Transjugular Intrahepatic Portosystemic Shunt for a Wait List Patient Is Not a Contraindication for Orthotopic Liver Transplant Outcomes

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Abstract

Objectives: A transjugular intrahepatic portosystemic shunt for treating recurrent variceal bleeding or refractory ascites can be used as bridge therapy in patients awaiting a liver transplant. However, incorrect placement of the transjugular intrahepatic portosystemic shunt may complicate surgery during a liver transplant. This study sought to analyze a cohort of transplanted recipients to underscore whether transjugular intrahepatic portosystemic shunts can negatively affect liver transplant outcomes.

Materials and Methods: We retrospectively analyzed 207 patients who had undergone a liver transplant between January 2001 and December 2009 in the Rome “La Sapienza” center. Transjugular intrahepatic portosystemic shunt was performed before the liver transplant in 36 cases (17%). The analyzed population was stratified into 2 groups (no transjugular intrahepatic portosystemic shunt \( n=171 \) and transjugular intrahepatic portosystemic shunt \( n=36 \)), and patient survival outcomes were compared.

Results: In the no-transjugular intrahepatic portosystemic shunt group, 60 of 171 deaths (35%) were reported, 20 of which were seen in the first 3 months after the liver transplant. In the transjugular intrahepatic portosystemic shunt group, 12 of the 36 deaths (33%) were seen; 5 patients died within 3 months of the liver transplant. In this latter group, 12 grafts (33%) were lost, 4 of which were reported during the first 3 months after surgery. The median patient survival was 64 months and 69 months in the 2 groups. On survival analysis, no significant differences were found between the 2 groups.

Conclusions: Transjugular intrahepatic portosystemic shunt does not seem to affect outcomes after a liver transplant. We suggest that clinicians recognized the location of the stent to prevent any difficulty during surgery.

Key words: Transjugular intrahepatic portosystemic shunt, Liver transplant, Outcomes

Introduction

 Decompensated cirrhosis is often complicated by recurrent variceal bleeding or refractory ascites refractory to conventional treatments. Consequently, liver transplant (LT) represents the best therapy for these types of conditions. However, LT represents a scarce resource, and many patients die or to drop out from the wait list because of developing irreversible complications. Transjugular intrahepatic portosystemic shunts (TIPS) represents a useful bridge therapy in patients waiting for an LT, with the intent of avoiding developing deadly complications. Incorrect placement of a TIPS may complicate surgery during an LT, increasing the risk of early postoperative complications or having a negative effect on graft and patient survivals.
This study sought to analyze a cohort of transplanted recipients with the intent of investigating if a preoperatively placed TIPS plays a negative role after an LT regarding patient survival.

**Materials and Methods**

From January 2001, until December 2009, two hundred seven LTs were performed in the Rome “La Sapienza” center. A TIPS was placed before an LT in 36 cases (17%). The entire population was stratified in 2 groups according to pre-LT TIPS placement: a no-TIPS group (n=171) and a TIPS group (n=36). The 2 groups were compared regarding patient survivals. All protocols were approved by the ethics committee of the institution before the study began, and the protocols conformed with the ethical guidelines of the 1975 Helsinki Declaration.

Standard TIPS placement was performed via a right transjugular access. After evaluating the length of the intrahepatic tract, a covered stent graft was used (Viatorr; GORE-TEX, W. L. Gore & Associates, Inc., Newark, DE, USA). The Viatorr stent graft consisted of a self-expanding nitinol stent composed by a 2-cm uncovered portion for the portal region and an ultrathin expanded polytetrafluoroethylene-covered portion of the intrahepatic tract. According to these prerogatives, LT was performed more easily because the covered portion of the Viatorr was not incorporated into the liver parenchyma, and its bare portion was well attached to the portal vein, avoiding any stent migration.

**Statistical analyses**

Patient survival was measured from the date of the LT until death or until the last follow-up. Survival curves were constructed using the Kaplan-Meier method and compared with the log-rank test. Statistical analyses were performed with SPSS software (SPSS: An IBM Company, version 16.0, IBM Corporation, Armonk, NY, USA).

**Results**

Analyzing the entire population, cumulative 5-year patient and graft survivals were 66% and 64%. In no-TIPS group, 60, of 171 deaths (35%) were reported, 20 of which were observed in the first 3 months after the LT; in the same group, 61 graft losses (36%) were observed, 19 of which were observed in the first 3 months after the LT. In the TIPS group, 12 of 36 deaths (33%) were observed, with 5 deaths within 3 months after the LT; in this latter group, 12 grafts were lost (33%), and 4 were reported during the first 3 months after surgery.

We analyzed the Model for End-Stage Liver Disease (MELD) score (bilirubin, creatinine, and international normalized ratio) and platelets, before TIPS, and the time it took to do the orthotopic liver transplant. Medium MELD score before TIPS was 13.54 (normal range, 10.3-18.6) and 14.08 (normal range, 10.74-25.5) (not correct for hepatocellular carcinoma) at orthotopic liver transplant. Platelets were 98.000 (normal range, 25-250) at TIPS time and 96.400 (normal range, 35-204) at orthotopic liver transplant.

We had in 8 cases TIPS indications for emergency bleeding, in 12 cases for bleeding but an elective placement, and in 16 cases indications were ascites. In no case was early patient death or graft loss caused by a TIPS-related surgical problem. In only 1 case, a deadly massive hematemesis caused by a varix coil penetration into the stomach was reported; however, also in this case, no direct role of TIPS was observed. At patient survival analysis, no significant difference was found between the 2 groups (Figure 1).

**Discussion**

Transjugular intrahepatic portosystemic shunts is a nonoperative therapeutic option for managing portal hypertension, variceal bleeding, recurrent ascites, and Budd-Chiari syndrome. This procedure was first
introduced in 1989. Currently, TIPS is recommended as a bridge to an LT, but improper positioning of the stent can be complicated. According to Guerrini and associates, TIPS improves patient and graft survival, but it does not reduce intraoperative bleeding.

In the present series of 36 LT patients with TIPS, no surgical difficulties were observed, and no differences between the 2 groups were observed regarding patient survival. Platelets at pre-TIPS and at OLT were not significantly different.

In conclusion, TIPS seems not to affect post-LT complications and patient survival. It could be suggested to evaluate the stent location before an LT to prevent any surgical difficulties.

References