Timing of assessment

Annalisa Berzigotti

Chief of Hepatology, Department of Visceral Surgery and Medicine, Bern University Hospital, University of Bern

Paris Portal Vein Thrombosis meeting – 29-30 November 2022

VALDIG
VASCULAR LIVER DISEASE GROUP

Baveno recommendations
First complete assessment: on diagnosis

- **Doppler ultrasound, CT- or MR angiography** should demonstrate solid intraluminal material not enhancing after injection of vascular contrast agents; or a network of porto-portal collaterals (cavernoma). (B,1).
- If diagnosed by Doppler ultrasound, confirmation with contrast enhanced CT or MR angiography is needed (D,1).

- Mapping of extension and collaterals

- Cirrhosis vs. non-cirrhotic liver; potential causes (septic focus; tumor; pancreatitis…)

Key to decide the best therapeutic attitude

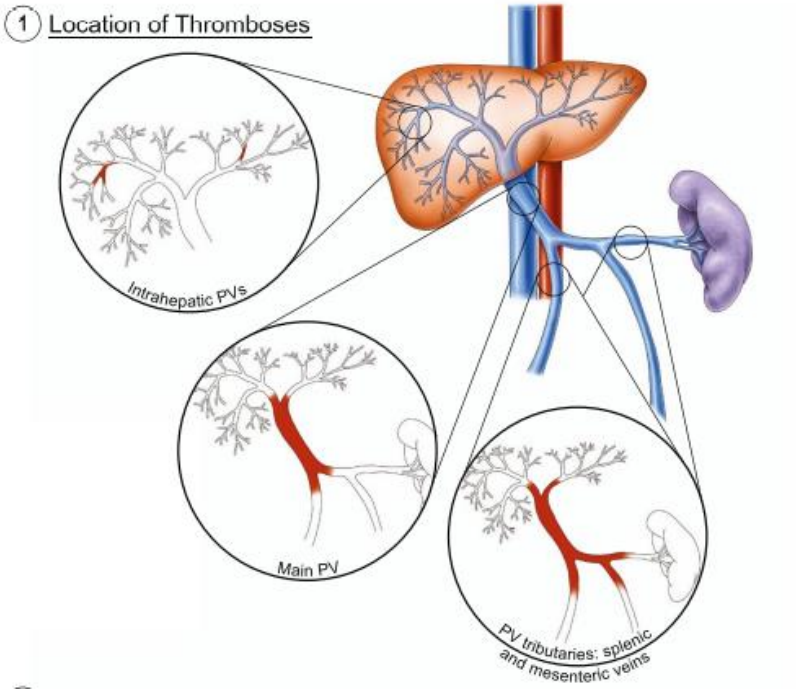
Recommended Standardized Nomenclature for Description of PVT in Both the Clinical and Research Setting

Descriptor	Definition
Time course	
Recent	PVT presumed to be present for <6 months
Chronic	PVT present or persistent for >6 months
Percent occlusion of main PV	
Completely occlusive	No persistent lumen
Partially occlusive	Clot obstructing >50% of original vessel lumen
Minimally occlusive	Clot obstructing <50% of original vessel lumen
Cavernous transformation	Gross portoportal collaterals without original PV seen

Northup P, et al.
Vascular Liver Disorders, Portal Vein Thrombosis, and Procedural Bleeding in Patients With Liver Disease: 2020 Practice Guidance by the American Association for the Study of Liver Diseases.
Hepatology 2020

Endorsed by Valdig and Baveno VII

Site of location and extent of thrombosis



Northup et al. AASLD Guidance 2020

After detection: aims of treatment

Surrogate outcomes

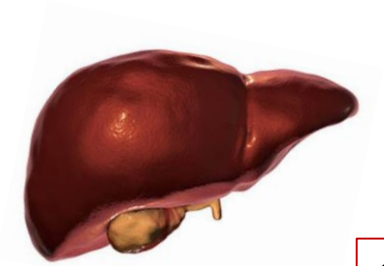
- Achieve recanalization
- Avoid progression
- Avoid recurrence

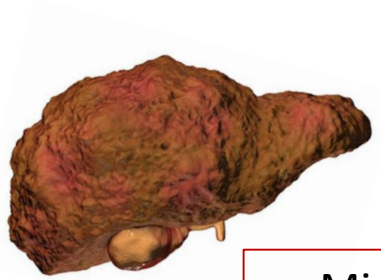
Hard endpoints

Reduce/avoid:

- Intestinal ischemia
- Portal hypertension and its complications
- Mortality

After detection: treatment of recent PVT based on absence or presence of cirrhosis and extension





