Approach to variceal bleeding

Des Moodley
Tygerberg Hospital
Supervisor: Prof Marc Bernon

Stellenbosch UNIVERSITY IYUNIVESITHI UNIVERSITEIT
forward together
sonke siya phambili
saam vorentoe

Project ECHO®
Gastroenterology Foundation of sub Saharan Africa

G-ECHO
GI HEPATOLOGY ECHO OF SUB-SAHARAN AFRICA
ESTABLISHED 2020

Pathophysiology

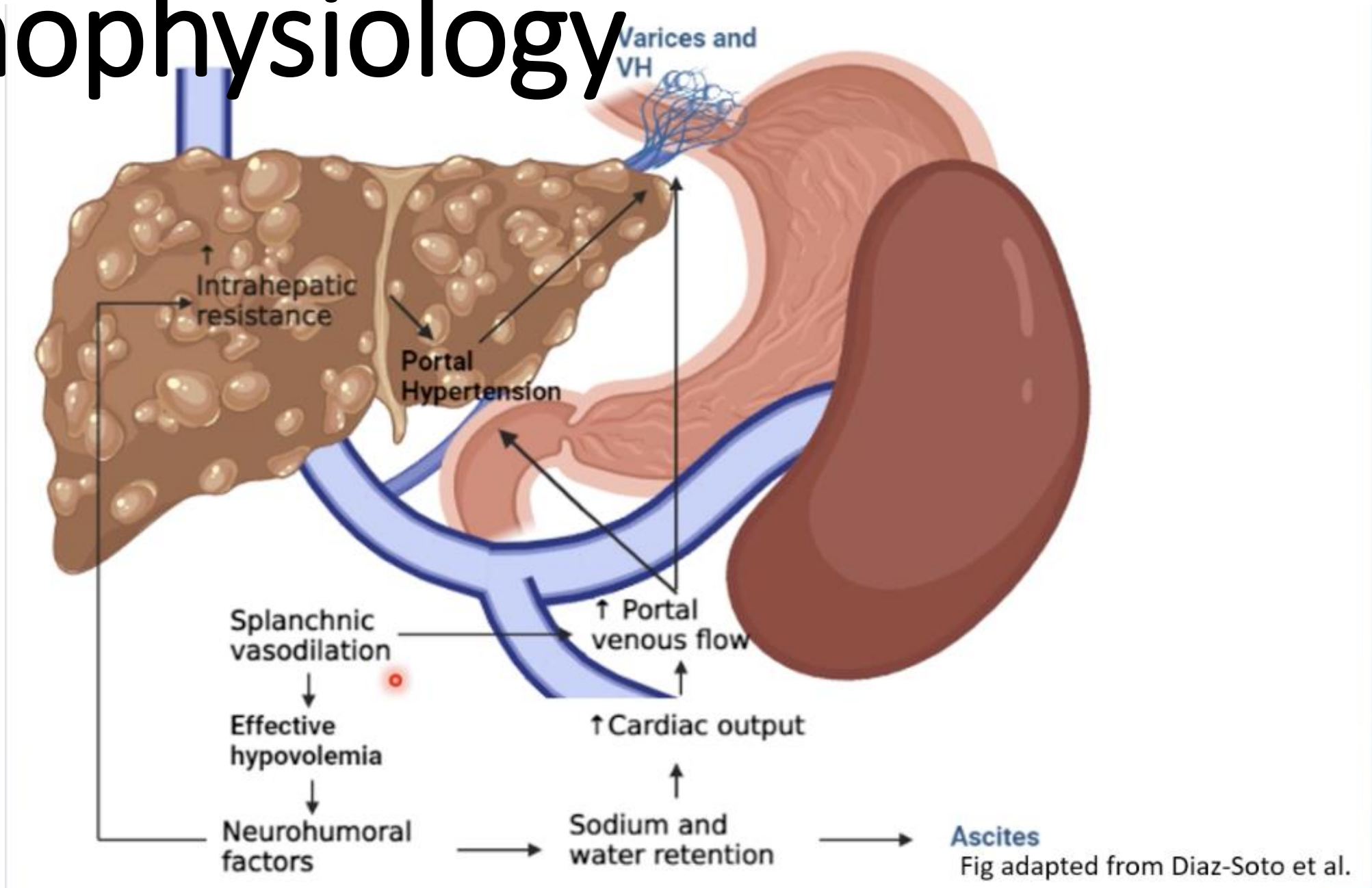
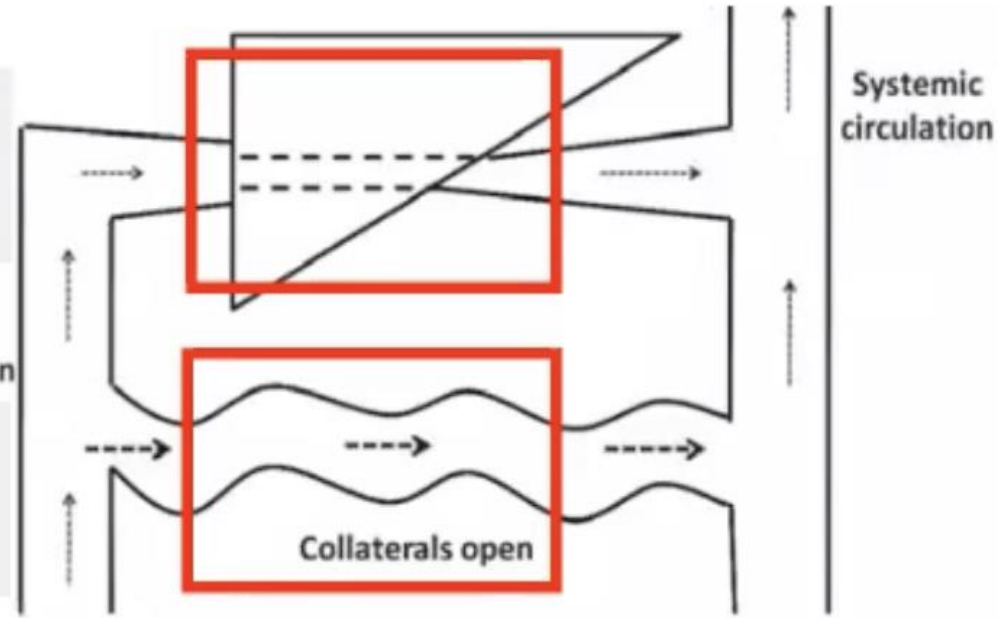


Fig adapted from Diaz-Soto et al.

Key contributors of portal hypertension in cirrhosis

Intrahepatic venous resistance



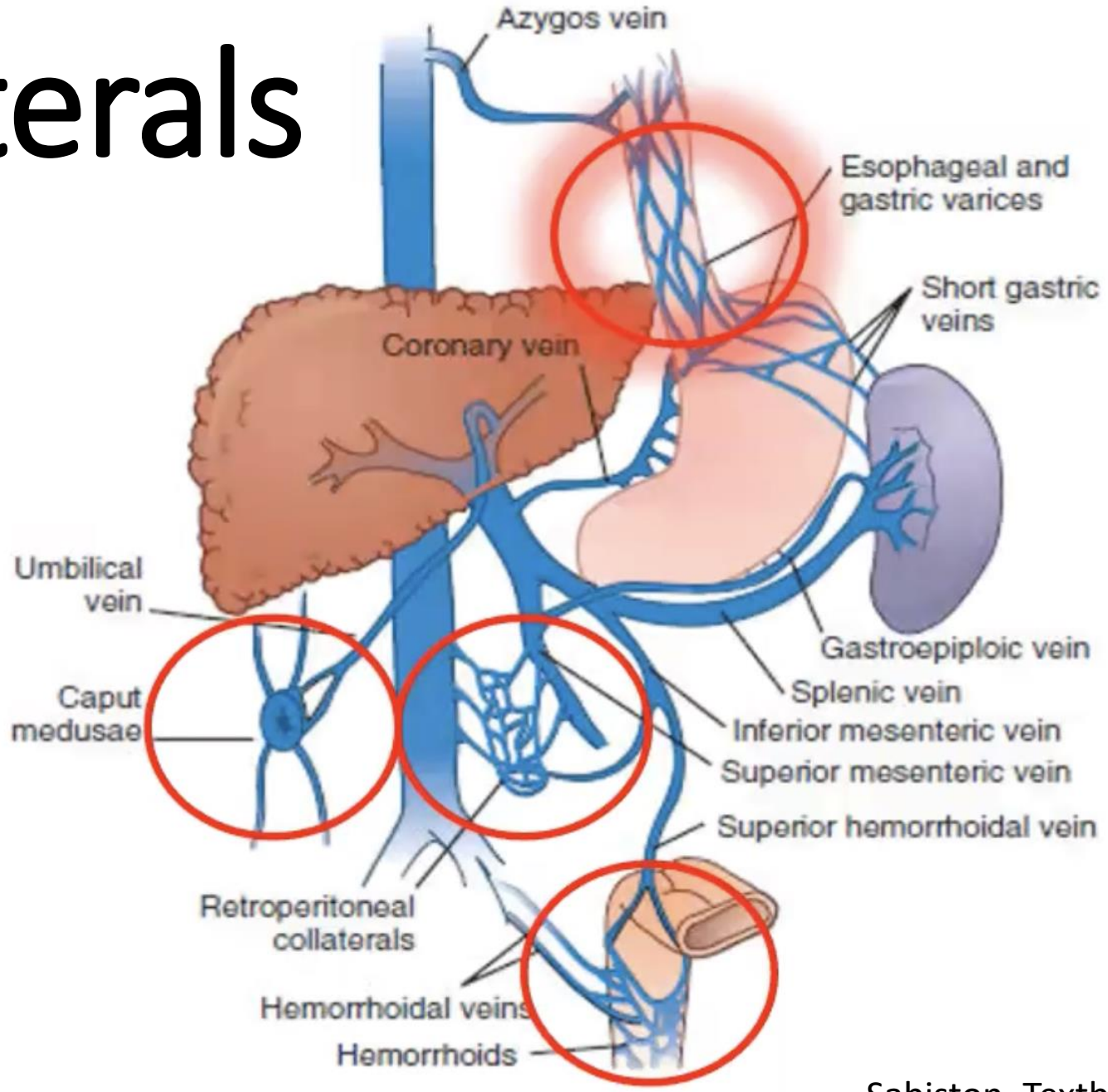
Portosystemic collaterals

Increased portal inflow

Hyperdynamic circulation
Splanchnic vasodilation

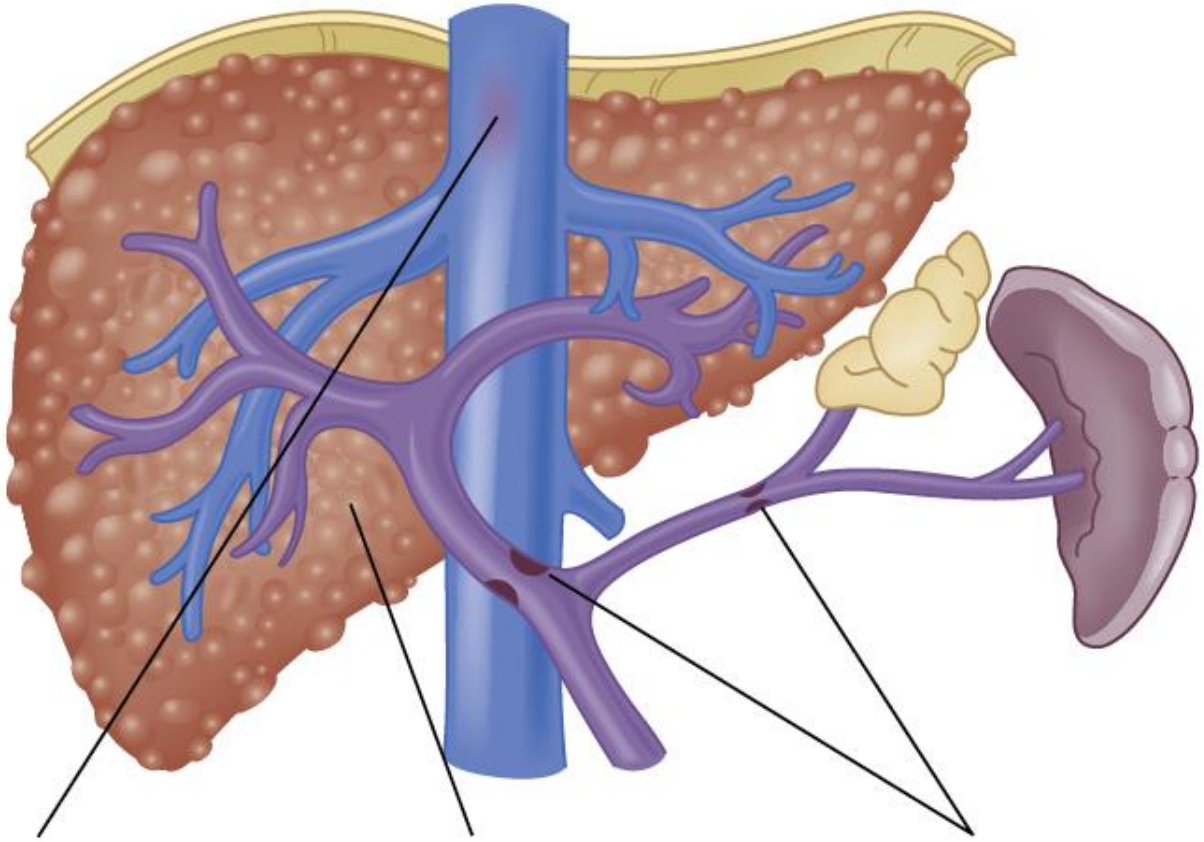
Kumar et al, Indian Journal Gastroenterol, 2008

