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Received: 23 April 2002 Revised: 13 November 2002 Accepted: 10 December 2002 Published online: 29 April 2003 © Springer-Verlag 2003

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Introduction

The incidence of portal vein thrombosis is 15% in patients with chronic liver disease [8, 11] and ranges from 6 to 21% in patients with cirrhosis who are treated surgically. Abnormalities of portal, splenic, and mesenteric veins were previously considered to be absolute contraindications for liver transplantation [11]. Nevertheless, improvements in surgical techniques now permit liver transplantation in these situations [2, 10, 13].

In exceptional cases, anastomosis of the donor portal vein to the recipient splanchnic system is not possible. In such cases, successful restoration of portal blood perfusion of the transplanted liver has been obtained by anastomosis of the left gastric vein [3, 8], the hepatoduodenal [9] and bile duct varices [1, 6], and the gastro-epiploic vein [4], and even by partial arterialization of the portal vein [12].

Abstract Recipient portal vein thrombosis in liver transplantation is a contingency that increases surgical difficulty as well as patient morbidity and mortality. The aim of this paper is to demonstrate a surgical technique for reconstruction of portal blood flow in emergency situations of portal vein thrombosis with inadequate blood flow and a poor vascular bed for re-vascularization. Keywords Liver transplantation · Portal vein thrombosis · Vascular graft · Re-vascularization · Partial ligature of the inferior vena cava

[2]. In cases of chronic and complete thrombosis, the use of meso-portal venous jump graft gives very good results [5]. Technical problems occur when a chronic portal vein thrombosis is encountered that was not detected previously due to a functional (though insufficient) blood flow and when the splenic and superior mesenteric veins are not accessible, as in the case we are presenting.

The current technique of choice for dealing with

portal vein thrombosis is eversion venous thrombectomy

Case report

We present a 57-year-old man with Child–Pugh class C-10 alcoholinduced liver cirrhosis. Pre-operative vascular imaging (Doppler ultrasound) did not show any portal vein thrombosis. During hepatectomy we found an organized thrombosis of the porto–mesenteric system (Fig. 1) with insufficient blood flow. Profuse bleeding impeded the approach of the superior mesenteric and splenic veins,

Portal vein thrombosis: an emergency solution for blood flow in liver transplantation



Fig. 1 Schematic of re-vascularization of the liver by means of porto-porto vena cava anastomosis with donor venous Y-graft. Note the partial ligature on the inferior vena cava and the section of thrombosed recipient portal vein

and we could not find a suitable vein for re-vascularization; nor were there any collateral veins with sufficient caliber and flow.

To overcome this we used a donor venous iliac Y-graft (external and internal iliac veins). First we created a porto-portal anastomosis with the internal iliac branch of the clamped graft. Once the graft was re-vascularized, blood pressure was measured at only 8 mmHg. We then created a termino-lateral anastomosis of the internal iliac branch of the venous graft to the recipient infrahepatic vena cava (Fig. 1). We also placed a partial ligature on the Postoperative progress of the patient was satisfactory, and the direction of portal venous flow (assessed by Doppler ultrasound) was adequate at 24 h as well as 7 and 15 days after transplantation. The patient did not show impaired renal function (creatinine: 1.5 mg/dl, 7 days post-transplantation) or lower-limb perfusion. The patient showed no deprivation of portal blood, since the pressure of the inferior vena cava infra-ligature is always higher, and portal hypertension was not observed in the liver graft. The patient died from a massive myocardial infarction on day 35 post-transplantation, with good graft function.

Conclusion

Along with Figueras et al. [5], we believe the extra-anatomic venous graft to be the first option in the presence of chronic portal vein thrombosis. However, there are situations in which such a procedure is very hazardous. Portocaval hemi-transposition is another reported technique for overcoming portal thrombosis and is also helpful in cases of congenital absence of the portal vein [7]. In such cases, impairment of renal function and perfusion of the lower limbs would be very important.

We believe that this technique can provide adequate venous circulation to the graft in the unusual case when it is not possible to access the splanchnic vein system to create a direct venous anastomosis.

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