PROCEDURE

Small bowel tissue smear/biopsy

A small bowel tissue smear or biopsy removes tiny lining samples for laboratory examination.

PURPOSE
Examine the small-bowel lining for disease or infection

PROCEDURE TYPE
Diagnostic, endoscopic tissue sampling

WHERE IT IS DONE
Endoscopy suite, usually as an outpatient

ANAESTHESIA
Moderate or deep sedation; sometimes general anaesthesia

HOW LONG IT TAKES
Usually 15-30 minutes; deep enteroscopy may take longer

PREPARATION
Fasting, medication review, and sometimes bowel preparation

RECOVERY
Same day; no driving after sedation

MAIN RISKS
Bleeding, perforation, aspiration, sedation reaction

RESULTS
Visual findings immediately; tissue analysis usually within several days

Overview

A small bowel tissue biopsy removes tiny pieces of tissue from the lining of your small intestine. Most samples come from the duodenum, the first part of the small bowel. They are usually collected during an upper gastrointestinal endoscopy, also called a gastroscopy.

During this procedure, a clinician passes a thin, flexible camera through your mouth, down your food pipe and stomach, and into the duodenum. Small instruments passed through the camera take the samples. You should not feel the biopsy being taken because the bowel lining does not sense cutting in the same way as skin.

The laboratory may examine thin sections of the tissue under a microscope. In selected cases, tissue may also be pressed or spread onto a slide to make a smear, or sent for tests such as enzyme analysis. The way samples are handled is based on what your healthcare team is

investigating.

This procedure is diagnostic. It helps identify or rule out a condition; it does not usually treat one.

Why the procedure is performed

A biopsy can show changes that are not visible through the endoscope. Even if the bowel lining looks normal, microscopic examination may provide important information.

Your healthcare team may recommend sampling to investigate:

The reason for your biopsy affects where samples are taken and which laboratory tests are requested.

- Possible coeliac disease, in which gluten triggers damage to the small-bowel lining
- Ongoing diarrhoea, weight loss, anaemia, or difficulty absorbing nutrients
- Inflammation or injury affecting the small bowel
- Certain infections, including infections that may be harder to identify with stool tests
- Abnormal tissue, polyps, or a suspected tumour
- An abnormal blood test, scan, capsule endoscopy, or earlier endoscopy
- Whether a known small-bowel condition has changed

Who should and should not have it

A small bowel biopsy may be appropriate when tissue examination could confirm a suspected diagnosis, explain ongoing problems, or guide treatment. Before you consent, ask what question the biopsy is intended to answer and how the result could change your care.

The procedure may be avoided or delayed if its risks outweigh the expected benefit. Reasons can include:

Allergies, previous reactions to sedation, sleep apnoea, heart or lung disease, and implanted medical devices do not always prevent endoscopy. They may change the sedation plan or where the procedure is performed.

Do not stop a prescribed blood thinner on your own. The decision must balance bleeding risk against the risk of a blood clot.

- An unstable heart, breathing, or other serious medical problem

- A suspected or known tear in the digestive tract
- A severe blood-clotting problem that has not been corrected
- Use of a blood thinner like warfarin or apixaban when it cannot be safely continued or temporarily adjusted
- Food or liquid remaining in the stomach, increasing aspiration risk
- An inability to complete fasting or preparation safely
- Pregnancy when the procedure is not urgent and postponement is reasonable

How to prepare

Follow the treating facility's own instructions first, because its fasting and medication rules take priority over general information.

You will usually be told not to eat for several hours before an upper endoscopy. You may also need to stop drinking clear liquids for a shorter period. If the small bowel will be reached through the colon, bowel-cleansing medicine may be required.

Give the team a current list of medicines and supplements. Make sure they know about blood thinners, diabetes medicines, weight-management medicines, allergies, pregnancy, sleep apnoea, and previous problems with anaesthesia or sedation.

Your instructions may include:

Arrange for a responsible adult to take you home if you will receive sedation or general anaesthesia. You may also be asked to have someone stay with you afterward.

- When to stop food and liquids
- Which regular medicines to take that morning
- Whether any medicine needs temporary adjustment
- Whether bowel preparation is needed
- When to arrive and what to bring

What happens during the procedure

Before the procedure, the team confirms your identity, why the biopsy is planned, your medicines, and your consent. An intravenous line may be placed in your arm for sedation. Monitoring usually includes your oxygen level, pulse, and blood pressure.

You may receive a spray that numbs the throat. Sedation can make you relaxed and sleepy. With deep sedation or general anaesthesia, you are usually unaware of the procedure.

You will normally lie on your side with a mouth guard between your teeth. The endoscope passes through your mouth and into the upper digestive tract. It does not block your breathing. Air or carbon dioxide is introduced so the clinician can see the lining.

When the endoscope reaches the small bowel, tiny forceps collect several tissue samples. Taking more than one sample helps the laboratory assess changes that may not affect every area equally. The clinician may also photograph the lining or take samples from the stomach or food pipe.

A routine upper endoscopy often takes about 15 to 30 minutes. Procedures that examine deeper parts of the small bowel can take longer.

Recovery and what to expect afterward

Pain: A mild sore throat, bloating, or cramping can occur. Severe or increasing pain is not expected. Gas discomfort usually improves as the introduced air passes.

