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AGA Clinical Practice Update on Surgical Risk Assessment and Perioperative Management in Cirrhosis: Expert Review

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In March 2019, the American Gastroenterology Association (AGA) published a clinical practice update on the surgical risk in individuals with cirrhosis.¹ Improved management and better selection of patients with cirrhosis have led to improved surgical survival and the development of new risk prediction algorithms. Nevertheless, the evaluation and treatment of the patient with cirrhosis in whom an invasive surgical procedure is planned is not standardized, and there are no definitive prospective trials to provide clarity to clinicians in assessing patients in the preoperative period and managing them in the postoperative period. The modern literature on surgical risk stratification in patients with cirrhosis consists of case reports, small series, and only a few serious attempts to stratify risk. This review summarizes the available data and recommendations based on expert opinion on how best to predict surgical outcomes and optimize the condition of patients with cirrhosis who undergo surgical procedures. Table 1 summarizes our recommendations.

Please listen to Dr. Patrick G. Northup discuss the important updates and impact on patient management from this publication.

REFERENCE

 Northup PG, Friedman LS, Kamath PS. AGA Clinical Practice Update on Surgical Risk Assessment and Perioperative Management in Cirrhosis: expert review. Clin Gastroenterol Hepatol 2019;17: 595-606.

Abbreviations: AGA, American Gastroenterology Association; ASA, American Society of Anesthesiologists; BPA, best practice advice; CTP, Child-Turcotte-Pugh; INR, international normalized ratio; MELD, Model for End-Stage Liver Disease; TIPS, transjugular intrahepatic portosystemic shunt.

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TABLE 1. RECOMMENDATIONS FOR PREOPERATIVE RISK ASSESSMENT AND PERIOPERATIVE MANAGEMENT IN PATIENTS WITH CIRRHOSIS

Target audience

Target population

Baseline factors common

in patients with cirrhosis potentially contributing to surgical risk

Preoperative surgical mortality risk assessment tools

Postoperative complications of surgical procedures more common in or unique to patients with cirrhosis BPA Gastroenterologists, hepatologists, general surgeons, surgical subspecialists, anesthesiologists, critical care physicians, and other clinicians seeing patients with cirrhosis

Patients with cirrhosis undergoing invasive non-liver transplant surgical procedures

Significant malnutrition; portal hypertension, raising the risk of bleeding complications; thrombocytopenia, coagulation, and fibrinolytic abnormalities; renal dysfunction; impaired hepatic drug metabolism and elimination; increased susceptibility to infection; decreased effective intravascular volume and susceptibility to acute renal injury; potential for a thrombophilic state and predisposition to venous thromboembolism

CTP score, MELD score, ASA Physical Status Classification, Mayo Postoperative Mortality Risk Calculator in Patients With Cirrhosis

