

Esophageal Variceal Hemorrhage

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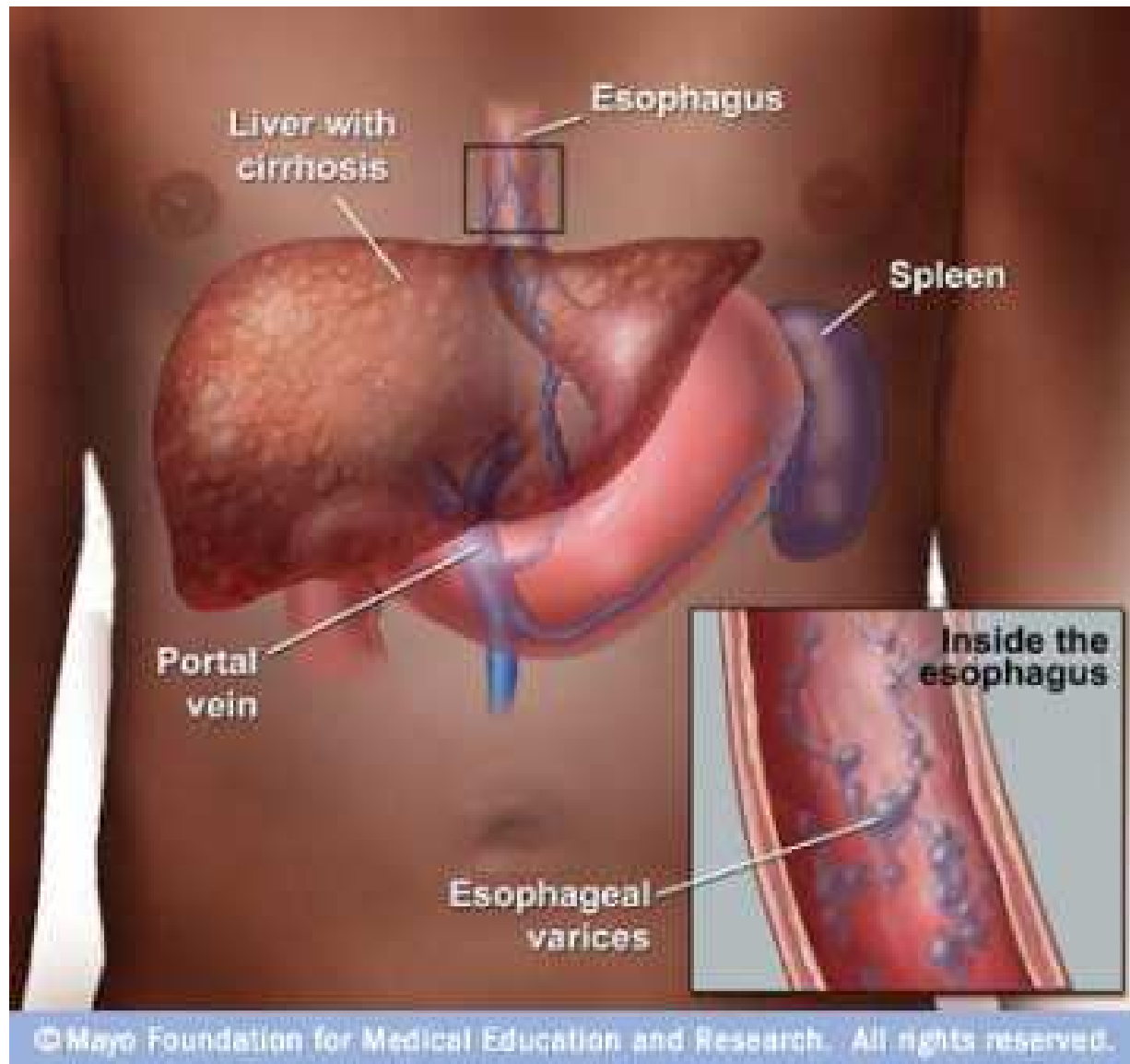
Objectives

1. Describe the pathophysiology of esophageal varices and variceal hemorrhage
2. Recommend a plan for emergent pharmacological treatment of esophageal variceal hemorrhage
3. Identify non-pharmacologic treatment options for esophageal variceal hemorrhage

Esophageal Varices

- Porto-systemic collaterals resulting from portal hypertension
 - Cirrhosis of the liver
 - Portal/systemic circulation
- Elevated hepatic venous pressure gradient (HVPG)
 - Normal: 3-5 mmHg
 - >10 mmHg strong predictor of varices development