Collaterals



Sabiston, Textbook of Surgery, Elsevier 2017

Causes



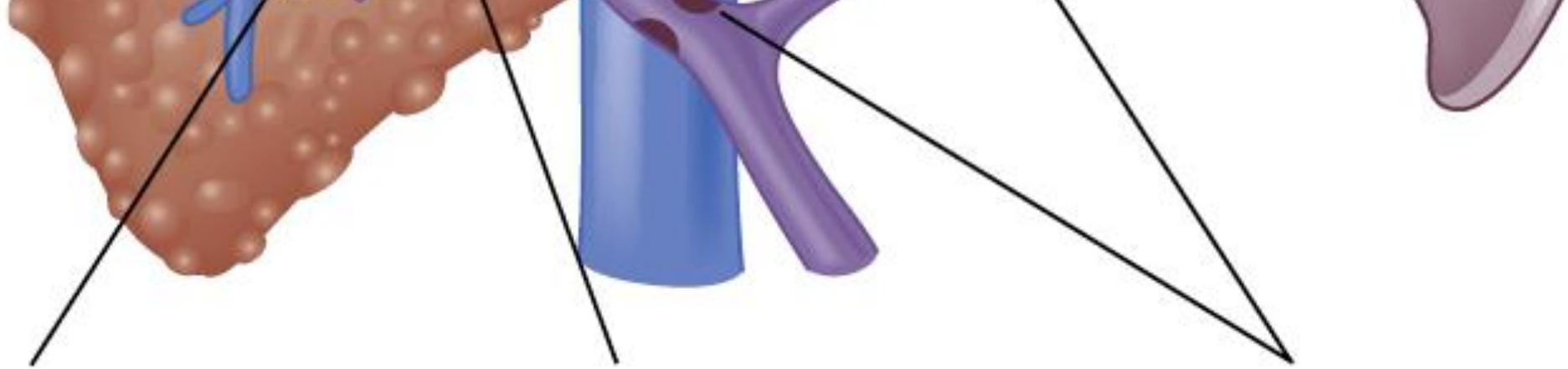
Posthepatic
Budd-Chiari syndrome
Constrictive pericarditis
Inferior vena caval obstruction
Right-sided heart failure
Severe tricuspid regurgitation

Intrahepatic
Presinusoidal
- Idiopathic portal hypertension
- PBC
- Sarcoidosis
- Schistosomiasis

Sinusoidal
- Alcohol-associated cirrhosis
- Alcohol-associated hepatitis
- Cryptogenic cirrhosis
- Postnecrotic cirrhosis

Postsinusoidal
- Sinusoidal obstruction syndrome

Prehepatic
Portal vein thrombosis
Splenic vein thrombosis



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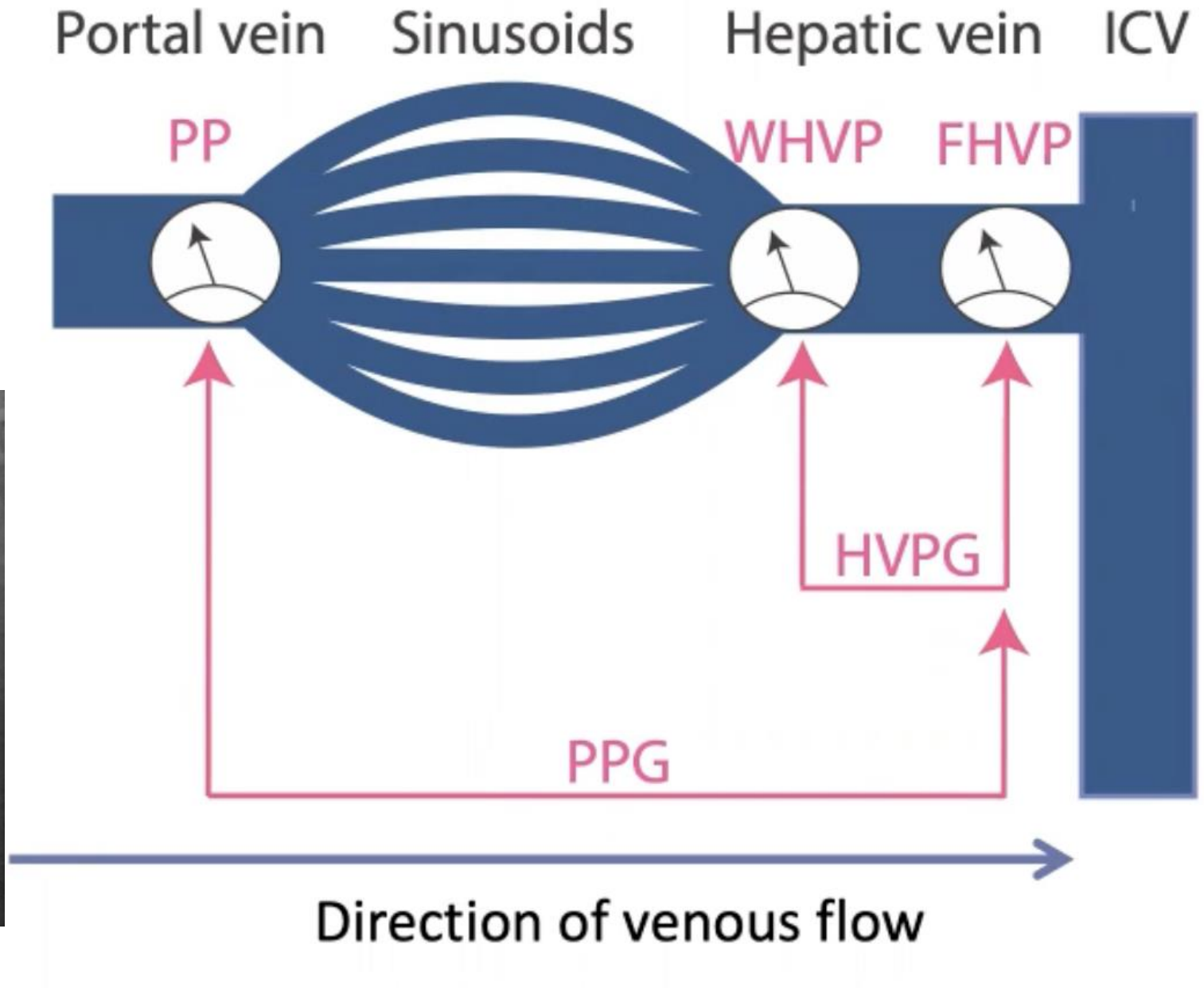
Postsinusoidal
- Sinusoidal obstruction syndrome

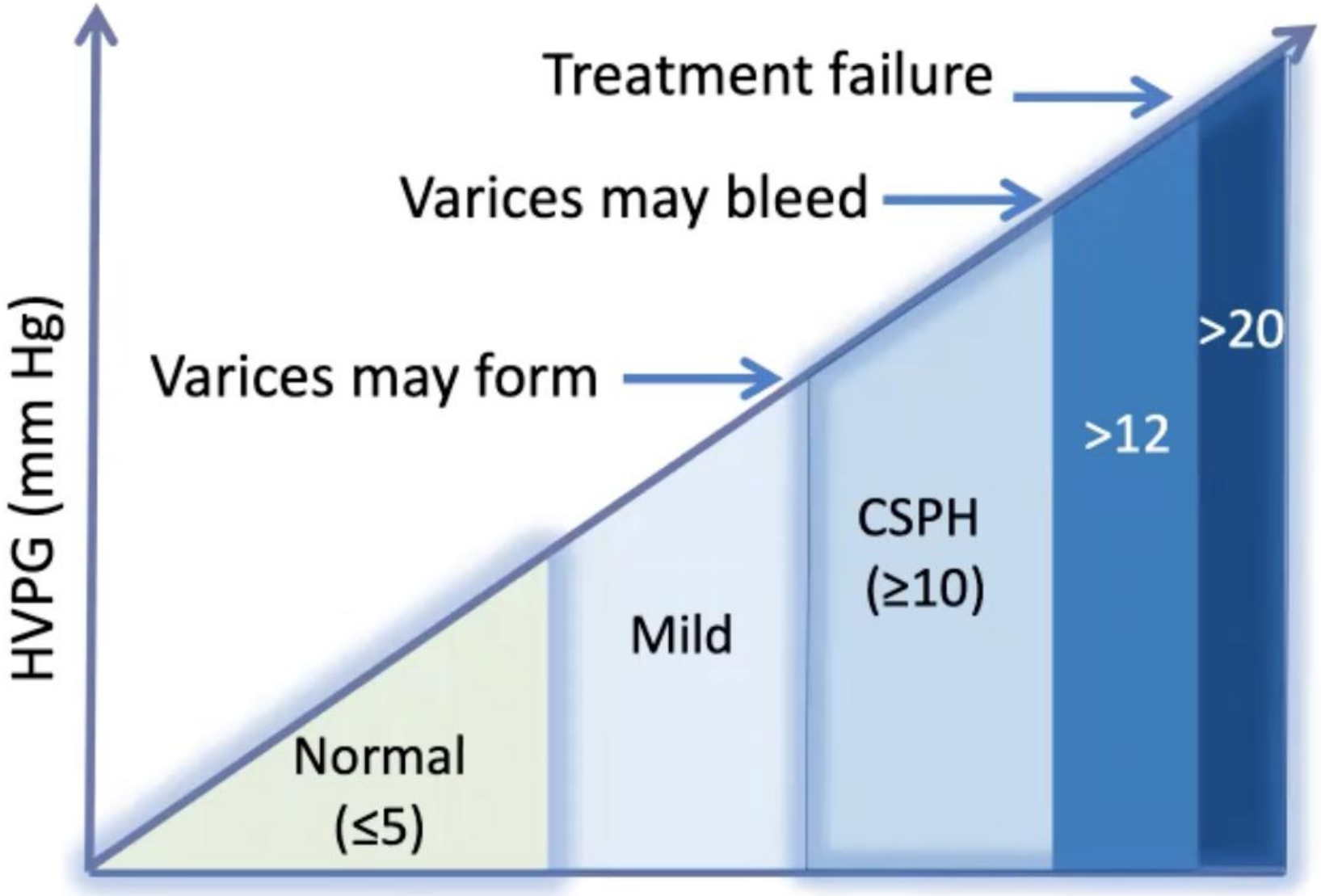
Prehepatic
Portal vein thrombosis
Splenic vein thrombosis

Diagnosing CSPH

Gold standard

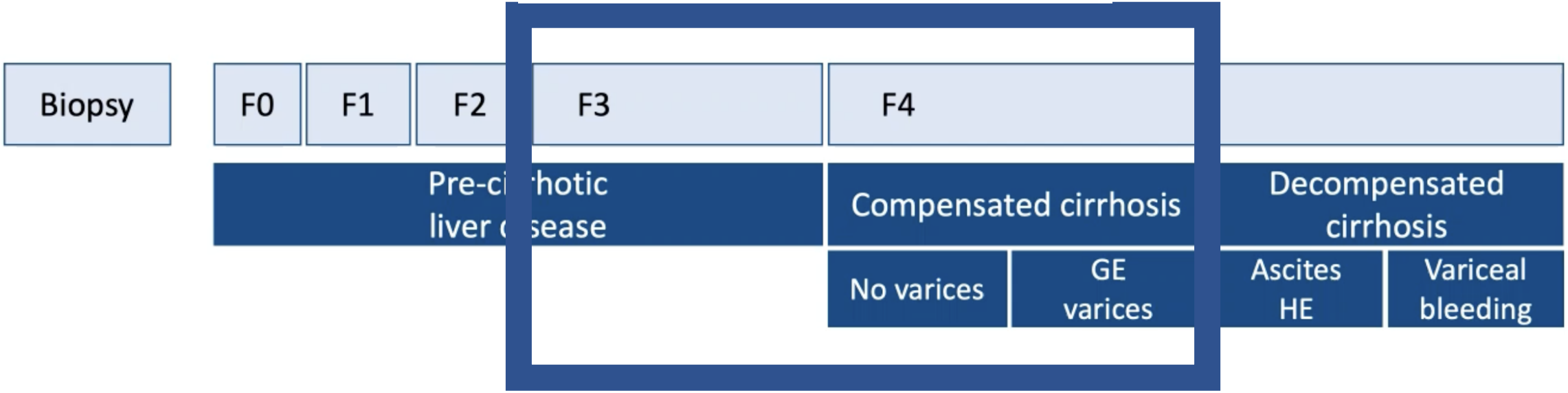
Chest and abdominal X-rays during hepatic venous pressure gradient measurement in procedure 28. The balloon catheter is inserted via the right cephalic vein. The catheter is inserted into the right hepatic vein. The balloon is inflated, and stasis of injected contrast medium is identified.

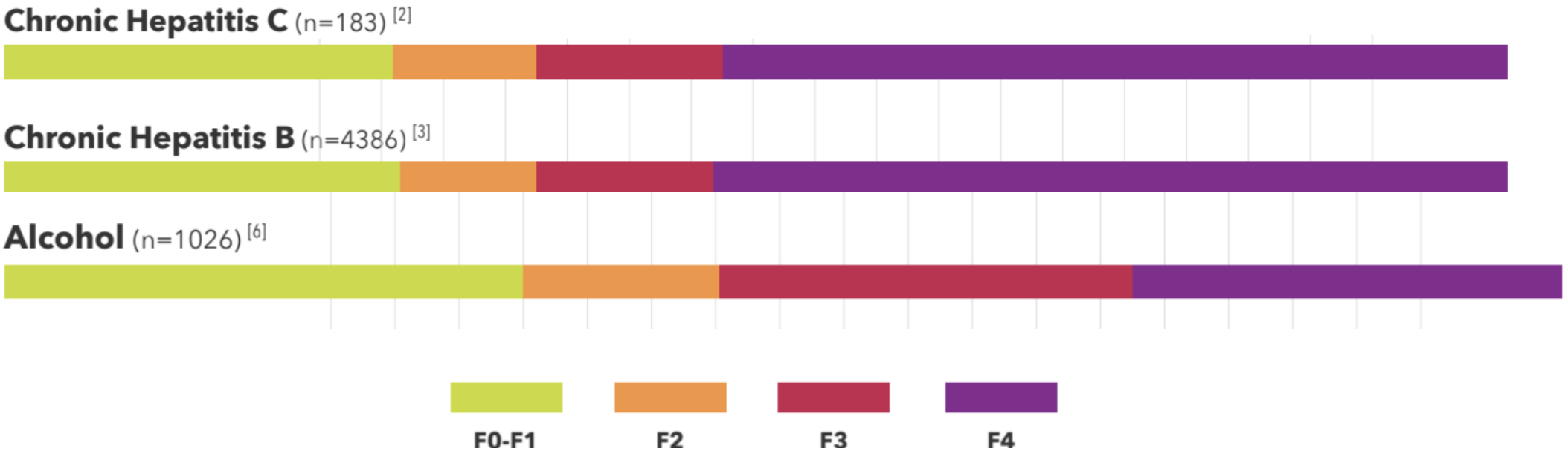



HVPG (mm Hg)
Treatment failure
Varices may bleed
Varices may form
>20
>12
CSPH
(≥10)
Mild
Normal
(≤5)

