

VIDEO | LIVER

# Intraoperative Challenge for Vascular Reconstruction in Orthotopic Liver Transplantation Because of Extensive Portal Thrombosis and Intimal Dissection of the Hepatic Artery

Francisco Laxague, MD<sup>1</sup>, Agustin Valinoti, MD<sup>1</sup>, Dario Ramallo, MD<sup>1,2</sup>, Maria Agustina Casas, MD<sup>1</sup>, Emilio Quiñones, MD<sup>2</sup>, and Lucas McCormack, MD, FACS, FEBS<sup>1,2</sup>

<sup>1</sup>Department of Surgery, Hospital Alemán of Buenos Aires, University of Buenos Aires, Buenos Aires, Argentina

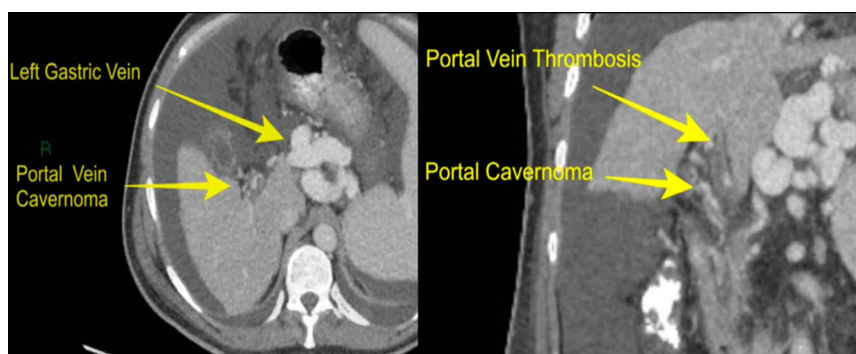
<sup>2</sup>Liver Surgery and Transplantation Unit, Hospital Alemán of Buenos Aires, Buenos Aires, Argentina

## CASE REPORT

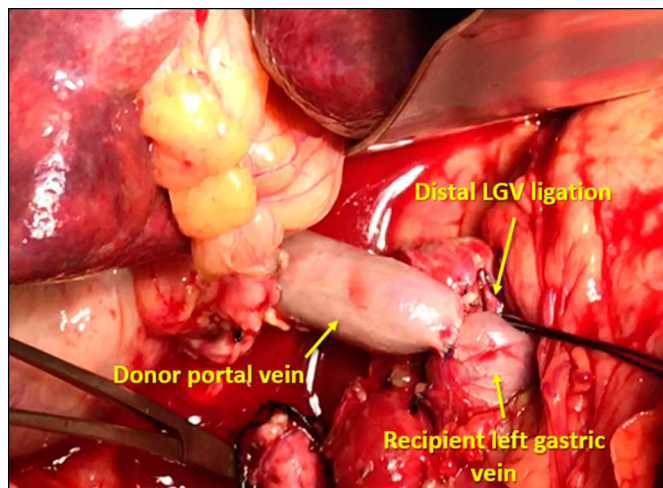
The presence of the portal vein (PV) thrombosis in cirrhotic patients is not considered an absolute contraindication for liver transplantation, despite being technically challenging and associated with longer operative time and poor outcomes.<sup>1</sup> We aim to present a patient with an extensive portal thrombosis who underwent a deceased donor liver transplantation.

A 41-year-old man presented with a diagnosis of alcoholic cirrhosis (Model for End-Stage Liver Disease score = 28) and a history of multiple upper gastrointestinal bleeding and refractory ascites. Computed tomography revealed revascularized PV cavernous transformation with signs of left segmental portal hypertension in the splenic, gastric, and esophagic territories, without low-pressure signs in the superior mesenteric vein system (Figure 1). The patient underwent a successful nonanatomical liver transplantation with an implantation of the donor PV into the recipient's left gastric vein (LGV) in an end-to-side fashion. To increase the flow in the liver graft, a distal ligation of LGV was performed to avoid vascular steal phenomenon toward the esophagus or gastric territories (Figure 2). Intraoperatively, a complete intimal dissection of the recipient common hepatic artery was confirmed and thus, the donor hepatic artery flow was reconstructed using an iliac artery interposition graft from the infrarenal aorta (Figure 3). The postoperative outcome was uneventful, and the patient was discharged under anticoagulation therapy on the seventh postoperative day (Video 1; watch the video at <http://links.lww.com/ACGCR/A20>).

