Role of Transjugular Intrahepatic Portosystemic Shunt in the Management of Portal Hypertension

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KEYWORDS

- Transjugular intrahepatic portosystemic shunt • Portal hypertension • Varices • Ascites

KEY POINTS

- Transjugular intrahepatic portosystemic shunt (TIPS) is an effective emergency treatment of esophageal variceal bleeding in patients who have failed conventional therapy.
- High-risk patients with advanced cirrhosis experience less rebleeding with better survival if TIPS is placed early after variceal bleeding (within 5 days of bleeding).
- TIPS prevents rebleeding more effectively than drug or endoscopic therapy after esophageal variceal bleeding.
- TIPS improves symptoms in treatment-refractory ascites or hepatic hydrothorax, but a survival benefit is yet to be conclusively shown.
- Selected cases of Budd-Chiari respond to TIPS.

INTRODUCTION: NATURE OF THE PROBLEM

A transjugular intrahepatic portosystemic shunt (TIPS) is a stent placed via the jugular vein to create a shunt from the portal vein to the systemic circulation via an artificial communication through the liver. TIPS is used to treat complications of portal hypertension by reducing portal pressure (**Table 1**). After the introduction of TIPS in 1988[1] as a treatment of uncontrolled variceal bleeding, the role of TIPS has expanded (**Table 2**). TIPS prevents rebleeding in high-risk patients, defined by measures of the severity of portal hypertension or cirrhosis. In addition to variceal bleeding, TIPS is recommended for the management of treatment-refractory or treatment-intolerant

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Table 1
Hepatic venous pressure gradient (HVPG) in health and disease (see text section for explanation)

	Normal (mm Hg)	Portal Hypertension (mm Hg)	High-risk Portal Hypertension (mm Hg)	Target After Insertion of TIPS (mm Hg)
HVPG	5	5–10	>12	<12

ascites and hepatic hydrothorax, and selected cases of Budd-Chiari syndrome.[12,13] Although considered a safe procedure, TIPS has risks, the most common being provocation or exacerbation of hepatic encephalopathy. This article discusses the indications, insertion, and management of TIPS.

Table 2
Indications and outcomes for TIPS in portal hypertension

Indication	Outcome
Esophageal Varices	
Prophylaxis of first bleed	Not indicated
Treatment of acute bleeding after failure of medical and endoscopic therapy	Bleeding controlled in 90% of patients. Early rebleeding rates 6%–15%.[2,3] 50% 1-y survival[3]
Preemptive TIPS in high-risk patients (HVPG>20 mm Hg, advanced cirrhosis)	1-y mortality 14%–31% vs 39%–65% with variceal band ligation/drugs alone[4–6]
Secondary prophylaxis	More effective than drug treatment or endoscopy in prevention of rebleeding but no overall survival benefit[7,8]
Gastric Varices	
Prophylaxis of bleeding	Not indicated
Treatment of acute bleeding	TIPS as effective as cyanoacrylate glue with regard to rebleeding and survival, greater morbidity with TIPS[9]
Prevention of rebleeding	More effective in reducing rebleeding from gastric varices than cyanoacrylate glue (11% vs 38%)[10] but no improvement in overall survival
Portal hypertensive gastropathy	Control of uncontrolled acute bleeding or transfusion dependent chronic bleeding
Gastric antral vascular ectasia	Not indicated
Ascites	
Uncomplicated ascites	Not indicated
Diuretic-intolerant or diuretic-refractory ascites	TIPS significantly reduces need for paracentesis. Survival benefit unclear
Hepatic hydrothorax	60% of patients with refractory hydrothorax do not require further drainage
Budd-Chiari	Moderate Budd-Chiari syndrome unresponsive to anticoagulation; 74%–78% transplant-free survival at 5 y[11]
Pulmonary Complications of Liver Disease	
Hepatopulmonary syndrome	Not routinely indicated
Portopulmonary syndrome	Contraindicated

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