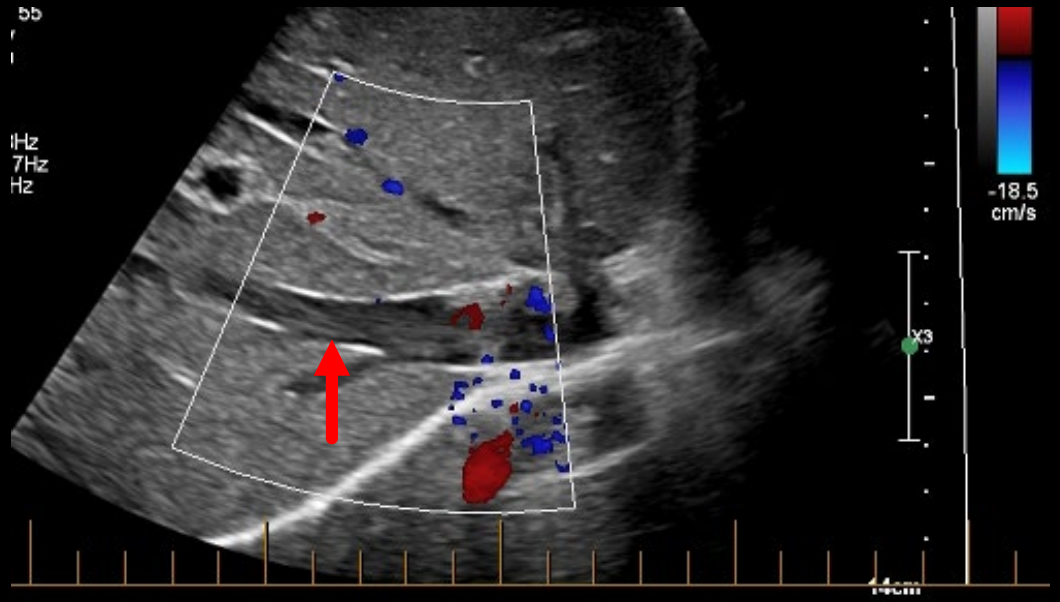
CAIR Case of the Month

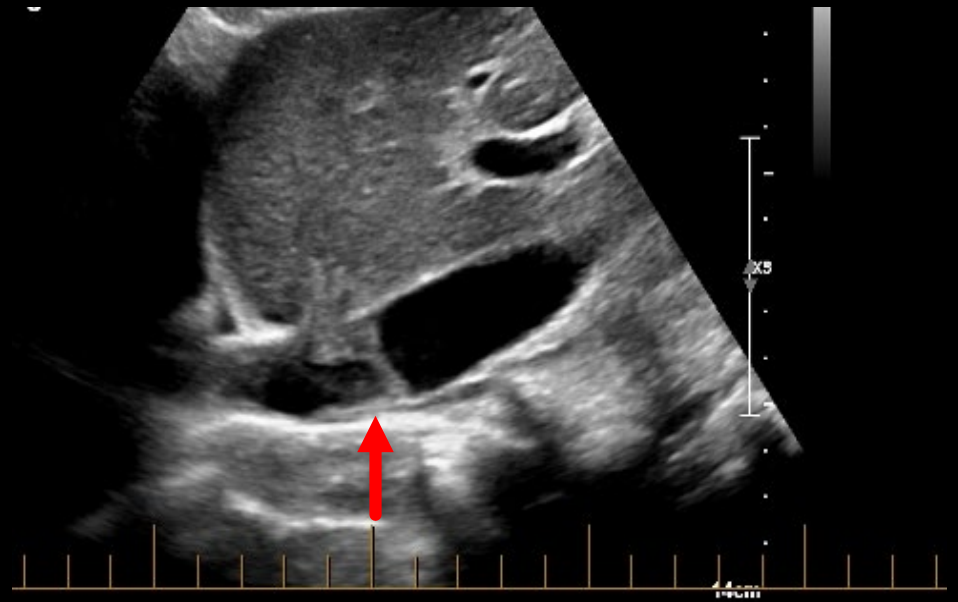
Case Courtesy of Dr. A. Shrivastata

McGill University

CLINICAL HISTORY

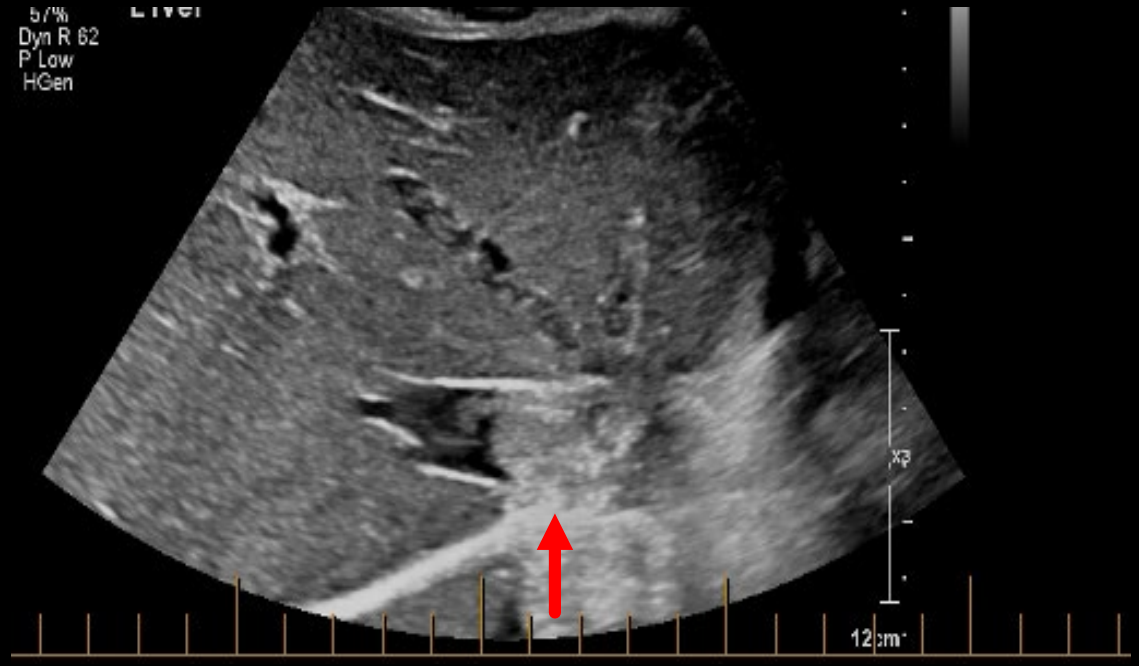
- 24 year old male presenting with progressive abdominal pain
  - History of anabolic steroid use

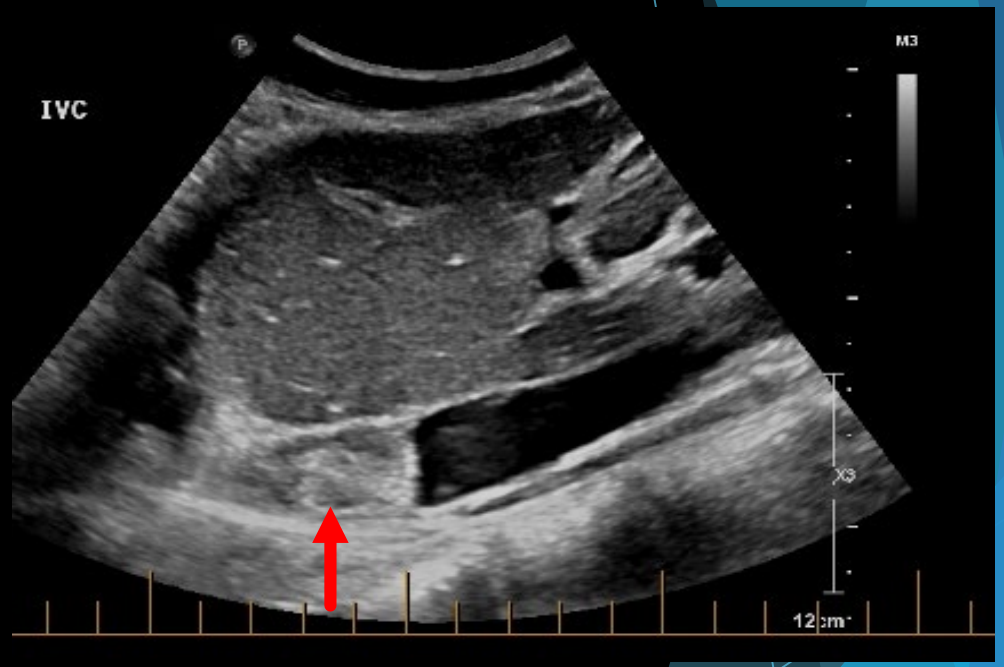




- Thrombosis in hepatic veins and IVC
- Initially treated with Fragmin 12,500 units sc daily

FOLLOW UP ULTRASOUND AFTER 1 WEEK





Progression of thrombus

- After few days → worsening of symptoms with increasing abdominal pain, hypotension and jaundice
- Also developed leg swelling and was unable to walk