Any PVT

Occlusive PVT

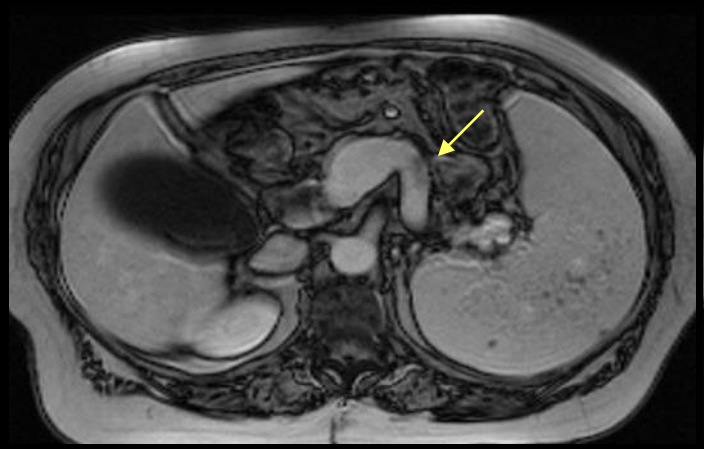
Minimally or partially occlusive

AC

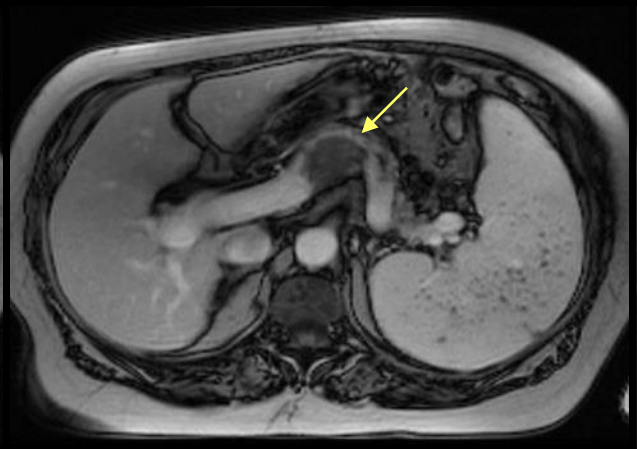
Watch and wait

Course over time: outcomes

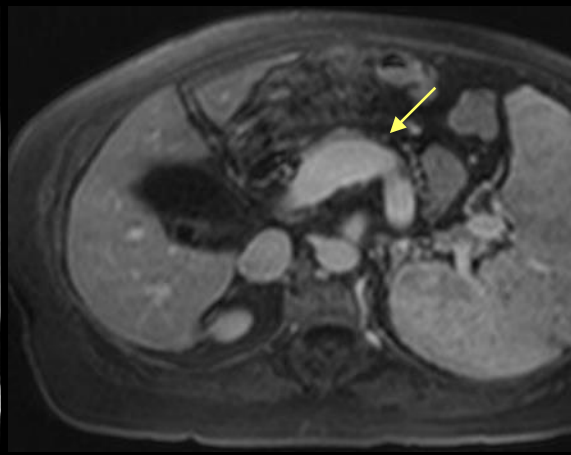
Progressive PVT **Regressive PVT**



Sept 2009



Sept 2010



Oct 2011

Else: stable

Aim of further assessment

1) Inform on the progression or spontaneous regression of thrombosis in patients in whom a watchful waiting approach in the context of cirrhosis has been chosen

2) Inform on the response to anticoagulation (improvement, stability, worsening of PVT)

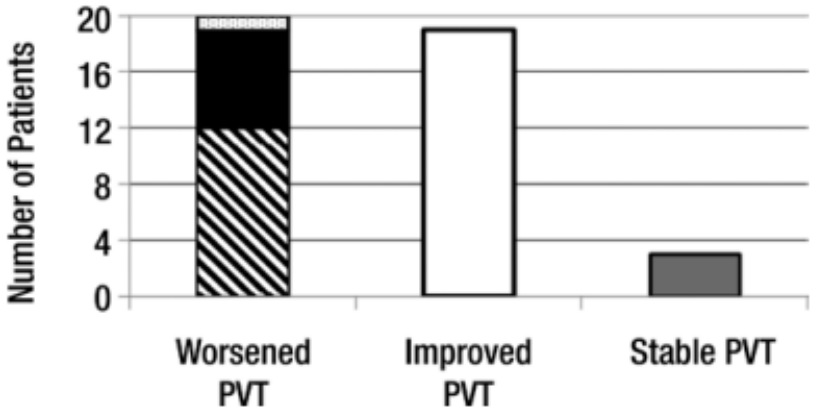
3) Inform on recurrence after suspension of anticoagulation

4) Provide anatomic details allowing to select an appropriate treatment in case of complications (e.g. variceal bleeding).

Imaging should be guided by some general principles, namely safety and reliability, and ultrasound should be chosen whenever possible.

But when should we re-assess?

Wait and watch: spontaneous resolution of non-occlusive PVT in cirrhosis can be seen at 3-6 months on follow-up imaging



N=42 45% showed improvement

Luca A et al. Radiology 2012

N=1243, of whom 118 developed PVT; among the 101 non occlusive:

- thrombi disappearance 70%
- Later on thrombi reappeared in 19/70

Nery F et al. Hepatology 2015

Overall, in the literature spontaneous resolution/stability is reported in 33-75%

Usual timing: 6 months and 1 year

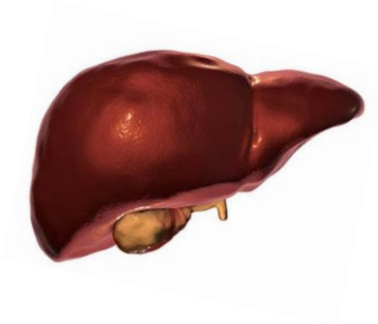
Minimally occlusive thrombosis of the main PV trunk in cirrhosis and candidates to LT: treat and strict follow-up

- Anticoagulation is considered in patients with cirrhosis and minimally occlusive (<50%) thrombosis of the portal vein trunk that
  - (i) progresses on short-term follow-up (1-3 months) or
  - (ii) compromises the superior mesenteric vein (C,2)

