PROCEDURE

Biopsy - biliary tract

A biliary tract biopsy removes cells or tissue from a bile duct or gallbladder for laboratory testing.

PURPOSE
To identify cancer, inflammation, or another biliary abnormality

PROCEDURE TYPE
Diagnostic; endoscopic, minimally invasive, interventional radiology, or surgical

WHERE IT IS DONE
Endoscopy suite, operating theatre, or interventional radiology suite

ANAESTHESIA
Local anaesthesia with sedation, or general anaesthesia

HOW LONG IT TAKES
20-90 minutes; surgical biopsy may take longer

PREPARATION
Fasting, medication review, and an individual blood thinner plan

RECOVERY
Usually same day; no driving after sedation, sometimes overnight

MAIN RISKS
Pancreatitis, bleeding, infection, perforation, or bile leak

RESULTS
Initial findings immediately; laboratory analysis usually within several days

Overview

A biliary tract biopsy removes cells or a small piece of tissue from a bile duct or the gallbladder. A pathologist then examines the sample under a microscope.

There is no single method for every biliary biopsy. The approach depends on where the abnormal area is, what previous scans show, and whether you need another treatment at the same time.

Sampling may be done during an endoscopic procedure such as ERCP or endoscopic ultrasound. It may also be done through the skin with imaging guidance or during surgery. Brush cytology, which collects loose cells with a tiny brush, is often grouped with biopsy even though it does not remove a piece of tissue.

Why the procedure is performed

Your healthcare team may recommend sampling when imaging shows a narrowed bile duct, a mass, or unexplained thickening. It can help distinguish cancer from scarring, inflammation, infection, or other non-cancerous changes.

A biopsy may also identify the type of cancer or provide material for molecular tests. This information can affect surgery, medication, or other treatment decisions.

Sometimes an ERCP combines sampling with treatment. For example, the clinician may place a stent to help bile flow through a blocked duct.

Who should and should not have it

A biopsy may be appropriate when the result is likely to clarify a diagnosis or change treatment. The safest method is chosen after reviewing your scans, medical history, and the location of the abnormality.

It may be avoided or delayed when:

Pregnancy does not automatically rule out biopsy, but procedures using X-rays need special planning.

Needle biopsy through the abdomen can occasionally carry abnormal cells along the needle path. This is especially important when a liver transplant may be considered for cancer near the liver's main bile ducts. The transplant or specialist team should review the sampling plan before any needle passes through the tumour.

- The result would not change your treatment
- Imaging already supports going directly to surgery
- A serious infection needs treatment or drainage first
- A bleeding disorder has not been corrected
- A blood-thinning medicine cannot yet be safely interrupted
- Your heart, lung, or general health makes sedation unsafe
- The suspected area cannot be reached safely

How to prepare

Your treating facility's own instructions take priority because preparation differs by biopsy

method and type of anaesthesia.

You may be asked not to eat or drink before the procedure. Tell the team about all medicines and supplements you take, particularly blood thinners like warfarin or apixaban , aspirin, diabetes medicines, or anti-inflammatory pain medicines. Do not stop a prescribed blood thinner unless the treating team gives you a specific plan.

Tell them if you have allergies, previous problems with anaesthesia, heart or lung disease, a possible pregnancy, or signs of infection. Blood tests may be needed to check blood counts, liver function, and clotting.

If you will receive sedation or general anaesthesia, arrange for an adult to take you home and follow any instructions about supervision afterward.

What happens during the procedure

Before the biopsy, the team confirms the planned method and asks for your consent. You may have an intravenous line, blood pressure cuff, oxygen monitor, and medicine to help you relax or sleep.

During ERCP , a flexible camera passes through your mouth, stomach, and into the first part of the small intestine. A thin tube enters the bile duct. The clinician may collect cells with a brush or take small tissue samples with forceps. A very small camera called a cholangioscope may be placed inside the duct to guide targeted biopsies.

During endoscopic ultrasound , an ultrasound camera passes through your mouth. A needle can then collect tissue from a mass, nearby lymph node, or selected bile duct abnormality.

For a percutaneous biopsy , imaging such as ultrasound or CT guides a needle through numbed skin. The needle may pass through the liver to reach the target. Sedation may also be used.

A surgical biopsy is taken during keyhole or open surgery. This may be planned when the gallbladder or part of the bile duct is being removed.

The sample goes to a laboratory. A stent or drainage tube may also be placed if bile flow is blocked.

