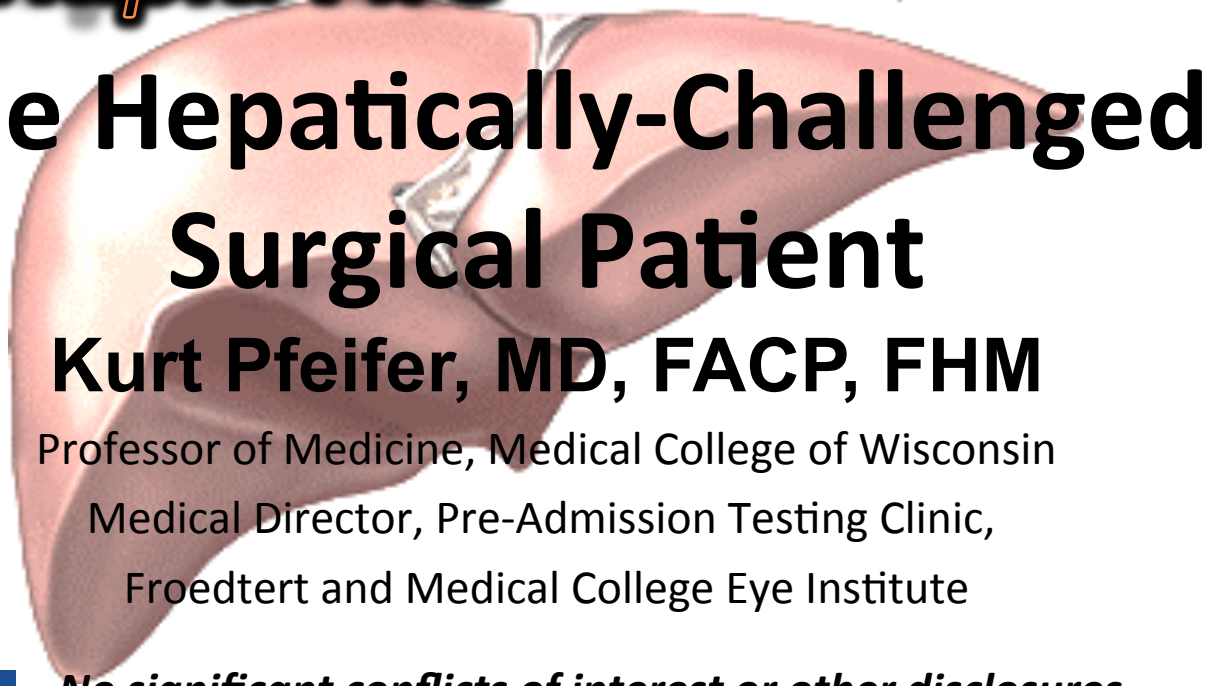
Perioperative Medicine Summit

Evidence Based Perioperative Medical Care

Rapid Fire

Answering challenging, common clinical questions

The Hepatically-Challenged Surgical Patient



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Froedtert HEALTH Froedtert Hospital Perioperative & Consultative Medicine

MEDICAL COLLEGE OF WISCONSIN

Objectives

- Outline the perioperative challenges posed by hepatic disease of all types
- Apply available surgical risk stratification methods for patients with liver disease
- Utilize appropriate risk reduction strategies to minimize perioperative complications in patients with hepatic dysfunction

ARS Question

Which of the following is most strongly associated with poor perioperative outcomes?

A) Stable alcoholic cirrhosis (now abstinent) – MELD 10 – undergoing lap chole

B) Chronic hepatitis C infection without cirrhosis

C) Stable nonalcoholic steatohepatitis (NASH) with cirrhosis – MELD 10 – undergoing knee replacement