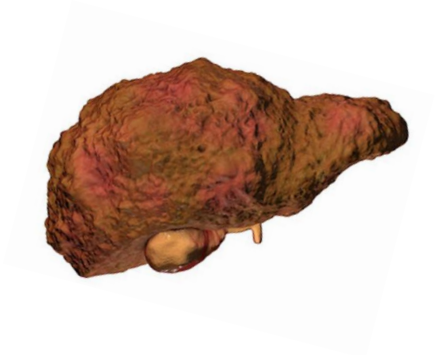
Baveno VII

- In patients with cirrhosis and PVT candidates to LT in whom anticoagulation has been initiated
  - Thrombosis progression can potentially hamper LT
  - Thrombosis regression can accelerate regaining an active status of the patient on the WL
- In patients with cirrhosis and PVT candidates to LT in whom anticoagulation has been initiated but then has to be stopped due to side effects:
  - short-term follow-up is meaningful

Anticoagulation: time to recanalization in the reported studies

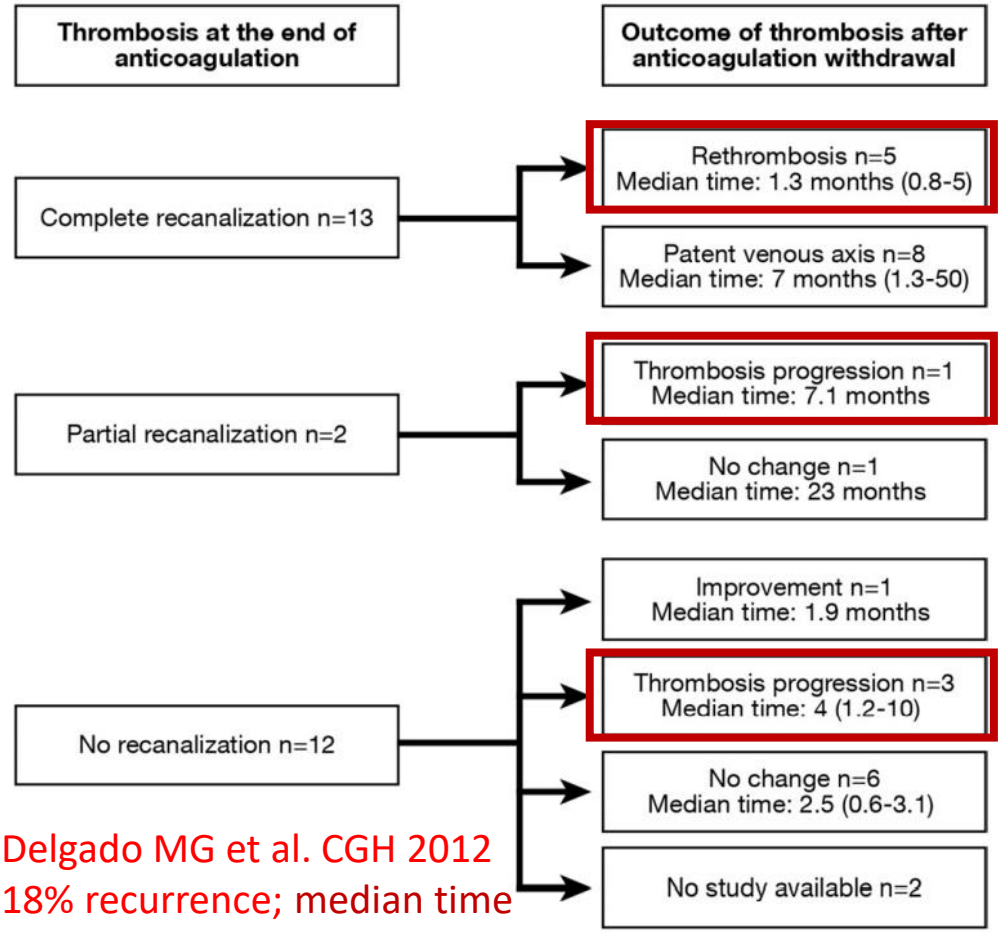


No recanalisation on AC after the first 6 months



5-8 months, with some cases recanalizing after 6 months