The presence of PV thrombosis is a complex scenario in patients on a waiting list for liver transplantation, and it is observed in 10% of preoperative imaging in cirrhotic patients.<sup>2</sup> The cause of the occurrence of PV thrombosis is multifactorial, and it is probably related



**Figure 1.** Computed tomography showing signs of segmental portal hypertension in the splenic, gastric, and esophagic areas due to portal vein cavernous transformation.



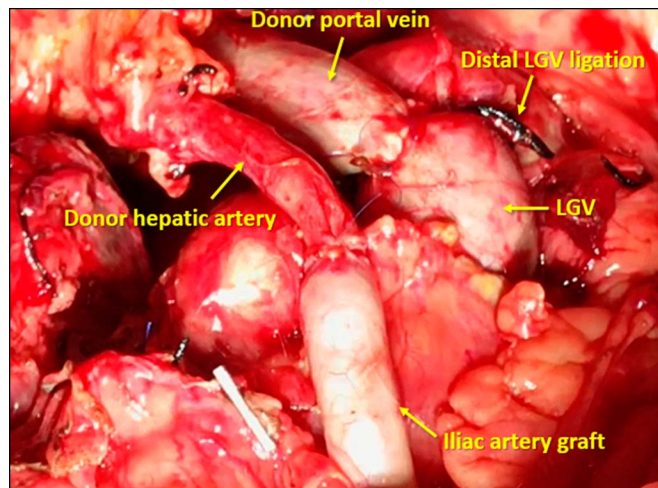
**Figure 2.** Nonanatomical reconstruction of the graft portal flow with an implantation of the donor PV into the recipient left gastric vein (distal ligation to increase PV flow). PV, portal vein.

to the presence of extensive fibrosis of the hepatic parenchyma, a procoagulant state, and periportal lymphangitis. Other risk factors have been described including male sex, alcoholic liver disease, previous splenectomy, and the coexistence of a hepatocellular carcinoma. Unfortunately, the presence of PV thrombosis has been associated with poor patient survival after a liver transplantation.<sup>3,4</sup>

Despite being a challenging situation, it does not represent a contraindication for liver transplantation.<sup>1</sup> There are several options to manage portal reconstruction including anatomical reconstruction with portal-portal anastomosis after portal thrombectomy or nonanatomical reconstruction including the implantation of the donor PV in the recipient superior mesenteric vein, LGV, vena cava with or without the use of interposition iliac vein grafts.<sup>5</sup> From the surgical point of view, PV flow reconstruction in this setting represents a technical challenge and usually increases operative time, bleeding risk, graft failure rate, and finally, the risk of postoperative PV rethrombosis.<sup>6</sup> In our case, it was performed for a nonanatomic PV reconstruction using the recipient LGV with an end-to-lateral anastomosis and distal ligation of the LGV to redirect the portal flow to the liver graft.

## DISCLOSURES

Author contributions: F. Laxague wrote the manuscript and is the article guarantor. V. Agustin provided the video. R. Dario and Q. Emilio edited the manuscript. C. M. Agustina provided the video and images. L. McCormack wrote and revised the manuscript for intellectual content.



**Figure 3.** The final aspect of the liver graft vascular reconstruction. The arterial anastomosis of the donor common hepatic artery and iliac artery interposition graft from the infrarenal aorta. PV reconstruction of the donor PV and the recipient left gastric vein. PV, portal vein.

**Video 1.** Challenging vascular reconstruction in orthotopic liver transplantation because of extensive portal thrombosis and intimal dissection of the hepatic artery.

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Informed consent was obtained for this case report.

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