Esophageal Varices

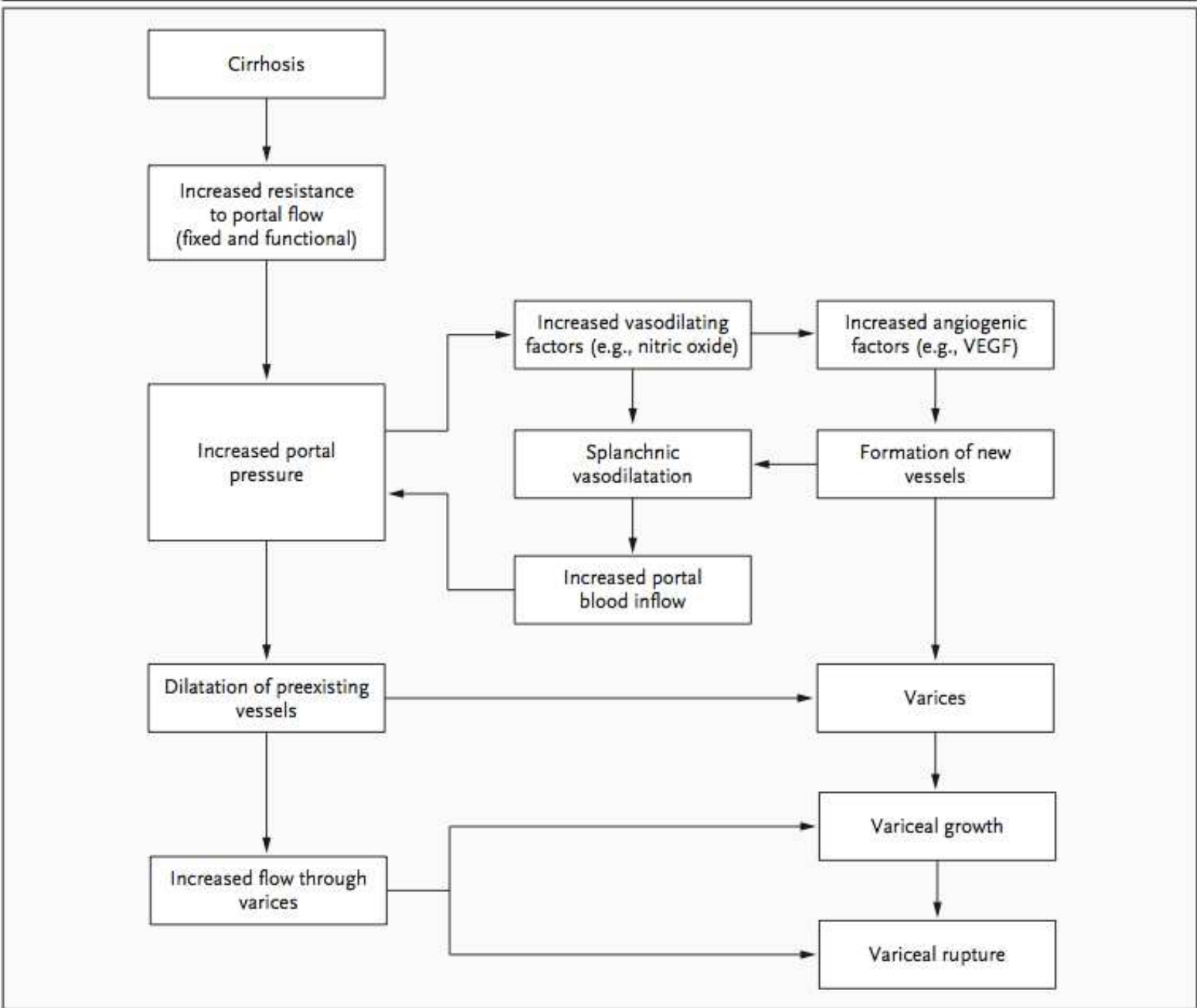


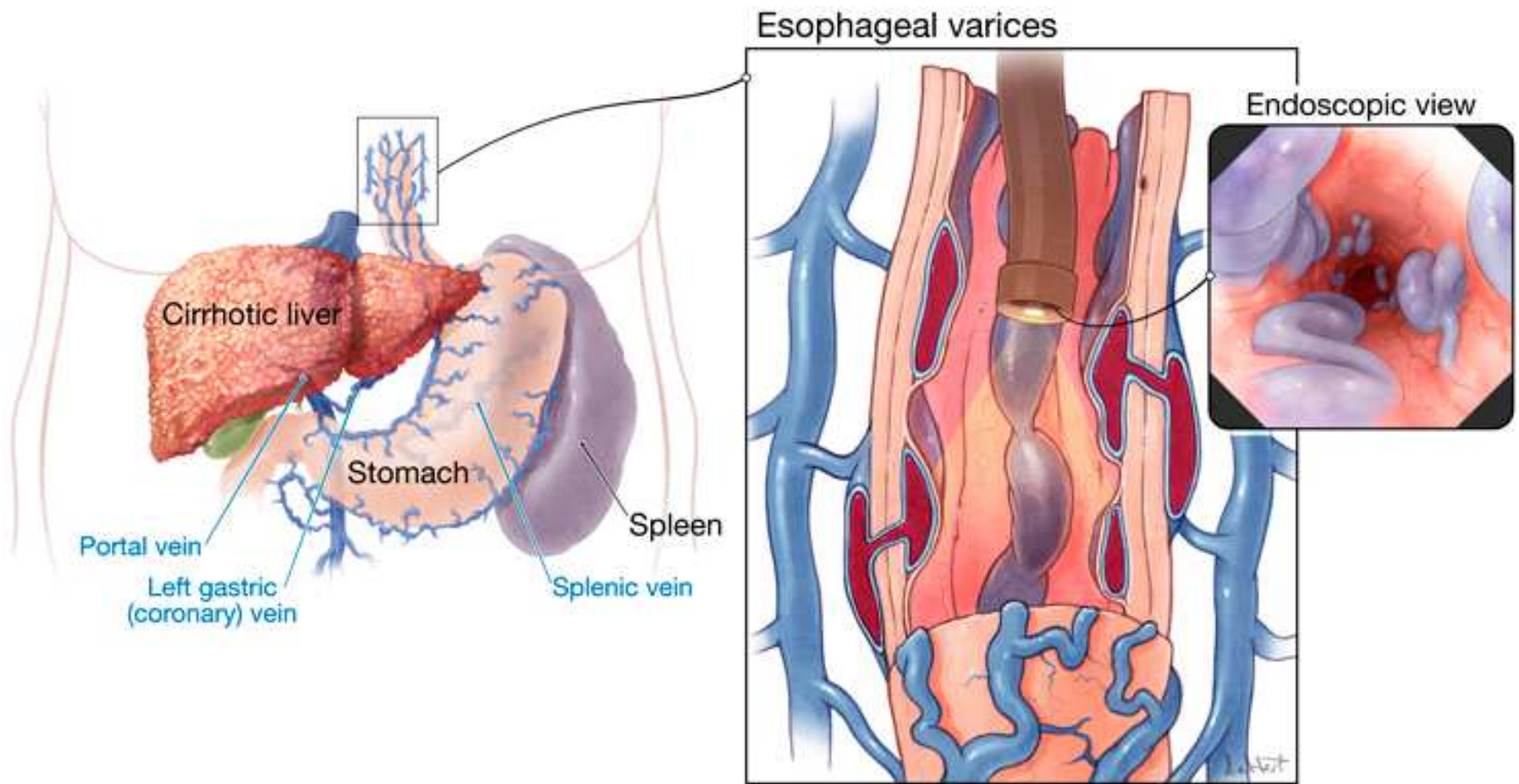
Portal Hypertension

- Increased resistance to blood flow in liver
 - Structural: cirrhotic liver (fibrous tissue, nodules)
- Intrahepatic vasoconstriction
 - Dynamic: decreased nitric oxide production
- Varix development does not affect portal hypertension
 - Increased resistance to portal flow
 - Increased portal inflow

Variceal Hemorrhage

- Gastroesophageal varices present in 50% of patients with cirrhosis
 - Highest rate Child Class B & C liver disease
- 2007 variceal hemorrhage rate 5-15%
- Six week mortality rate 20%
- Variceal wall tension
 - Primary predictor of rupture
 - Larger diameter varix > smaller varix
 - Same HVPG
- Lethal complication





Patient Case

- 70 yo male presented to the ED with gross hematemesis beginning that evening
- Stated complaint: “Upper GI bleed”
- PMH
 - *Cirrhosis* CAD s/p CABG
 - *Esophageal varices* Hypertension
 - *GI bleed* Hyperlipidemia
 - Splenomegaly Neuropathy
 - Pancytopenia COPD

