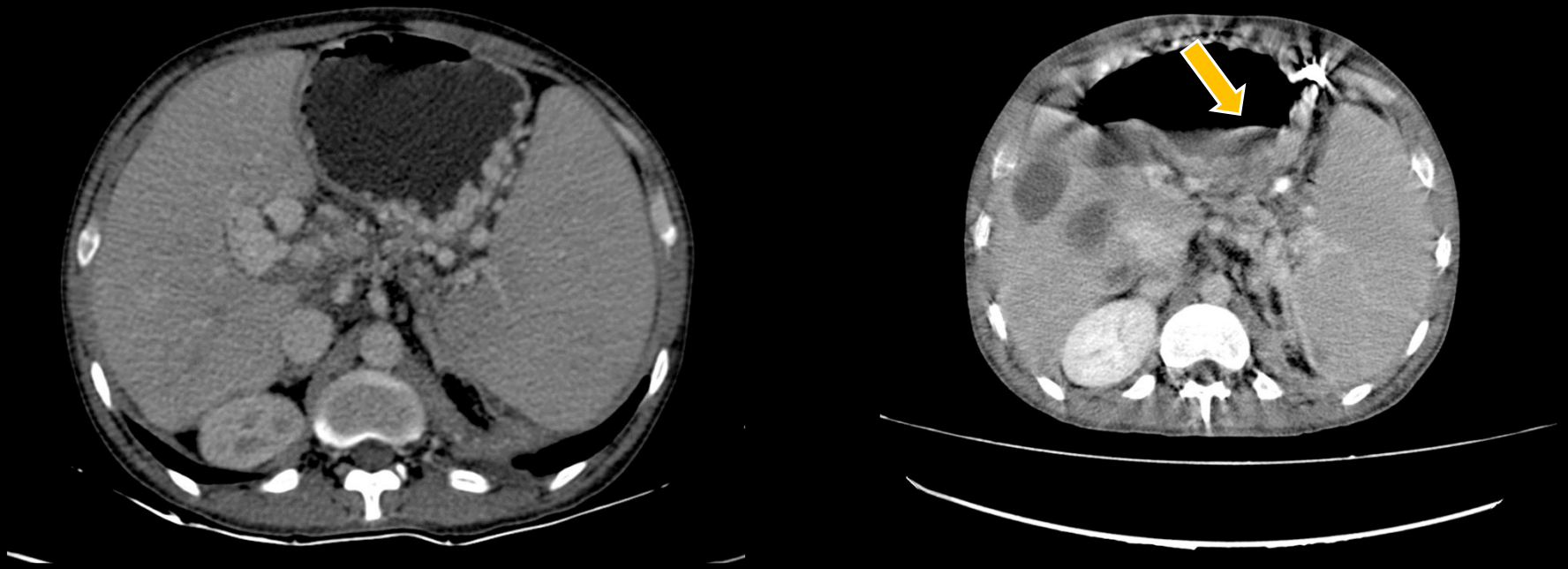




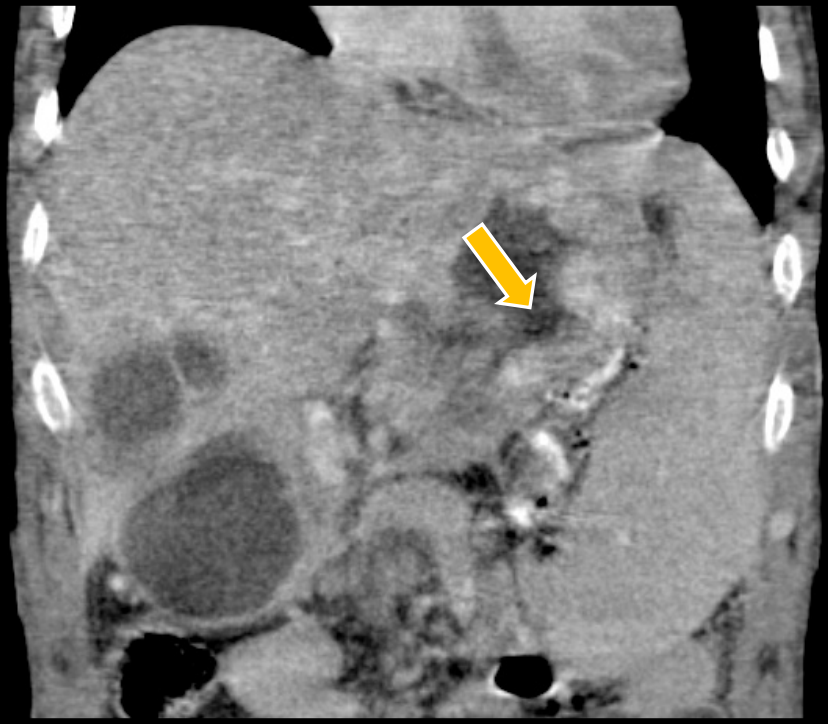
Opening up and communication with deeper intramural gastric collaterals. Stasis was achieved (arrow) and vascular plug was detached.