Eating: Wait until throat numbness has worn off and the team says it is safe to drink. You can usually return to your normal diet unless you receive different instructions.

Activity: Rest for the remainder of the day after sedation. Avoid alcohol, operating machinery, signing important documents, or making major decisions for the period specified by the facility.

Driving: Do not drive yourself home after sedation or general anaesthesia. Many facilities restrict driving until the following day, but follow your discharge instructions.

Work: Many people return to desk work the next day. You may need longer if your job involves driving, heavy machinery, physical labour, or safety-sensitive decisions.

Risks and possible complications

Small bowel biopsy is generally considered a low-risk procedure, but complications are possible. Some risks come from the endoscopy or sedation rather than from the tissue sample itself.

Possible complications include:

Your personal risk is affected by your health, medicines, the type of endoscopy, and whether other procedures are performed at the same time.

- Bleeding from a biopsy site, usually minor
- Perforation, meaning a hole in the digestive tract
- Aspiration, when stomach contents enter the lungs
- Breathing, blood pressure, or heart-rhythm problems related to sedation
- A reaction to a medicine
- Damage to teeth, dental work, lips, or throat
- Infection, although this is not usually expected after routine sampling
- An incomplete procedure or a sample too small to answer the question

Results and follow up

The clinician may discuss what the bowel looked like before you leave. A normal-looking lining does not rule out microscopic changes, so the final interpretation usually waits for the laboratory report.

A pathologist, a doctor who examines cells and tissue, looks for inflammation, damage to the finger-like absorptive structures called villi, infection, abnormal deposits, or abnormal cells. Special stains or other tests may take additional time.

Results are often available within several days, but specialised testing can take longer. Ask before leaving:

Do not make major dietary changes, such as starting a gluten-free diet, unless your healthcare team has advised it. Changing your diet before testing is complete can affect how some results are interpreted.

- How and when you will receive the result
- Who will explain it
- Whether you need a routine follow-up appointment
- What to do if you have not heard by the expected date

Alternatives

The useful alternatives depend on what your team is trying to find. None provides exactly the same information as examining tissue.

Blood tests can look for coeliac antibodies, anaemia, inflammation, or nutritional problems.

They are easier than endoscopy but may not confirm the cause or show the degree of tissue injury.

Stool tests can detect some infections, bleeding, or intestinal inflammation. They avoid an invasive procedure but cannot directly show the bowel's microscopic structure, and a negative test may not exclude every infection.

CT or MRI enterography can show bowel-wall thickening, narrowing, masses, and surrounding tissues. These scans examine more of the small bowel but cannot usually identify subtle microscopic changes or provide a tissue diagnosis.

Capsule endoscopy uses a swallowed camera to photograph the small bowel. It reaches areas beyond a routine upper endoscopy but cannot take a biopsy. The capsule can also become stuck if the bowel is narrowed.

Observation or treatment without biopsy may be reasonable in selected situations. This avoids the immediate procedure, but it can delay a firm diagnosis, and treatment may alter later test results.

When to call your healthcare team

Contact your healthcare team promptly for persistent vomiting, worsening throat symptoms, increasing abdominal pain, fever, difficulty swallowing, or a small amount of bleeding that continues.

Seek urgent medical assessment for:

For severe breathing difficulty, collapse, or heavy bleeding, call your local emergency number.

Routine questions about the pathology report, diet, medication, or follow-up appointment can wait for normal office hours unless your discharge instructions say otherwise.

- Severe or rapidly worsening chest or abdominal pain
- Vomiting blood or material resembling coffee grounds
- Black, tar-like stools or substantial rectal bleeding
- Shortness of breath, fainting, confusion, or marked weakness
- A hard, swollen abdomen with severe pain
- Trouble breathing or swelling of the face or throat

Common questions

Will I be asleep?

You may be awake but relaxed with moderate sedation, or fully unaware with deep sedation or general anaesthesia. The planned level of sedation should be explained before you consent.

Can I drive home?

Not if you received sedation or general anaesthesia. Arrange an adult escort and follow the facility's driving restriction, which commonly extends until the next day.

How painful is it?

You should not feel the tissue samples being taken. You may notice pressure, gagging, bloating, or a mild sore throat. Tell the team if you are uncomfortable during the procedure.

When will I know the results?

The clinician may describe the visual findings immediately. Biopsy results usually take several days, and special laboratory tests can take longer.

How many samples will be taken?

Several samples may be collected from different areas because small-bowel changes can be patchy. The number is chosen according to the reason for testing.

Will the biopsy leave a wound inside me?

Each sample leaves a very small area that normally heals without treatment. Minor bleeding can occur, but significant ongoing bleeding is not expected.

Sources

- National Institute of Diabetes and Digestive and Kidney Diseases: Upper GI Endoscopy
- American Society for Gastrointestinal Endoscopy: Adverse Events of Upper GI Endoscopy
- American Society for Gastrointestinal Endoscopy: Endoscopic Mucosal Tissue Sampling
- British Society of Gastroenterology: Diagnosis and Management of Adult Coeliac Disease
- NHS: Gastroscopy
- European Society of Gastrointestinal Endoscopy: Endoscopic Tissue Sampling in Upper Gastrointestinal and Hepatopancreatobiliary Tracts