Pettinari et al. AJG 2019
61% at 3 m
28% at 6-12 m
11% after 12 m



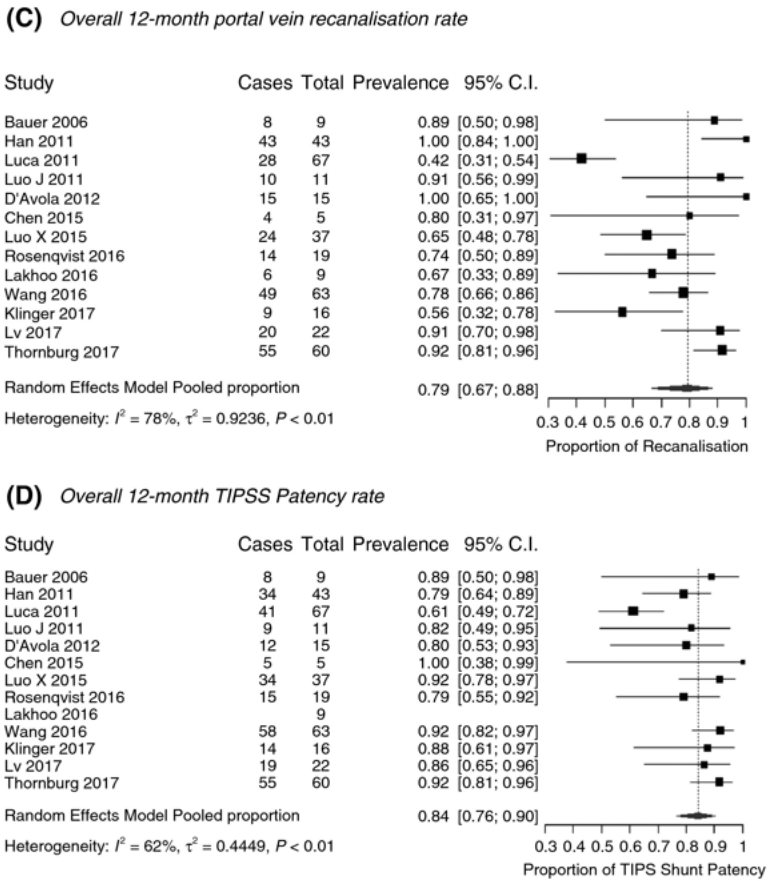
Delgado MG et al. CGH 2012
18% recurrence; median time 1.3 months

When does thrombosis recur after stopping anticoagulation in PVT in cirrhosis?

Pettinari et al. AJG 2018: 36% recurrence

Naymagon et al. DDS 2020: 29% recurrence, mean time 9.2 months

Proposal on control imaging:
4-6 weeks (using US if possible)
3 months
6 months using CECT
Every 6 months (HCC screening)



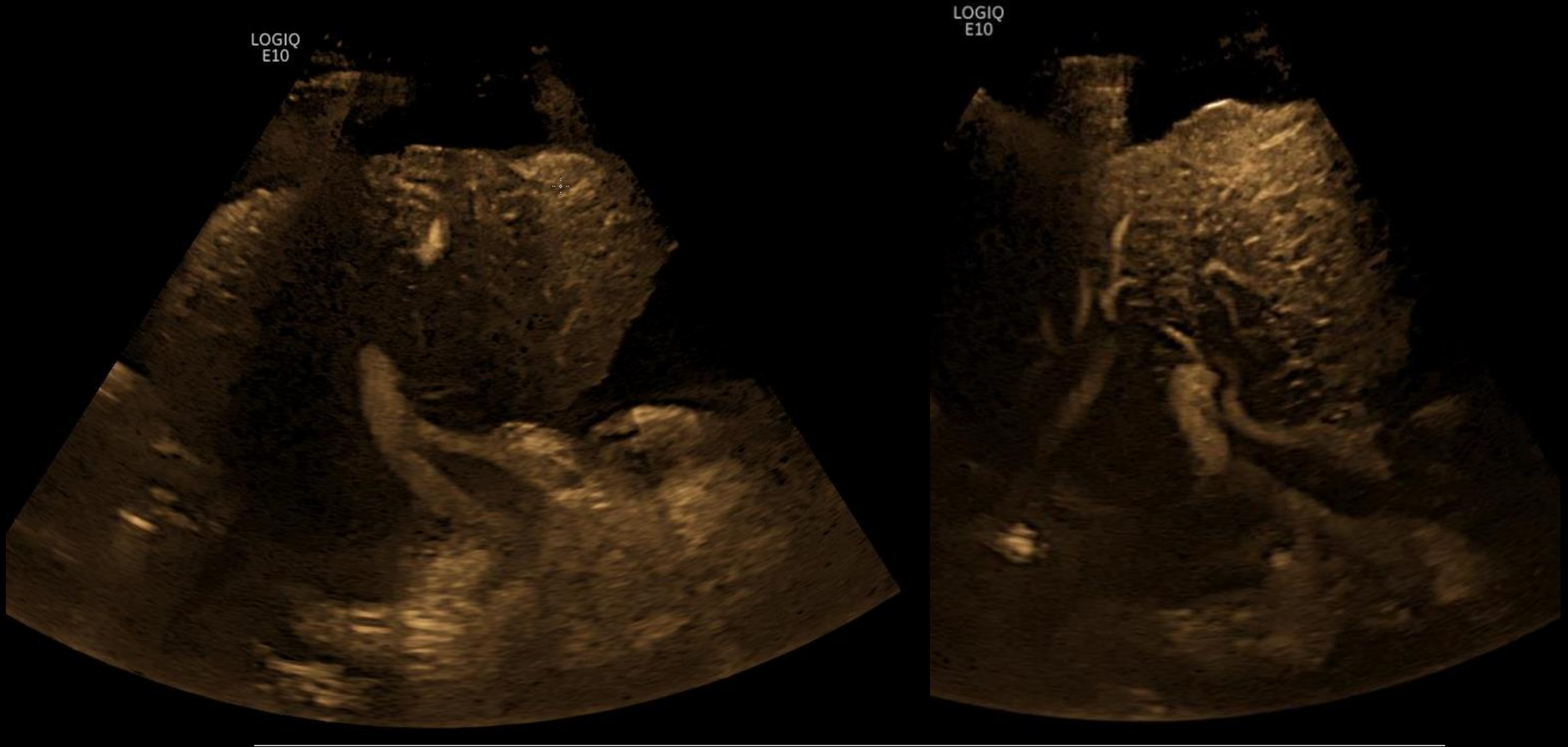
Assessment of the outcome of interventions, i.e. TIPS with/without thrombolysis in PVT: 1 year follow-up

But when did the rethrombosis take place?