Patient Case

- Social History

- No alcohol for 7+ years (extensive history)
- Dips snuff

- Home Medications

- Metoprolol 12.5 mg daily
- Lasix 60 mg
- Prinvil 10 mg BID
- Zocor 20 mg daily
- Folic acid 1 mg daily
- Neurontin 300 mg BID
- Prilosec 20 mg daily
- MVT daily

Patient Case

- Vital Signs
 - HR 71
 - BP 79/33
- Laboratory Data
 - Hemoglobin 8.5
 - Hematocrit 25.1
 - Platelets 125

Patient Case

- Emergency Department management
 - Protonix 80 mg IV bolus, followed by Protonix drip
 - Sandostatin (octreotide) 50 mcg bolus, followed by 50 mcg/hr drip
 - Rocephin 1 gram IV x 1 dose
 - Erythromycin 250 mg IV x 1 dose
 - FFP & PRBC transfusions x 3
 - 1 L NS
 - GI consult

Emergency Management of Esophageal Variceal Hemorrhage

- Splanchnic vasoconstrictor, prompt initiation
 - Somatostatin analog IV
 - Sandostatin (octreotide) in U.S.
- Prophylactic antibiotic, short-term
 - Norfloxacin/ciprofloxacin
 - Rocephin
- Endoscopic treatment < 12 hours after admission
 - Diagnosis and treatment

Emergency Management of Esophageal Variceal Hemorrhage

- Intravascular volume support
- Blood transfusions
 - Maintain hemoglobin ~ 8 g/dL

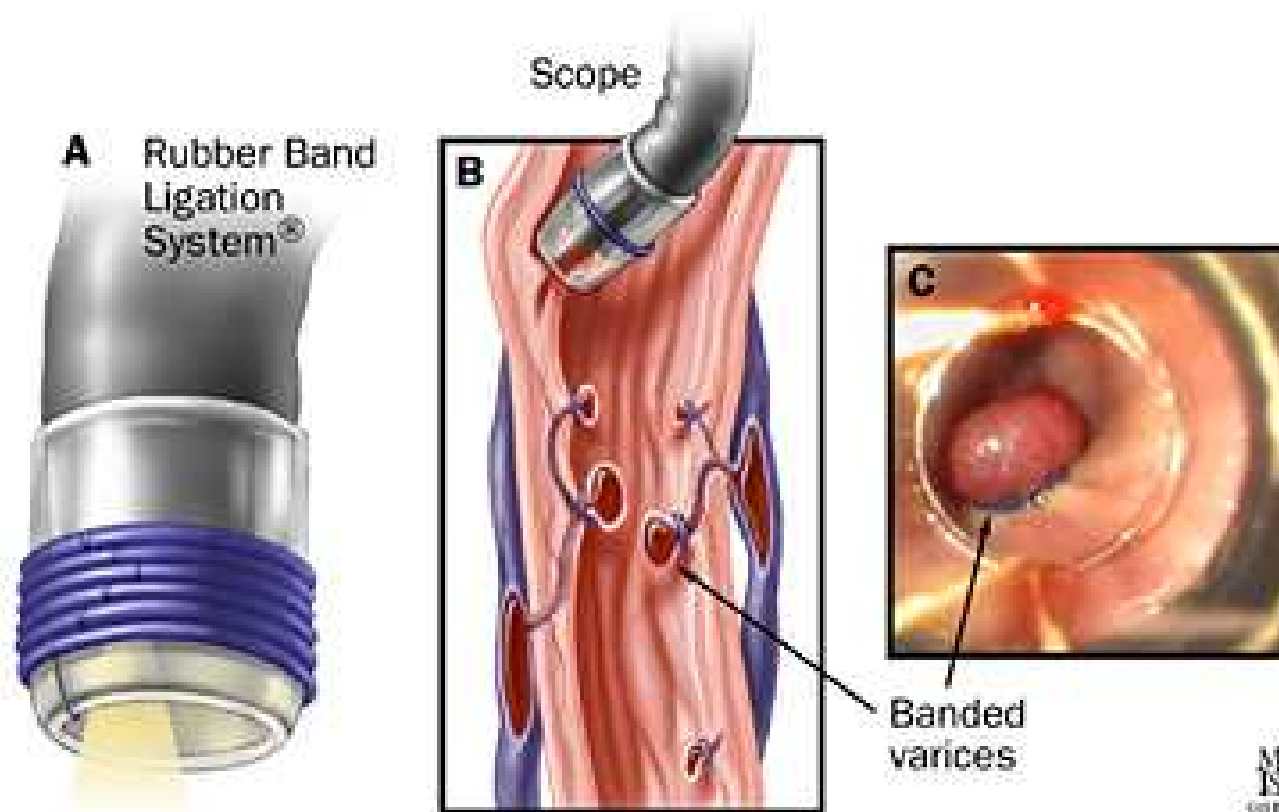
Sandostatin (octreotide)