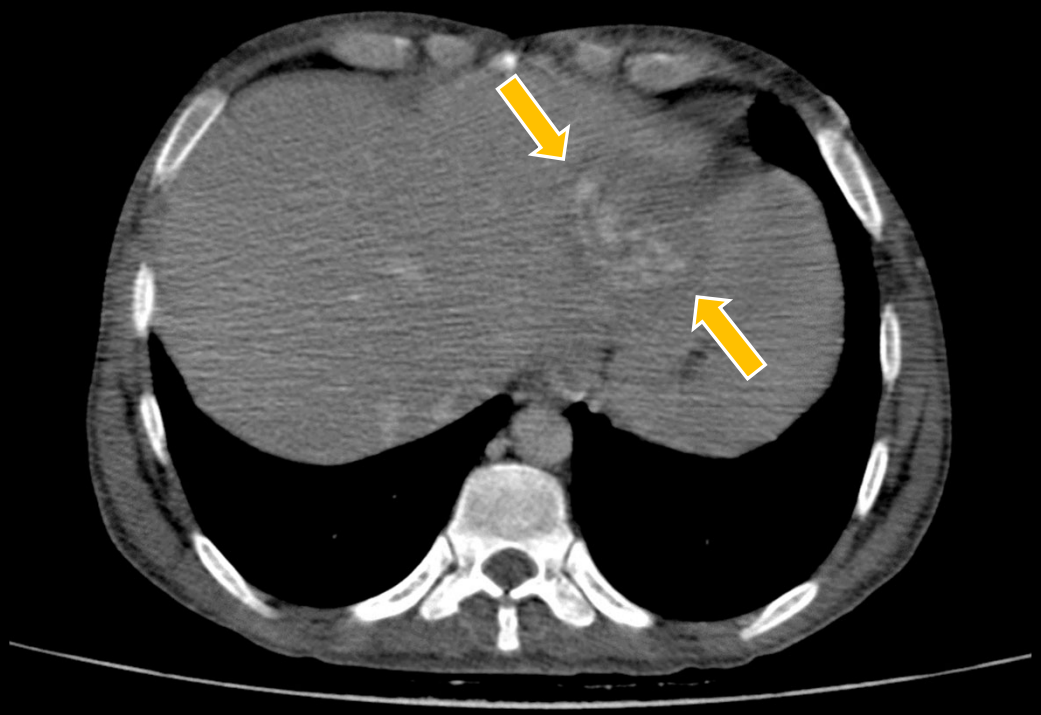
Immediate post procedure complication of leak (arrow) was managed by injection of Glu-lipiodol combination through the sheath.

Comparison of Pre and Post Procedure CT for Gastric Varices:



No enhancement of gastric varices in portal venous phase post embolization (arrow).





Opening up of newer fundal peri-gastric varices which are not intramural

Follow-Up Assessment and Next Steps:

- Post procedure follow up at 1 day, 1 week and 4 weeks.
- Patient had mild hemoperitoneum post procedure (~50cc) which did not increase on subsequent US evaluations.
- Patient had 1 recurrent episode of melena immediately after the procedure following which symptoms did not recur.
- Patient did not have any further Hb drop on subsequent monitoring.
- Plan: **Partial splenic artery embolization** to further reduce portal pressure and relieve portal hypertension.

Thank You !