1 Anatomy of the Liver

Knowledge of the anatomy and segmental nature of the liver is essential in the management of patients with malignant liver lesions. Precise localization of the lesions is important as the feasibility and the type of a surgical treatment depend on it. The identification of anatomical landmarks in the liver with imaging modalities such as ultrasound, computed tomography (CT), and magnetic resonance (MR) allows precise localizing of liver lesions.

The liver weighs about 1500 g and is divided into two lobes and eight segments (Fig. 1.1). The division of the liver is based on vascular territories that produce potential surgical intersegmental and interlobar planes containing the hepatic veins [1,2]. The landmarks and the vessels delimiting the segments can be recognized with imaging techniques and help to localize lesions in the liver parenchyma (Figs. 1.2–1.4).
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Fig. 1.2. a The liver segments, oblique. lhv, Left hepatic vein; mhv, middle hepatic vein; rhv, right hepatic vein. b The liver segments; the liver is seen from below

The plane between the inferior vena cava and the main middle hepatic vein separates the right from the left lobe. The left lobe is separated into two portions by the portoumbilical fissure formed by the falciform ligament containing caudally the obliterated umbilical vein (ligamentum teres hepatis), venous ligament (Arantii), and hepatogastric ligament. At the cranial diaphragmatic aspect of the liver, the falciform ligament separates into right and left coronary ligaments that define the extraperitoneal bare area of the liver. On both sides the coronary ligaments end up in the triangular ligaments. The porta hepatis contains the portal vein dorsally and the hepatic artery with the vegetative nervous tissue, extrahepatic biliary tract, and portal lymphatics ventrally.

About 75% of the blood supply to the liver is obtained through the portal veins and the remaining 25% through the hepatic arteries.

1.1 Hepatic Veins

Although there is considerable variation, the hepatic venous drainage consists generally of left, middle, and right hepatic veins.

The middle hepatic vein drains most of the blood from segment 4 (the quadrate lobe) of the left lobe and from segments 5 and 8 from the right lobe. The left hepatic vein lies in a plane separating segment 4, located medially, from segments 2 and 3 located laterally in the left lobe. As the left hepatic vein separates early into smaller branches, it can be identified only in the cranial