- Somatostatin analog, synthetic octapeptide
 - Somatostatin is a naturally occurring hormone
 - Octreotide prolonged half life
 - IV or SQ administration
 - MOA: Splanchnic vasoconstriction to reduce portal venous inflow
 - Does not act systemically, acts locally

Sandostatin (octreotide)

- 50 mcg IV bolus, followed by 50 mcg/hr continuous IV infusion
 - 3-5 days per guidelines
- Can be administered > 24 hours
 - vs vasopressin
- No FDA indication for variceal bleeding

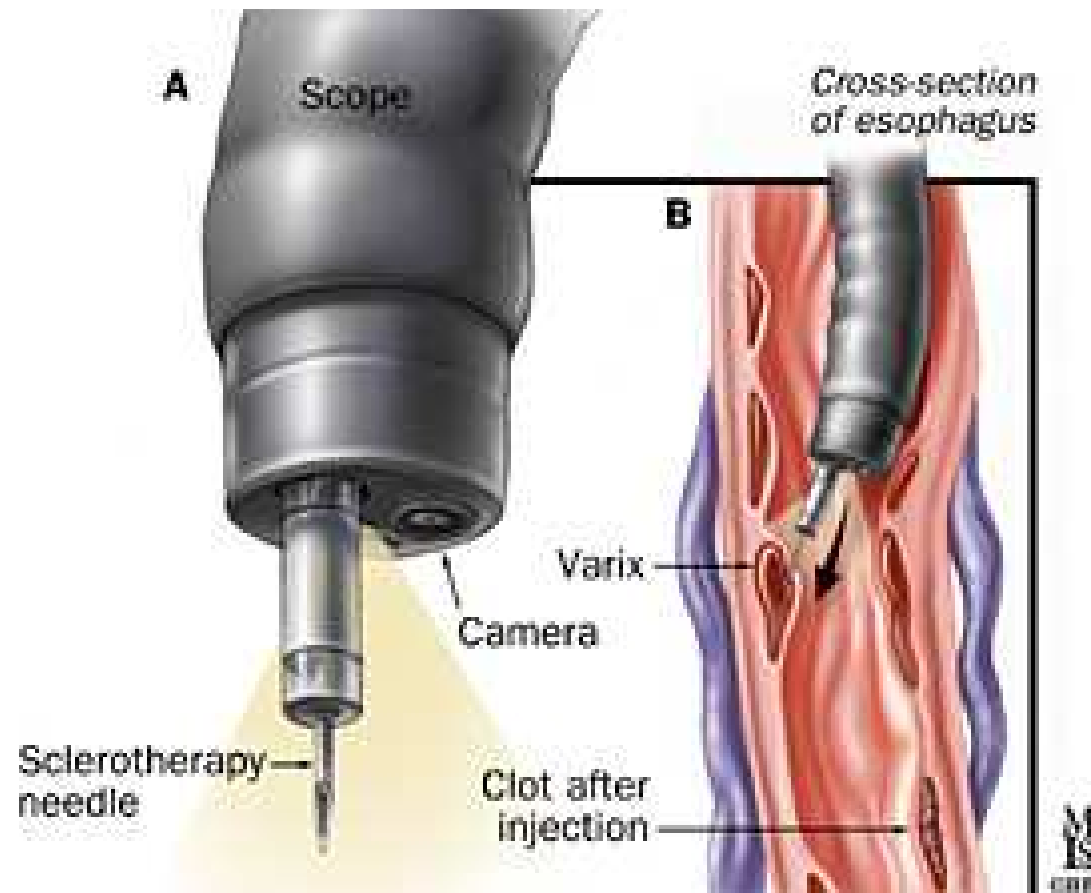
Endoscopic Variceal Ligation



Endoscopic Variceal Ligation



Sclerotherapy



Patient Case: ICU

- GI consult A/P
 - Upper GI bleed (rule out varices)
 - Plan for panendoscopy
- Esophagogastroduodenoscopy (EGD)
 - < 1 hour after transfer to ICU
 - 16 hours from ED triage
 - Large varices found; 4 bands placed
- Antibiotic
 - IV Levaquin