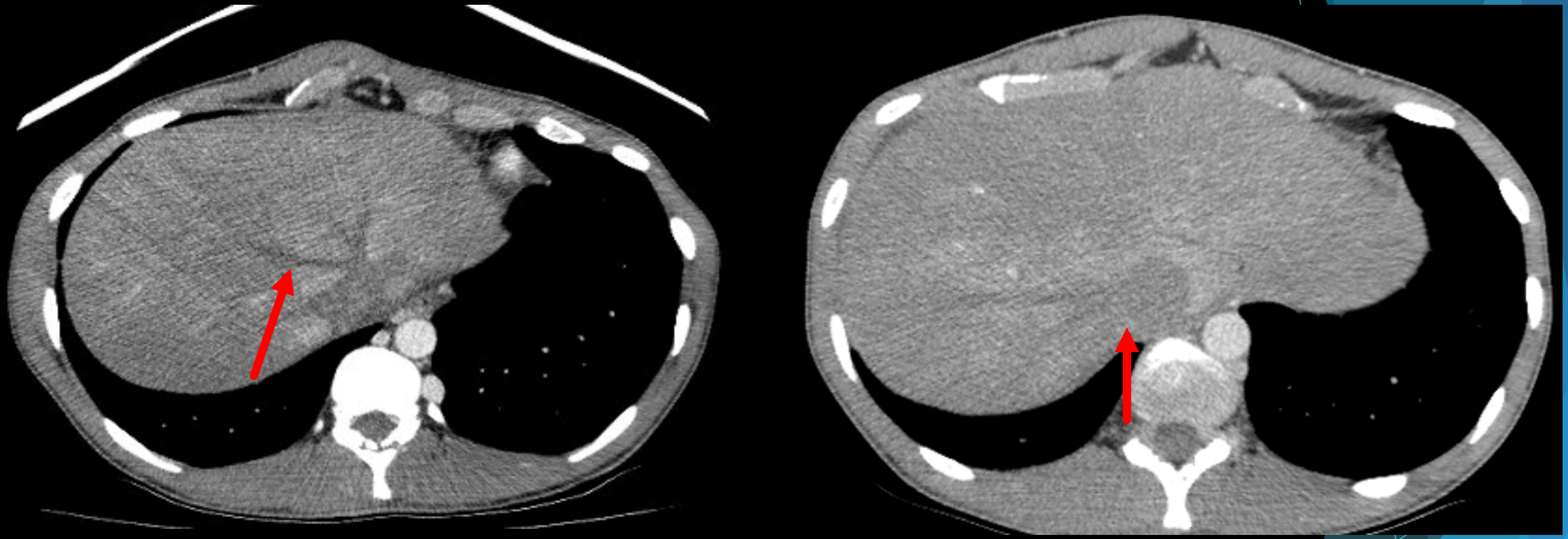
  Dx → hepatic failure

- Develop neurological symptoms

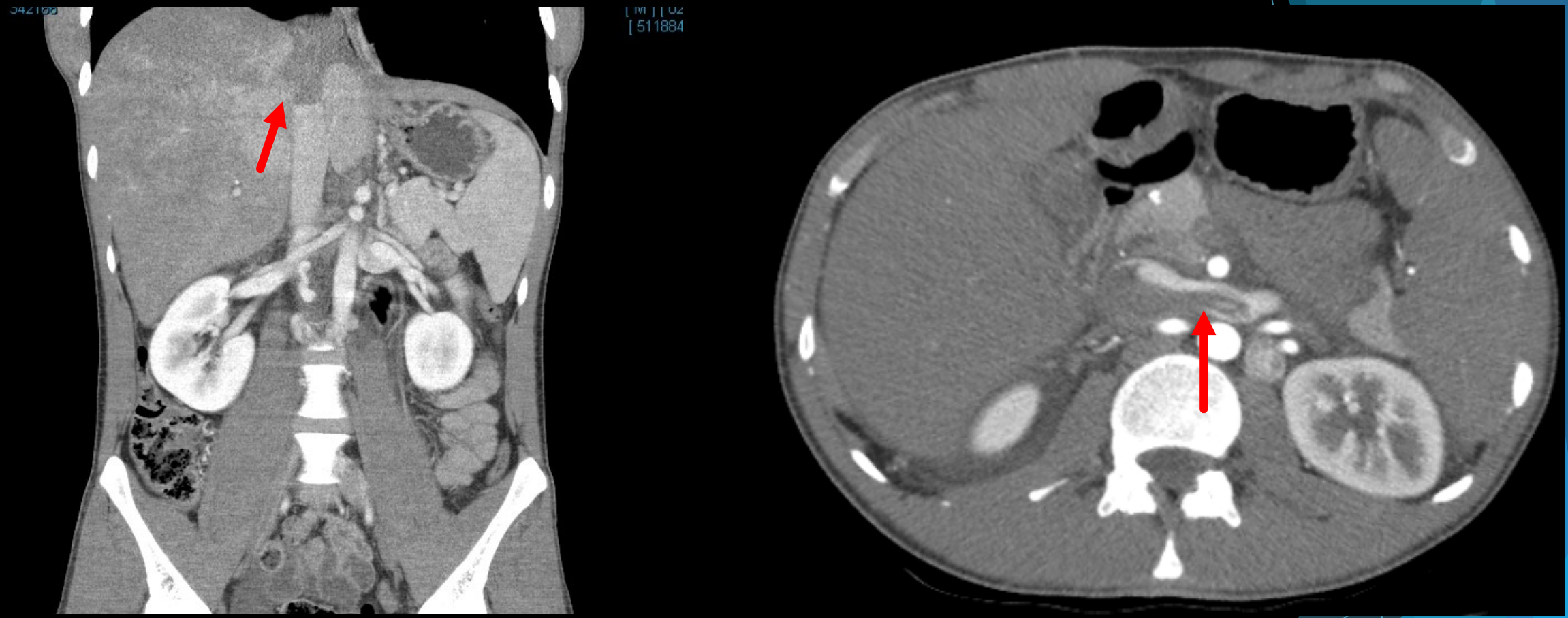
  Dx → transient ischemia attack (TIA)

- Echocardiogram → PFO

CECT OF ABDOMEN



Thrombosis of hepatic veins and IVC



Progression of the thrombus into the IVC and left renal veins

CLINICAL AND LABORATORY EXAMINATION AT THE DAY OF PROCEDURE

- RR: 20
- HR: 101
- BP: 117/81
- Temp: 36.5
- SpO2: 100
- Abdomen:
  - soft, non-tender
  - no peritoneal signs

Laboratory values	
PLT	233
WBC	6.0
BIL	51
ALT	347
ALP	85
INR	2.0
HB	128
PT	28

BUDD-CHIARI

Options?

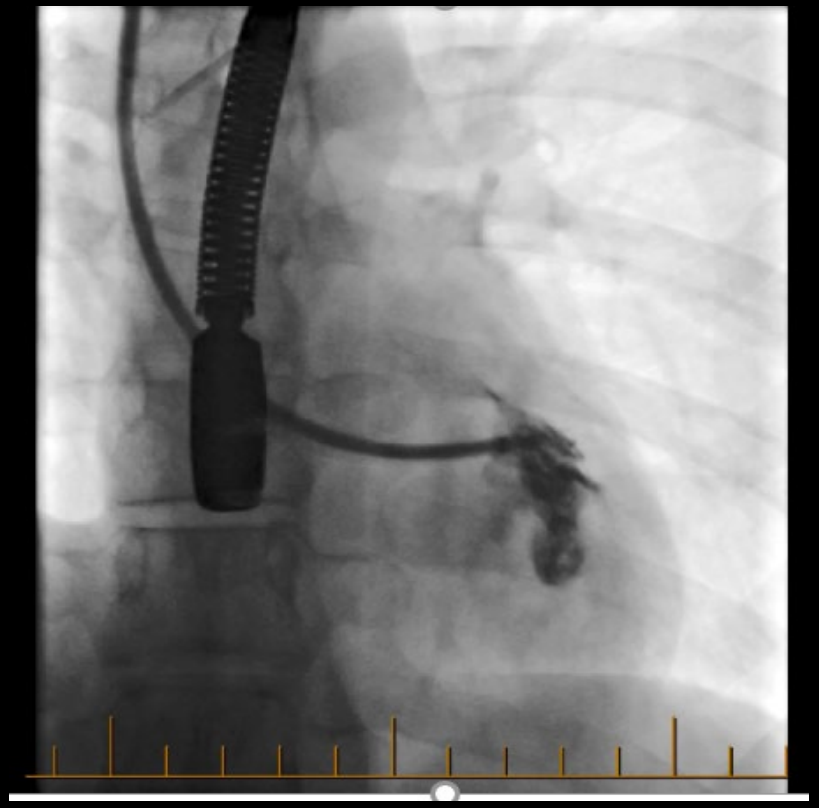
- Hepatic vein recanalization
- TIPS
- DIPS
- Liver Transplant

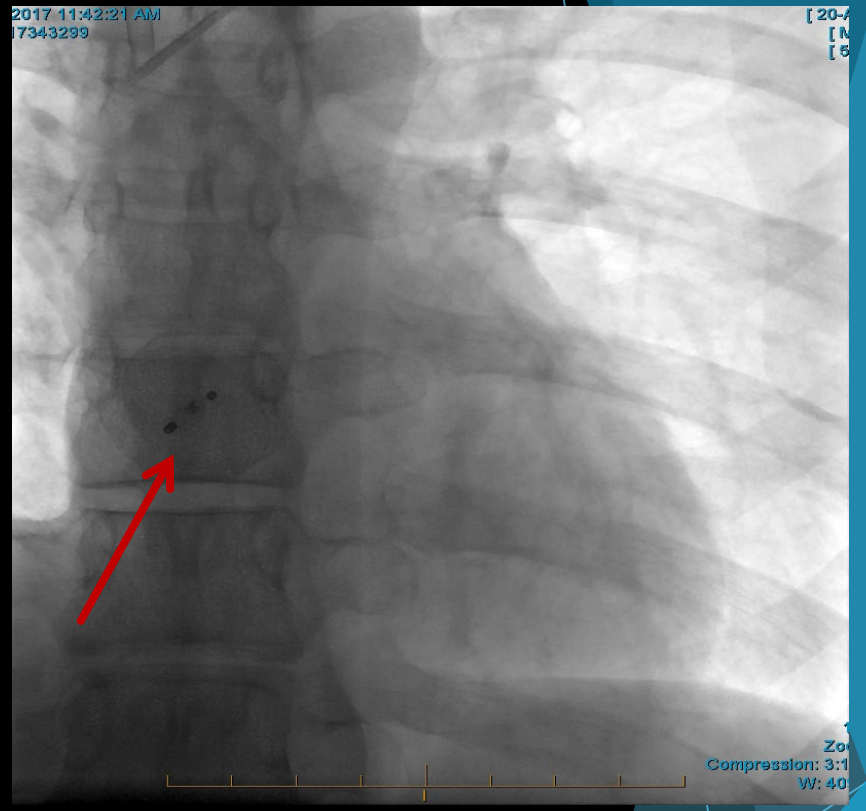
- What about the PFO?