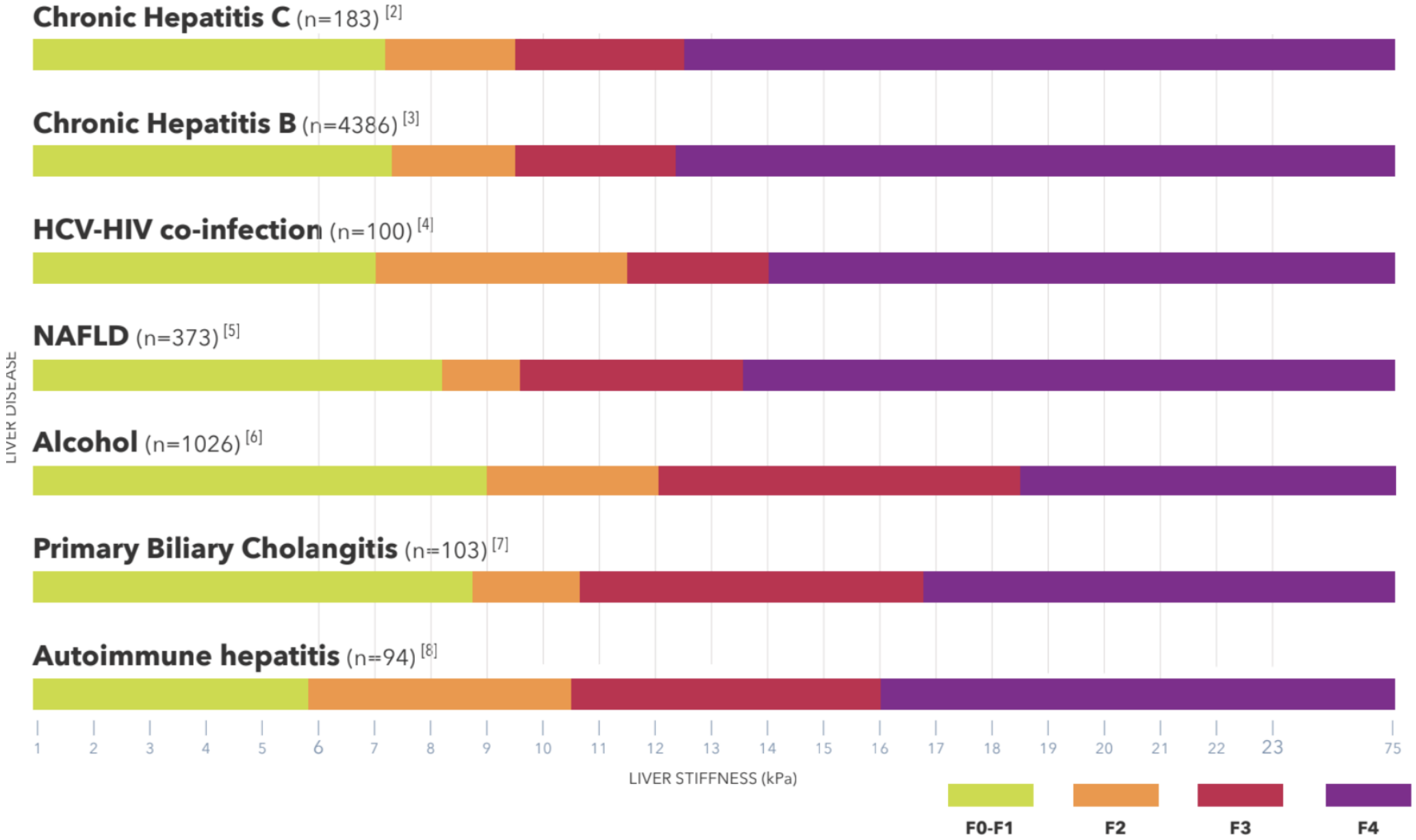
Diagnosing CSPH- Non-invasive

Compensated advanced chronic liver disease (cACLD)

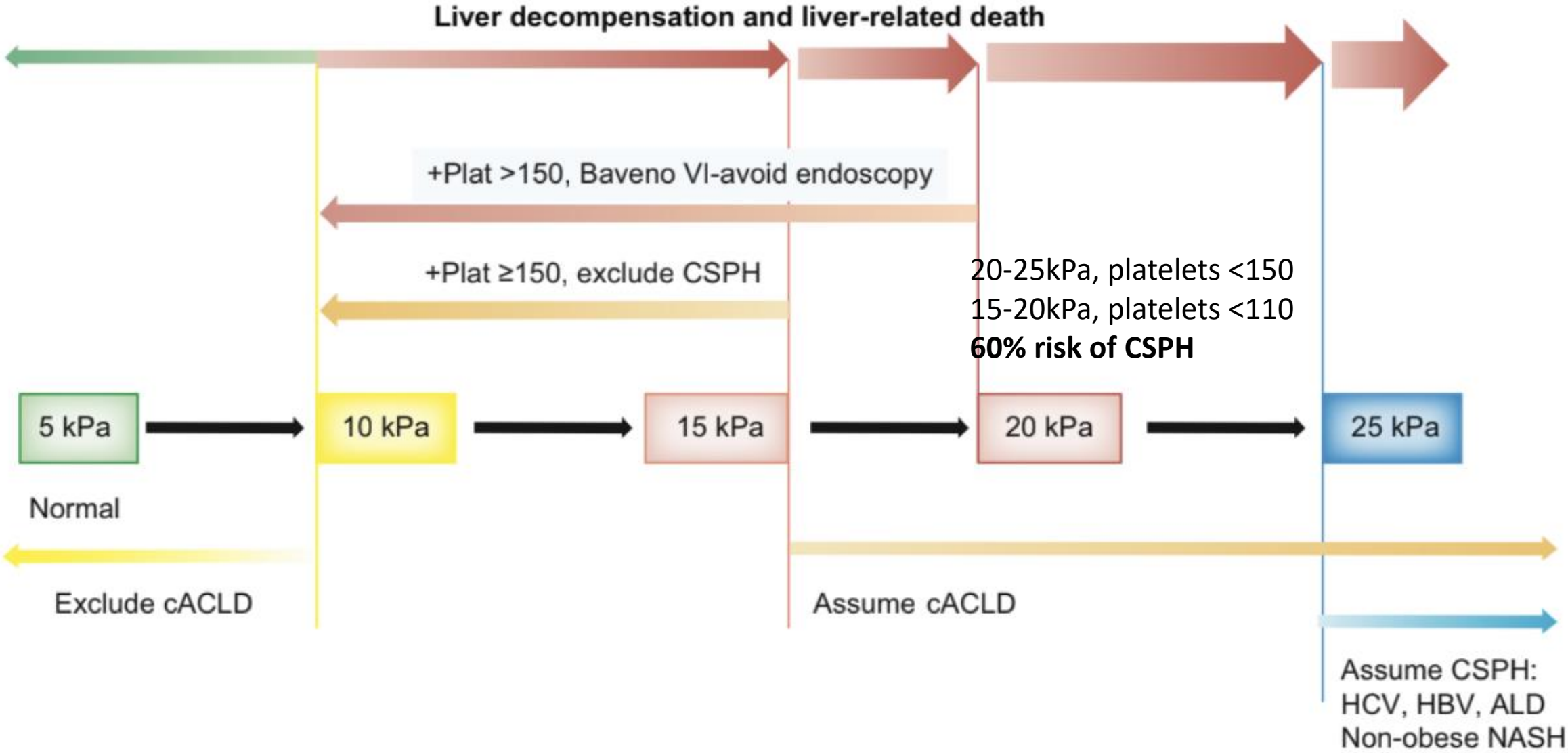




FibroScan® by echosens



Risk assessment



Baveno 7

Spleen stiffness measurement

Viral hepatitis

<21kPa rules out CSPH

>50kPa rules in CSPH

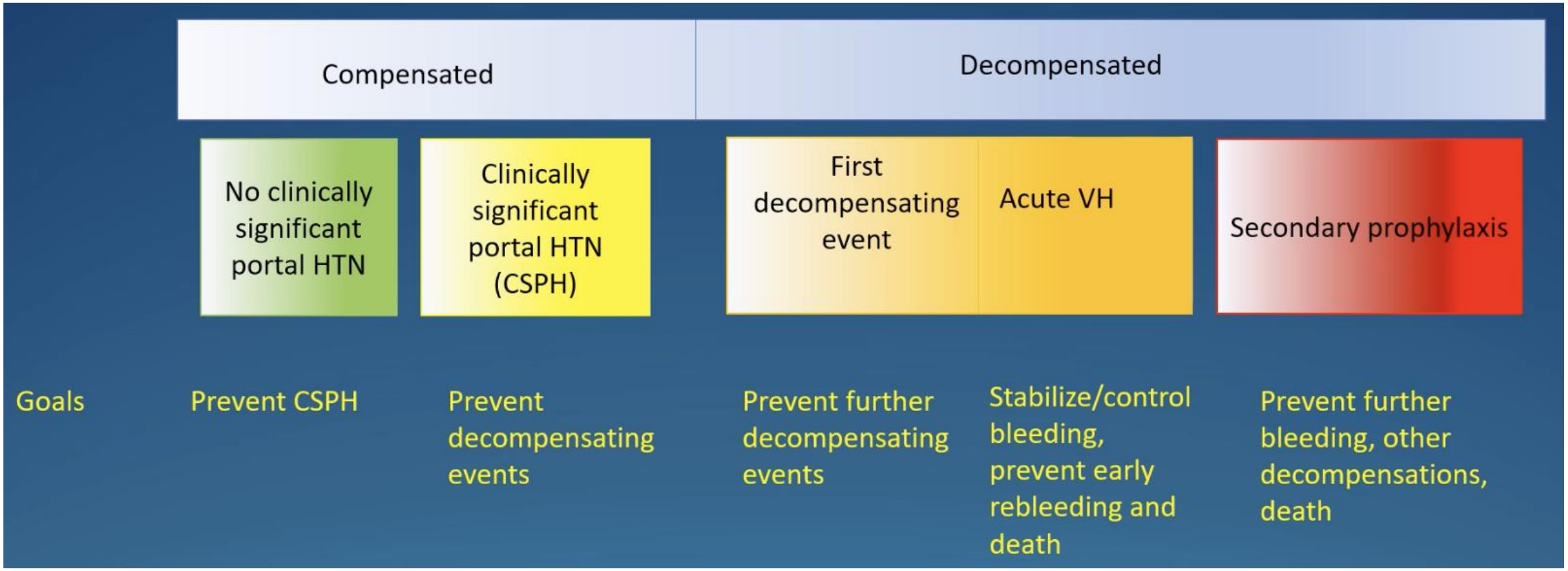
If C/I or intolerance to NSBB:

LSM >20kPa +- platelets <150 x 10^9

If SSM <40→ low risk of varices, can avoid endoscopy

echosens™

Goals of therapy



Medications

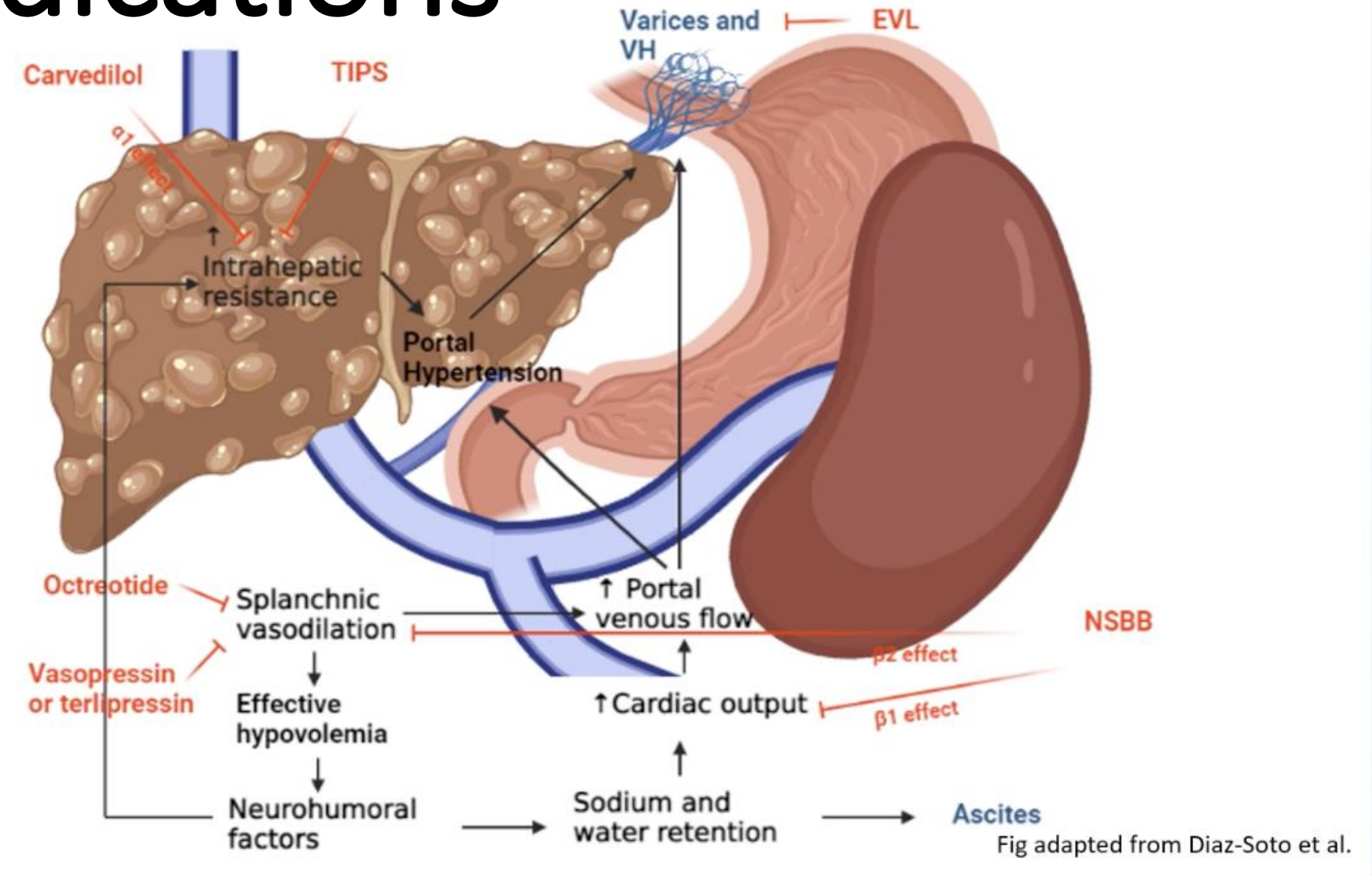


Fig adapted from Diaz-Soto et al.

