

LIVER MICROANATOMY

The organizational unit of the liver is the hepatic acinus, a berry-shaped cluster of liver cells and vascular structures. Each cell lies next to a portal/arterial blood supply as well as separate hepatic vein and bile duct drain tubes.

Blood normally flows across the microvasculature under a pressure gradient of only 2-3 mmHg, one tenth that of most other organs. Any increase in right atrial cardiac pressure is transmitted instantaneously, directly, and quantitatively into the core hepatic drainage system. When outflow pressure grossly exceeds inflow pressure, blood flows backward through the organ and reaches the IVC via retrograde flow in the main portal vein and its connections to gastric and esophageal veins. These vessels are unaccustomed to conveying such high-volume flow and may become dilated with risk of rupture.

Assessment of flow direction by Doppler ultrasound has significant hemodynamic implications in the assessment of both hepatic and right heart function.

