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EDITORIAL

Transjugular intrahepatic portosystemic shunt safety in patients on the liver transplantation waiting list. Risks and benefits[☆]



Seguridad de la derivación portosistémica intrahepática transyugular en pacientes en lista de espera para recibir un trasplante hepático. Riesgos y beneficios

Transjugular intrahepatic portosystemic shunt (TIPS) is a radiologic procedure frequently carried out worldwide to treat complications of portal hypertension. There are three indications for TIPS that have been evaluated in randomized clinical trials: Secondary prophylaxis for esophageal varices, treatment of active variceal bleeding, and refractory ascites.^{1–3} Other indications include hepatic hydrothorax, Budd-Chiari syndrome, veno-occlusive disease, portal thrombosis, hepatopulmonary syndrome, and hepatorenal syndrome.⁴

In the setting of liver transplantation (LT), TIPS has been used as a bridging therapy in patients on the waiting list with severe portal hypertension, especially in patients with refractory ascites or refractory esophageal varices.⁵

Studies have demonstrated that TIPS use diminishes the mortality rate in patients on the waiting list for LT, compared with those without TIPS.⁶ However, the true benefit, as well as TIPS placement risk, regarding patient progression after transplantation, is still controversial.^{7,8}

Portal pressure and collateral vein pressure decrease upon TIPS placement through portal flow improvement. That decrease in collateral circulation can result in the production of greater congestion of the intestine and hypotension, upon closing the portal vein during LT, especially if there is total exclusion of the vena cava (classic technique). On the other hand, malposition or migration of the TIPS can cause more complicated hepatectomy, as well as a wider dissection of the vessels (portal vein and suprahepatic vena cava) due to the presence of the TIPS, or even affect the endothe-

lium where the anastomosis is to be carried out. All this can consequently lead to an increase in the risk for vascular complications. Malposition can also cause intrahepatic bile duct injury, with or without the formation of liver abscesses or bilomas.

Matsushima et al.⁹ conducted a retrospective analysis on a cohort of 1081 LT recipients, within the time frame of January 2007 to June 2017. Of the 1081 transplanted patients, 130 had pretransplantation TIPS placement, comparing those patients with TIPS vs 260 patients without TIPS, utilizing 1:2 propensity score matching. The aim of that study was to determine whether TIPS placement could increase surgical risk and post-transplantation progression in patients that were LT recipients. Both the model for end-stage liver disease (MELD) score and the bilirubin level were higher in the patients with TIPS than in the patients without TIPS (21.8 ± 9.4 vs. 19.2 ± 9.9 , $p=0.01$, and 9.6 ± 11.7 mg/dl vs. 7.6 ± 10.5 mg/dl, $p=0.046$), with a statistically significant difference. TIPS malposition was reported in 17 patients (13%).

Graft survival at one, three, and five years was 86.9, 82.7, and 75.5%, respectively, for the group without TIPS and 88.5, 80.5, and 76.1%, respectively, for the group with TIPS, with no significant difference ($p=0.47$). Patient survival at one, three, and five years was also similar: 87.7, 83.4, and 76.2%, respectively, for the group without TIPS and 89.2, 81.1, and 76.7%, respectively, for the group with TIPS, also with no significant difference ($p=0.57$).

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In a sub-analysis of that cohort, patient survival at one year was not affected by TIPS placement and was reported at 92%. Nevertheless, it should be pointed out that when TIPS malpositioning occurred, one-year survival was only 70.6%, with a statistically significant difference ($p = 0.01$).

In this issue of the *Revista de Gastroenterología de México*, Hinojosa-González et al.¹⁰ described their experience in utilizing TIPS and its safety in patients that were LT recipients, in a cohort seen within the time frame of 1999 to February 2020. During that period, the authors performed 92 LTs, placing a TIPS before transplantation in 9 (9.8%) of the patients. They compared surgery duration, transfusions, blood loss, intensive care unit (ICU) stay, and short-term survival in patients with pretransplant TIPS versus patients that only underwent LT. They also carried out 1:3 propensity score matching. The authors found no differences between MELD scores, which were generally low at 16 (± 5.56). When the patients with and without TIPS were compared, the MELD score was even lower, at 14.5 (± 4.72), in the patients with TIPS.

There were no differences in ICU stay, reoperation, vascular complications, or biliary complications. The survival rate of the patients with and without TIPS was similar on the Kaplan-Meier curves ($p = 0.367$). Of TIPS complications after placement, encephalopathy in one case and shunt revision in another were described, not mentioning whether there was malpositioning in the latter.

In another study that evaluated the post-LT impact of TIPS, Barbier et al.¹¹ compared 76 patients with TIPS with 138 matched patients without TIPS. In that report, 10% of the TIPS were occluded and 32% were malpositioned. TIPS removal was complicated due to malposition in 17% of the cases and total exclusion was necessary in 10%. More porta-caval shunts were also required during hepatectomy. There was more ascites fluid in the TIPS group (7.6 vs. 6.9 L, $p = 0.036$). Unlike the study by Matsushima et al.,⁹ there was no difference in the survival of the LT recipients with TIPS malposition.

Likewise, in the study by Guerrini et al.¹² on 61 patients with TIPS prior to LT, graft survival and patient survival between the two groups (with and without TIPS) were analyzed, and no significant difference ($p = 0.27$ and $p = 0.29$, respectively) was found. Their results showed that graft survival at five years was 58.8% in the patients with migrated/displaced TIPS, which occurred in 28% of the cases, and 78.3% in the patients without migrated/displaced TIPS.

In this new publication, Hinojosa-González et al.¹⁰ provide more evidence on the use of TIPS and the placement risks in patients on the waiting list for LT, concluding that TIPS placement does not affect survival in the patients that have received it. However, their study has several limitations. It is a retrospective study conducted at a single center on a small cohort of transplanted patients (92 in 20 years), with TIPS placement in only 9 patients on the waiting list. The authors describe TIPS placement revision in only one patient and did not report whether or not there were cases of malpositioning, and so not contributing more information on whether TIPS malpositioning affects one-year and five-year survival.

The evidence provided by this publication, added to the existing information, allows us to state that the placement

of TIPS in patients on the LT waiting list is clearly indicated, but always after a risk-benefit evaluation. TIPS migration or malpositioning are risks that should not be underestimated because they can increase LT morbidity and mortality by causing serious complications, even affecting survival in the LT recipient.

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Conflict of interest

The authors declare that there is no conflict of interest.

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