Secondary Prophylaxis

Table 4. First-Line Prevention of Recurrent Variceal Hemorrhage.*

Regimen	Dose	Goal	Duration	Follow-up
Beta-blocker				
Propranolol	Start at 20 mg orally twice a day	Increase to maximally tolerated dose or until heart rate is approximately 55 beats/min	Indefinite	Ensure heart-rate goals are met at each clinic visit; no need for follow-up endoscopy
Nadolol	Start at 40 mg orally once a day	Increase to maximally tolerated dose or until heart rate is approximately 55 beats/min	Indefinite	Ensure heart-rate goals are met at each clinic visit; no need for follow-up endoscopy
Endoscopic variceal ligation	Ligate every 2–4 wk	Obliterate varices	Until variceal obliteration achieved (usually 2–4 sessions)	First surveillance endoscopy 1–3 mo after obliteration, then every 6–12 mo indefinitely
Isosorbide mononitrate in association with a beta-blocker (either propranolol or nadolol)†	10 mg given orally every night, with stepwise increase to a maximum of 20 mg twice a day	Increase to maximally tolerated dose with maintenance of blood pressure at >95 mm Hg	Indefinite	Ensure compliance with medication regimen at each visit; no need for follow-up endoscopy

* Only one beta-blocker plus ligation should be used. Therapies that should not be used for first-line prevention of recurrent variceal hemorrhage are nonselective beta-blockers alone, endoscopic variceal sclerotherapy, endoscopic variceal ligation alone, and endoscopic variceal ligation plus endoscopic variceal sclerotherapy.

† This therapy is being studied.^{55,56} It is recommended for patients who are not candidates for ligation.

Patient Case

- ICU admission complicated by respiratory failure and opioid withdrawal
- Transferred to floor 3 days after ICU admission
 - Protonix drip discontinued
- Discharged home next day
 - Discharge diagnosis: Upper GI bleed from esophageal varices, acute anemia blood loss, hemorrhagic shock
 - Discharge medications:
 - Iron 324 mg as directed
 - Levaquin 750 mg PO x 4 days
 - Same as admission

Patient Case

	Hemoglobin (g/dL)	Hematocrit (%)
11/13	8.5	25.1
11/14	6.6	19.3
11/14	7.8	23.3
11/14	8.2	24.6
11/14	7.8	22.9
11/15	9.6	28.9
11/15	8.9	26.9
11/15	8.3	25.1
11/15	8.6	25.9
11/16	10.2	31.3
11/16	10.6	31.7
11/16	10.5	31.4
11/17	10.4	31.5
11/17	8.4	24.4
11/18	10.0	30.1

Patient Case

- Actual Treatment vs AASLD Guideline Recommendation
 - Octreotide initiated and continued until discharge
 - Levaquin continued 4 days post discharge
 - Protonix drip not addressed by guideline
 - EVL ideal per guideline
 - Blood transfusions per guideline
 - Not discharged on non-selective beta-blocker
 - CAD s/p CABG, Coreg?

