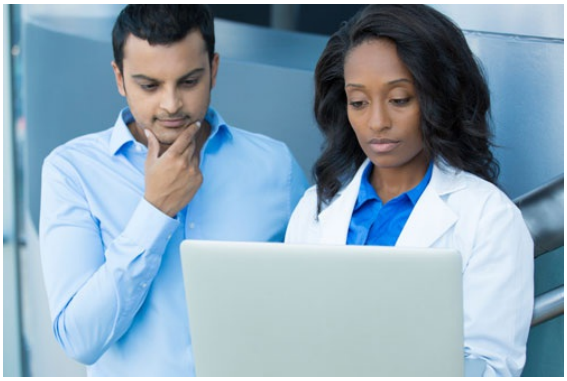
Liver Biopsy



Liver biopsy uses a needle to remove a small amount tissue from the liver for lab work. Most liver biopsies insert the needle through your abdomen and into the liver. Alternatively, the needle may be inserted through a vein in the neck. You may need a biopsy if blood and/or imaging tests show a possible liver problem.

Your doctor will tell you how to prepare. Tell your doctor about all the medications you take. This should include aspirin, blood thinners, and herbal supplements. List any allergies—especially to anesthesia. Your doctor may tell you to stop taking aspirin or blood thinners for a while before your biopsy. Fasting for up to 8 hours before your biopsy may also be required. Leave jewelry at home and wear loose, comfortable clothing. You may be given a gown to wear at the hospital.

What is a Liver Biopsy?

A liver biopsy removes a small piece of liver tissue for examination under a microscope.

Your doctor will remove the liver tissue in one of three ways. The most common is called percutaneous (meaning through the skin) where a biopsy needle is inserted through your abdomen into your liver. Second is a transjugular biopsy: the doctor inserts a thin plastic tube (catheter) into the jugular vein in your neck and guides it to the liver. The doctor then inserts a needle through the catheter and removes a tissue sample. Last is a laparoscopic biopsy; the doctor makes small incisions in your abdomen and inserts a tiny video camera along with surgical tools to take the tissue sample.

This article focuses exclusively on percutaneous and transjugular biopsy used in interventional and diagnostic radiology.

What are some common uses of the procedure?

Your doctor may use liver biopsy to:

- take a sample of tissue from an abnormal growth (tumor)
- diagnose disorders and diseases of the liver
- determine the severity of liver disease or damage (staging)
- identify the best treatment plan
- assess how treatment is working
- monitor a liver transplant

How should I prepare?

Tell your doctor about all the medications you take, including herbal supplements. List any allergies, especially to local anesthetic (http://www.radiologyinfo.org) , general anesthesia (http://www.radiologyinfo.org) , or contrast materials (http://www.radiologyinfo.org) . Your doctor may tell you to stop taking aspirin, nonsteroidal anti-inflammatory drugs (NSAID (http://www.radiologyinfo.org) s) or blood thinners before your procedure. Also, tell your doctor about recent illnesses

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and other medical conditions.

Your doctor will order blood tests prior to your procedure. If you have blood-clotting problems, your doctor may prescribe medication to reduce the risk of bleeding.

The doctor will use imaging tests to view your liver and surrounding organs to find the best place to insert the biopsy needle. These imaging tests may include:

- ultrasound, which uses sound waves to create images
- CT scan, which uses x-rays (https://www.niddk.nih.gov/Dictionary/X/x-ray) to create images

Women should always tell their doctor if there is any possibility that they are pregnant. Doctors avoid some procedures that use radiation during pregnancy (such as CT or fluoroscopy) because radiation can be harmful to the fetus. *See the Radiation Safety page (https://www.radiologyinfo.org/en/info/safety-radiation) for more information about pregnancy and x-rays.*

You will receive specific instructions on how to prepare, including any changes you need to make to your regular medication schedule. Your doctor may tell you to fast for several hours before your procedure. Your doctor may give you medications to help prevent nausea and pain and antibiotics to help prevent infection.

You may want to have someone accompany you and drive you home after the procedure. This is necessary if you receive sedation.

You will likely wear a gown during the procedure.

What does the equipment look like?

A biopsy needle is generally several inches long. The needle diameter is similar to a standard paper clip. The needle is hollow so it can capture the tissue specimen.

Doctors perform needle biopsies with CT, fluoroscopy, ultrasound, or MRI guidance.

Ultrasound machines consist of a computer console, video monitor and an attached transducer. The transducer is a small hand-held device that emits the sound beams. Some exams may use a variety of transducers with different functions during a single exam. The transducer sends out inaudible, high-frequency sound waves into the body and listens for the returning echoes. The same principles apply to sonar used by boats and submarines.

The technologist applies a small amount of gel to the area under examination and places the transducer there. The gel creates good contact and allows sound waves to travel back and forth between the transducer and the area under examination. The ultrasound image is immediately visible on a video monitor. The computer creates the image based on the loudness (amplitude), pitch (frequency), and time it takes for the ultrasound signal to return to the transducer. It also considers what type of body structure and/or tissue the sound is traveling through.

The CT scanner is typically a large, donut-shaped machine with a short tunnel in the center. You will lie on a narrow table that slides in and out of this short tunnel. Rotating around you, the x-ray tube and electronic x-ray detectors are located opposite each other in a ring, called a gantry. The computer workstation that processes the imaging information is in a separate control room. This is where the technologist operates the scanner and monitors your exam in direct visual contact. The technologist will be able to hear and talk to you using a speaker and microphone.

