Portal Hypertension

Important

Notes (Doctors'/students')

431 SURGERY TEAM

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CAUSES

Cirrhosis

Non-cirrhosis

*Asymptomatic

COMPLICATIONS

Gastroesophageal varices

Ascites

Splenomegaly

Underlying disease

Classification of noncirrhotic portal hypertension

Prehepatic
Portal vein thrombosis
Splenic vein thombosis
Splanchnic arteriovenous fistula
Splenomegaly (lymphoma, Gaucher's disease)
Intrahepatic
Presinusoidal
Schistosomiasis
Idiopathic portal hypertension/Noncirrhotic portal fibrosis/Hepatoportal sclerosis
Primary biliary cirrhosis
Sarcoidosis
Congenital hepatic fibrosis
Sclerosing cholangitis
Hepatic arteriopetal fistula
Sinusoidal
Arsenic poisoning
Vinyl chloride toxicity
Vitamin A toxicity
Nodular regenerative hyperplasia
Postsinusoidal
Sinusoidal obstruction syndrome (Veno-occlusive disease)
Budd-Chiari syndrome
Posthepatic
IVC obstruction
Cardiac disease (constrictive pericarditis, restrictive cardiomyopathy)

UpToDate

Causes of portal vein thrombosis

Abdominal sepsis
Behcet's disease
Cirrhosis
Collagen vascular diseases (eg, lupus)
Compression or invasion of the portal vein by tumor (eg, pancreatic cancer)
Endoscopic sclerotherapy
Factor V Leiden
Hepatocellular carcinoma
Hyperhomocysteinemia
Inflammatory bowel disease
Myeloproliferative syndromes
Omphalitis
Oral contraceptives
Pancreatitis
Paroxysmal nocturnal hemoglobinuria
Pregnancy
Protein C deficiency
Prothrombin gene mutation
Retroperitoneal fibrosis
Transjugular intrahepatic portosystemic shunt
Trauma

UpToDate

TREATMENT OF BLEEDING

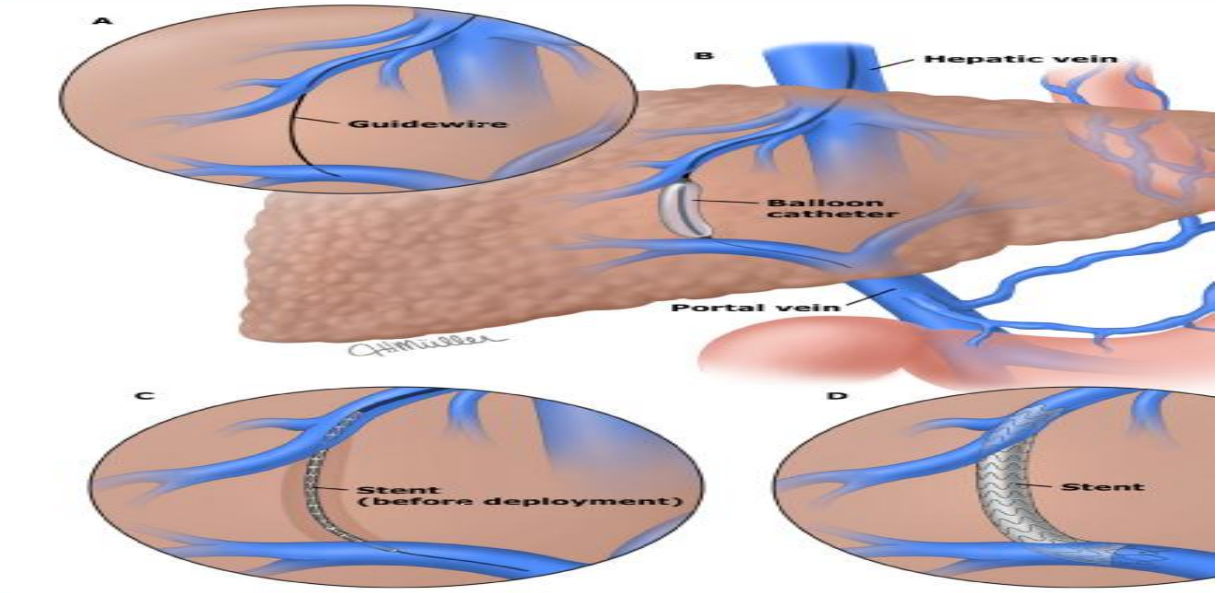
- **Initial therapy**: hemodynamic RESUSCITATION, prevention and treatment of complications.
- Prophylactic antibiotics, preferably before endoscopy (although effectiveness has also been demonstrated when given after).
- Suggest intravenous ceftriaxone (1 g IV) or Cipro (400 mg IV BID)
- UGD should be performed for diagnosis and possible treatment
- Suggest terlipressin in countries where it is available and somatostatin or OCTREOTIDE (50 mcg bolus followed by 50 mcg/hour by intravenous infusion) where terlipressin is unavailable.