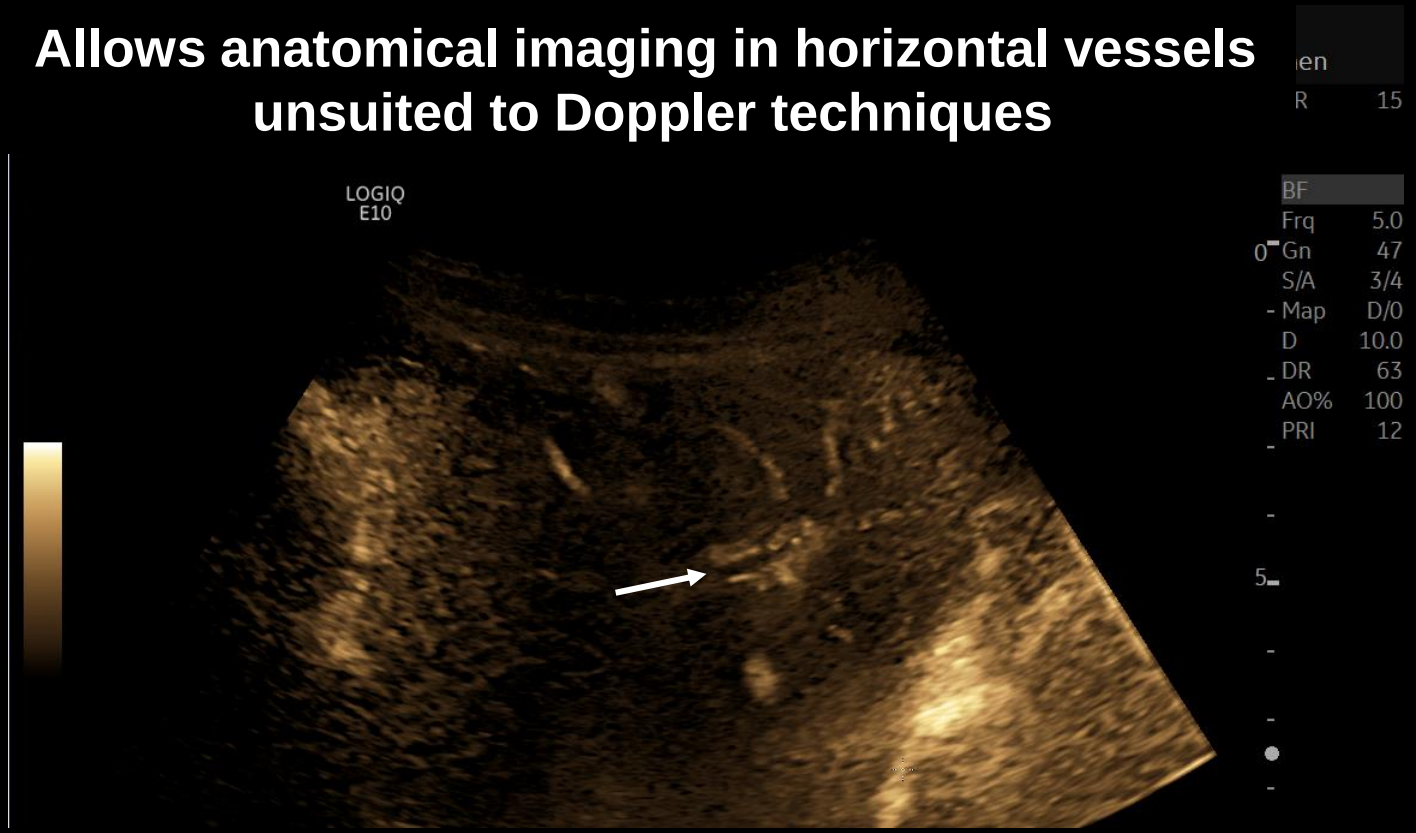
- Need for standardization
- Need to take advantage of modern ultrasound techniques, Doppler and beyond Doppler

Rodrigues SG et al. AP&T 2019

US: non-Doppler vascular assessment: «contrast without contrast»