Recovery and what to expect afterward

Mild throat soreness, bloating, or cramping can follow an endoscopic procedure. A biopsy through the skin may leave a tender puncture site. Pain should generally be manageable with the medication recommended by your team.

You can usually drink and then eat once you are fully awake and the team says it is safe. Follow any temporary diet instructions if a stent, drain, or operation was involved.

Rest for the remainder of the day after sedation. Avoid strenuous activity or heavy lifting for the period given by your facility. Recovery after surgery takes longer than recovery after an endoscopic or needle biopsy.

Do not drive, operate machinery, drink alcohol, or make important decisions for the period specified after sedation or general anaesthesia. You will usually need someone to take you home.

Many people return to desk-based work within a day or two after a straightforward endoscopic biopsy. A percutaneous or surgical biopsy may require more time away.

Risks and possible complications

The risks depend on how the sample is collected. Your team should explain those that apply to your planned approach.

Possible complications include:

There is also a possibility that a biopsy will miss the abnormal area. A non-cancerous or inconclusive result does not always rule out cancer when scans and other findings remain concerning.

- Bleeding from the sampled area or skin puncture
- Infection of the bile ducts or biopsy site
- Pancreatitis, meaning inflammation of the pancreas, after ERCP
- A tear or hole in the digestive tract during endoscopy
- Bile leaking into the abdomen after a needle or surgical biopsy
- Injury to a nearby organ during percutaneous sampling
- Breathing, blood pressure, or heart problems related to sedation
- An inadequate sample that requires another procedure

Results and follow up

The clinician may explain what was seen immediately after the procedure. Laboratory results take longer because the sample must be prepared and examined by a pathologist.

A report may describe the sample as benign, malignant, suspicious, atypical, or non-diagnostic. "Non-diagnostic" means there were not enough useful cells or tissue to give a reliable answer.

Your routine follow-up should explain how the result fits with your scans and blood tests. If the answer remains uncertain, options may include repeat sampling, a different biopsy method, molecular testing, monitoring, or surgery.

Alternatives

The alternatives depend on what your team needs to learn.

In some situations, combining brush samples with tissue biopsy gives more information than either method alone.

- MRI with MRCP or CT: Non-invasive and useful for showing the ducts, but cannot usually confirm what the cells are
- Blood tests and tumour markers: Easy to obtain, but cannot reliably confirm or exclude biliary cancer
- Monitoring with repeat scans: Avoids an immediate procedure, but may delay diagnosis or treatment
- Brush sampling instead of forceps biopsy: Often easier during ERCP, but small cell samples can miss abnormalities
- Endoscopic ultrasound sampling: Can reach a mass or lymph node outside the duct, but may not sample the duct lining directly
- Surgery: Provides a larger specimen and may remove the abnormality, but has a longer recovery and greater procedural burden

When to call your healthcare team

Contact the treating team promptly for fever, chills, worsening jaundice, persistent vomiting, increasing redness or drainage at a puncture site, or pain that is not improving.

Seek emergency medical care for:

Mild throat soreness, temporary bloating, and limited tenderness can be routine. Discuss persistent symptoms at follow-up even if they are not urgent.

- Severe or rapidly worsening abdominal or chest pain
- Trouble breathing, fainting, or new confusion

- Vomiting blood or passing black, tar-like stools
- Heavy bleeding from a biopsy or drain site
- A hard or swollen abdomen with severe illness

Common questions

Will I be asleep?

You may receive moderate or deep sedation, which often makes you very sleepy and may limit what you remember. Some procedures use general anaesthesia, while a biopsy through the skin may use local anaesthesia with sedation.

Can I drive myself home?

Not after sedation or general anaesthesia. Arrange for someone to take you home. Follow the facility's instructions about when you may drive again.

How painful is a biliary tract biopsy?

You should not feel sharp pain during a fully sedated procedure. Mild throat discomfort, bloating, abdominal cramping, or puncture-site soreness may occur afterward. Tell the team if pain is severe or increasing.

When will I know the results?

The clinician may discuss the procedure findings immediately. Pathology usually takes several days, and specialised testing can take longer. Ask how and when your team will contact you.

What if the biopsy does not give an answer?

Small samples sometimes contain too few abnormal cells. Your team may review the scans, repeat the procedure, use another sampling method, or discuss surgery or monitoring.

Can a biopsy spread cancer?

Spread along a needle path is possible but is not a concern with every technique. It matters particularly when planning treatment for some cancers near the liver hilum. Your specialist should choose the sampling route with future surgery or transplant options in mind.

Sources

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