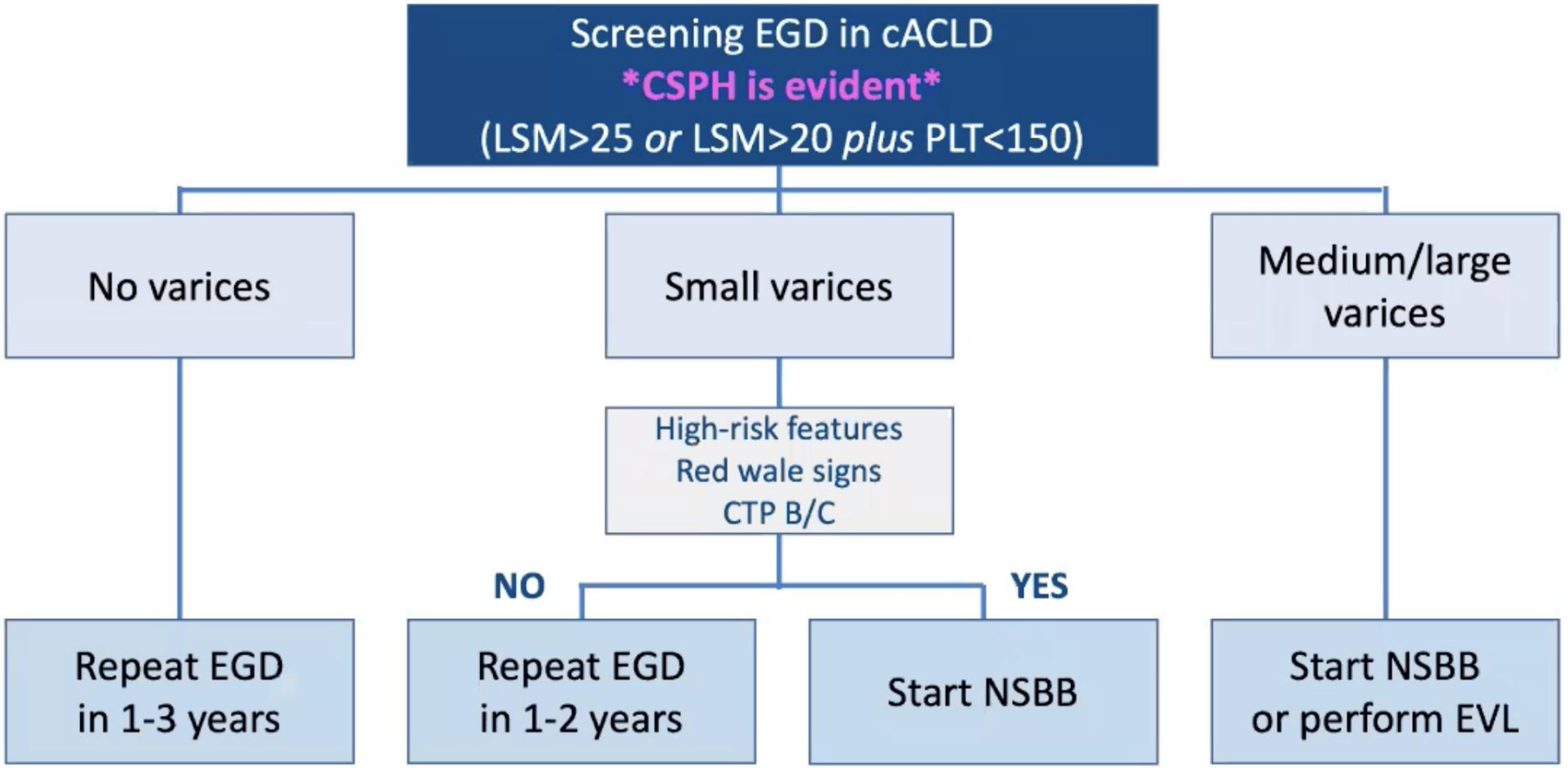
- **Primary prophylaxis**

Varices but no previous bleeding

- **Secondary prophylaxis**

Varices that have bled

Primary prophylaxis

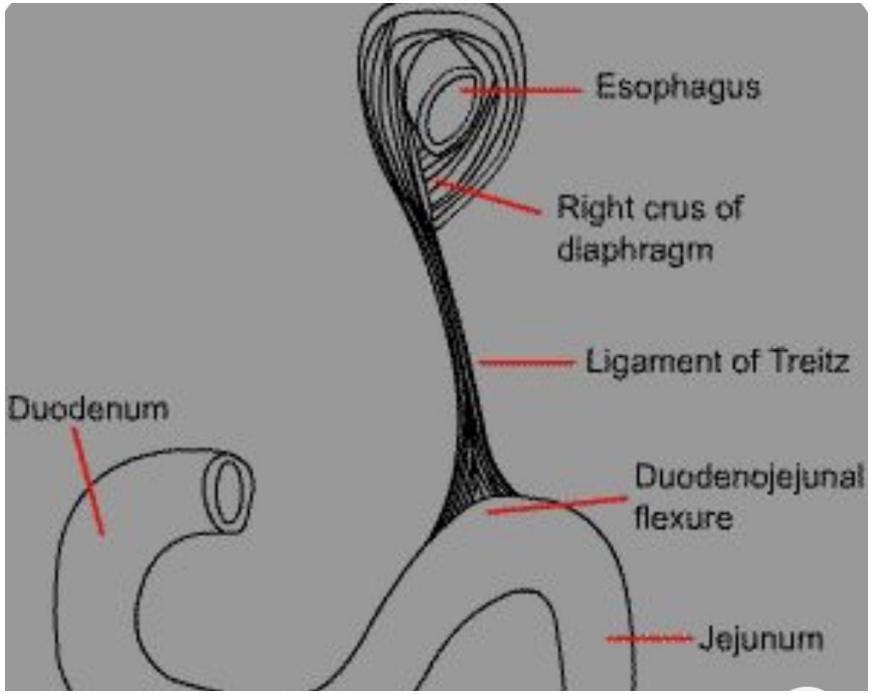


Non selective beta-blockers

- **Carvedilol** (preferred NSBB- Baveno 7)
  - Can be daily dose
  - Goal SBP 90-100 (no role in monitoring HR)
  - Lowers portal pressure >propranolol, lowers systemic pressure
- **Propanolol**
  - 20-40mg BD
  - HR 55-60, SBP >90
- **Nadolol**
  - 20-40mg QID
  - HR 55-60, SBP >90

GIT bleeding

- UGIB=70%
  - Variceal 10%
- LGIB=30%



- UGIB defined as bleeding proximal to ligament of Treitz

Varices

- Gastro-oesophageal varices= 50% cirrhotics
  - Childs Pugh A = 40%
  - Childs Pugh C = 85%
- Form at rate of 5-15% year, 30% will bleed at some point
- Bleeding if portal pressure >12mmHg

Chronic Liver Disease Assessment - Child-Pugh Score

Parameters		Score		
		1	2	3
Albumin		> 35 g/L	28 – 35 g/L	< 28 g/L
Ascites		Absent	Slight	Moderate
Bilirubin		< 34.2 µmol/L	34.2 – 51.3 µmol/L	> 51.3 µmol/L
Encephalopathy		None	Grade 1 – 2	Grade 3 – 4
PTT	Seconds over control	< 4	4 – 6	> 6
	INR	< 1.7	1.7 – 2.3	> 2.3

Score	Class	Description	1-Year Survival (%)	2-Year Survival (%)
5 – 6	A	Well-compensated disease	100	85
7 – 9	B	Significant functional compromise	80	60
10 – 15	C	Decompensated disease	45	35

Reference:

1. Pugh RN, Murray-Lyon IM, Dawson JL, et al. Transection of the oesophagus for bleeding oesophageal varices. Br J Surg 1973; 60:646.
2. Child CG, Turcotte JG. The Liver and Portal Hypertension, WB Saunders Co, Philadelphia 1964.
3. Trey C, Burns DG, Saunders SJ. Treatment of hepatic coma by exchange blood transfusion. NEJM 1966; 274:473.

- High risk of bleeding:
  - Child-Pugh C
  - HVPG >20mmHg
  - Large varices
  - High risk stigmata
- Risk of bleeding
  - Small varices (<=5mm/grade1) < 10%/year
  - Medium/large varices(grade2/3) =30%/year
- Mortality 15-30%/yr
- If untreated, 70% will die within the year

Glasgow Blatchford score

Risk factors at presentation	Threshold	Score
Blood urea nitrogen (mmol/l)	6.5–7.9	2
	8.0–9.9	3
	10.0–24.9	4
	≥25.0	6
Hemoglobin for men (g/l)	120–130	1
	100–119	3
	<100	6
Hemoglobin for women (g/l)	100–120	1
	<100	6
Systolic blood pressure (mmHg)	100–109	1
	90–99	2
	<90	3
Heart rate (bpm)	>100	1
Melena	Present	1
Syncope	Present	2
Hepatic disease	Present	2
Cardiac failure	Present	2

Total score (0–23). Patients with scores >0 are considered to be at high risk. Permission obtained from Elsevier Ltd © Blatchford, O. *et al. Lancet* **356**, 1318–1321 (2000).

Rockall Score

Variables	Points
Age (years)	
<60	0
60–79	1
≥80	2
Hemodynamic shock	
Heart rate >100 bpm	1
Systolic blood pressure <100 mmHg	2
Coexisting illnesses	
Heart failure, ischemic heart disease	2
Renal failure, hepatic failure, metastatic cancer	3
Endoscopic signs (diagnostic)	
No lesion observed, or Mallory–Weiss tear	0
Peptic ulcer, erosive disease, esophagitis	1
Cancer of the upper gastrointestinal tract	2
Endoscopic signs (hemorrhagic)	
Clean-base ulcer or flat, pigmented spot	0
Visible blood, active bleeding, visible vessel, adherent clot	2

Scores range from 0 to 11 and are divided into three categories of risk: low risk ≤2, moderate risk 3–5, high risk ≥6. Permission obtained from BMJ Publishing Group Ltd © Rockall, T. A. *et al*. *Gut* **38**, 316–321 (1996).

Timing of endoscopy

- Following adequate haemodynamic resuscitation
- UGIB + features suggesting cirrhosis→ scope within 12 hours of presentation

PRE-PROCEDURAL

Justification for EGD

Informed consent

Patient Preparation
- Fasting convention
- Stomach contents & water jet usage reporting

Premedication
- Simethicone
- N-acetylcysteine
- Pronase

Prophylactic measures
- Antibiotics
- PPIs
- Vasoactive drugs

Risk Stratification
- UGI cancers
- Biopsies for suspicious lesions

Endoscopist competency
- Continuous development
- Benchmarks
- Experience

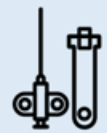
Sedation choice

INTRA-PROCEDURAL

Thorough Examination
- Anatomical landmarks

Inspection Duration
- ≥ 7-8 min

Technological Advancements
IEE types:
- NBI
- FICE
- BLI
- i-SCAN



Characterization & Biopsy Protocols
- Gastric ulcer biopsies
- Barrett's esophagus measures

Visualization Clarity
- Water jets
- Mucolytics
- Defoaming agents

Reporting
- ≥ 10 photo-documentations (standard exams)

POST-PROCEDURAL

Documentation
- Comprehensive reports for findings & recommendations

Patient Communication
- Post-EGD reach out for incidents

Auditing Post-procedural Outcomes
- Complications
- Hospital readmissions
- Mortality

Biopsy & Histological Evaluations
- Swift review and escalation for malignancy detection

Technological Tools
- Software tools for enhanced report generation

Pre-endoscopic

- ABCs
- If LOC altered, protect airway
- Avoid aggressive volume resuscitation
  - Lower BP accepted
  - Target Hct 21%
  - Aim for Hb between 7 and 8g/dl
  - No routine role for FFPs/platelets

Pre-endoscopic

- Antibiotics 7/7
  - Ceftriaxone 1G daily
  - Mortality benefit

- PPI
  - Up to a quarter of suspected variceal bleeds have another cause

Pre-endoscopic

- Consider infusion of Erythromycin (250mg IV 30-120min prior)
  - If no contraindications

Vasoactive drugs

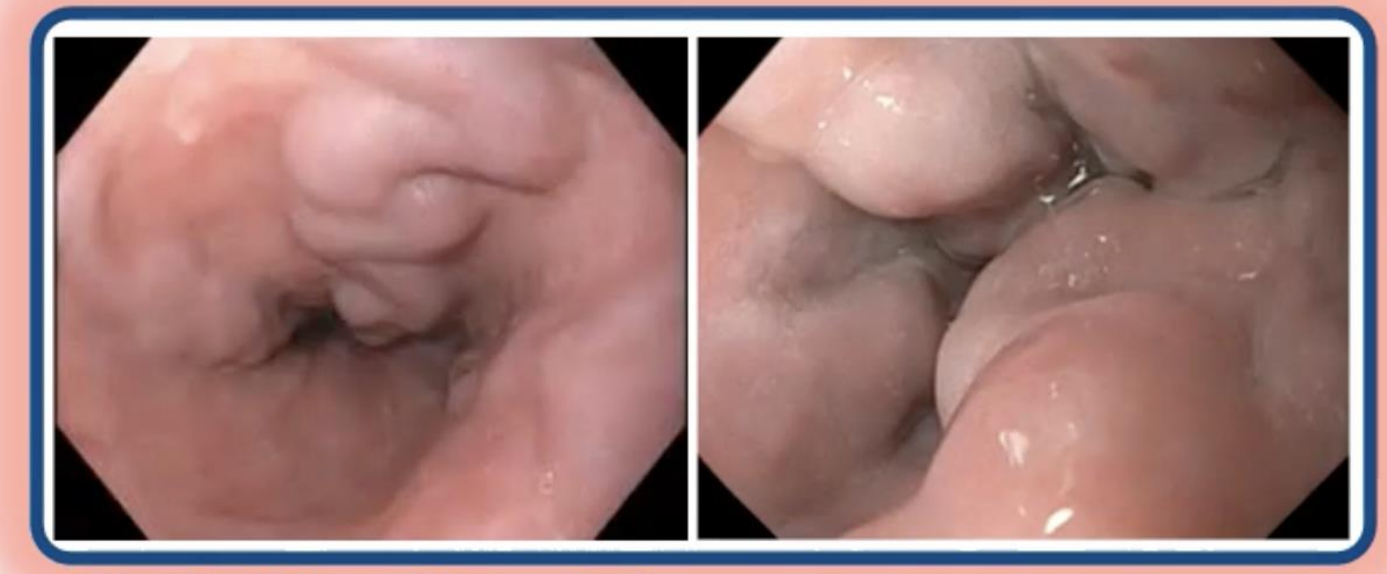
Somatostatin	IV 250mcg bolus (may repeat in 1hr) IV infusion of 250-500mcg/hr for 2-5 days
Octreotide	Synthetic analog of Somatostatin, longer half life IV 50mcg bolus, followed by IV infusion of 50mcg/hr for 2-5 days Effective alone or with EVL and reduces rebleeding but not mortality Better safety profile than Vasopressin/Terlipressin but no survival benefit
Vasopressin	Less preferred (extensive vasoconstrictor). Given for up to 24 hours
Terlipressin	Synthetic Vasopressin analog, longher half life Initial dose 2mg IV q4hrly, down titrated to 1mg q4hrly for 2-5 days Associated with hyponatremia and ischemic injury (incl ischemic bowel, MI)

Ioannou et al, Cochrane Database Sys Rev, 2003; Garcia-Tsao et al, Hepatology, 2007

Endoscopic

Small Varices (<5 mm)

Grade 1 (flattening)



Grade 2 (non-flattening)

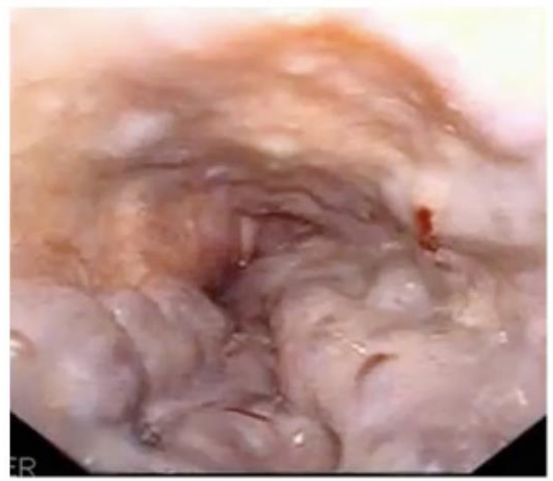
Grade 3 (confluent)

Medium/Large Varices (>5 mm)

Figure 5.2 Larges esophageal varices with red signs.