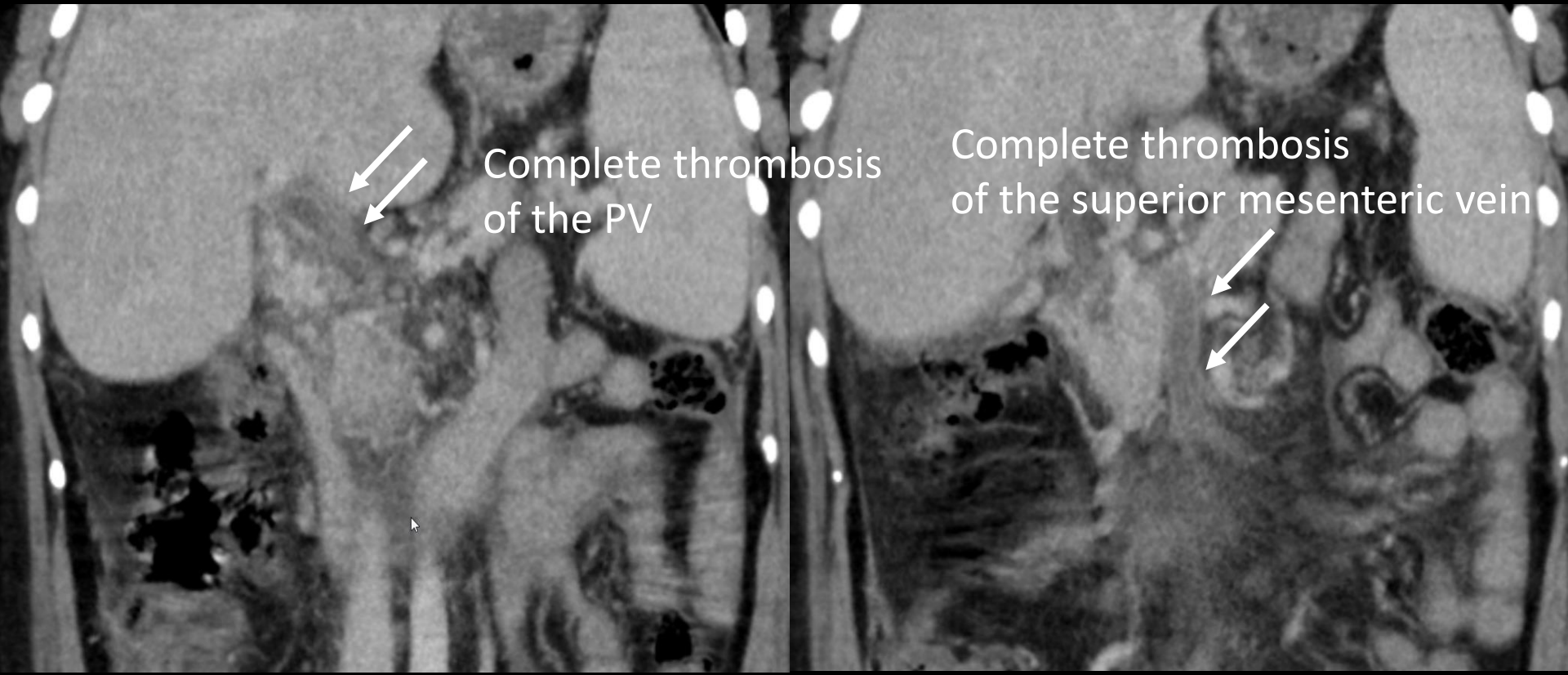


Allows anatomical imaging in horizontal vessels unsuited to Doppler techniques

