



## Exploring Liver Capsules Versatile Functions in Protecting Liver from Disease and Injury

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### DESCRIPTION

Liver capsule is the term used to describe the thin layer of connective tissue that surrounds and protects the liver. The liver is the largest internal organ in the human body, weighing about 1.5 kg and performing many vital functions, such as plasma protein synthesis, vitamin storage, iron metabolism, bile production, carbohydrate metabolism, and detoxification of drugs and toxins. The liver capsule plays an important role in maintaining the shape, structure, and function of the liver. The liver capsule consists of two layers: an inner fibrous layer and an outer serosal layer. The inner fibrous layer is composed of type III collagen (reticulin) fibers, which form a dense network that supports the hepatocytes (liver cells) and the sinusoids (capillaries) within the liver parenchyma (functional tissue). The outer serosal layer is derived from the peritoneum (the membrane that lines the abdominal cavity) and covers the entire surface of the liver. The serosal layer is also called Glisson's capsule, after Francis Glisson, a British physician who first described it in. The liver capsule extends into the liver along the portal triads, which are structures that contain a branch of the hepatic artery, a branch of the portal vein, and a branch of the bile duct. These vessels supply blood and bile to and from the liver lobules, which are the microscopic functional units of the liver. Each lobule consists of hexagonal plates of hepatocytes arranged around a central vein. The hepatocytes perform various metabolic activities and secrete bile into small canaliculi that drain into the bile ducts. The liver capsule also forms a loose sheath around each lobule, separating it from adjacent lobules. This creates spaces between the lobules called interlobular spaces or portal areas. These spaces contain lymphatic vessels, nerves, and connective tissue cells. The lymphatic vessels drain excess fluid from the liver parenchyma and transport it to the thoracic duct, which empties into the left subclavian vein. The nerves innervate the liver capsule and regulate its sensitivity to pain and pressure.

The liver capsule has several functions in relation to the liver. First, it provides mechanical protection to the liver from external injuries and infections. Second, it maintains the shape and integrity of the liver by preventing excessive expansion or contraction due to changes in blood volume or pressure. Third, it facilitates the exchange of substances between the blood and the hepatocytes by regulating the permeability of the sinusoids. Fourth, it participates in the immune response of the liver by containing macrophages (white blood cells) that phagocytose (engulf) foreign particles and microorganisms. The liver capsule can be affected by various diseases and disorders that can alter its structure and function. The liver capsule is an important component of the liver anatomy and physiology. It serves as a protective barrier, a structural framework, a regulatory mechanism, and an immune defense for the liver. It can be affected by various pathological conditions that can compromise its function and cause symptoms such as pain, jaundice, fever, or abdominal swelling.

### CONCLUSION

Additionally, the liver capsule plays a vital role in regulating substance exchange and participating in the immune response within the liver. Pathological conditions can impact the liver capsule, potentially leading to symptoms like pain, jaundice, fever, or abdominal swelling. To preserve the health and function of the liver capsule, it is imperative to lead a healthy lifestyle and seek medical attention when necessary. Understanding the significance of the liver capsule underscores its integral role in maintaining overall well-being. Therefore, maintaining a healthy lifestyle and seeking medical attention when needed are essential for preserving the health and function of the liver capsule. It also contains nerve fibers that transmit pain signals when it is stretched or compressed.

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