D) Seeing Dr. Pfeifer in preop clinic

Surgery & Liver Disease

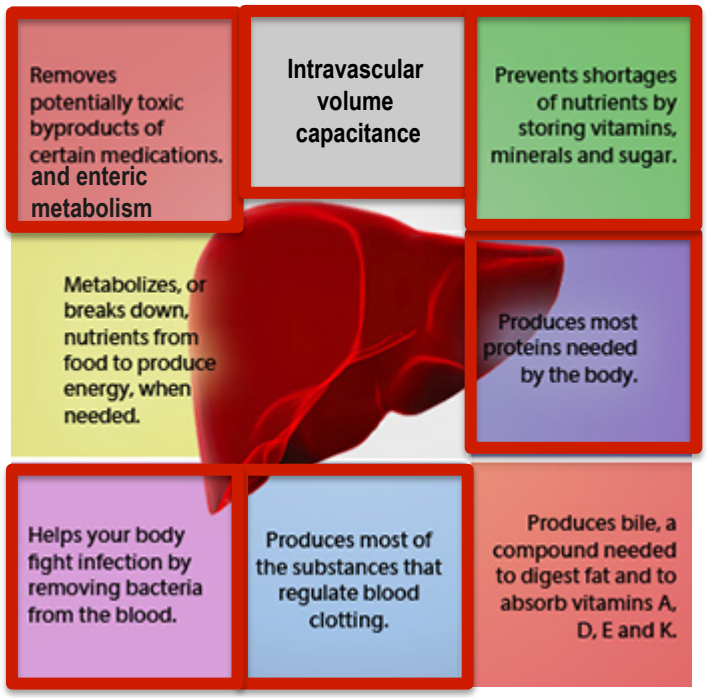
- **Over 5 million patients with hepatitis B or C in US[1]**
- **5% prevalence of NASH in US[1]**
- **10-20% of pts with cirrhosis will have surgery[2]**
- Some patients may be unaware of their advanced liver disease when they present for surgery
- Physiologic functions of the liver are many and significantly impact perioperative care

"You have a fatty liver... and fatty arms, fatty legs and a fatty head."

[1] www.cdc.gov

[2] Im GY et al. *Clin Liver Dis*. 2014;18:477-505.

Physiology & Pathophysiology



MedicineNet.com

NEUROLOGIC
- Encephalopathy

PULMONARY
- Impaired inspiration from ascites & hydrothorax

CARDIOVASCULAR
- MI & CVA from increased potential for hypotension

GASTROINTESTINAL
- GI bleeding & worsening ascites

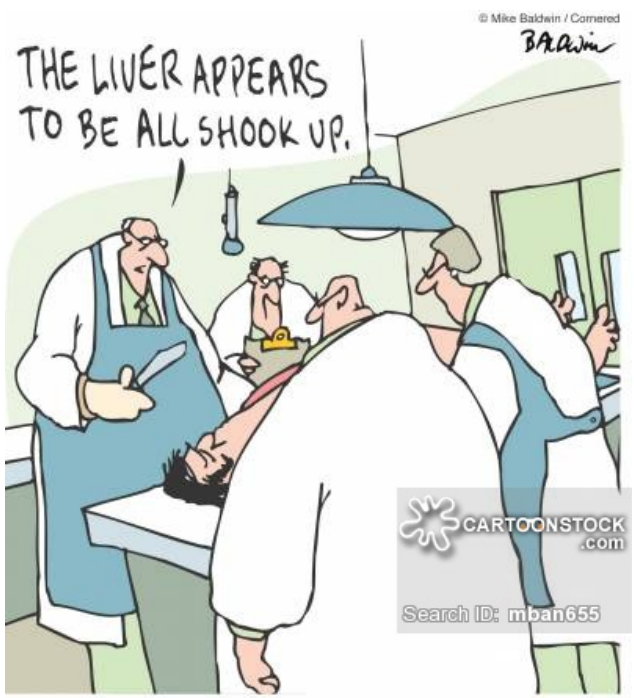
HEMATOLOGIC → production of coagulation factors
- Bleeding complications (especially with pharmacologic DVT prophylaxis)

INFECTIOUS
- Increased wound infection risk & increased risk of SBP

ENDOCRINE
- Hypoglycemia
- Electrolyte abnormalities

RENAL
- Increased risk of AKI (hepatorenal syndrome)

Risk Based on Chronicity/Etiology



Elvis' autopsy

- Acute Hepatitis or Obstructive Jaundice
  - Very high risk regardless of etiology – contraindication for surgery
- Chronic Hepatitis
  - Minimal risk unless symptomatic or with evidence of synthetic dysfunction (low albumin), cirrhosis or portal hypertension
  - Studies have shown that etiology of cirrhosis is not an independent predictor of perioperative risk

Im GY et al. *Clin Liver Dis*. 2014;18:477-505.