- Hepatic decompensation and worsening of liver synthetic function; acute worsening of portal hypertension and associated complications, including ascites, hepatic encephalopathy, and portal hypertensive bleeding; wound healing difficulties and dehiscence; pulmonary complications—pleural effusions and pneumonia; other infections, including bacterial peritonitis; increased risk of intraoperative and perioperative bleeding; multiple organ failure
- BPA 1: Due to the profound effects of hepatic synthetic dysfunction and portal hypertension, patients with cirrhosis are at increased risk of death after all invasive surgical procedures compared with the healthy general population. It is not entirely clear how much the risk attributed to cirrhosis is additive to traditional cardiopulmonary risk factors studied in the general population. Patients with cirrhosis undergoing all but the most emergent surgical procedures should be risk stratified and counseled on the magnitude of that risk.
- BPA 2: In patients considered for surgery, <u>use the CTP score (Child-Pugh class), MELD score, Mayo Postoperative Mortality Risk Score,</u> or another validated risk stratification system. There is <u>no single definitive risk stratification system</u> to determine operative risk in all patients with cirrhosis, and we recommend using multiple methods.
- BPA 3: The type and anatomic site of the proposed surgical procedure are important in risk stratification. The clinical teams must incorporate the surgical procedure itself into discussions of risk with patients. Procedures associated with higher surgical risk include hepatobiliary surgery, such as primary liver resection, other intra-abdominal procedures, thoracic surgery, and cardiovascular procedures. Avoid elective cholecystectomy if possible, and if required, it should be carried out in centers with expertise in this population.
- BPA 4: Surgical risk is continuous, and there are no absolute cutoff values for excluding patients with cirrhosis from surgical procedures. The patient and the surgical and medical teams caring for the patient must weigh the potential benefits and risks collaboratively. Patients should be referred to a surgical team with experience in the care of patients with cirrhosis and portal hypertension whenever possible. Patients with Child-Pugh class C (CTP score >10) or a MELD score >20 pose a high risk for postoperative decompensation and death. Avoid or delay until after liver transplantation, if possible, all but the most urgent and lifesaving procedures in this population.
- BPA 5: TIPS is not routinely recommended before surgical procedures in patients with cirrhosis and portal hypertension with abdominal collaterals. Small uncontrolled case series have demonstrated the ability to decompress collateral vessels with TIPS preoperatively in patients who require deep pelvic and colonic resections; however, the absolute benefit of TIPS over conservative management is not established.
- BPA 6: The special case of primary liver resection in a patient with cirrhosis, usually for malignancy, has been studied more thoroughly than other general surgical procedures. Data support the safety profile of segmental liver resections in patients without clinically significant portal hypertension, as indicated by a hepatic vein pressure gradient <10 mm Ha. A validated surrogate measure of lack of clinically significant portal hypertension is the absence of venous abdominal collaterals on imaging or of esophageal varices on endoscopy, peripheral blood platelet count >100,000/μL, or hepatic transient elastography values <23kPa.</p>
- BPA 7: There are no established preoperative safety thresholds for common laboratory values related to bleeding and clotting. The INR is not predictive of procedural bleeding risk in patients with cirrhosis. We do not recommend protocol transfusions to a target INR in patients with cirrhosis. In vitro studies suggest that a platelet count >50,000/μL is adequate to generate thrombin and provide stable clot formation, and retrospective clinical studies show an increased bleeding tendency in patients with a platelet count lower than this threshold. The literature provides no evidence to support protocol transfusions, but critically ill patients with plasma fibrinogen levels <100 mg/dL have more bleeding events. Handle coagulation management on a case-by-case basis preferably using viscoelastic testing–directed therapy, and avoid needless transfusions or volume overload.
- BPA 8: Involve a skilled medical team with experience in treating patients with cirrhosis in the postoperative management of patients with cirrhosis, and obtain early consultation to help avoid progressive complications. Achieve optimal control of ascites, variceal bleeding risk, and hepatic encephalopathy before surgery, if possible. Monitor renal and hepatic function at least daily in the postoperative period.
- BPA 9: Aggressively avoid exacerbations of portal hypertension and associated complications in the postoperative period. Appropriate measures include close monitoring of renal function and avoidance of volume excess or depletion. Excess volume can increase the risk for variceal and other portal hypertensive bleeding.
- BPA 10: Due to disturbed metabolism and elimination, patients with cirrhosis are at especially high risk for medication-related complications. Generally, use opiates at lower doses and with longer dosing intervals than in the general population. Use only short-acting benzodiazepines. Avoidance of constipation should be a priority in the management of these patients to minimize flares of hepatic encephalopathy in the postoperative period. In patients who can take medications orally, rifaximin generally causes less bowel distension than nonabsorbable disaccharides (lactulose).
- BPA 11: Avoid medications that might be toxic in patients with portal hypertension and cirrhosis. Do <u>not use nonsteroidal anti-inflam-</u> <u>matory drugs</u> because they can impair <u>renal blood</u> flow. Patients with cirrhosis, especially those with heavy alcohol use, can be <u>susceptible to acetaminophen toxicity at doses lower</u> than those that may cause toxicity in the general population. Do not prescribe combination opiate/acetaminophen pain relievers to take home after surgery because the patient may be unaware of the presence of acetaminophen in various over-the-counter products, and unintentional acetaminophen overdose and hepatotoxicity can result.

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TABLE 1. (CONTINUED)

- BPA 12: The <u>gallbladder wall</u> may <u>appear thickened on imaging</u>, which may lead to the <u>erroneous diagnosis of acute cholecystitis</u>. A diagnosis of acute cholecystitis should be made only in the appropriate clinical setting, usually in the presence of biliary pain. There is a <u>significant risk for complications after cholecystectomy</u> in patients with <u>cirrhosis</u>. <u>Avoid elective cholecystectomy</u> in a patient with confirmed cirrhosis. Refer patients who require cholecystectomy to a surgical team with experience in invasive procedures in the population with cirrhosis.
- BPA 13: Except for incarceration that cannot be manually reduced or suspected strangulation with bowel ischemia or gangrene, abdominal hernia surgery should be avoided in the patient with cirrhosis and ascites unless the ascites is completely controlled. Wound dehiscence, peritonitis, and poor outcomes frequently occur when ascites recurs after hernia surgery.
- BPA 14: Patients who experience hepatic decompensation after surgery may become candidates for liver transplantation. The MELD score cutoff value for selecting patients for a liver transplant evaluation before elective surgery is not clear. We recommend preoperative liver transplant evaluation when the predicted postoperative 3-month mortality rate is greater than 15%, as reflected by surgical risk stratification models or when the MELD score is >15.
- BPA 15: Centers with expertise in surgery in patients with cirrhosis may perform bariatric surgery in this population, but clinically significant portal hypertension is a contraindication to the operation. In highly selected patients with obesity and decompensated cirrhosis undergoing liver transplantation, a sleeve gastrectomy at the same time as liver transplantation is an option.

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