Figure 6.1 Large varices with red signs.

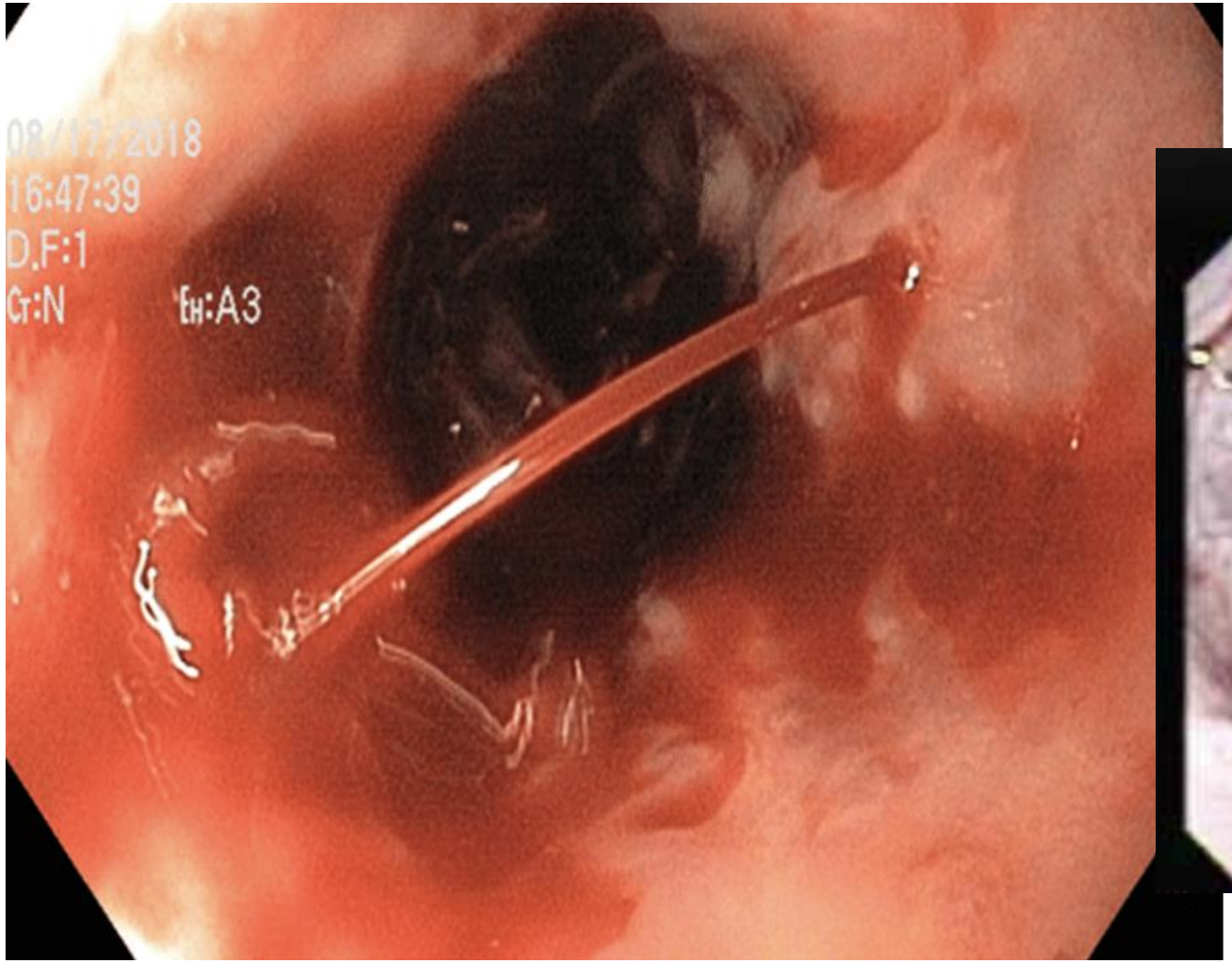
Red wale signs

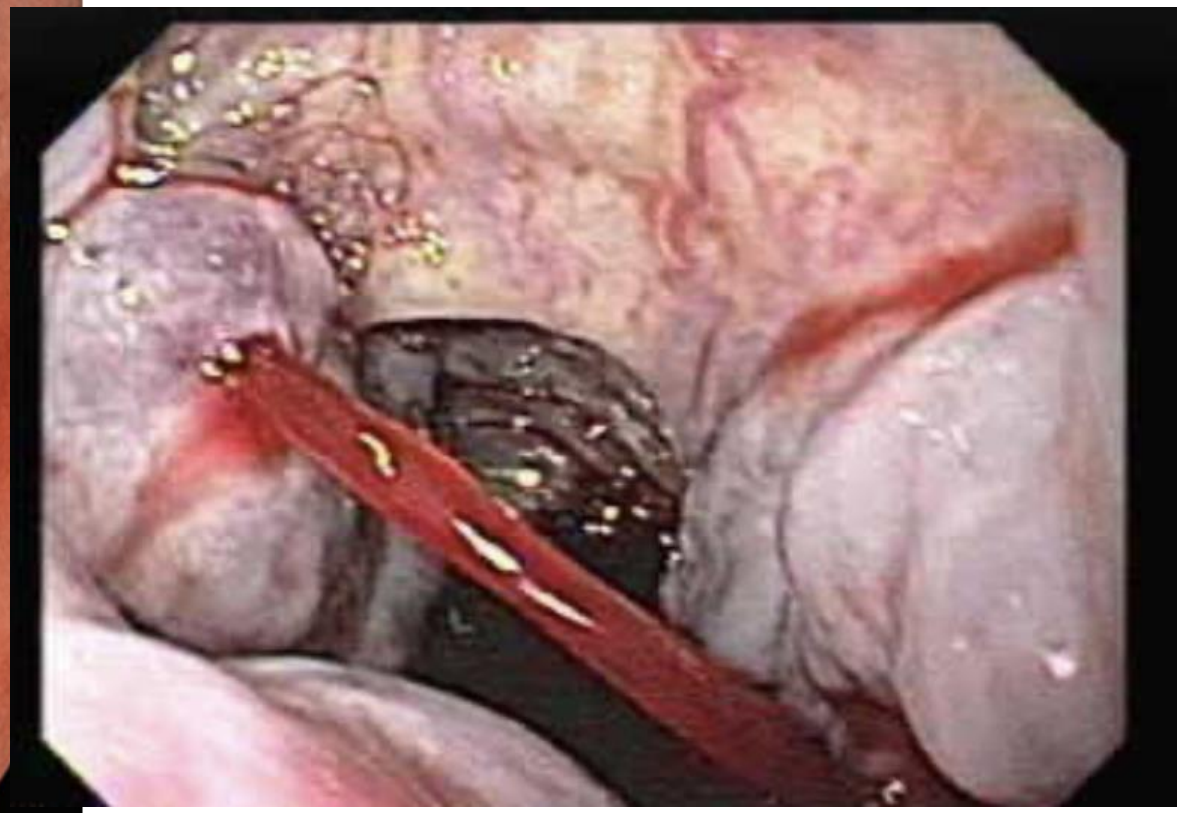


Cherry spots

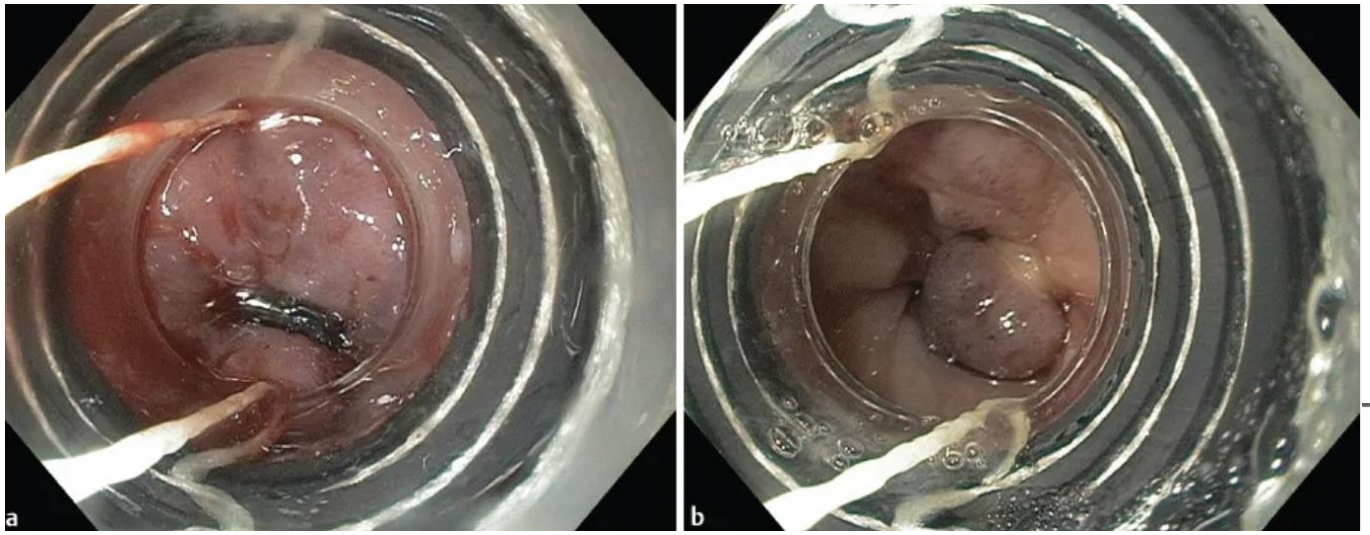
'Mamilla' (white nipple) sign

Post-banding ulcers

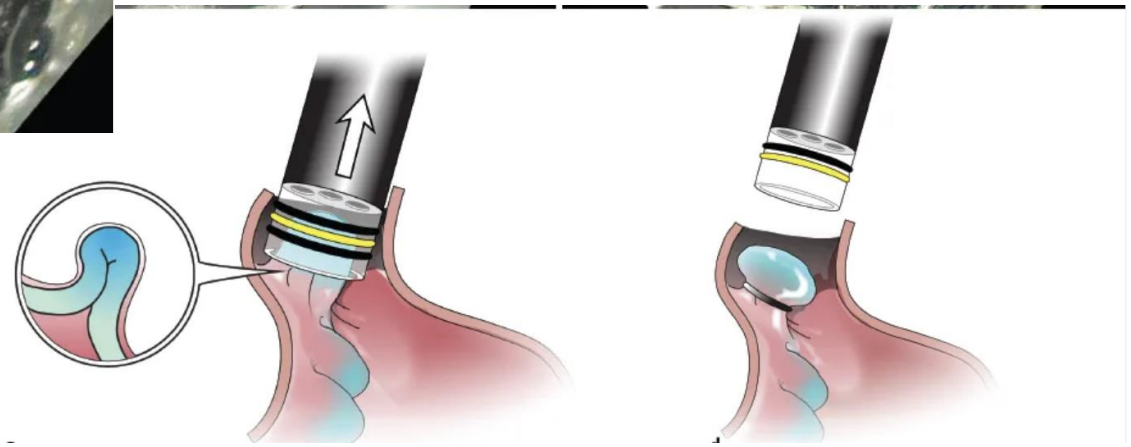

08/17/2018
16:47:39
D.F:1
Cr:N
EH:A3



Endoscopic Variceal Band Ligation



Repeat EGD 2-8 weekly until full obliteration, then 6-12 months thereafter



Complications

- Chest pain
- Ulceration
- Bleeding
- Stricture formation
- Perforation

Post-endoscopic

- If intubated, extubate as soon as possible after scope
- Stop PPI
- Continue vaso-active drugs 2-5 days
- Continue antibiotics for up to 7 days
- Start oral nutrition as soon as possible
- GIT emptying (lactulose/enemas) to reduce risk HE

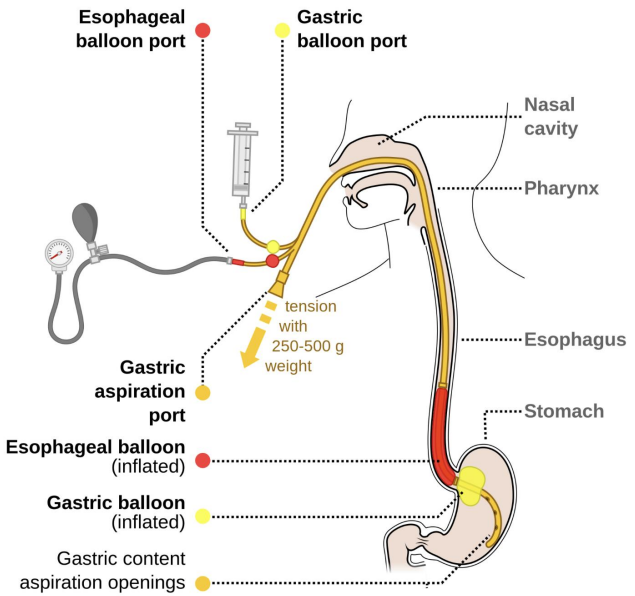
Baveno 7, ESGE guidelines

Treatment failure

- Absence of control of bleeding or rebleeding within the first 5 days (10-15%)
- Risk factors:
  - HVPG >20mmHg
  - CTP C→regardless of scope findings
  - CTP B→active bleeding on endoscopy