SALVAGE TREATMENT

- TIPS (transjugular intrahepatic portosystemic shunt)
- Surgery is one with well preserved liver function who fails emergent endoscopic treatment and has no complications from the bleeding or endoscopy.
- The choice of surgery usually depends upon the availability, training, and expertise of the surgeon. Although a selective shunt has some physiologic advantages, it may significantly exacerbate marked ascites. Thus, a portacaval shunt would be preferable in patients with marked ascites.

TIPS is done by interventional radiologist ..
and under the visualization by ultra-sound

Transjugular intrahepatic portosystemic shunt

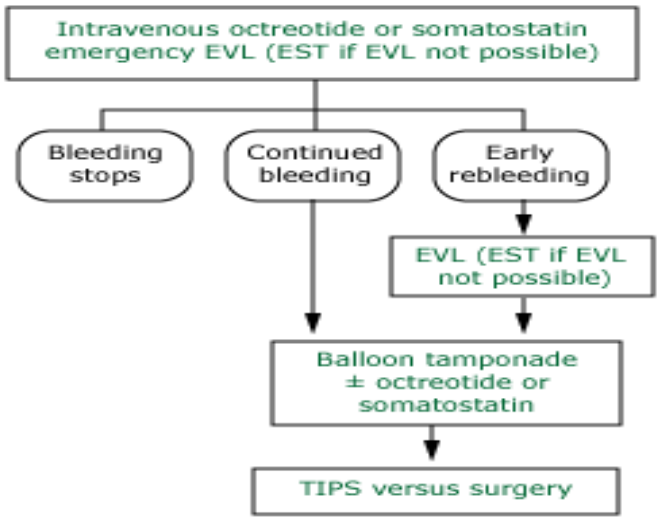


A transjugular intrahepatic portosystemic shunt (TIPS) is cre passing a needle catheter via the transjugular route into the and wedging it there. The needle is then extruded and advar the liver parenchyma to the intrahepatic portion of the porta stent is placed between the portal and hepatic veins. A TIPS side-to-side surgical portacaval shunt, but does not require anesthesia or major surgery for placement. (A) Passage of a between the hepatic vein and the portal vein. (B) Inflation of catheter within the liver to dilate the tract between the hepat portal vein. (C) Deployment of the stent. (D) Stent in its fina

SHUNT OPERATIONS CAN BE CATEGORIZED AS FOLLOWS:

- Nonselective — those that decompress the entire portal tree, such as porta-caval shunts (portal connected to cava without passing to liver)
- Selective — those that compartmentalize the portal tree into a decompressed variceal system while maintaining sinusoidal perfusion via a hypertensive superior mesenteric-portal compartment, such as a distal spleno-renal shunt
- Partial — those that incompletely decompress the entire portal tree and thereby also maintain some hepatic perfusion
- Non-shunt operations generally include either esophageal transection (in which the distal esophagus is transected and then stapled back together after varices have been ligated) or devascularization of the gastroesophageal junction (Sugiura procedure).

Management of acute variceal hemorrhage



These are only general guidelines and appropriate therapy should be based on the patient's individual circumstances an the expertise available.
EST: endoscopic sclerotherapy; EVL: endoscopic variceal band ligation.
Adapted from Sanyal, A, et al, Semin Liver Dis 1993; 13:4.

