

INPLASY

Endoscopic treatments versus TIPS for patients with cirrhosis and variceal bleeding: Comparison of long-term outcomes using meta-analysis

INPLASY202470106

doi: 10.37766/inplasy2024.7.0106

Received: 27 July 2024

Published: 27 July 2024

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ADMINISTRATIVE INFORMATION

Support - Not applicable.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202470106

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 27 July 2024 and was last updated on 27 July 2024.

INTRODUCTION

Review question / Objective The survival benefit of placement of transjugular intrahepatic portosystemic shunts (TIPS) in patients with cirrhosis and acute variceal bleeding is controversial.

Rationale We aimed to assess whether TIPS improves survival in patients with advanced cirrhosis and acute variceal bleeding.

Condition being studied Several randomized controlled trials have been performed in attempts to determine the differences between TIPS and endoscopic intervention in efficacy for the treatment of variceal bleeding in patients with cirrhotic portal hypertension. However, most of these studies were underpowered to demonstrate survival benefits.

METHODS

Search strategy The following key terms were used: "TIPS," "transjugular intrahepatic portosystemic shunt," "variceal bleeding". References cited in relevant publications were also manually crosschecked for additional, potentially eligible studies.

Participant or population TIPS and ETs for the prevention of variceal rebleeding in patients with cirrhosis.

Intervention Patients with cirrhosis and variceal rebleeding were randomly assigned to the TIPS group.

Comparator Patients with cirrhosis and variceal rebleeding were randomly assigned to the endoscopic treatments group.

Study designs to be included Randomized controlled trials.

Eligibility criteria Eligible studies were screened on the basis of the following inclusion criteria: RCTs that compared TIPS and ETs for the prevention of variceal rebleeding in patients with cirrhosis; TIPS and ETs (EVL or injection therapy) were after randomization; patients in the included studies were ≥ 18 years of age; the prognosis that assessed the effects of treatments included at least one of the following outcomes: overall mortality, rate of variceal re-bleeding, incidence of postoperative HE, and new or worsening ascites.

Information sources The literature search was limited to English-language articles published in the PubMed, Embase, Cochrane Library, and Web of Science databases from inception to March 31, 2024.

Main outcome(s) Eighteen RCTs (1353 patients) were included in the review. Compared with ETs, TIPS was associated with a lower rate of variceal rebleeding (odds ratio [OR] 0.34 [95% confidence interval (CI) 0.23, 0.49]; $P < .00001$) and new or worsening ascites (OR, 0.34 [95% CI: 0.22, 0.53]; $P < .00001$). There was no difference in mortality between the TIPS and ETs groups (OR, 1.08 [95% CI: 0.68, 1.70]; $P = .75$). TIPS was associated with higher rates of hepatic encephalopathy (HE) than ET (OR, 1.54 [95% CI: 1.21, 1.97]; $P = .0005$).

Quality assessment / Risk of bias analysis Risk of bias in the included trials was assessed in accordance with guidelines from the Cochrane Handbook for Systematic Reviews of Interventions. Specifically, this tool includes seven aspects: sequence generation; allocation sequence concealment; blinding of participants and personnel; blinding of outcome assessment; incomplete outcome data; selective outcome reporting; and other biases. Additionally, risk in each aspect was ranked as low, high, or unclear.

Strategy of data synthesis Review Manager (RevMan) version 5.3 (The Nordic Cochrane Centre, The Cochrane Collaboration, 2014, Copenhagen, Denmark) was used to input and combine the data. For dichotomous outcome data, odds ratio (OR) and corresponding 95% confidence interval (CI) was used to measure the treatment effect. I^2 and I^2 statistics were used to investigate the statistical heterogeneity among studies. I^2 values of 30%, 60%, and $> 60\%$ indicated low, moderate, and high heterogeneity, respectively. Statistical significance was assessed

according to Cochran's Q-test, and $P < 0.1$ was considered to be statistically significant.

Subgroup analysis Subgroup analysis revealed no difference in mortality between the TIPS and ETs groups when follow-up was ≤ 24 months.

Sensitivity analysis Publication bias was assessed using funnel plots. Sensitivity analyses were also performed to examine the robustness of the results.

Country(ies) involved China.

Keywords Transjugular intrahepatic portosystemic shunt; endoscopic therapy; variceal bleeding; cirrhosis; meta-analysis.

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