COMBINED INTERVENTIONAL CARDIOLOGY AND IR PROCEDURE

- Cardiologist:
  - PFO CLOSURE
- IR:
  - IVC lysis & recanalization
  - Hepatic vein recanalization
  - TIPS/DIPS

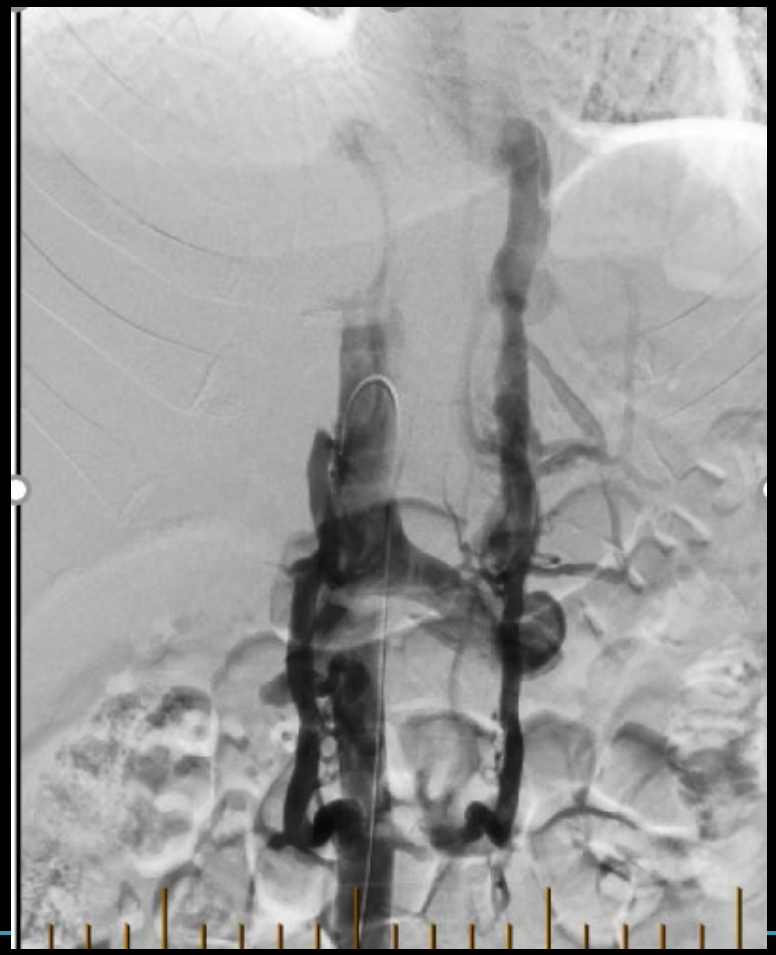
STEP 1 – PFO CLOSURE

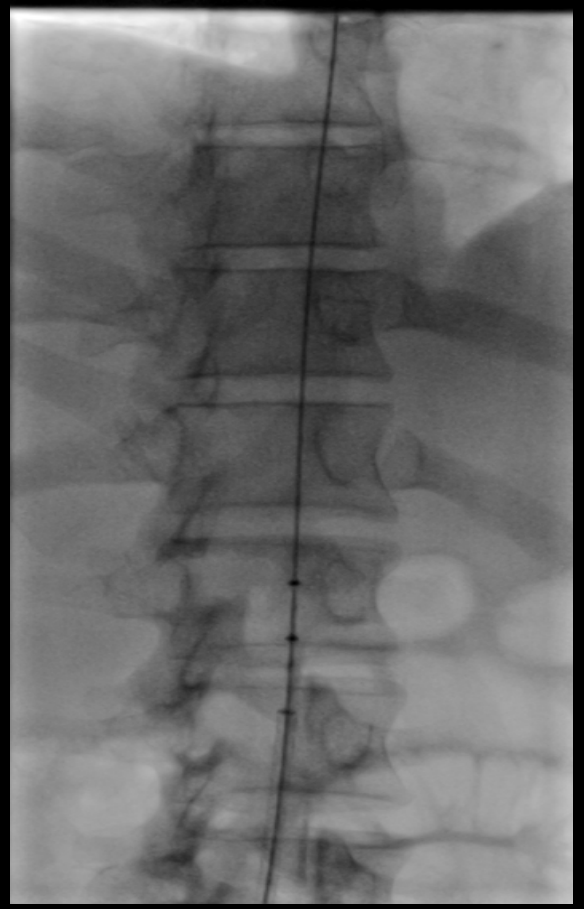




- Right IJ access
- TEE guided closure of the PFO with ASD closure device (25 mm)

STEP 2 – IVC THROMBOLYSIS



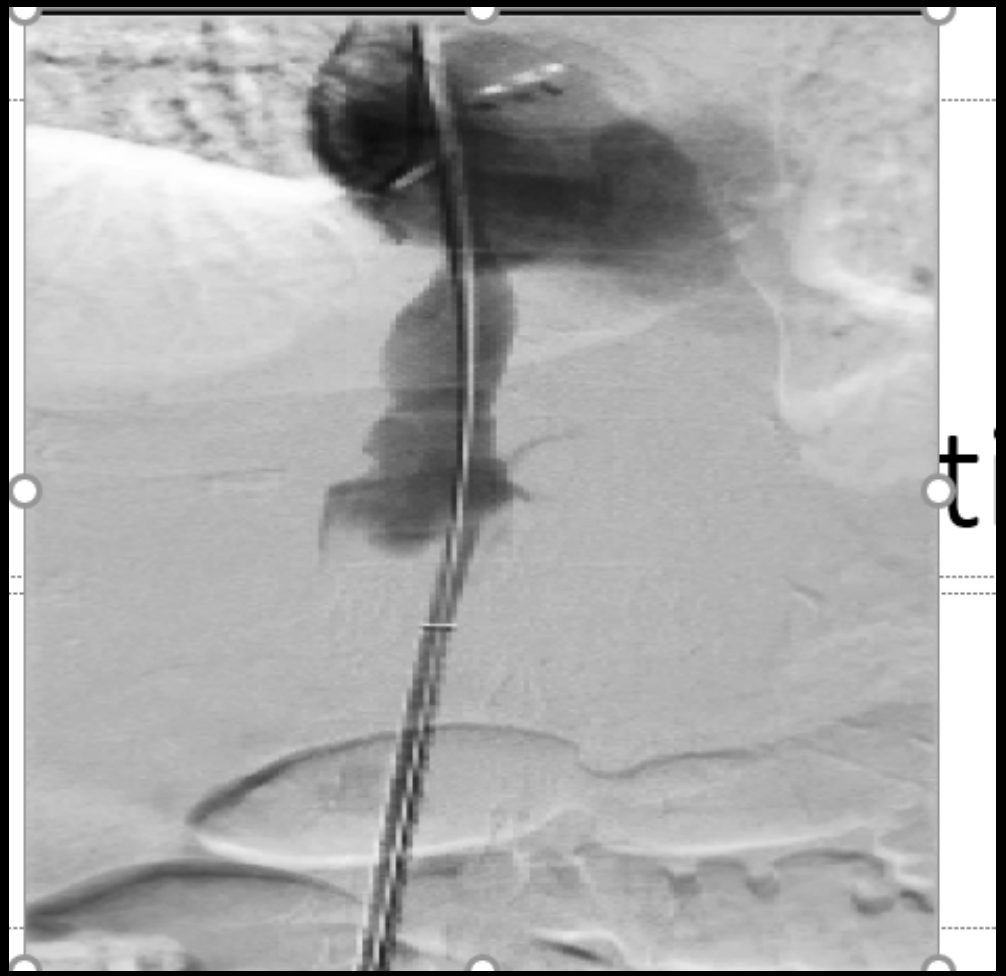


- Right femoral access
- The lower part of the clot (6-7 cm) was soft thrombus and easy to cross
- The upper 4 cm was very hard thrombus requiring a Terumo and CXi catheter