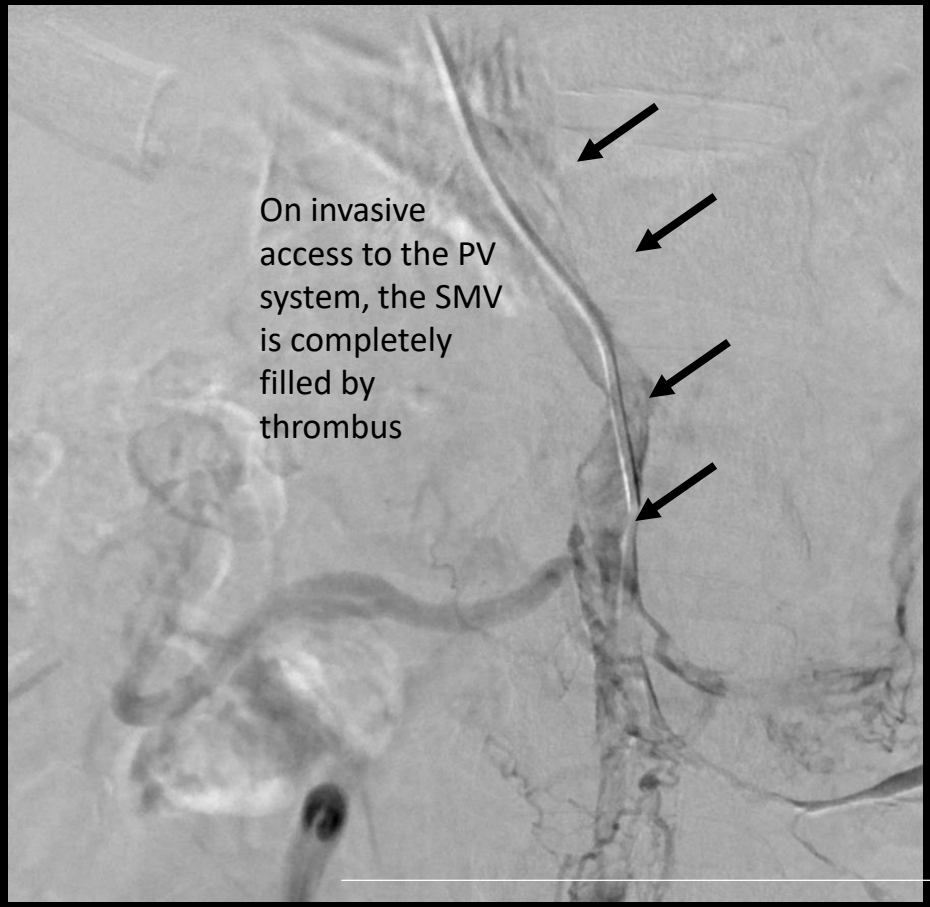


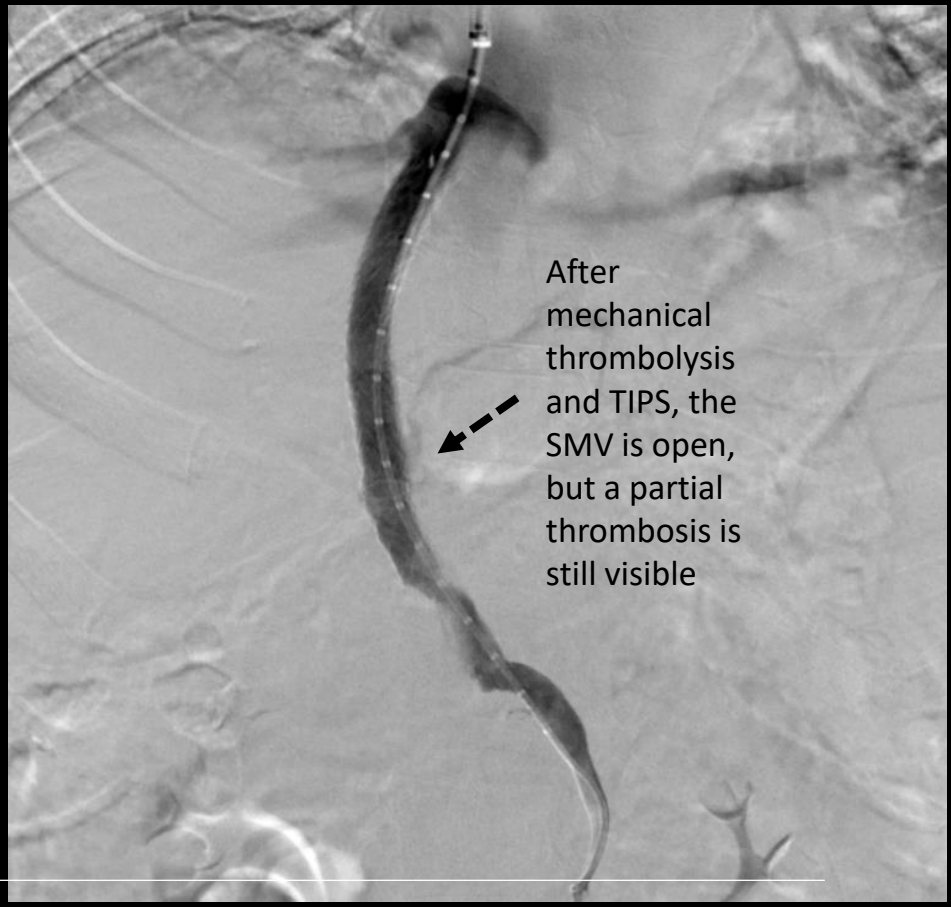
+ Use contrast-enhanced ultrasound if needed