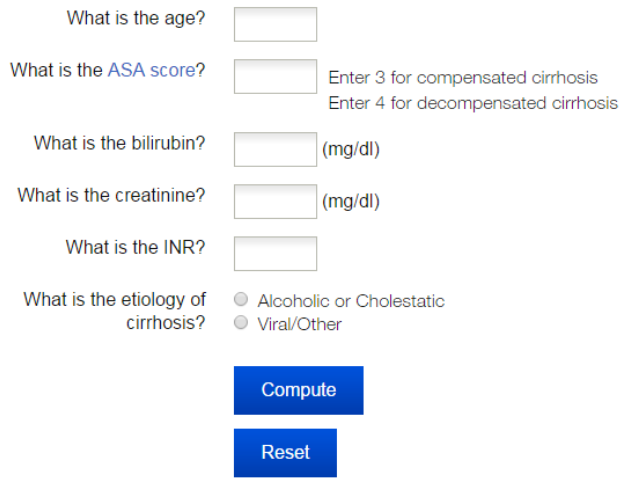
Risk Based on Surgical Type – Cirrhosis

Surgery	30-day Mortality
Laparoscopic cholecystectomy	1-3%[1]
Umbilical hernia	1%[2] – MELD<15
Major abdominal	12-30%[1]
Cardiac	10-67%[1]
Orthopedic	10%[3]

Multiple studies have suggested that emergency surgery carries much higher risk

[1] Friedman LS. *Trans Am Clin Climatol Assoc*. 2010;121:192-205.
[2] Cho SW et al. *Arch Surg*. 2012;147(9):864-9.
[3] Teh SH et al. *Gastroenterology*. 2007;132(4):1261-9.

MELD for Predicting Risk[1]



www.mayoclinic.org/**meld**/mayomodel9.html

MELD Score	30-day mortality (%)
<8	6
8-11	10
12-15*	25
16-20*	44
21-25	54
>25	90

*** Considerable variation in mortality → serum albumin may provide further risk stratification (>2.5 g/dl correlates with lower risk)[2]**

[1] Teh SH et al. *Gastroenterology*. 2007;132(4):1261-9.
[2] Telem DA et al. *Clin Gastroenterol Hepatol*. 2010;8:451-47.