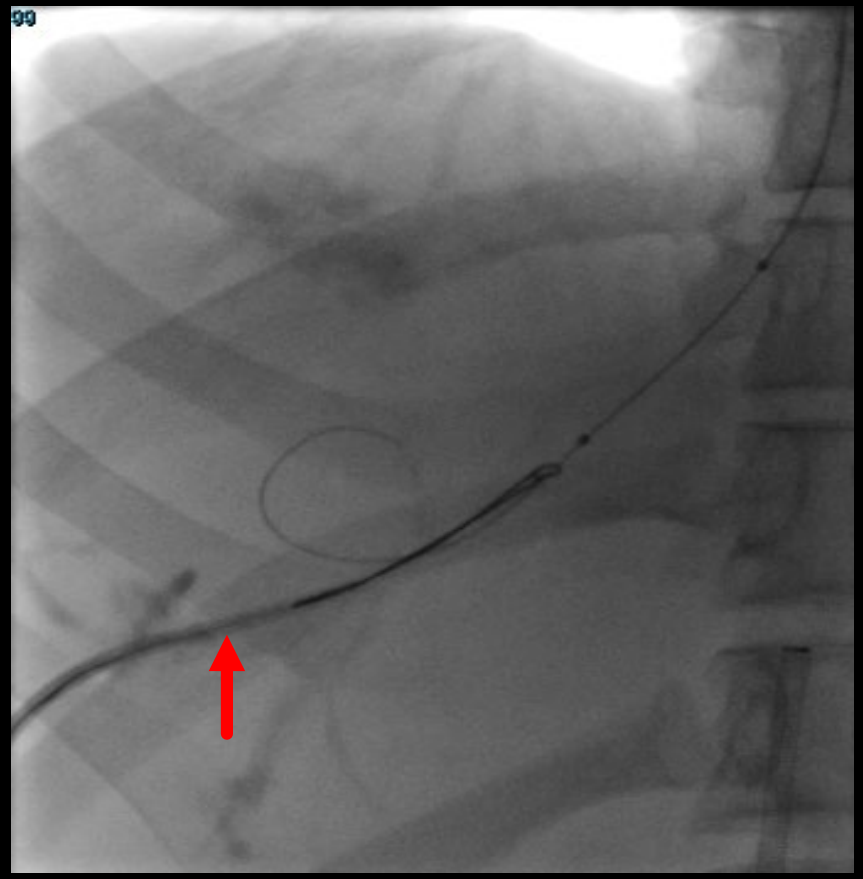
STEP 2 – IVC THROMBOLYSIS

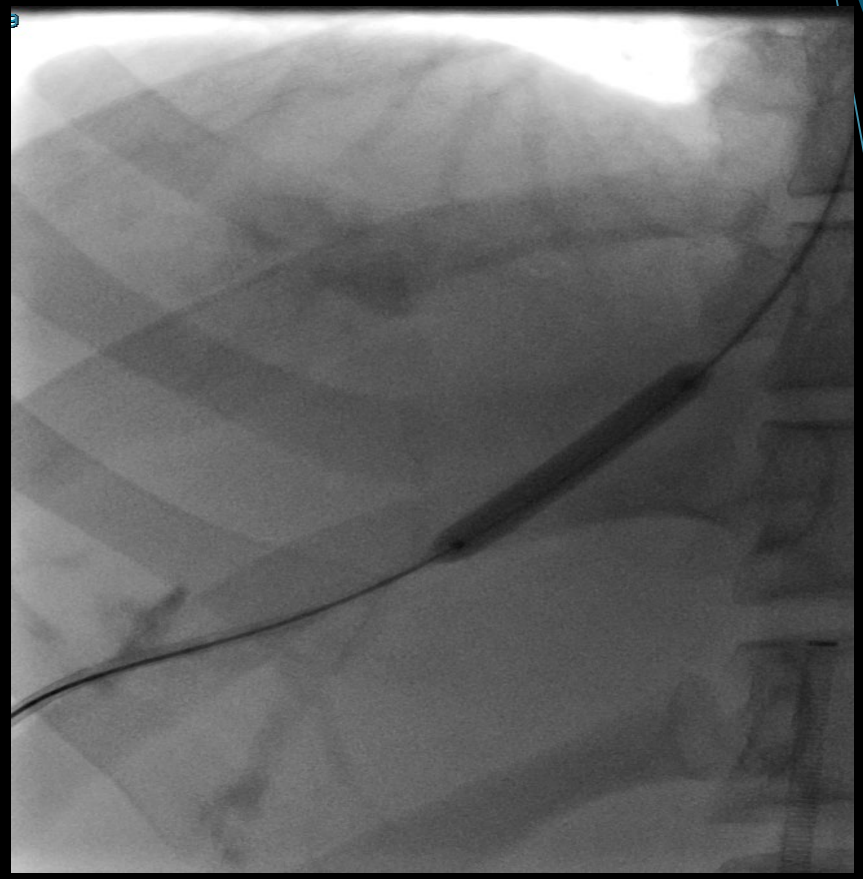
- AngioJet for the lower portion, tPA (10 ml in 40 ml saline)
- Angioplasty of the upper IVC with 12mm →14mm → 16mm balloon

STEP 2 – POST ANGIOPLASTY



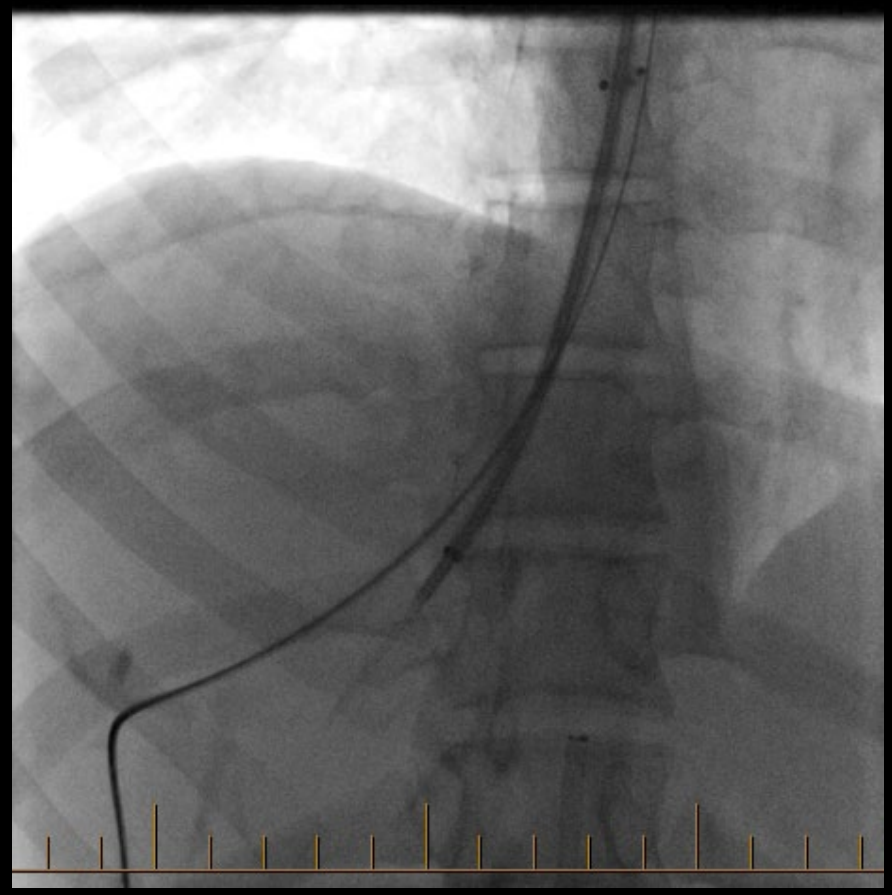
STEP 3 – TIPS





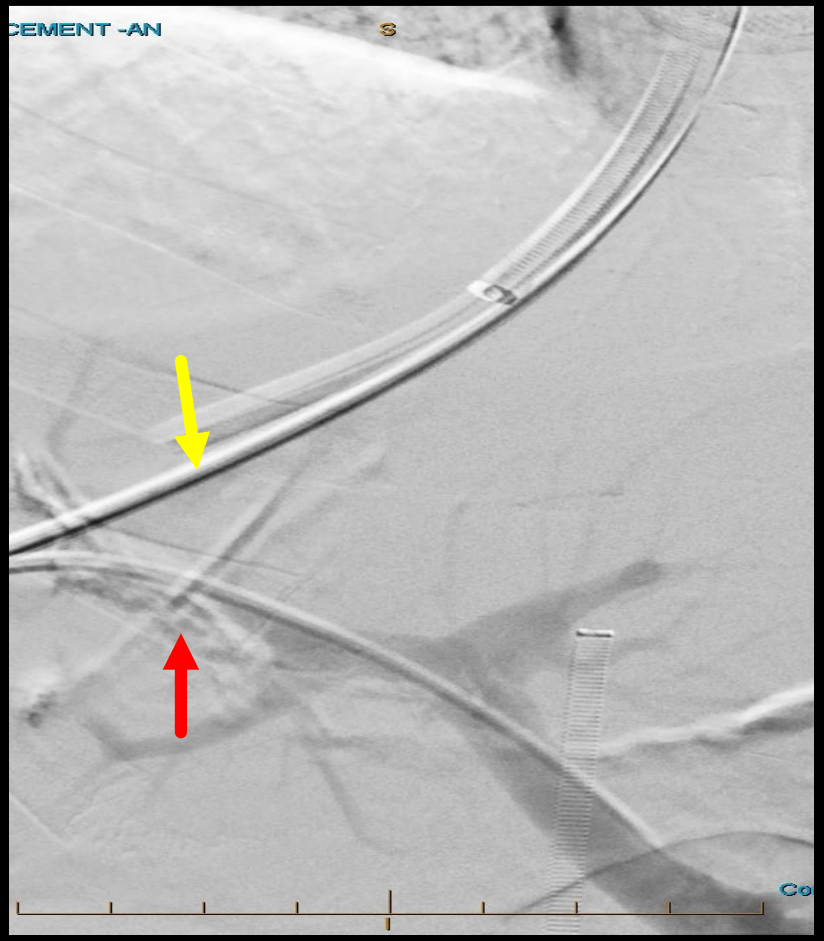
- Could not catheterize the hepatic vein
- Ultrasound puncture of the hepatic vein with a 21 gauge needle (red arrow showing RHV)
- Snaring of the wire from the jugular approach

