

Liver (An Overview)

The liver has two major lobes and two minor lobes. Anteriorly, the right lobe is separated from the smaller left lobe by the falciform ligament. Inferiorly, the caudate lobe is near the inferior vena cava, and the quadrate lobe is adjacent to the gallbladder. The falciform ligament is responsible for attaching the liver to the anterior abdominal wall and the diaphragm by way of the coronary ligament, the upper layer of which is exposed as if the liver were to be pulled away from the diaphragm. A ligamentum teres is continuous along the free border of the falciform ligament and is a remnant of the umbilical vein of the fetus. The porta of the liver is where the hepatic artery, portal vein lymphatics, and nerves enter the liver and where the hepatic ducts exit. Although the liver is the largest internal organ of the body, it is only one to two cells thick. This is due to the fact that hepatocytes, or liver cells, are only one to two cells thick and separated from each other by large capillary spaces called sinusoids. The plate structure of the liver and high permeability of the sinusoids allow each hepatocyte to be in close contact with the blood. The hepatic plates are arranged into functional units called liver lobules. In the middle of each lobule is a central vein and at the periphery of each lobule are branches of the hepatic portal vein and hepatic artery, opening into spaces between hepatic plates. Arterial blood and portal venous blood, containing nutrient molecules absorbed in the gastrointestinal tract mix as the blood flows from the periphery of the lobule to the central vein. The central veins of the lobules will converge to form two hepatic veins which will carry blood from the liver to the inferior vena cava. Bile is produced in the liver by the hepatocytes and secreted into thin channels called bile canaliculi located within each hepatic plate. The canaliculi are drained peripherally by bile ducts which in turn drain into hepatic ducts that carry bile away from the liver. As a result, blood travels in the sinusoids and bile travels in the opposite direction so blood and bile never mix in the lobules of the liver under normal conditions. Cirrhosis, an irreversible liver disease destroys large numbers of liver lobules and replaces them with a permanent type of connective tissue from hepatocytes

called regenerative nodules. These nodules don't have the plate-like structure of normal liver tissue and are consequently, less functional. Cirrhosis is often accompanied by the presence of ammonia from the hepatic portal vein on into systemic circulation. Any disease that attacks liver cells such as viral hepatitis or chemicals affecting the liver such as seen in chronic alcohol abuse may bring about sclerosis.