Fluoroscopy uses a continuous or pulsed x-ray beam to create images and project them onto a video monitor. Your exam may use a contrast material to clearly define the area of interest. Fluoroscopy allows your doctor to view joints or internal organs in motion. The exam also captures still images or movies and stores them on a computer.

This procedure may use an intravenous (http://www.radiologyinfo.org) (IV) line and devices that monitor your heart beat and

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blood pressure.

How does the procedure work?

Percutaneous Biopsy
The doctor inserts the biopsy needle through the skin and into the liver and removes a tissue sample.

Transjugular Biopsy
The doctor inserts a thin plastic tube (catheter) into the jugular vein in your neck and threads it into the liver. Then, the doctor injects a contrast material (http://www.radiologyinfo.org) through the tube to see the liver with imaging. They insert a long, thin needle through the tube and into the liver to remove a tissue sample. If you have problems with blood clotting (https://my.clevelandclinic.org/health/diseases/16788-blood-clotting-disorders-hypercoagulable-states) , your doctor may use this type of biopsy.

How is the biopsy procedure performed?

Most often, this is an outpatient procedure. However, some patients need to stay overnight for observation. Ask your doctor if this will be the case for you.

You will lie on the table. A nurse or technologist inserts an intravenous (IV) line into a vein in your hand or arm. This allows you to receive sedation or relaxation medication. You may also have a mild sedative prior to the biopsy.

The nurse or doctor sterilizes the site and covers it with a sterile drape. They will numb the site with a local anesthetic (http://www.radiologyinfo.org) before they insert the biopsy needle. This may briefly burn or sting before the area becomes numb .

The doctor may make a tiny skin incision at the site.

Percutaneous biopsy
The doctor determines the best place to put the needle by looking at ultrasound or CT images. The doctor may make a small incision at that site. They insert the needle through the skin into the liver and remove a tissue sample.

Transjugular Biopsy
The doctor makes a small incision in your neck over the jugular vein. They insert a thin, plastic tube (catheter) into this vein. The doctor threads the catheter through the jugular vein into the hepatic vein in your liver. The doctor will use fluoroscopy and inject a contrast material (http://www.radiologyinfo.org) through the catheter to better see the veins and liver. They will insert a biopsy needle through the catheter and remove a tissue sample.

In some cases, the doctor may use additional imaging, such as ultrasound, to help guide the needle.

The doctor applies pressure to prevent any bleeding and covers the opening in the skin with a bandage. Typically, no sutures are necessary.

You will remain lying down for up to 4 hours after the biopsy.

The doctor or nurse removes your IV line before you go home.

The entire procedure usually takes about 30 minutes.

What will I experience during and after the biopsy?

When the doctor injects the local anesthetic to numb the skin, you will feel a slight pin prick from the needle and some burning

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from the anesthetic medication. The area will become numb shortly. You may feel some pressure when the doctor inserts the biopsy needle.

You will need to remain still and not cough during the procedure. You may also need to hold your breath multiple times during the biopsy. It is important to hold your breath to help the doctor safely place the needle.

Aftercare instructions vary. You should be able to remove your bandage one day after the procedure. You may bathe or shower as normal.

Avoid intense activity and heavy lifting for one week. Do not drive or operate machinery for at least 12 hours after the procedure.

You may feel:

- soreness where the doctor inserted the needle
- dull pain in your shoulders or back

This pain typically lasts less than a week. Your doctor may prescribe pain medication. Do not take aspirin, products containing aspirin, or nonsteroidal anti-inflammatory drugs for 24 hours after the procedure. Unless your primary doctor has instructed you not to, you may take acetaminophen (Tylenol) if needed.

Who interprets the results and how do I get them?

A pathologist examines the tissue samples and makes a final diagnosis. Biopsy results usually are available to your doctor within a week after the procedure.

What are the benefits vs. risks?

Benefits

- Needle biopsy is a reliable way to get tissue samples to help diagnose whether a nodule is benign (http://www.radiologyinfo.org) (non-cancerous) or malignant (http://www.radiologyinfo.org) . This test also helps your doctor diagnose or stage liver disease.
- A needle biopsy is less invasive than surgical biopsies that involve a larger incision and general anesthesia (http://www.radiologyinfo.org) .
- The procedure is usually not painful. Needle biopsies are as accurate as surgical biopsies.
- Recovery time is brief, and patients can soon resume their usual activities.

Risks

- Any procedure that penetrates the skin carries a risk of infection. The chance of infection requiring antibiotic treatment is about less than one in 1,000.
- Internal bleeding may occur but is rare. If it does occur, you may need to stay overnight at the hospital to stop the bleeding.
- Accidental injury to a nearby organ may occur. Bile may leak from the liver or gallbladder. There is a slight risk of a collapsed lung, (pneumothorax (http://www.radiologyinfo.org)) or a buildup of blood in the space between the lung and the chest wall (hemothorax (http://www.radiologyinfo.org)).
- Transjugular biopsy risks include:
  - a collection of blood (hematoma) (http://www.radiologyinfo.org) where the doctor inserted the catheter into the neck
  - short-term effects to the face or eyes
  - a hoarse or weak voice

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- If the biopsy used contrast material, there is a very slight risk of allergic reaction. Reactions usually are mild and easily controlled by medication. If you have allergic symptoms, a radiologist or other doctor will be available for immediate assistance.

What are the limitations of Liver Biopsy?

Percutaneous biopsy may be difficult for patients who are:

- very obese
- have a liver infection
- are unable to hold their breath or hold still for the length of the procedure

The position of the liver can also be a limiting factor.

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