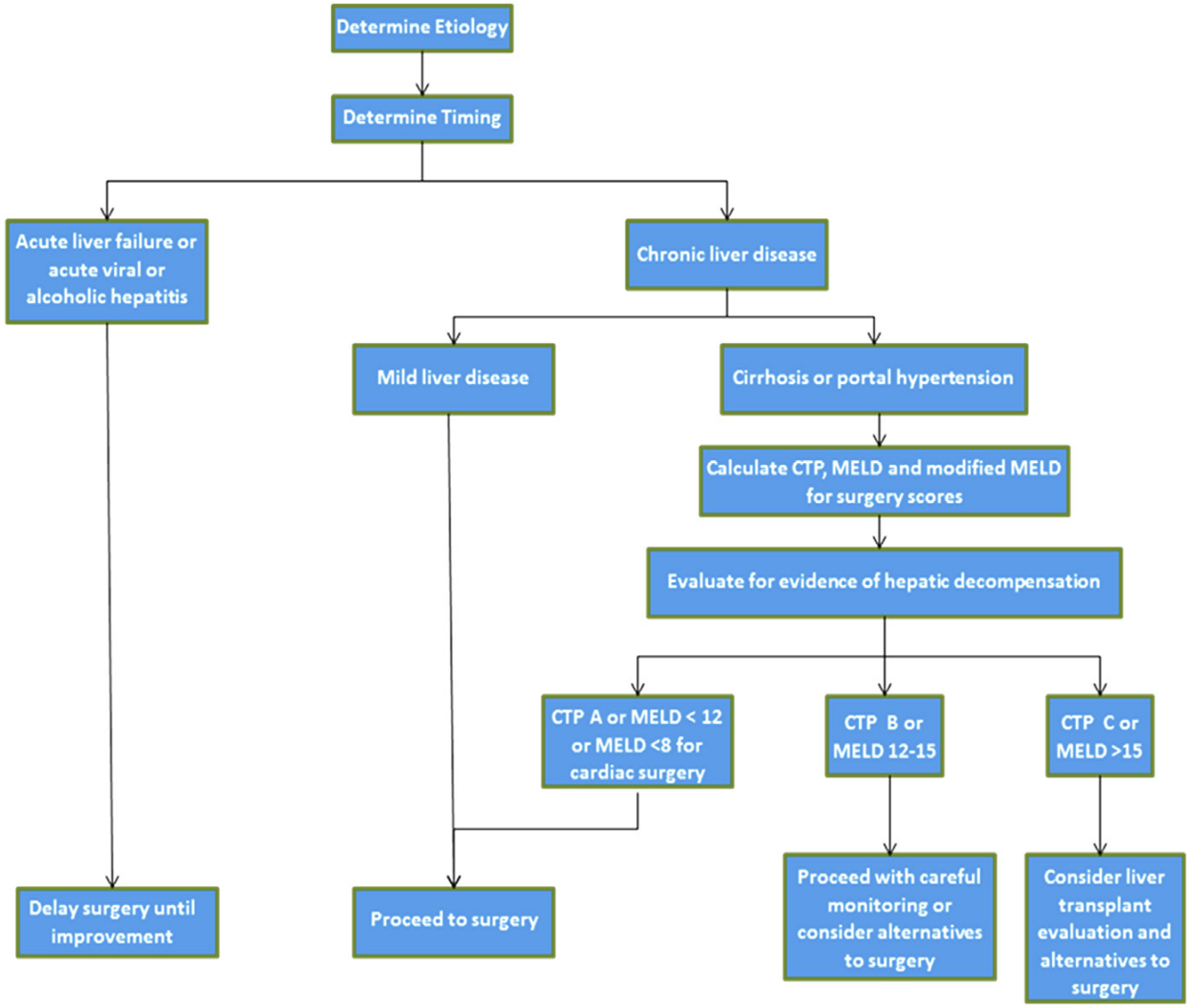
Preoperative Management

If history or exam suggest possible liver disease, check liver transaminases, bilirubin, albumin and INR

- If ALT/AST elevated >3x normal or any elevation with elevated bilirubin, surgery should be delayed for further hepatic evaluation[1]
  - Up to 30% of such patients have cirrhosis[2]
- Lesser abnormalities without cirrhosis or portal hypertension are likely low-risk for perioperative complications[3,4]

[1] Hanje AJ et al. *Nat Clin Pract Gastroenterol Hepatol*. 2007;4(5):266-76.
[2] Hay JE et al. *Hepatology*. 1989;9(2):193-7.
[3] Brolin RE et al. *Arch Surg*. 1998;133(1):84-8.
[4] Kim TH et al. *Liver Int*. 2015 Mar;35(3):713-23.

Preoperative Risk Stratification



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Risk Reduction Strategies

There is no such thing as a good cirrhotic patient.

Make sure sequelae of liver disease are stabilized

- Hepatic encephalopathy
- Ascites
- Esophageal varices
- Hepatocellular carcinoma (HCC) screening
- Electrolyte disturbances
- Coagulopathy

Im GY et al. *Clin Liver Dis*. 2014;18:477-505.

Hepatic Encephalopathy (HE)

- Minimize sedation & analgesia
- Assure 2-4 BMs daily
  - Lactulose or polyethylene glycol
  - Rifaximin if previous HE
- Aspiration precautions
- Do not restrict dietary protein
- Avoid dehydration (hold diuretics unless severe ascites)

Im GY et al. *Clin Liver Dis*. 2014;18:477-505.

Ascites

- **New or worsened** → preop diagnostic paracentesis
- **Moderate/severe** → therapeutic paracentesis prior to surgery
- **Diuretic-resistant ascites** → consider preoperative transjugular intrahepatic portosystemic shunt (TIPS)

Im GY et al. *Clin Liver Dis*. 2014;18:477-505.

Esophageal Varices

- EGD screening
  - At diagnosis of cirrhosis
  - Every 3 years if compensated & no prior varices
  - Every 2 years if compensated & small prior varices
  - Every year if decompensated or medium-large prior varices
- Nonselective beta-blockers
  - If small varices & increased risk of hemorrhage (CTP B or C or red wale marks seen on EGD)
  - If medium-large varices

World Gastroenterology Organization Practice Guidline for Esophageal Varices. 2014.

Other Sequelae of Chronic Liver Disease

- HCC screening – ultrasound + AFP[1]
  - Every 6-12 months if high-risk for HCC: hepatitis B without cirrhosis & cirrhosis from any cause
- Hyponatremia
  - Restrict IV fluids (but avoid dehydration) & follow electrolytes
- Bleeding
  - Vitamin K
  - (Platelets, FFP, antifibrinolytics)

[1] El-Serag HB & Davila JA. *Therap Adv Gastroenterol*. 2011; 4(1): 5–10.

Conclusion

- Screen with liver function tests and platelet count if liver disease suspected
- Delay surgery if acute hepatitis or uncharacterized/decompensated cirrhosis
- Fully optimize cirrhotic patients prior to elective surgery & assure they are fully aware of their increased risk

Thank You

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