



Scientific Letters

Surgical Alternatives in the Treatment of Portal Vein Thrombosis in Liver Transplantation[☆]



Alternativas quirúrgicas para el tratamiento de la trombosis venosa portal en el trasplante hepático

Portal vein thrombosis (PVT) is a common complication in terminal-stage liver disease. Its incidence in liver transplantation (LT) ranges from 2.1% to 26%; in cirrhotic patients, however, it can be as high as 64%,¹ depending on the diagnostic method used. In the past, PVT was considered an absolute contraindication for LT, especially due to the technical difficulty involved.^{1,2} Nonetheless, since the mid-1980s, with the introduction of new surgical techniques, PVT is no longer considered an absolute contraindication in a larger percentage of patients.³ In spite of the frequent appearance of PVT in terminal liver disease, and, consequently, in an important number of patients who are candidates for LT, there are no clinical guidelines for its treatment before transplantation.

Several surgical techniques have been proposed to ensure adequate portal flow during LT. Below, we present cases of patients with PVT treated by LT at our hospital and the different surgical techniques used.

Case 1

The patient is a 48-year-old male with Child B alcoholic cirrhosis, a MELD score of 9 and Yerdel grade II portal thrombosis.⁴ LT was conducted with a cadaveric donor organ, and we proceeded with thrombectomy, end-to-end portaportal anastomosis and placement of a stent by the Interventional Radiology Department. During the immediate post-op period, the patient presented with graft failure secondary to complete PVT, and reoperation was therefore necessary after 24 h for attempted portal recanalization by means of side-to-end transposition of the cava, which was not successful. The patient received another transplant, 48 h after the initial

transplantation, involving end-to-end anastomosis of the left renal vein to the portal vein with cadaveric donor vein graft and associated end-to-side anastomosis of a gastric varix to the portal vein with another venous graft (Fig. 1). The postoperative period was satisfactory, with no complications. Today, 8 years after transplantation, the graft continues to function correctly.

Case 2

The patient is a 62-year-old male with hepatocarcinoma in an alcoholic cirrhotic liver, Child B7 and MELD 13, associated with grade IV portal thrombosis,⁴ with several hospitalizations for hydropic decompensation. LT was performed, which entailed a very laborious surgery that lasted 8 h, with multiple transfusions, portal thrombectomy and end-to-end portaportal anastomosis and stent placement. Nonetheless, optimal portal flow was not achieved, so we decided to create an end-to-end anastomosis of the left renal vein to the portal vein. During post-op, the patient presented persistent ascites, so an angiography was performed, which demonstrated stenosis of the portal anastomosis that was treated with a stent (Fig. 2). Afterwards, the patient presented biliary fistula secondary to ischemia of the bile duct, with multiple organ failure. The patient died 40 days after surgery.

Case 3

The patient is a 50-year-old male with alcoholic cirrhosis, Child C and MELD 22, with a history of alcoholic pancreatitis and portal hypertension due to grade IV PVT, which resulted in

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Fig. 1 – (A) Transposition of the cava and (B) anastomosis to a gastric varix.

several surgeries, including bilioenteric bypass and splenorenal shunt. The LT was quite laborious due to an inflammatory magma in the hepatic hilum that impeded dissection of the elements and led to multiple intraoperative transfusions. End-to-end transposition of the cava provided adequate portal flow and deferred hepaticojejunostomy after 48 h. As complications, he presented a bile leak on the 7th day post-op, at which time a reoperation was performed and the hepaticojejunal anastomosis was repaired. Two months later, the patient developed stenosis of the right bile duct with recurrent cholangitis, the last of which was 3 months after transplantation, causing sepsis and death.

Case 4

The patient is a 49-year-old male with alcoholic cirrhosis and grade II portal thrombosis. LT was carried out with attempted

portomesenteric thrombectomy and failed recanalization of the superior mesenteric vein. We decided to perform side-to-end transposition of the cava with partial closure of the retrohepatic vena cava, leading to prolonged warm ischemia of the graft. In the postoperative period, low portal flow was detected, with secondary failure of the graft. The patient was retransplanted after 48 h; we dissected the collateral vein that drained into the superior mesenteric vein and provided an access for radioguided thrombectomy and later mesenteric-portal anastomosis with venous graft and stent placement.

Thrombosis of the portal-mesenteric axis was initially an absolute contraindication for LT in the context of terminal liver disease. The pathophysiology of PVT seems to be related with the increased intrahepatic resistance to portal flow as a consequence of cirrhosis, vascular damage induced by elevated portal pressure and coagulation disorders.⁵ Patients with terminal-stage liver disease present a wavering hemostatic balance; therefore, they can go from states of hypercoagulability with hemorrhage to situations of hypercoagulability and thrombosis.

PVT is more frequent in men with alcoholic cirrhosis, advanced hepatic disease (Child C), severe portal hypertension, hepatocarcinoma and patients with treatment for bleeding due to portal hypertension (sclerotherapy, portosystemic shunt, TIPS, splenectomy, etc.).^{2,4} According to Yerdel et al.,⁴ the presence of at least one of these risk factors increases the risk for portal vein thrombosis from 6.6% to 12.5%.

PVT is defined as the occupation of the portal lumen by a thrombus of variable extension. Several authors have classified PVT according to its extension and severity.⁶ The most extensively used is the classification by Yerdel et al.⁴:

- Grade I: minimal or partial thrombosis of the portal vein (<50% portal lumen) with minimal or limited extension to the superior mesenteric vein
- Grade II: obstruction of the portal vein >50%, including complete obstruction, with minimal extension or without extension to the superior mesenteric vein
- Grade III: complete thrombosis of the portal vein and proximal superior mesenteric vein

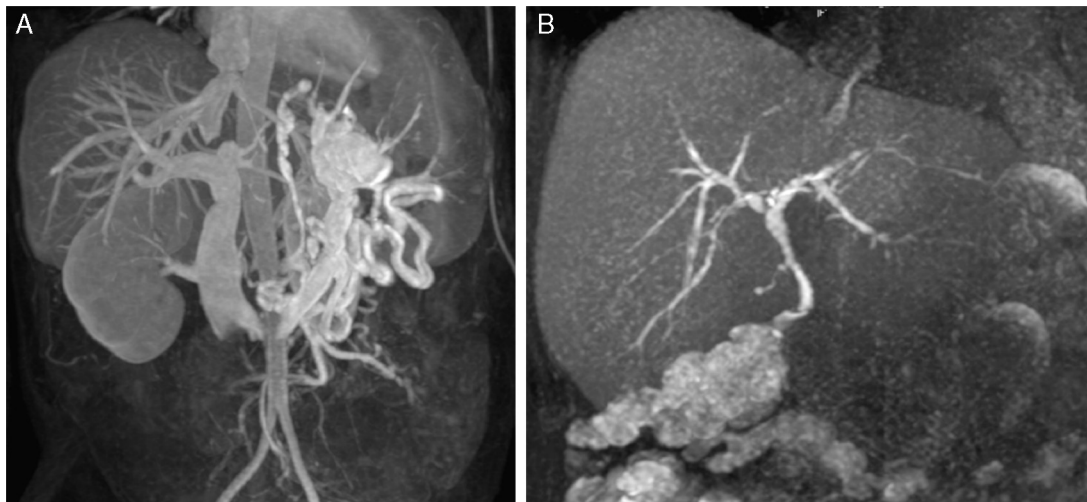


Fig. 2 – (A) Transposition of the cava and (B) bile duct stenosis.

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