Apart from the routine examination of the liver, ultrasound has three applications in this type of surgery:

1. Anatomical surgery
2. The detection of portal venous thrombosis
3. Evaluation of the completed anastomosis

The inspection of the cirrhotic liver should be meticulous because of the high incidence of hepatocellular carcinoma in these patients.

Fig. 67. When a separate origin of the right hepatic artery is present, it passes behind the portal vein at the base of the hepatoduodenal ligament to enter the right border of the hilus. The presence of this arterial anomaly interferes with the mobilization of the portal vein, which is essential to the creation of a side-to-side portacaval shunt. LPV, left branch of portal vein; HD, common hepatic duct; RBHA, right branch of hepatic artery; PV, portal vein; RHA, right hepatic artery; IVC, inferior vena cava. Sagittal transhepatic section, centred on hepatic ligament
Anatomical Exploration

The portal vein can quite easily be localized without ultrasound. The identification of aberrant arterial anatomy which could interfere with the realization of side-to-side portacaval anastomosis is the most important application of ultrasound [1] (Fig. 67).

Operative ultrasound is probably more useful in other types of shunt, for example:

Localization of the renal vein in splenorenal anastomosis [2].

When using an extraperitoneal approach for splenorenal anastomosis, the dissection can be reduced by using ultrasound for localization of the vessels [3].

Since the superior mesenteric vein is often surrounded by fat and lymph nodes [4], its localization for mesocaval shunting can be facilitated by operative ultrasound (Fig. 68).

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Fig. 68. Localization of the superior mesenteric vein (SMV) for a mesocaval shunt. The distance between the two arrows (two crosses on ultrasound image) is 2.5 cm. SMA, superior mesenteric artery; D3, third portion of the duodenum; A, aorta; IVC, inferior vena cava. Horizontal section with the probe on the root of the transverse mesocolon.