Gastric Varices

- Complex vascular shunts between the porto-splenic venous systemic veins of the abdomen and thorax.
- 17-25% prevalence in patients w/ PHTN
- GV’s less prevalent than EV’s, but bleeding is more severe and increased mortality w/ hemorrhage

Saad-Caldwell Classification

- Describes variations in afferent flow into the gastric varix and efferent flow through the portosystemic shunt
- Type 1 – dominant portal venous feeder is LGV
- Type 2 – dominant portal venous feeder is PGV’s or SGV’s
- Type 3 – All venous feeders are involved w/ variable dominance
- Further defined by the absence (a) or presence of a GRS (b)
- Subtype implies therapeutic management

Sarin Classification

- Divides gastric varices into 4 types based upon location in the stomach and association with EV’s
- Most commonly used classification scheme
- Merged classification scheme for EV’s and GV’s
- Unable to prognosticate the risk for bleeding based on high-risk endoscopic stigmata
- Corresponding vascular supply may overlap for lesions within the same type, no therapeutic association

LEGEND

- BRTO: Balloon-occluded Retrograde Transvenous Obliteration
- FGV: Fundal Gastric Varices
- GRS: Gastro Renal Shunt
- ECI: Endoscopic Cyanoacrylate Injection
- LGV: Left Gastric Vein
- LCGV: Lesser Curvature Gastric Varices
- LRV: Left Renal Vein
- PGV: Posterior Gastric Vein
- PSS: Portosystemic Shunts
- SGV: Short Gastric Vein
- SV: Splenic Vein
- TIPS: Transjugular intrahepatic portosystemic shunt

**Endoscopic Management of Gastric Varices**

**Evaluation of Gastric Varices**
- Early endoscopy should fully characterize varix
- Endoscopic Classification schemes for the appearance of GV should not guide primary ppx of GV bleeding
- Following endoscopic hemostasis of GV cross-sectional imaging w/ PV contrast should be obtained to determine vascular anatomy (determine presence of PSS and GRS)

**Temporizing Methods**
- Sclerotherapy with Ethanol based agents (ethanolamine) achieve marginal hemostasis, high early rebleeding and post-tx ulceration
- Band ligation is inferior to ECI, but can be used as a temporizing modality
- Procoagulants (e.g., Factor VIII) can increase risk for thrombotic complications
- ECI not recommended on index endoscopy due to logistics and unknown vascular anatomy
- **Gastric compression balloon** (i.e., Blakemore, Linton-Nachlas tube) – highly effective for cardiofundal varix and LCGV w/ competent proceduralist

**Definitive Management**
- ECI >>> Sclerotherapy: ↓ early and late rebleeding. ECI is the only definitive therapy for Cardiofundal GV (FGV have higher mortality, bleed at lower portal pressures)
  - No FDA approved formulation of cyanoacrylate; fast polymerization ↓ embolization
  - Addition of Lipiodol not needed for radiographic confirmation, may ↑ embolization
  - Risks: glue embolization → PE/Stroke (0.7% risk), PVT, and infection
- Band ligation is an option for LCGV
- EUS guided hemostatic coils and/or glue placement
  - Re-bleed from GV’s is often late (months); follow up EGD within 2-4 weeks to confirm tx

**Endovascular Management for Gastric Varices**

**Transjugular intrahepatic portosystemic shunt (TIPS)**

**Balloon-occluded retrograde transvenous obliteration (BROTO)**

**TIPS** decreases portal pressures but is more effective for EV’s than GV’s. Should be used for LCGV not responsive to band ligation.
- Risk of HE and hepatic ischemia with TIPS
- Endoscopic eval 4 wks post TIPS to ensure GV obliteration; if present may require ECI vs BROTO

**BROTO** is safe and effective, leading to >90% cessation of bleeding for GV’s, rebleed in <7% of cases
- Compared to TIPS for Cardiofundal GVs, BROTO has less HE; equivalent in initial hemostasis
- Risks: post-BROTO bleeding (due to worsened EV’s), worsening ascites, hepatic hydrothorax
- Benefits: Decreased HE, may improve liver function
  - EUS 48hrs post BROTO to eval for exacerbation of EV, obliteration of GV and obtain new baseline

https://www.cirse.org/patients/ir-procedures/transjugular-intrahepatic-portosystemic-shunt-tips/
https://virclinic.com/varicose-veins/portal-hypertension-cirrhosis/
Algorithmic Approach to Portal Hypertension Bleeding from Gastric Varices

**Pre-Endoscopic Management**
- Patient with known portal HTN presents to the hospital with UGIB
  - Modest transfusion strategy
  - Consider intubation
  - Vasoactive medication (Octreotide, Terlipressin)
  - Avoid volume expansion
  - 250mg IV erythromycin 30-120mins prior to endoscopy
  - Ceftriaxone 1g/24hr (max 7days)
- Perform endoscopy for further evaluation

**Endoscopic Evaluation**
- Image to assess vasculature
  - Discussion of Risk
- S-C Type 1a/1b
  - Similar mgmt. to EV
  - Band ligation
  - TIPS if uncontrollable
- S-C Type 3a
  - TIPS with embolization
  - Cyanoacrylate injection
- S-C Type 3b
  - BRTO of FGV
  - Subsequent band ligation +/- TIPS

Tip: Patients with non-cirrhotic pHTN 2/2 splenic vein thrombosis may be best managed w/ splenectomy!