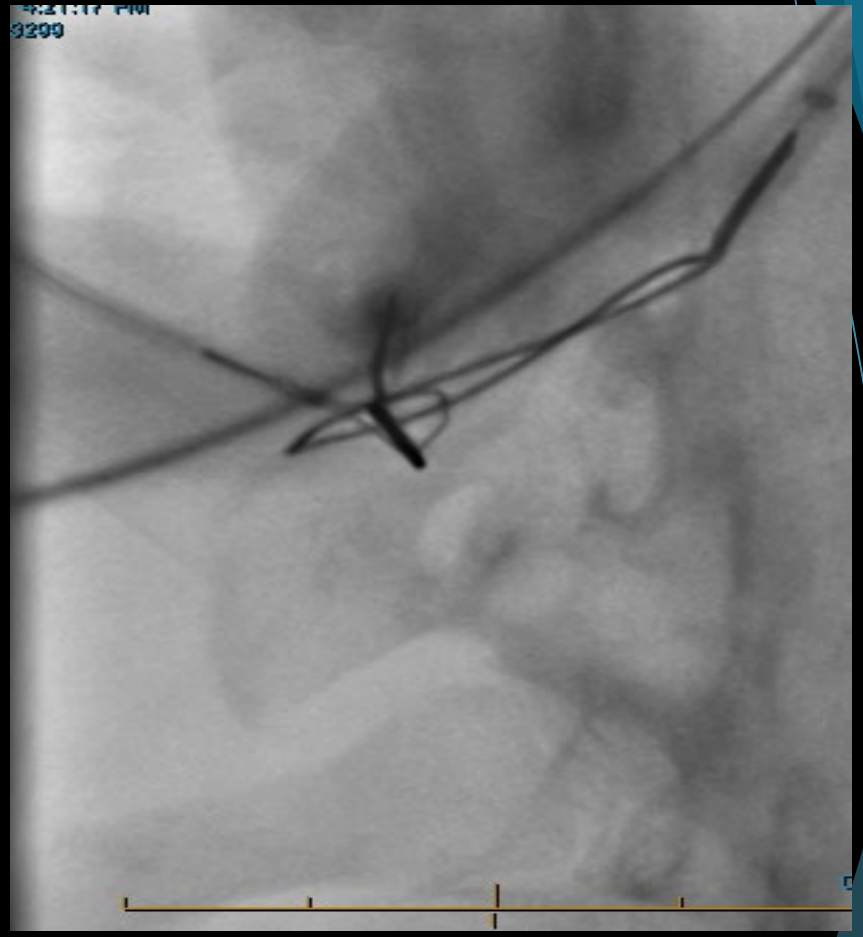
STEP 3 – TIPS



Failed to puncture the PV with a regular TIPS needle

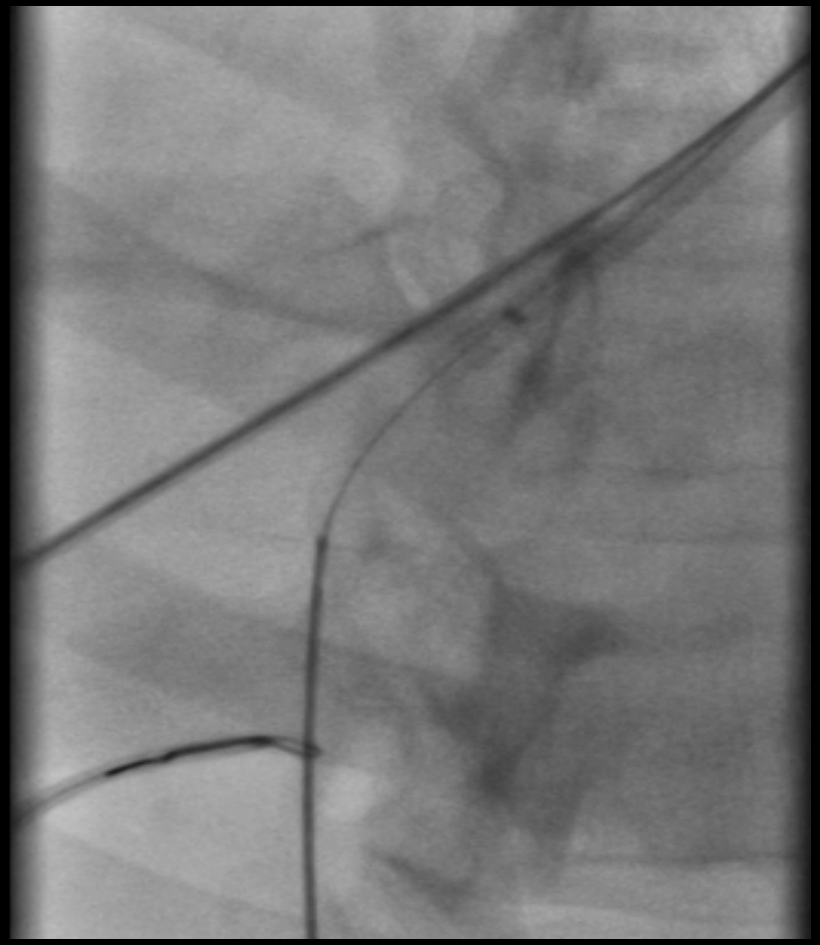
STEP 3 – TIPS

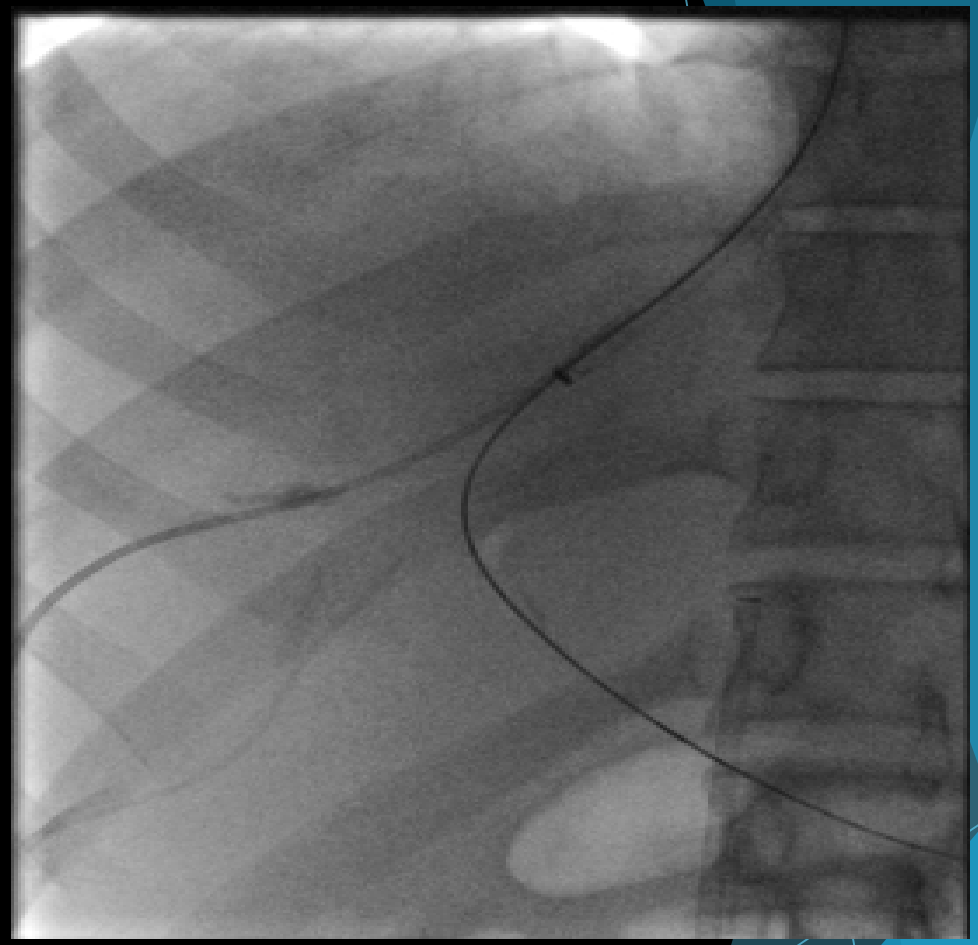




- Puncture of the PV + use of gunsight technique with a snare in the RPV and RHV
  - Red arrow (PORTAL VEIN)
  - Yellow arrow (Hepatic VEIN)