Balloon tamponade

- Sengstaken Blakemore tube
- Temporary “bridge” for max 24 hours
- ICU monitoring, consider intubation



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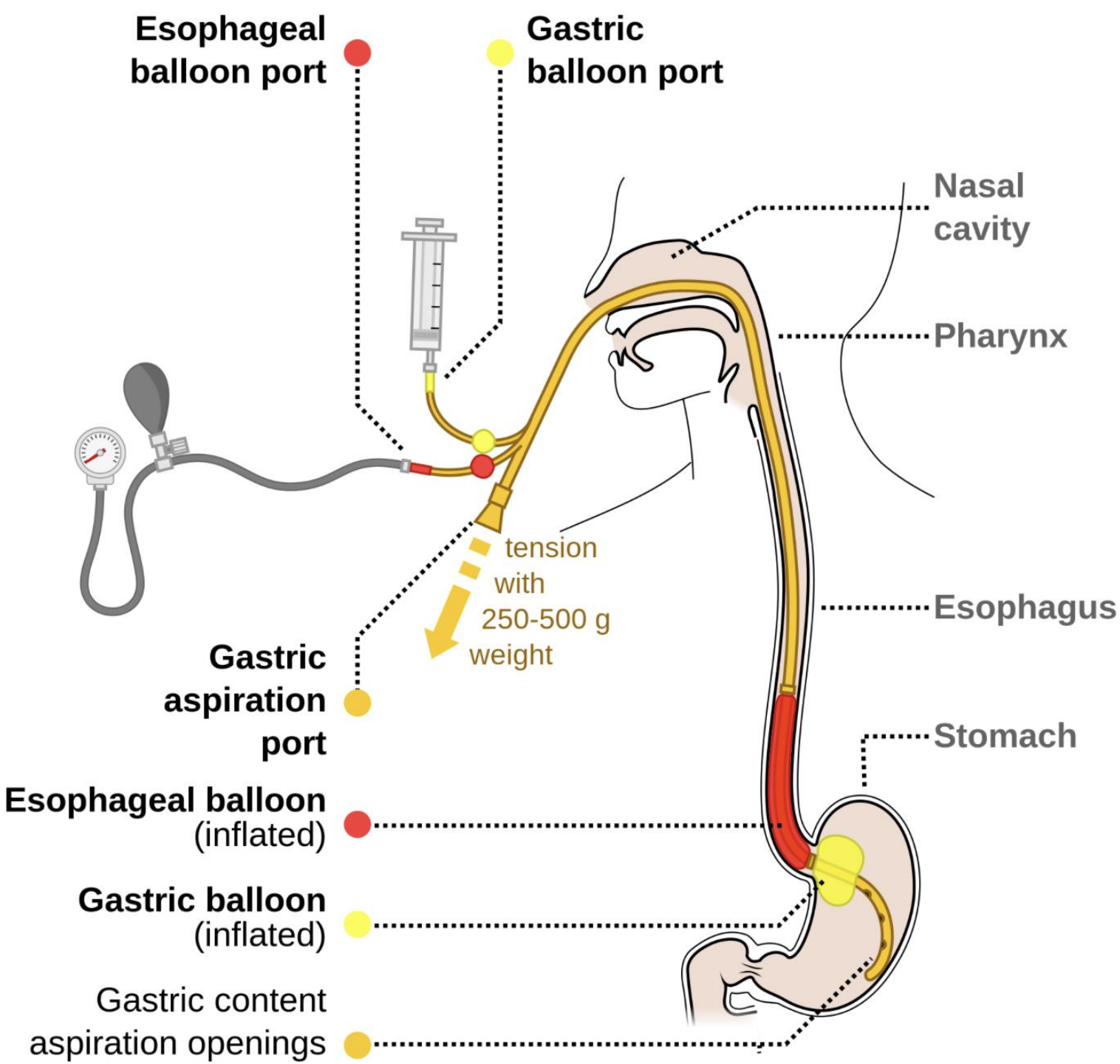
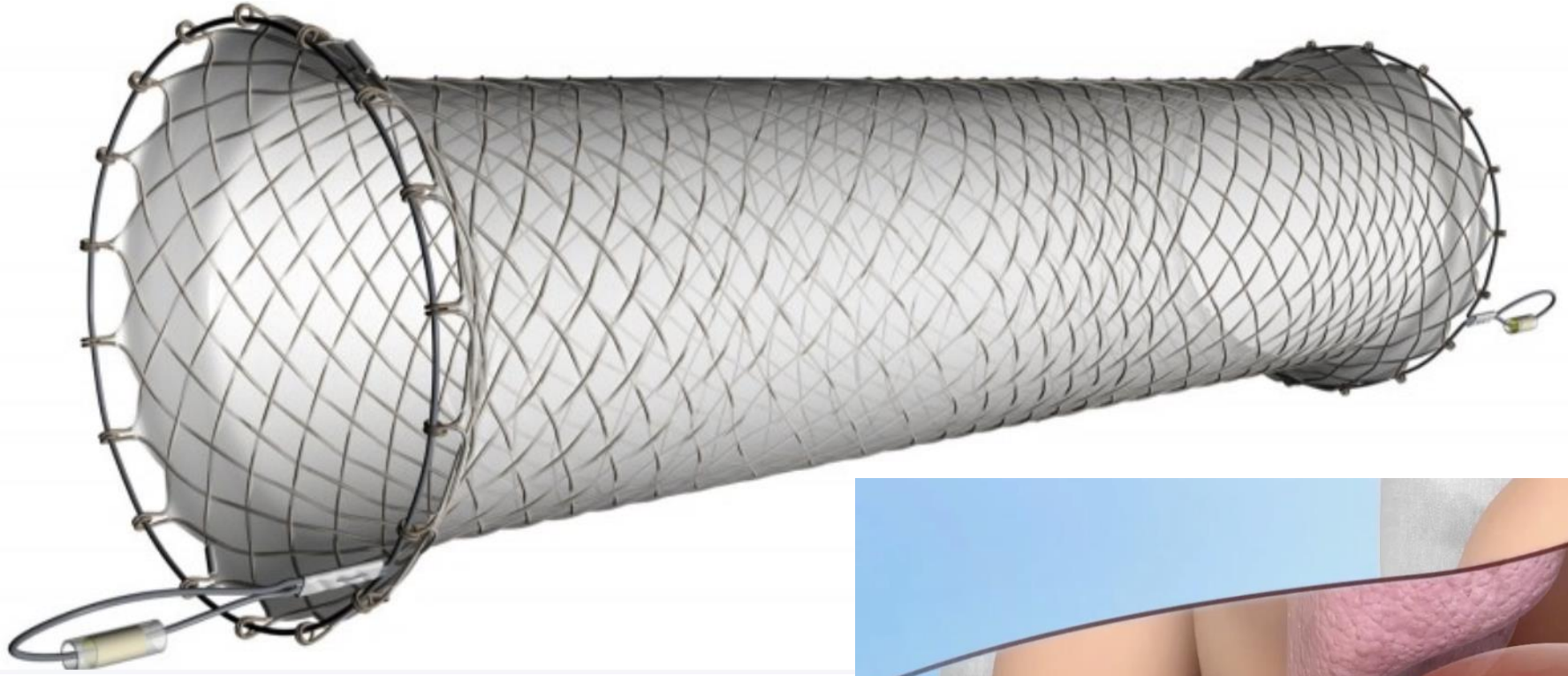
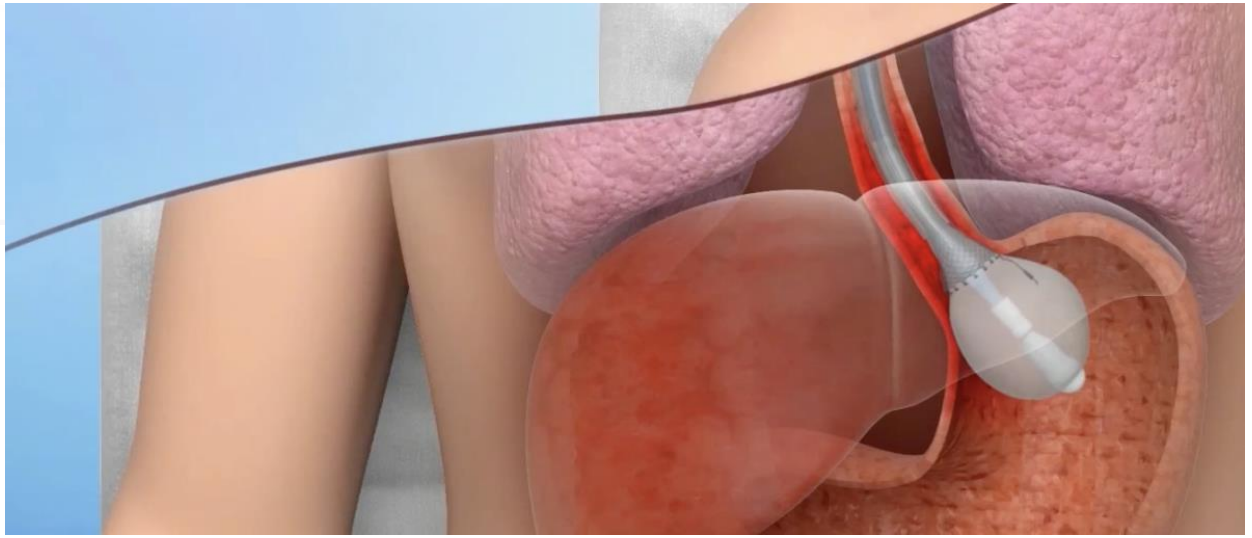
- Tempor
- ICU mo



SEMS e.g. Danis stent





TIPS

PRE-EMPTIVE

- Early (within 72 hours, ideally <24 hours) if bleeding OV/GOV1/GOV2 at high risk of treatment failure
  - Child-Pugh C <14 points
  - Child Pugh B>7 points with active bleeding
  - HVPG>20mmHg
- Goal: Target portal pressure gradient <12mmHg OR reduce pre-TIPS gradient by 50%

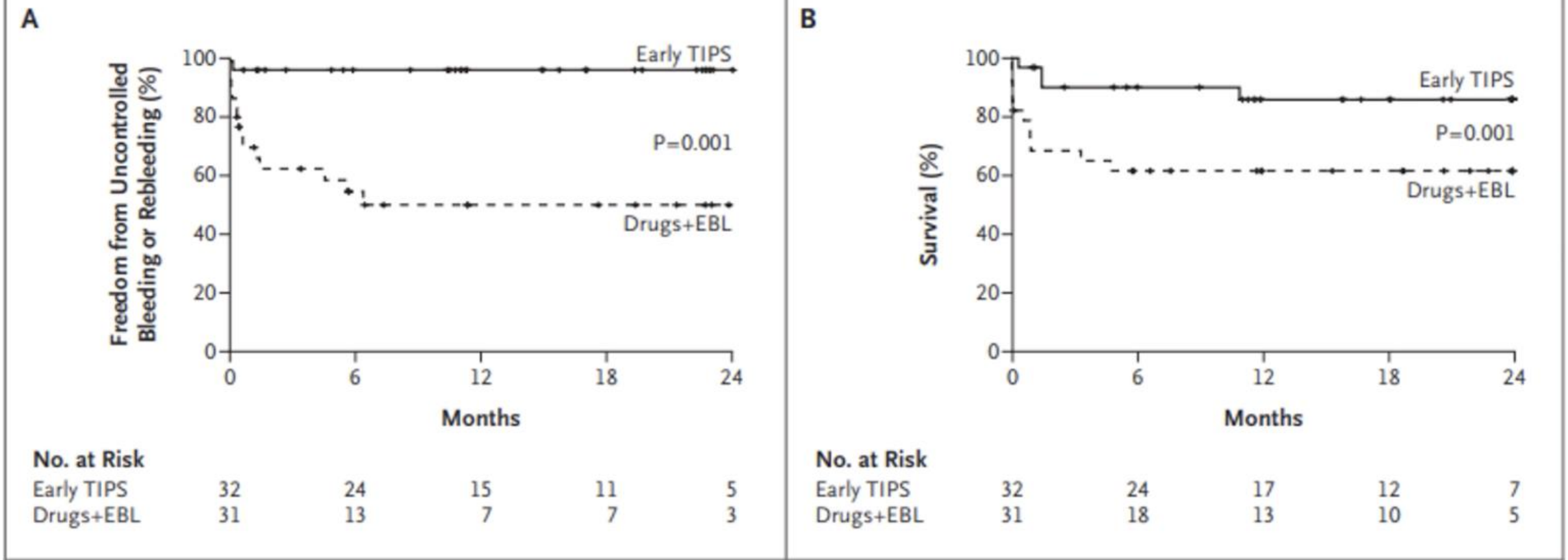


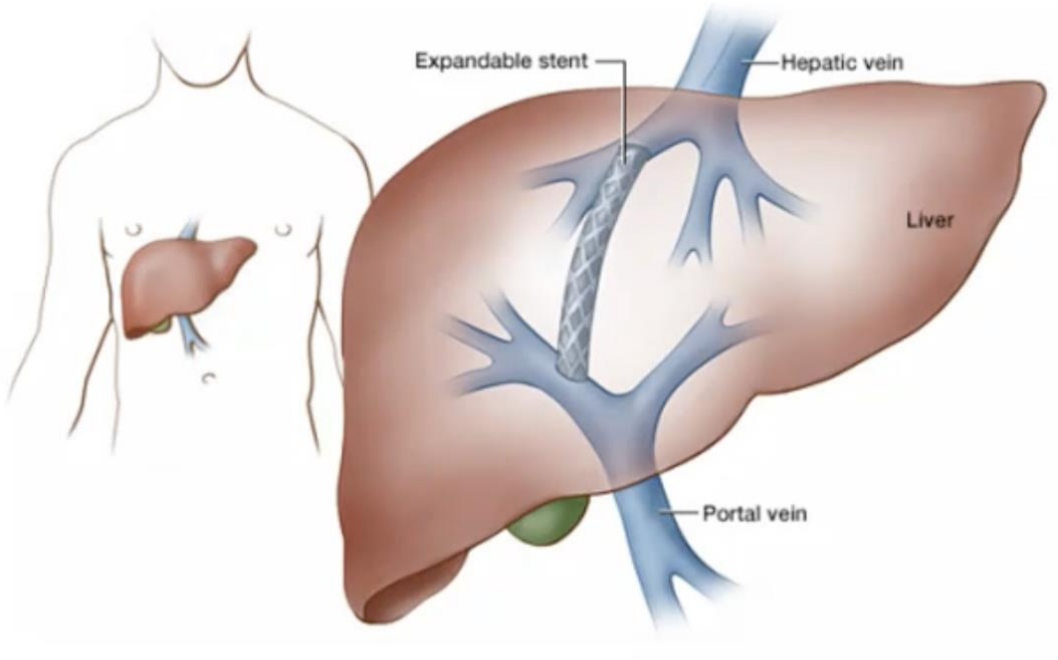
Figure 2. Actuarial Probability of the Primary Composite End Point and of Survival, According to Treatment Group.

