



Canadian Liver Foundation  
Fondation canadienne du foie

*Bringing liver research to life*  
*Donner vie à la recherche sur le foie*

## Liver Biopsy

### What is a liver biopsy?

Liver biopsy is a diagnostic procedure used to obtain a small amount of liver tissue, which can be examined under a microscope to determine what is causing the liver disease and the degree of fibrosis (scarring) of the liver.

### What are the different ways a liver biopsy can be performed?

The most common way a liver sample is obtained is by inserting a needle into the liver for a fraction of a second. This can be done in the hospital, and the patient may be sent home within two to three hours if there are no complications. The physician determines the best site, depth, and angle of the needle puncture by physical examination or by having an ultrasound mark the appropriate spot. The skin and area under the skin are anesthetized, and a needle is passed quickly into and out of the liver. Approximately half of individuals have no pain afterwards, while another half will experience brief localized pain that may spread to the right shoulder.

Another common technique used for liver biopsy is guiding the needle into the liver through the abdomen under direct guidance by imaging techniques. Ultrasound, or less commonly CT scan is used to pinpoint the site of the tumor and target the needle's entry into the liver under direct observation. An instrument called the "needle gun" is used to take the biopsy. After this procedure, the patient is usually allowed to go home the same day. Liver biopsies performed under direct radiologic guidance depend on availability and pattern of practice at the local hospital.

Less commonly used biopsy techniques include those that are performed during laparoscopy (usually when laparoscopy is performed for other reasons), transvenous or transjugular liver biopsies, and during open surgical procedures performed for other reasons.

With **laparoscopy**, a lighted, narrow tubular instrument is inserted through a small incision in the abdominal wall. The internal organs are moved away from the abdominal wall by gas that is introduced into the abdomen. Instruments may be passed through this lighted instrument or through separate puncture sites to obtain tissue samples from several different areas of the liver. Patients who undergo this procedure may be discharged several hours later.

**Transvenous** or **transjugular** liver biopsy may be performed by an interventional radiologist in special circumstances, usually when the patient has a significant problem with blood clotting (coagulopathy). With this procedure, a small tube is inserted into the internal jugular vein in the neck and radiologically guided into the hepatic vein, which drains the liver. A small biopsy needle is then inserted through the tube and directly into the liver to obtain a sample of tissue.



Canadian Liver Foundation  
Fondation canadienne du foie

*Bringing liver research to life*  
*Donner vie à la recherche sur le foie*

Finally, liver biopsy may be done at the time a patient undergoes an open abdominal operation, enabling the surgeon to inspect the liver and take one or more biopsy samples as needed.

## **When is a liver biopsy needed?**

Liver biopsy is often used to diagnose the cause of chronic liver disease that results in elevated liver tests or an enlarged liver. If the diagnosis is known, such as hepatitis C, then the main reason for a liver biopsy is to determine whether the patient has a progressive disease. In many cases, the specific cause of the chronic liver disease can be established on the basis of blood tests, but a liver biopsy is used to confirm the diagnosis and to determine the amount of damage to the liver. Liver biopsy is also used after liver transplantation to determine the cause of elevated liver tests and determine if rejection is present.

## **What are the dangers of liver biopsy?**

The primary risk of liver biopsy is bleeding from the site of needle entry into the liver, although this occurs in less than one per cent of patients. Other possible complications include the puncture of other organs, such as the kidney, lung or colon. A liver biopsy procedure that damages the gallbladder by mistake may lead to leakage of bile into the abdominal cavity, causing peritonitis. Fortunately, the risk of death from liver biopsy is extremely low, with a mortality of 1 in 5,000.

In order to reduce the risk of bleeding, the coagulation status is assessed in all patients prior to a biopsy. If the prothrombin (coagulating) time is too slow or the platelet count is low, a standard biopsy is not recommended. Vitamin K or fresh frozen plasma may be used to correct clotting abnormalities in such patients. Another alternative in this situation would be a transjugular biopsy.

## **Are there alternatives to liver biopsy?**

The primary alternative to liver biopsy is to make the diagnosis of a liver disease based on the physical examination of the patient, medical history, and blood testing. In some cases, blood testing is quite accurate in giving the doctor the information to diagnose chronic liver disease, while in other circumstances a liver biopsy is needed to assure an accurate diagnosis.

FibroScan (FS) is a completely non-invasive diagnostic instrument to measure fibrosis (scarring of the liver) of the liver. FS uses an “elastic wave” (transient elastography) to measure hepatic stiffness which correlates with fibrosis. FS is based on the premise that as the liver becomes more fibrotic, the tissue density increases and the liver becomes less elastic. FS is easier to perform, safer and less expensive in comparison to a liver biopsy. Measurements with the FS can be taken at multiple locations of the liver whereas a liver biopsy tissue sample is taken from one location in the liver.



Canadian Liver Foundation  
Fondation canadienne du foie

*Bringing liver research to life*  
*Donner vie à la recherche sur le foie*

## **Can liver biopsy be used to diagnose liver cancer?**

Liver biopsies are usually not recommended to diagnose liver cancer except on rare occasions when a diagnosis is not clear. Typically, liver cancer is diagnosed by using a CT scan or an MRI. A biopsy of a liver cancer has a small but real risk of having some cancer cells follow the pathway of the needle and spread outside of the liver.

## **Do liver biopsies ever need to be repeated?**

In most circumstances, a liver biopsy is only performed once to confirm a suspected diagnosis of chronic liver disease. Occasionally, liver biopsy is repeated if the clinical condition changes or to assess the results of medical therapy, such as drug treatment of chronic viral hepatitis or autoimmune hepatitis. Patients who have undergone liver transplantation often require numerous liver biopsies in the early weeks to months following the surgery to allow accurate diagnosis of whether the new liver is being rejected or whether other problems have developed.

*This information is current for October 2012*