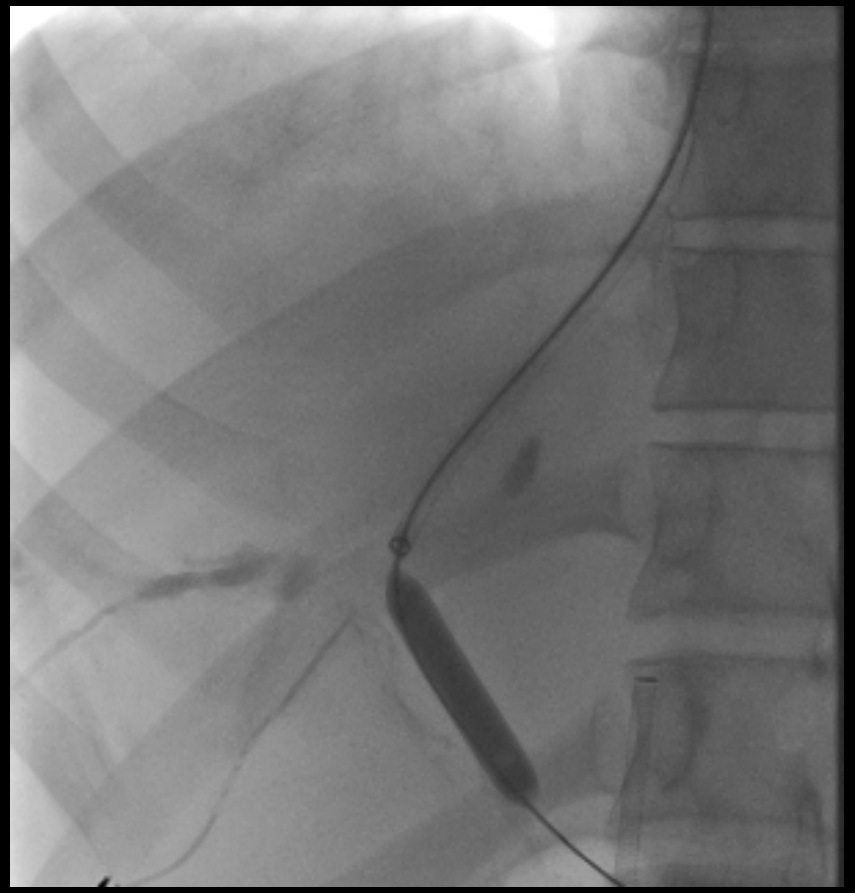
STEP 3 – TIPS

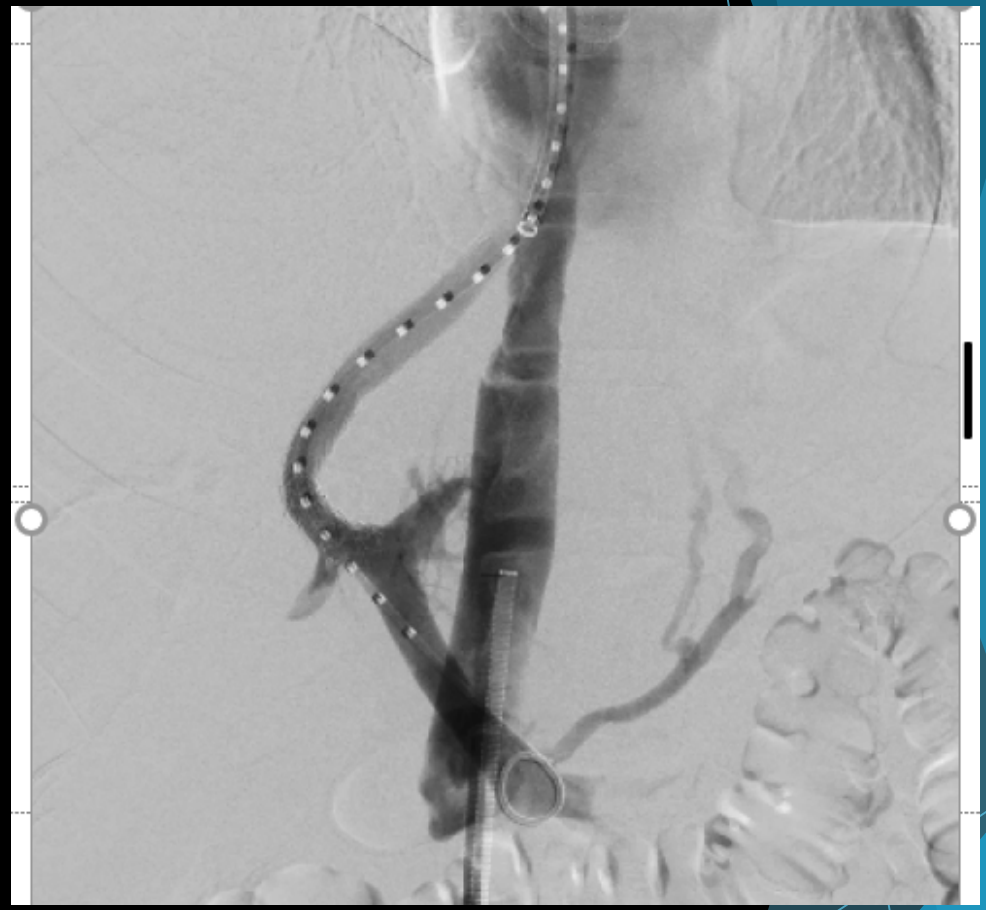




Puncture of the PV + use of gunsight technique with a snare in the RPV and RHV

STEP 3 – TIPS



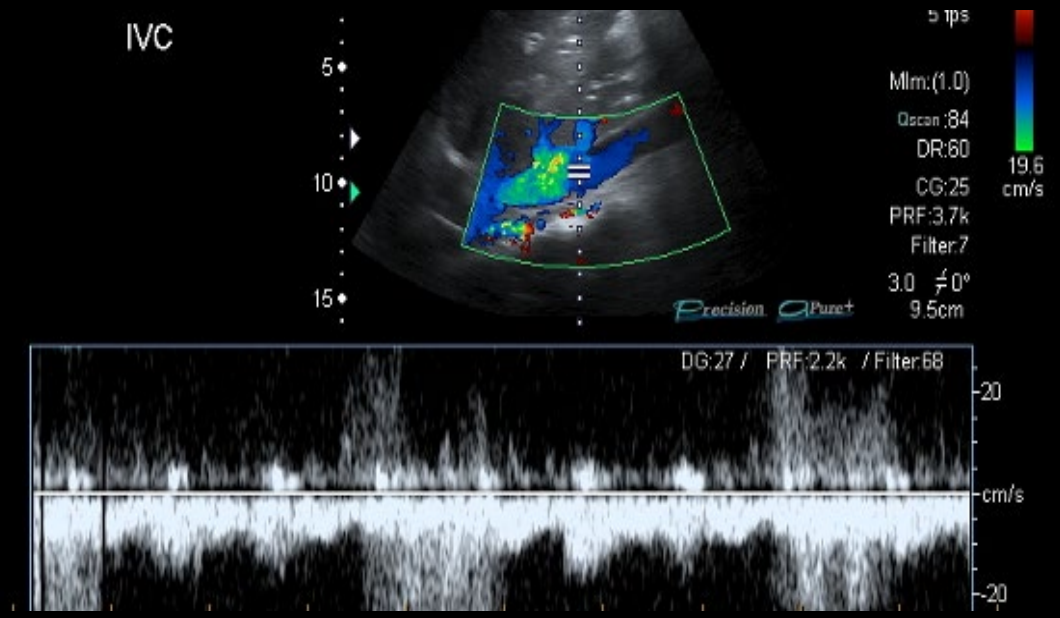


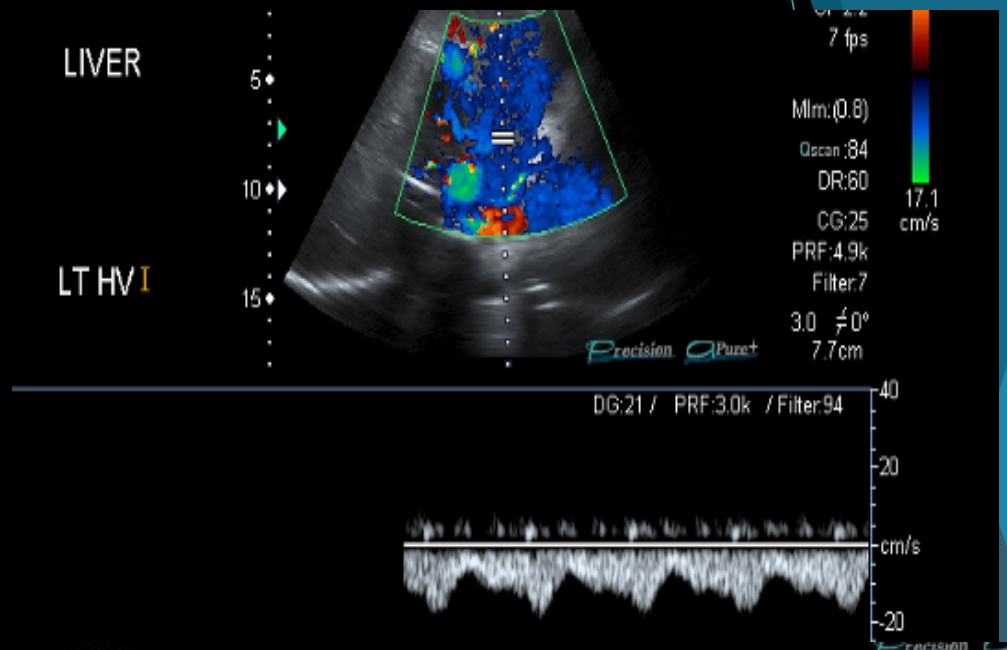
- Angioplasty of tract
- Good flow in IVC and TIPS stent