The probability of remaining free from uncontrolled variceal bleeding or variceal rebleeding is shown in Panel A, and the probability of survival is shown in Panel B. EBL denotes endoscopic band ligation, and TIPS transjugular intrahepatic portosystemic shunt.

Garcia-Pagan et al. NEJM. 2010

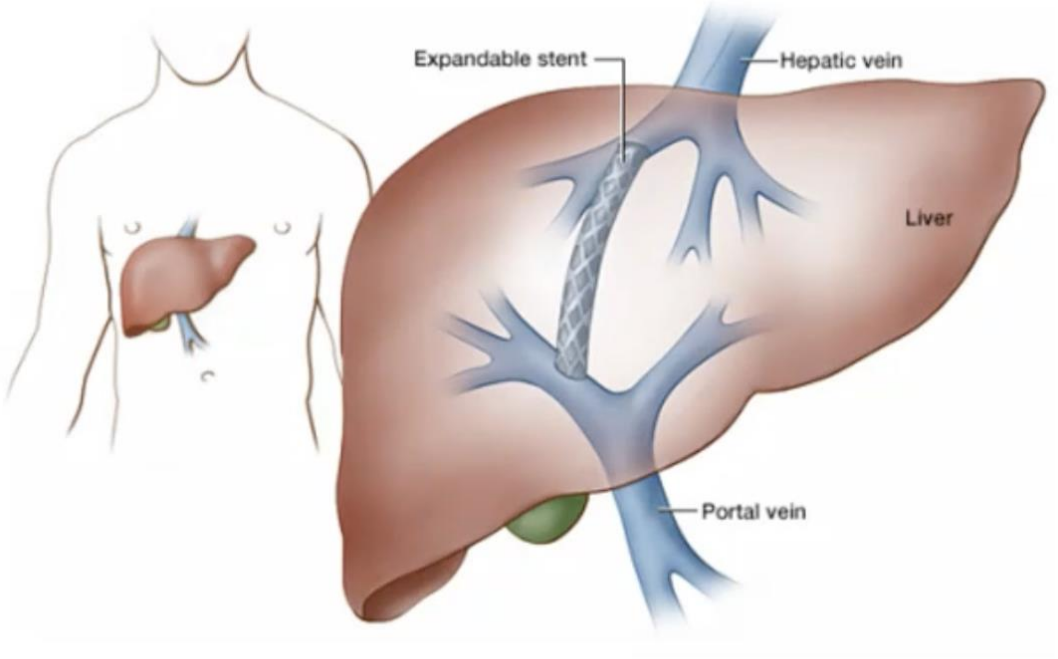
SALVAGE/RESCUE TIPS

- Persistent bleeding despite pharmacological and endoscopic therapy→ TIPS
- Rebleeding in first 5 days → repeat endoscopy or TIPS



Absolute contraindications

- CCF
- Severe PHT
- Severe TR
- Polycystic liver disease
- Uncontrolled systemic infection or sepsis



Relative contraindications

- HCC (particularly if central)
- PVT
- Severe coagulopathy or thrombocytopenia

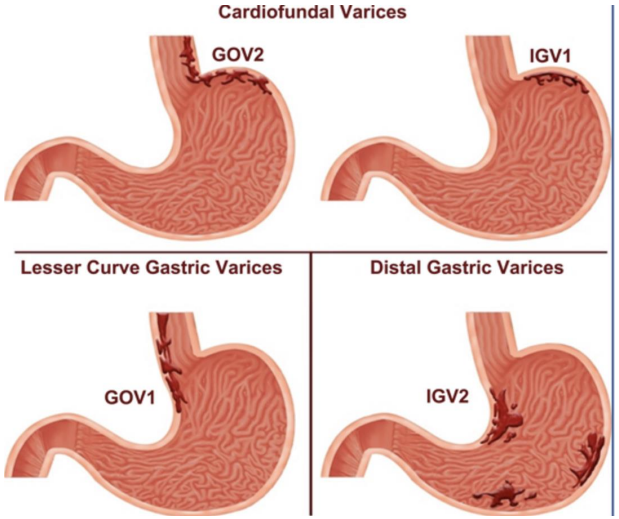
- Futility of TIPS must be considered if: CTP >=14, MELD >30, Lactate >12 and no liver transplant envisioned

Secondary prophylaxis

- Rebleeding occurs +-60% within 1-2 yrs after initial episode
- Beta blocker + EVL
- Only monotherapy if intolerance or contraindications
- If rebleeds on first line, consider TIPS

Gastric Varices

Gastric varices occur +-15% of cirrhosis
Less likely to bleed, bleeding is more severe
No primary intervention other than NSBB
Gastric varices alone→ splenenctomy



Gastric v

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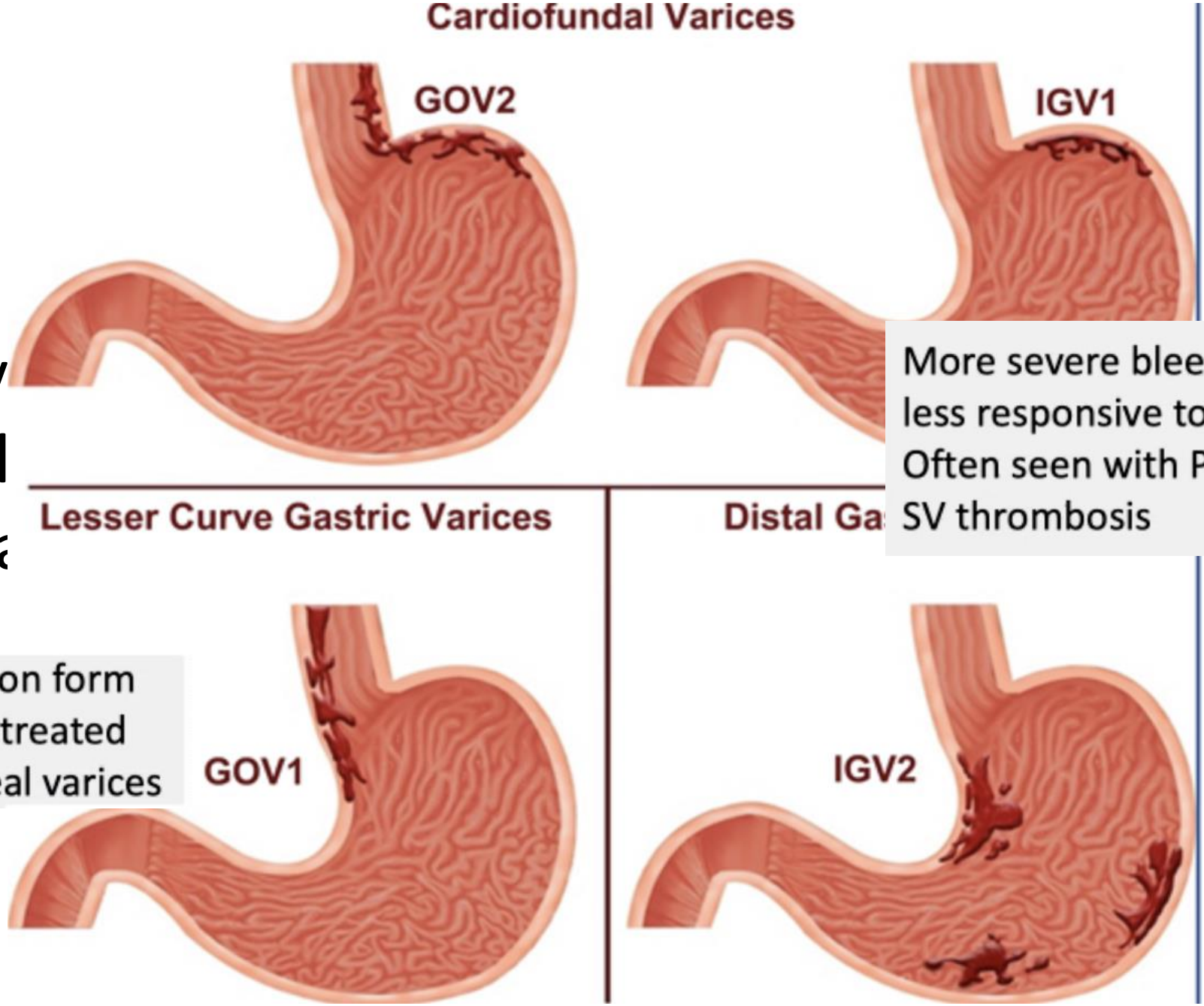
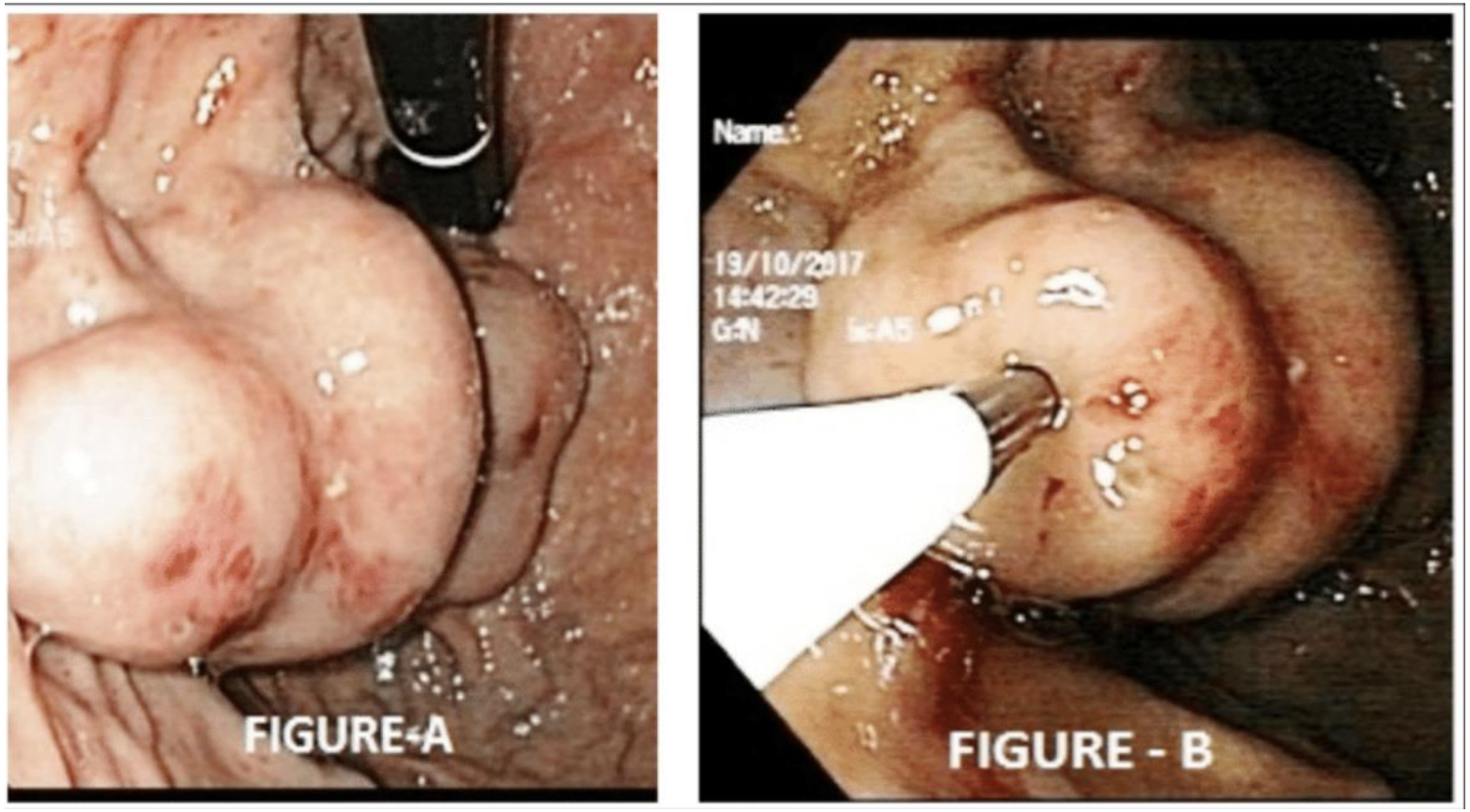


More severe bleeding – less responsive to TIPS. Often seen with PV or SV thrombosis

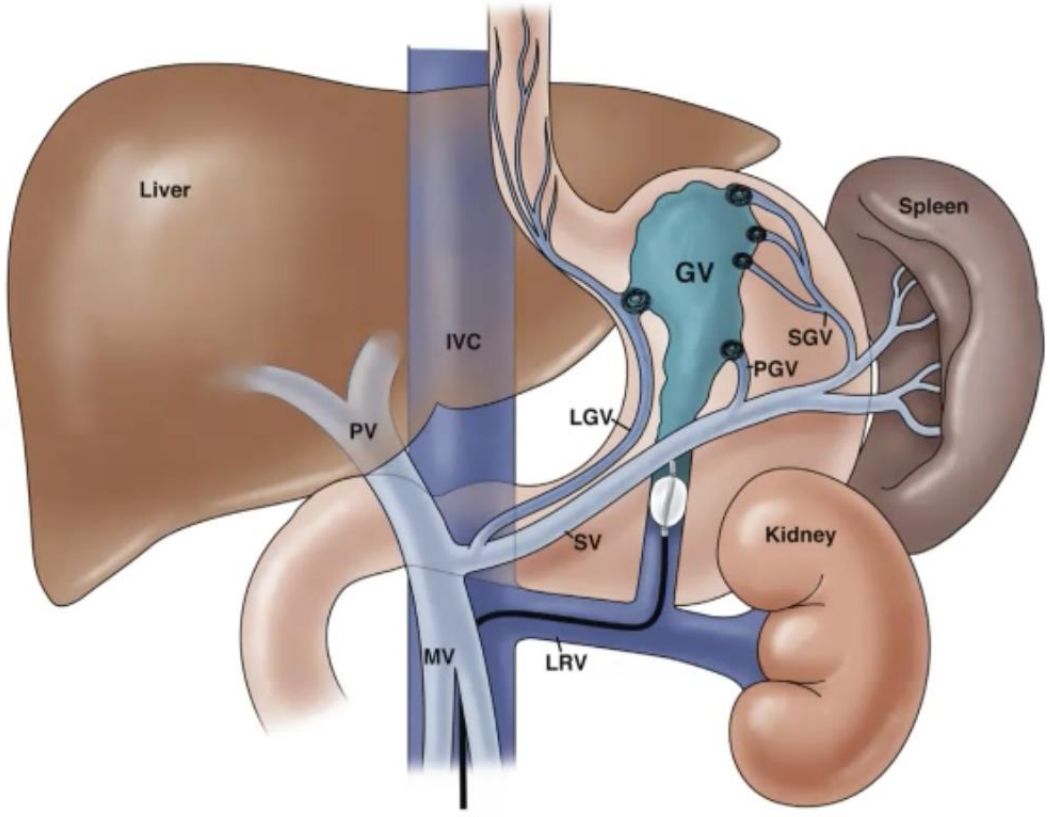
Most common form – should be treated as esophageal varices