A difficult case young woman presenting with abdominal pain and ascites

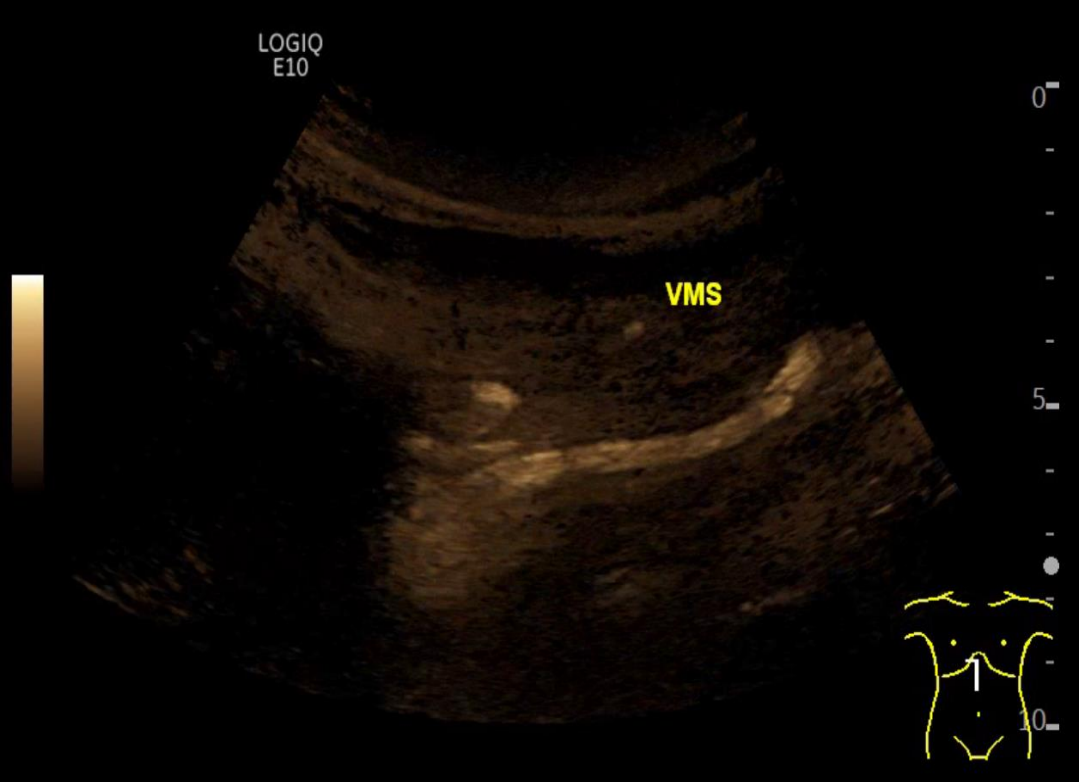


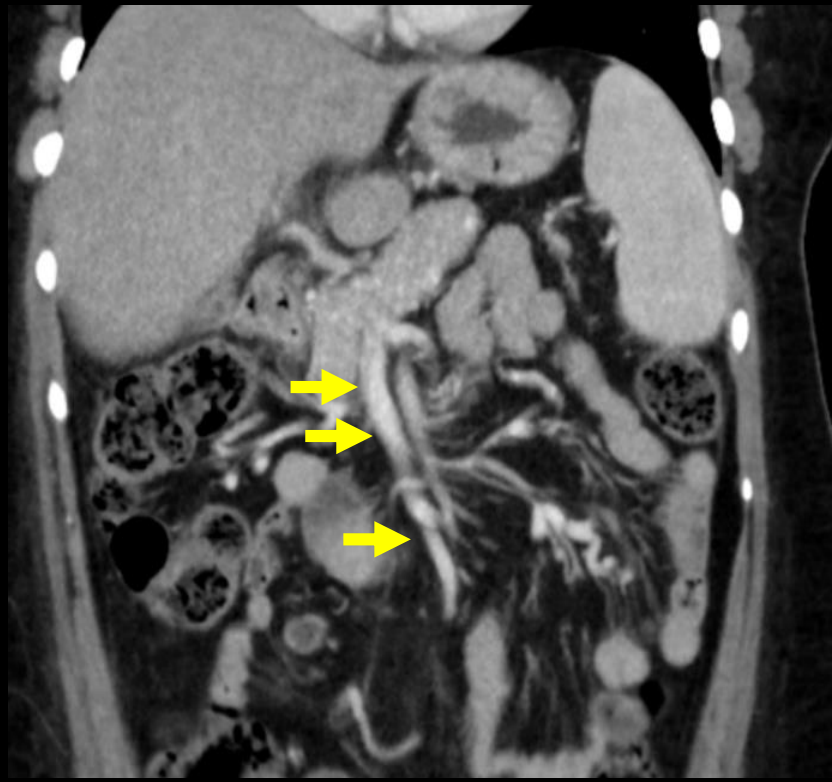
RECANALIZATION AND TIPS PROCEDURE



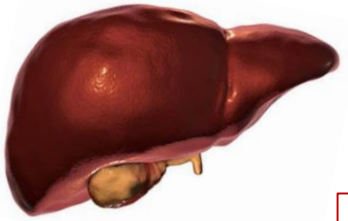


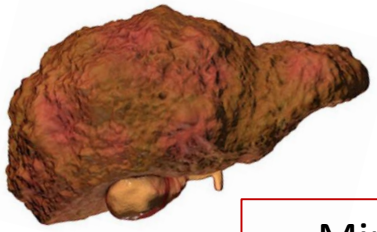
Post TIPS and on anticoagulation: control at 1 month





Timing of assessment in trials in PVT with or w/o cirrhosis: proposal





Any PVT

Occlusive PVT

Minimally or partially occlusive

AC

Watch and wait

In addition: repeat imaging in case of:

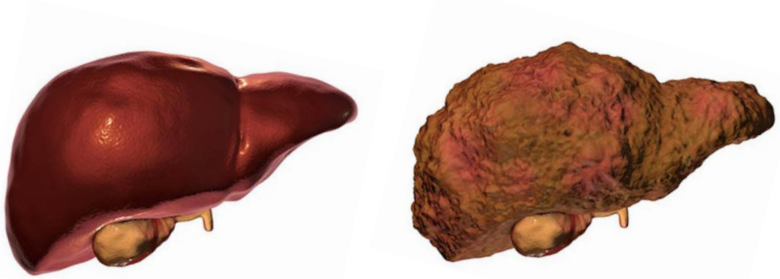
- Abdominal pain/diarrhea
- Worsening signs of PH
- Worsening liver function

First control at 4-6 weeks in severe acute cases?

- At 3 m
- At 6 m
  - Use CECT
- Every 6 m afterwards

- At 4-6 w
- At 3 m
- Every 3 m after that up to 1 y
  - Use CECT at the 6 m control
- Every 6 m afterwards, during HCC screening

Timing of assessment in trials in PVT after stopping AC: proposal



If AC is stopped

- At 4-6 w
- At 3 m
- At 6 m
- Every 6 m afterwards

In candidates to LT in whom AC has to be stopped due to side effects, re-assess frequently:

- Every 4-6 weeks

Questions to the experts

- Is it really needed to continue controls every 6 months lifelong in patients <u>without cirrhosis</u> who:
  - Are stable on AC for 2 years?
  - resolved PVT and stopped AC remaining stable for 2 years?

- Proposal: once per year sufficient in these cases

Take Home messages

- Timing of assessment variable among centers and studies:
  - Expertise
  - Availability of advanced imaging techniques

- Choice of imaging method should be based on reasonable criteria
  - Patients' characteristics (e.g. suitability for ultrasound assessment)
  - Risk of rethrombosis
  - Severity (e.g. SMV involvement)
- For future trials: proposal based on expert opinion
  - early assessment 4-6 w and 3 m; efficacy at 6 m and 1 year; long-term success: 5 years?

Thank you