- Maintain a hemoglobin of approximately 8 g/dL.
- Short-term (maximum seven days) antibiotic prophylaxis should be instituted in any patient with cirrhosis and GI hemorrhage.
- Pharmacologic therapy (somatostatin or its analogue octreotide) should start as soon as bleeding is suspected and continue for 3-5 days after confirmation.
- Upper endoscopy, performed within 12 hours, should be used to make the diagnosis and to treat variceal hemorrhage either with endoscopic variceal ligation or sclerotherapy.
- TIPS is indicated in patients in whom hemorrhage from esophageal varices cannot be controlled or in whom bleeding recurs despite combined pharmacological and endoscopic therapy.
- Balloon tamponade should be used as a temporizing measure (maximum 24 hours) in patients with uncontrollable bleeding for whom a more definitive therapy (eg, TIPS or endoscopic therapy) is planned.

BALLOON TAMPONADE => Nasogastric tube but in the end of it there's a balloon .. They insert it to the esophagus and upper stomach and then inflate the balloon => pressure on the bleeding to stop it .. it used temporally to transport the patient when he's in hospital with no interventional radiologist. They put it while transporting the patient to other hospital or on the ED while waiting for the endoscopic or interventional radiologist to come .. we don't use it more than 24 hours because it might cause perforation

COMMON SURGICAL PROBLEMS

Liver resection:

Benign

Hydatid cyst (parasitic infection treated with albendazole)

Abscess

Large adenoma (5 cm)

Intrahepatic biliary stones

- Oriental cholangiohepatitis

Heamangioma

Multiple cysts

FNH (focal nodular hyperplasia) => like hematoma

Choledochal cyst (congenital cyst in the bile duct)

Cystadenoma

Large adenoma and cystoadenoma have high risks for cancer

INDICATIONS FOR SURGERY

Malignant

Primary liver cancers:

- HCC
- Cholangiocarcinoma

Secondary liver cancers : (outside the liver) more likely metastasis

- Colorectal cancer (not the Most common metastasis to liver at all .. But it's the most common liver metastasis indicated for liver surgery)
- Neuroendocrine tumors. Rare tumors.
- Others (isolated, stable, chemo responsive)

isolated = metastasize to the liver only

stable = disease is not progress overtime as we treat it.

- Chemo-responsive we have to test it's chemo-responsive before the operation !

EXAMPLE : **e.g pt. present with breast cancer and metastasize to the liver, shall we operate ?**
we have to know is it isolated? Stable? chemo-responsive?
if ALL these criteria are fulfilled => we can operate!

ECHINOCOCCOSIS DISEASE

- Parasitic infection we start them on albendazole for enough time to kill the parasite .. > then we take away the cyst by surgical resection of the cyst
- Oral treatment
- Surgical resection
- Biliary communication

HCC

- Cirrhosis most common
- Child A indicates normal liver function in cirrhotic pt
- Non-cirrhosis
- Roles of resectability
- Survival benefit those who did surgery have good major survival

CHOLANGIOCARCINOMA

- Resectability
- The role of bile ducts

CRC METASTASIS :

Metastasis liver tumors is more common than the primary

- Portal connection
- Survival benefit is massive
- Limits of resection 70% up to 80% of liver we can take out and the liver functions are maintained
- Increase resectability
  - Decrease disease
  - Increase volume
  - Improve function

EXTRA ! The liver has the ability to regenerate , when we remove 70 - 80% of the liver

in 8 weeks (2 months) it comes back to almost its normal size !

-when less than 20% of the liver is normal we cannot operate less than 20% is not enough to sustain liver function

so what we do to increase the percentage of normal liver? , we make the liver grow before the operation by making the liver think we resect part of it so it will grow

how ?

by asking the interventional radiologist to block part of the portal vein of that part which we want it to grow => the liver think this part is resected => it will regenerate to restore that part !

or

we divide the surgery into small multiple surgeries, we take small portion of the tumor then the liver grow => take another portion etc.. until we remove the whole tumor.

LIVER TRANSPLANT

Cirrhosis

- HCV
- EToH
- NASH
- HCC

Benign disease

- PBS

QUESTIONS:

1. Portal hypertension is diagnosed when pressure is:
   A. >5 mmHg
   B. >12 mm Hg
   C. >30mm Hg
   D. >40 mmHg

2. What is the most common complication of cirrhosis?
A. Ascites
B. PHT
C. Esophageal Varices
D. Splenomegaly

B.A