Tissue adhesive

- N-butyl-cyanoacrylate for IGV. GOV2 beyond cardia

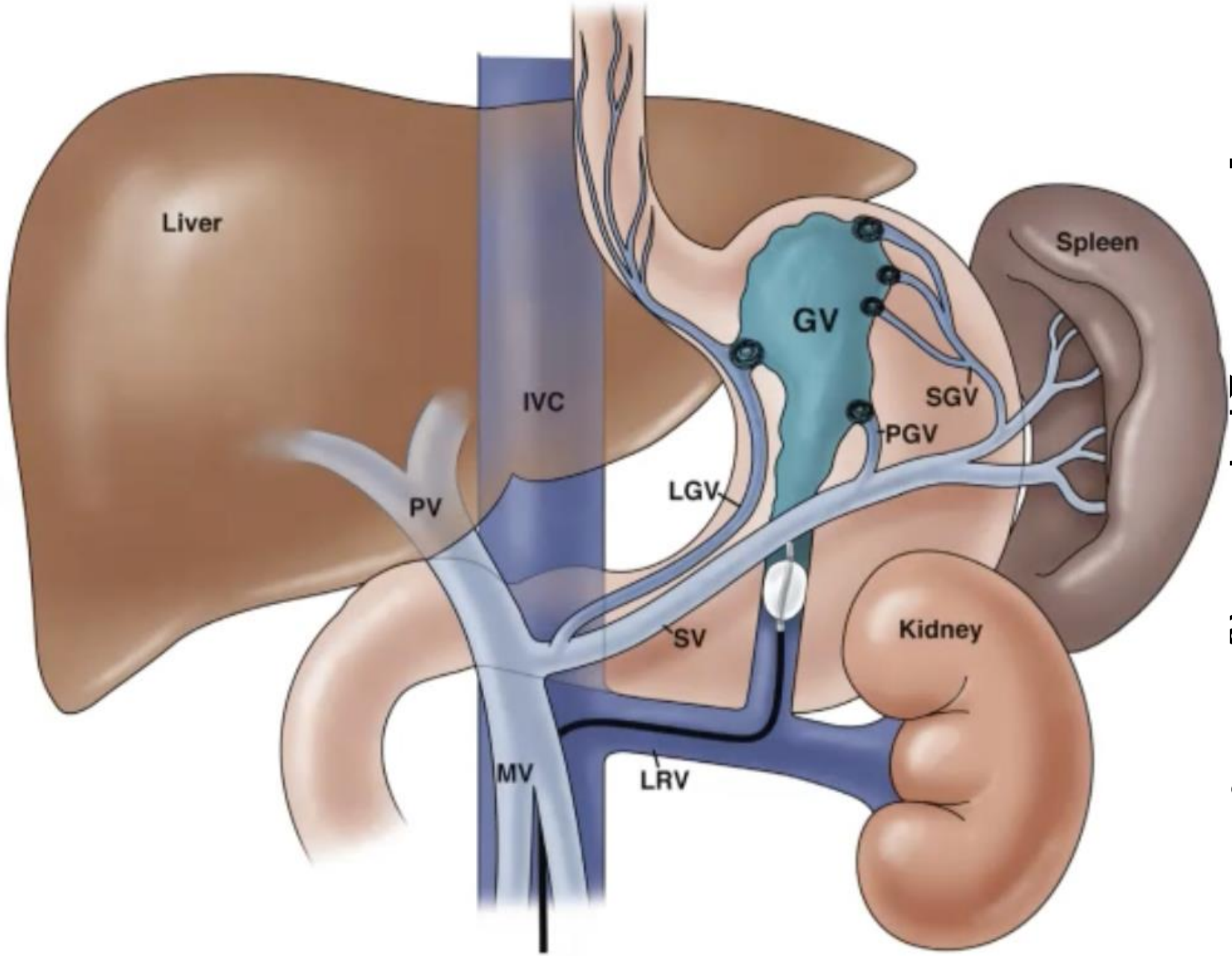


Balloon Occluded Retrograde Transvenous Obliteration (BRTO)



- Useful in GOV2/IGV1 with large shunts
- Increased liver perfusion and ascites formation
- Oesophageal varices may worsen

Ball
Trai



TO)

2/IGV1

nts

ascites

arices

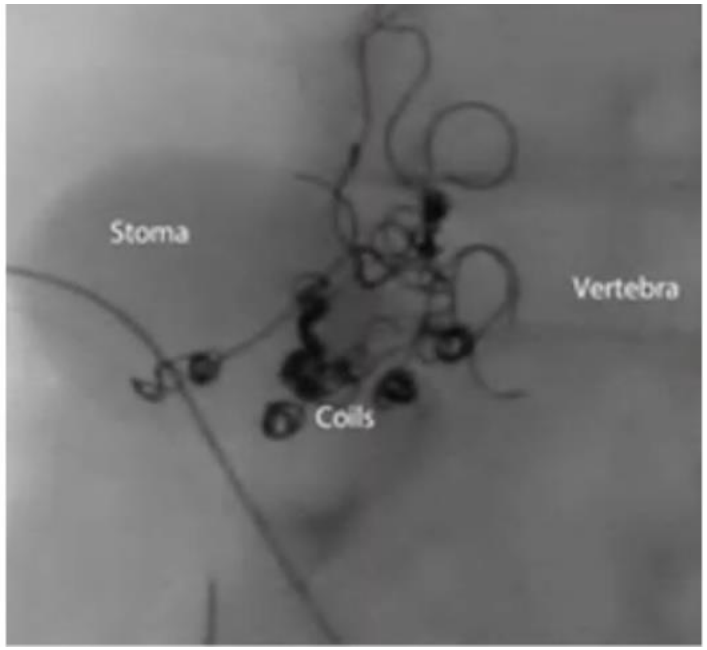
Table 31.2 Procedure-Related Complications of Balloon-Occluded Retrograde Transvenous Obliteration

Study	Patients (*n*)	Complication	Rate
Cho et al[12]	49	Death	2/4 (4.3%)
		Pulmonary embolus	2/49 (4.3%)
		Left renal vein thrombus	1/49 (2.2%)
		Hemoglobinuria	26/49 (53.1%)
Saad et al[55]	39	Spontaneous bacterial peritonitis	4/49 (8.2%)
		Partial portal vein thrombosis	1/39 (2.5%)
		Partial left renal vein thrombosis	1/39 (2.5%)
		Cardiac arrhythmia	1/39 (2.5 %)
		Pulmonary embolus	1/39 (2.5%)
Jang et al[53]	183	Pulmonary embolus	5/183 (2.7%)
		Left renal infarct	1/183 (0.5%)
		Gastrorenal shunt rupture	1/183 (0.5%)
Watanabe et al[58]	77	Portal vein thrombosis	3/77 (3.9%)
		Renal vein thrombosis	2/77 (2.6%)
		Splenic vein thrombosis	2/77 (2.6%)

Based on data from Cho SK, Shin SW, Lee IH, et al. Balloon-occluded retrograde transvenous obliteration of gastric varices: outcomes and complications in 49 patients. AJR Am J Roentgenol 2007;189(6):W365–W372.[12]; Jang SY, Kim GH, Park SY, et al. Clinical outcomes of balloon-occluded retrograde transvenous obliteration for the treatment of gastric variceal hemorrhage in Korean patients with liver cirrhosis: a retrospective multicenter study. Clin Mol Hepatol 2012;18:368–374.[53]; Kato T, Uematsu T, Nishigaki Y, et al. Therapeutic effects of BRTO on portal-systemic encephalopathy in patients with liver cirrhosis. Intern Med 2001;40:688–691.[54]; and Saad WE, Wagner C, Al-Osaimi A, et al. The effect of balloon-occluded transvenous obliteration of gastric varices and gastrorenal shunts on the hepatic synthetic function: a comparison between Child-Pugh and model for end-stage liver disease scores. Vasc Endovascular Surg 2013;47(4):281–287.[55]

Ectopic varices

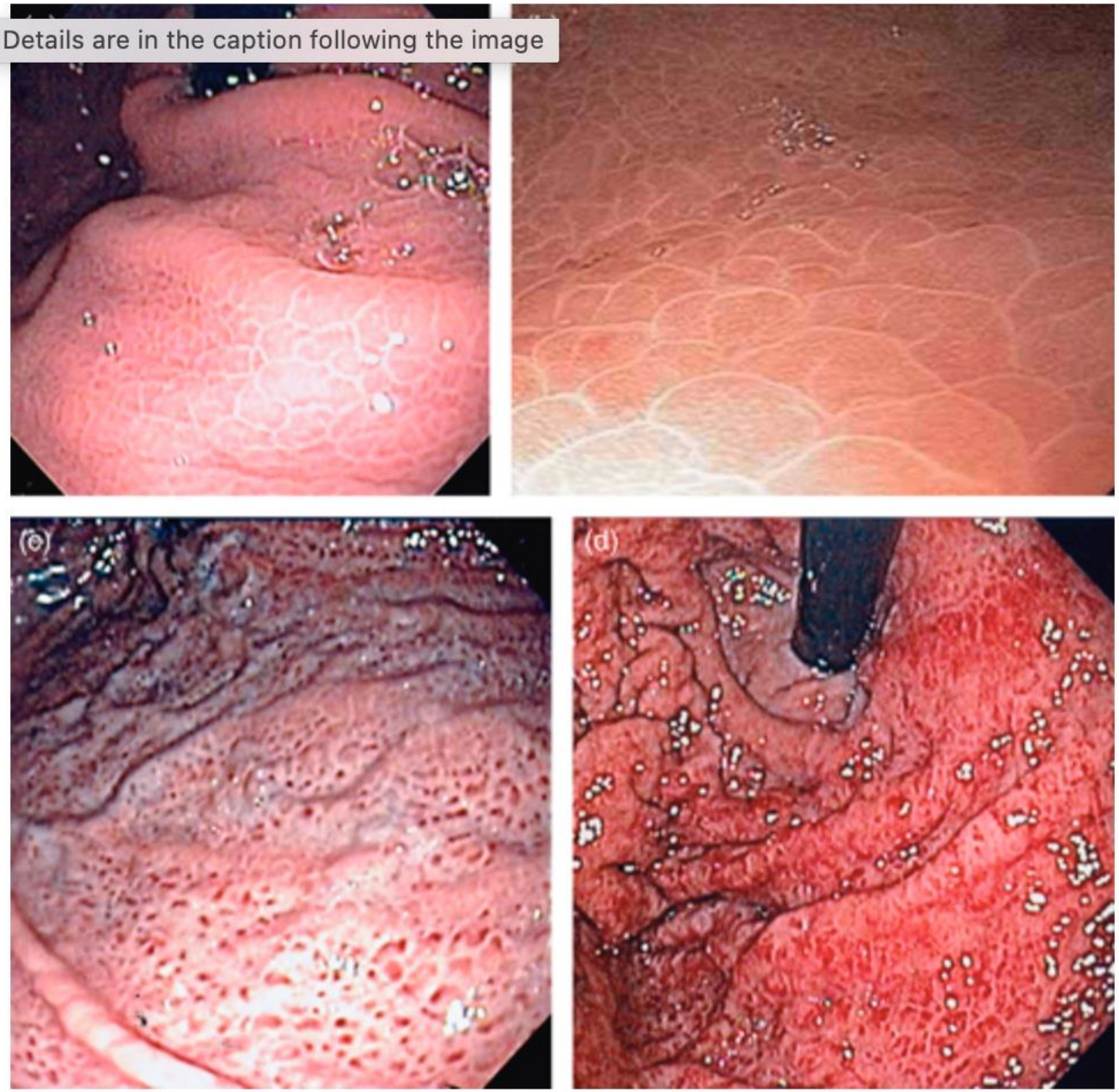
- Rare (1-5% of varices)
- Stomas (40%), duodenum (23%), rectum (17%) other sites (20%)
- Endoscopic access may be challenging
- Combo of TIPS and embolization preferred


Stoma
Vertebra
Coils

Portal hypertensive gastropathy

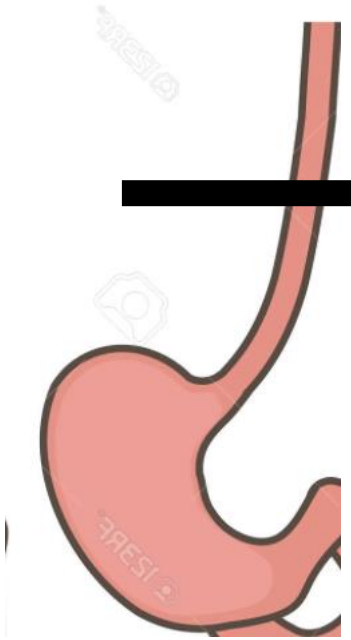
- 65% of cirrhosis with CSPH
- Severity correlates with CTP score
- Typical presentation is slow bleeding and anemia
- EVL may aggravate PHG
- NSBB is first line therapy in preventing recurrent bleeding
- Consider TIPS for transfusion dependent PHG that persists despite NSBB and endoscopic therapy

Details are in the caption following the image



Take-home messages

- NSBB is first line therapy for primary prevention
- Risk stratification NB
- Acute variceal bleed--> 6-week mortality 20%
- Best treated with EBL/Vasoactive drugs and antibiotics
- Pre-emptive TIPS in high-risk patients
- Rescue/Salvage TIPS in those who fail endoscopic therapy



hank you!