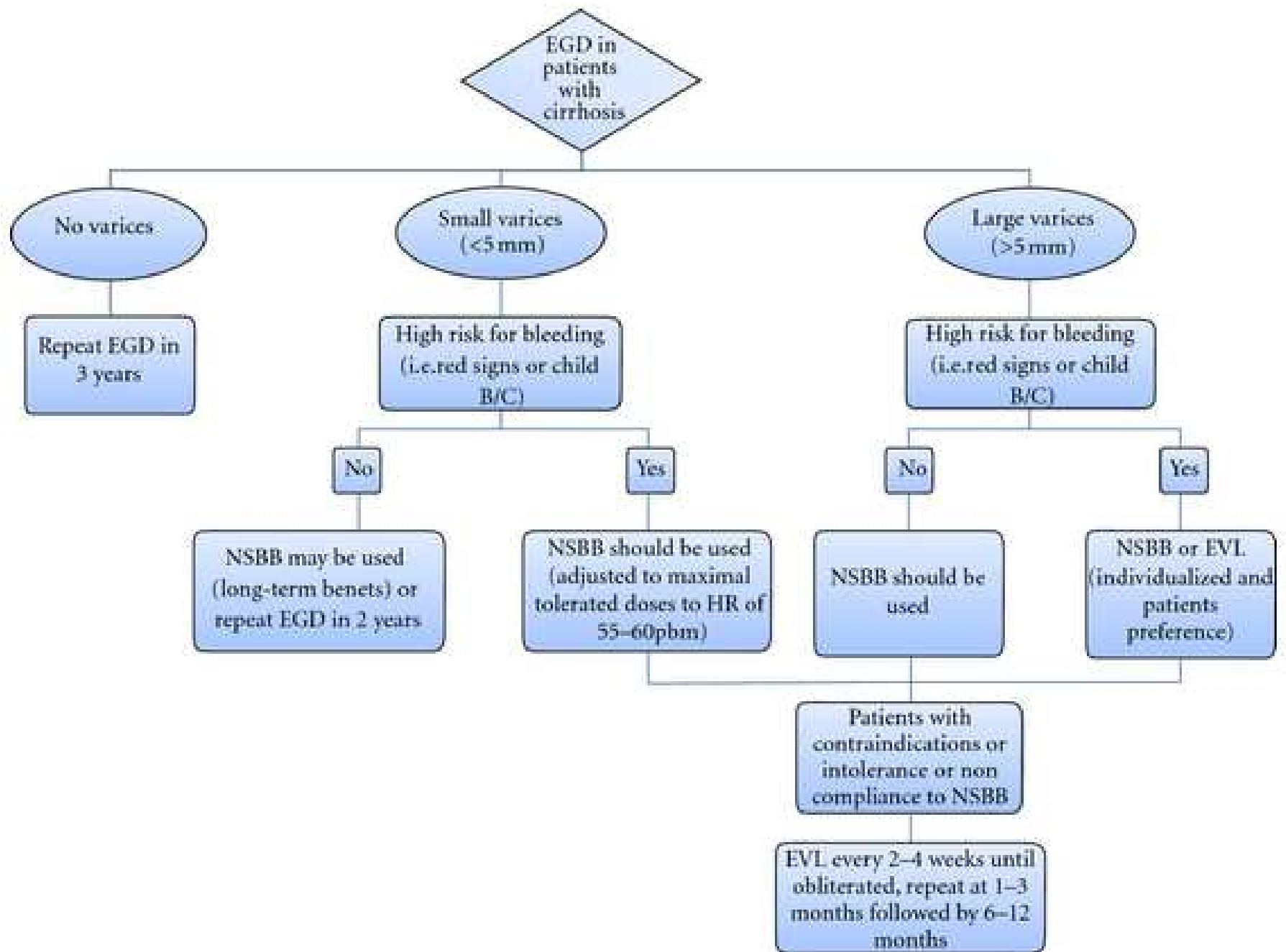
Primary Prophylaxis

Table 2. Primary Prophylaxis against Variceal Hemorrhage.*

Regimen†	Dose	Goal	Duration	Follow-up
Propranolol	Starting dose of 20 mg given orally twice a day	Increase to maximally tolerated dose or until heart rate is approximately 55 beats/min	Indefinite	Ensure heart-rate goals met at each clinic visit; no need for follow-up endoscopy
Nadolol	Starting dose of 40 mg given orally once a day	Increase to maximally tolerated dose or until heart rate is approximately 55 beats/min	Indefinite	Ensure heart-rate goals met at each clinic visit; no need for follow-up endoscopy
Endoscopic variceal ligation	Every 2–4 weeks	Obliterate varices	Until variceal obliteration achieved (usually 2–4 sessions)	Perform first surveillance endoscopy 1–3 mo after obliteration, then every 6–12 mo indefinitely

* Therapies that should not be used as prophylaxis include nitrates alone, endoscopic variceal sclerotherapy, shunt therapy (either transjugular intrahepatic portosystemic shunt or surgical shunt), nonselective beta-blockers plus endoscopic variceal ligation, and nonselective beta-blockers plus nitrates.

† Only one of the three regimens should be used.



Salvage/Rescue Therapy

- Hemorrhage uncontrollable OR re-bleeding despite pharmacologic and EVL therapy
 - Reverses portal hypertension
- TIPS (transjugular intrahepatic portosystemic shunt)
 - Percutaneous
- Shunt surgery
- Balloon tamponade

References

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Questions?