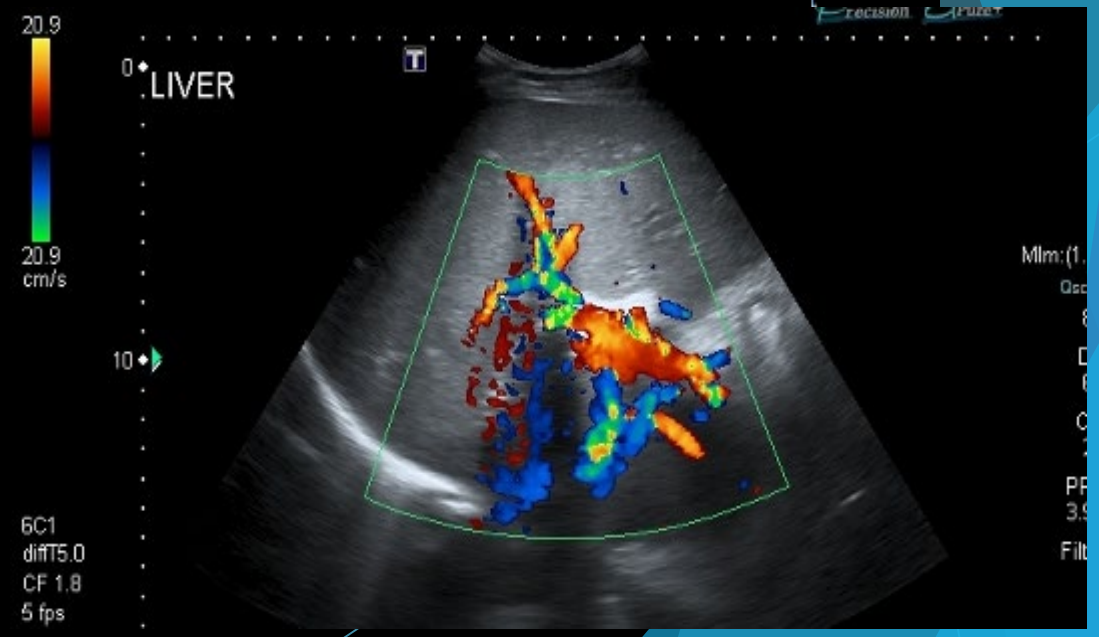
FOLLOW UP OF LAB PARAMETERS

BIL	ALT	ALP	PT	INR
51	347	134	28	2
28	291	99	22	1.7
15	36	83	16	1.2

FOLLOW UP AFTER 1 WEEK

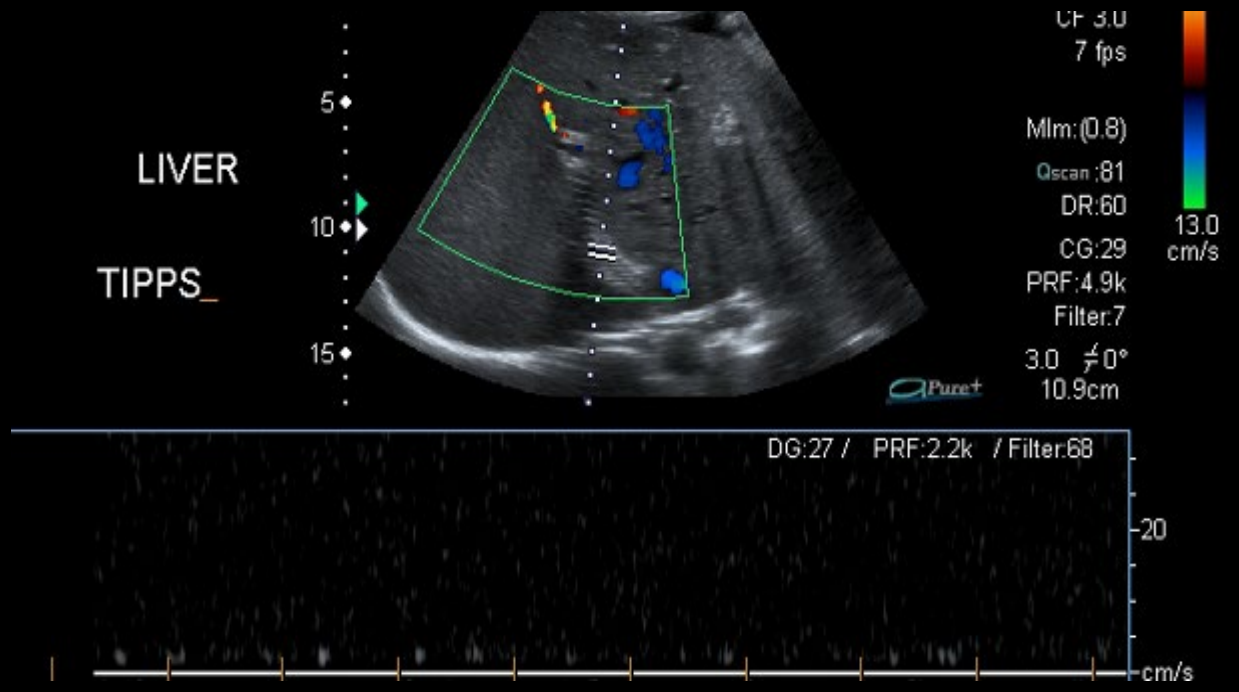


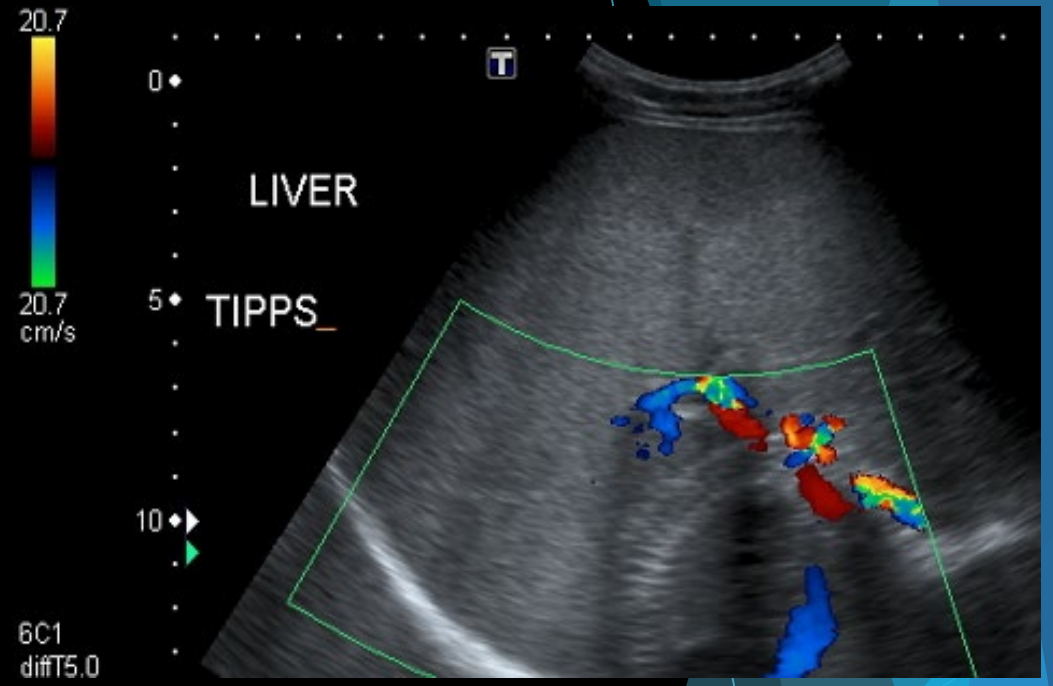




US images show good flow in IVC, HV, and PV

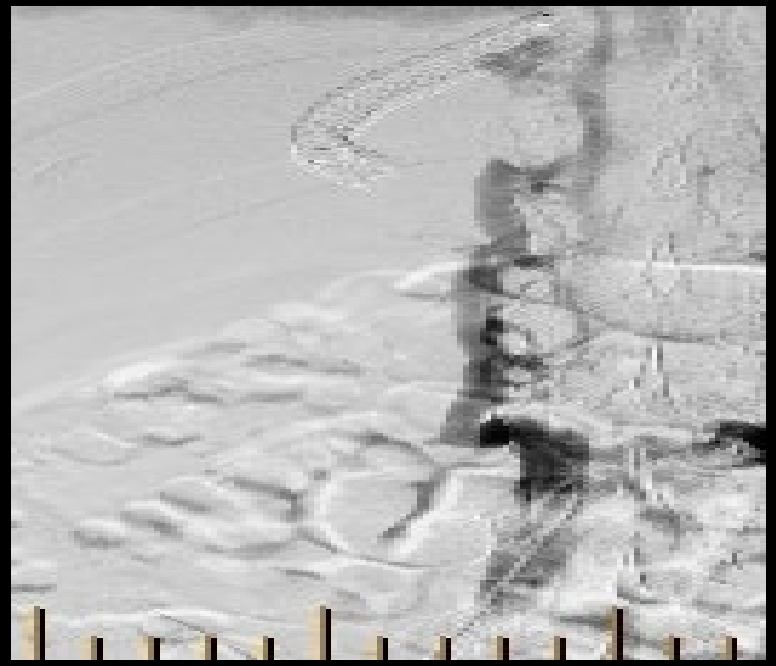
FOLLOW UP AFTER 4 MONTHS

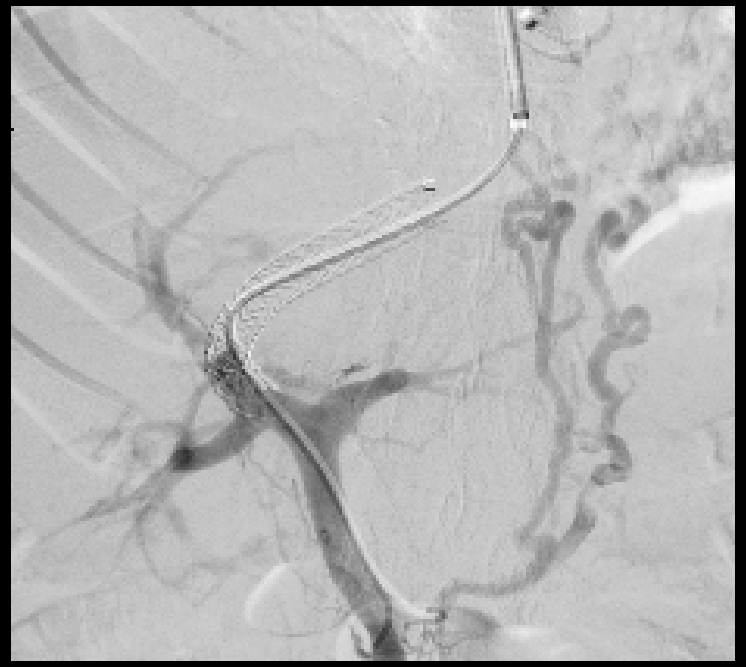




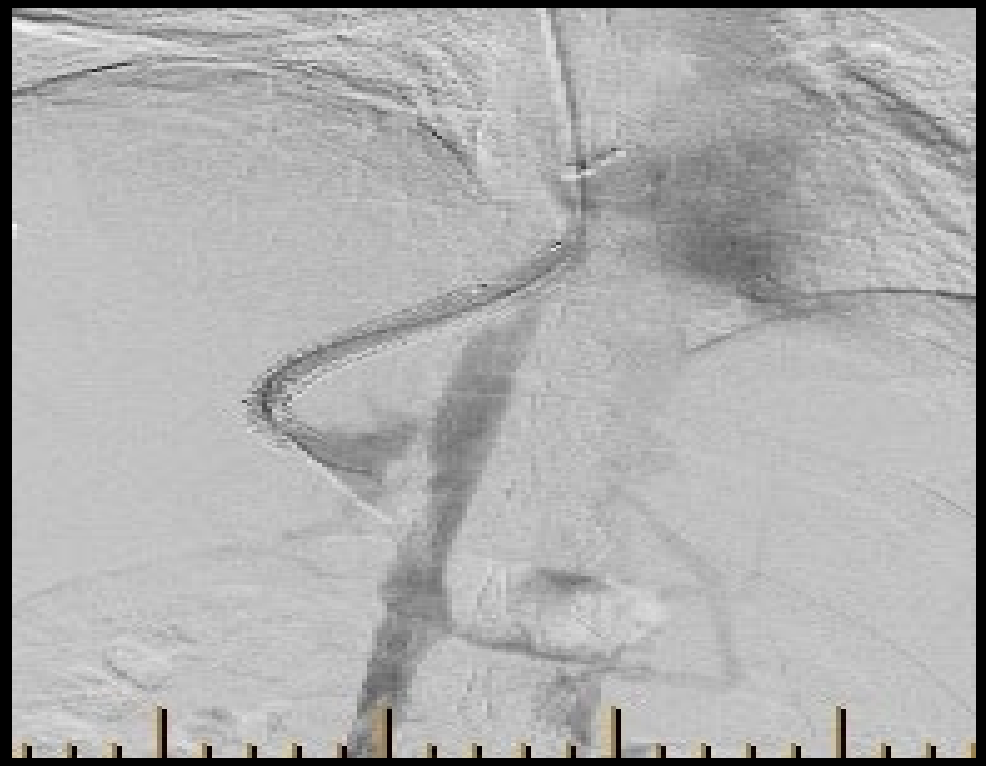
No flow in TIPS stent

IVC GRAM AND TIPS GRAM





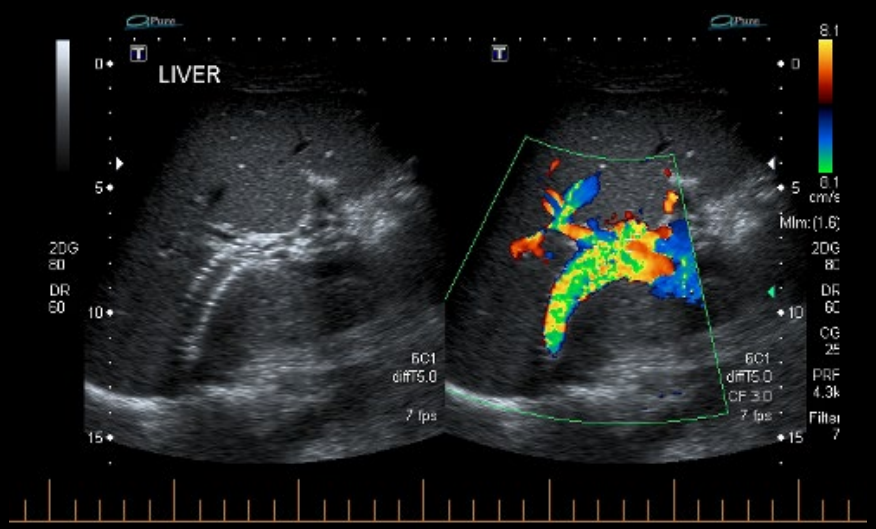
- Mimimal flow in IVC
- No flow in TIPS stent

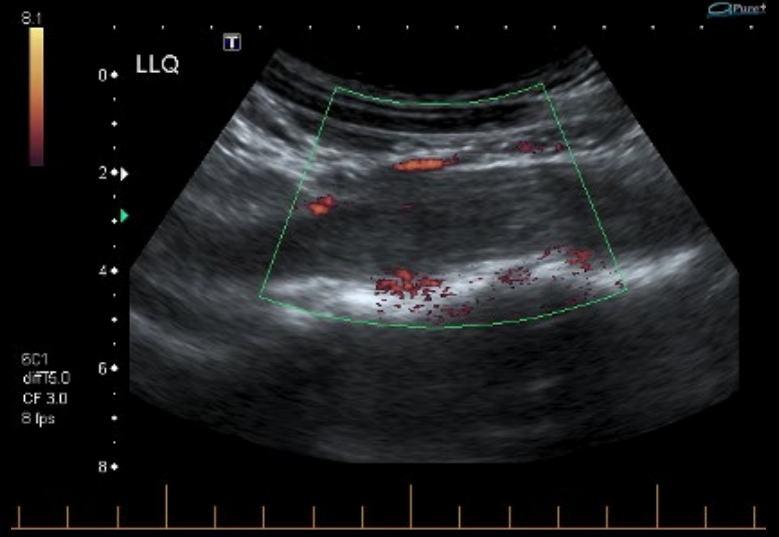


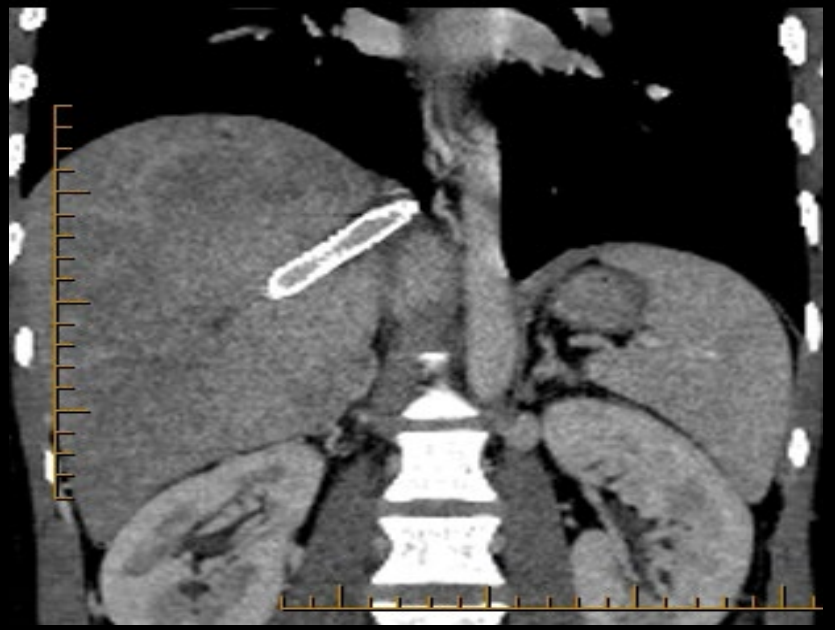
tPA (10 ml in 40 ml saline) and thrombolysis with AngioJet system in the critical segments, then sequential angioplasty with 12, 16 and 18 mm balloons

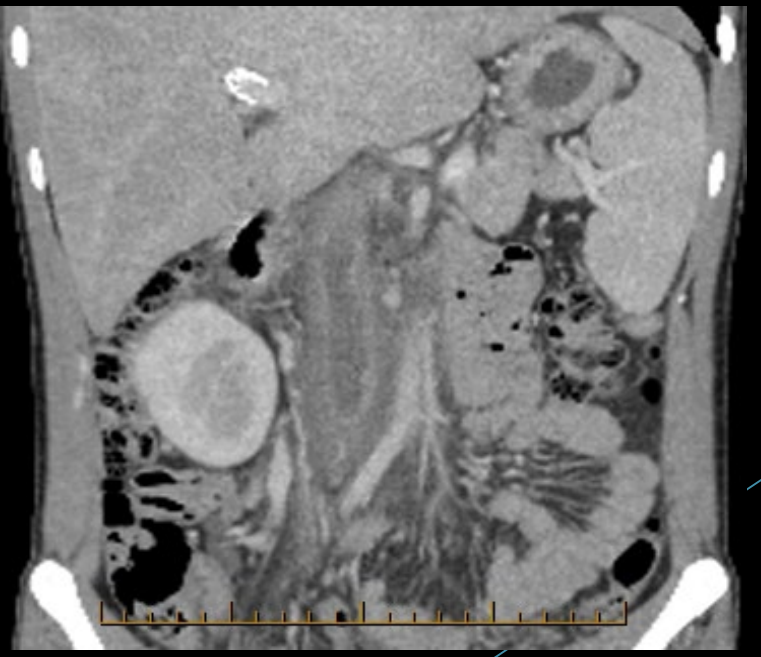
TIPS was catheterized by right jugular approach, 4 mg of tPA administered and then angioplastied with 10 mm balloon

FOLLOW UP 2 MONTHS AFTER SECOND INTERVENTION









- Good flow in TIPS stent
- Residual thrombosis in IVC with pericaval fat stranding

- Patient is on 12500 units sc fragmin and anti-inflammatory medication
- Clinically very well and under close follow up by IR, hepatologist, haematologist and transplant surgeon

BUDD-CHIARI SYNDROME

- Endovascular interventions play an important role in the management of BCS
- AASLD Practice Guidelines updated Budd-Chiari syndrome
  - recommend TIPS in patients with moderate disease that fails to improve with anticoagulation
- Severe disease → liver transplantation
- Randomized controlled trials are lacking
- 5-year survival approaches 80%
- A stepwise approach to therapy (anticoagulation, recanalization, TIPS, transplant) has a 5-year survival of up to 89%

References

- Seijo S, Plessier A, Hoekstra J, et al. Good long-term outcome of Budd-Chiari syndrome with a step-wise management. Hepatology 2013;57(5):1962–1968
- Boyer TD, Haskal ZJ; American Association for the Study of Liver Diseases. The Role of Transjugular Intrahepatic Portosystemic Shunt (TIPS) in the Management of Portal Hypertension: update 2009. Hepatology 2010;51(1):306
- Rössle M, Olschewski M, Siegerstetter V, Berger E, Kurz K, Grandt D. The Budd-Chi- ari syndrome: outcome after treatment with the transjugular intrahepatic portosystemic shunt. Surgery 2004;135(4):394–403