

Endoscopic Ultrasound Scan

An endoscopic ultrasound scan uses an endoscope with an ultrasound probe attached to create detailed pictures of internal organs and structures.

Note: the information below is a general guide only. The arrangements and the way tests are performed, may vary between different hospitals. Always follow the instructions given by your doctor or local hospital.

What is an endoscopic ultrasound scan?

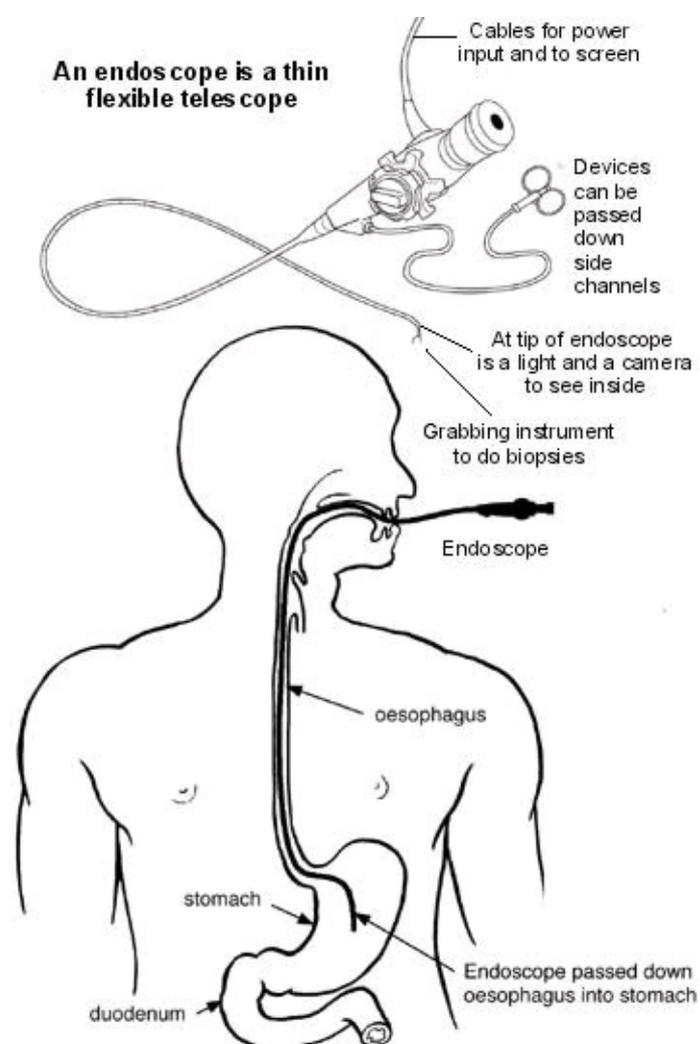
An endoscopic ultrasound scan (EUS) combines two types of test - endoscopy and ultrasound. The operator (a doctor or nurse) uses an endoscope with an ultrasound probe attached to look inside your gut (gastrointestinal tract). By putting the endoscope into the upper part of the gut, EUS can create pictures of the surrounding structures, not just inside the gut. The ultrasound probe is used to create detailed pictures of the body, including the lungs, pancreas, liver, gallbladder and stomach.

EUS can also look at other structures lower down in the body by inserting the endoscope through the back passage (rectum) into the lower part of the gut.

An endoscope is a thin, flexible telescope. It is about as thick as a little finger. The endoscope can be passed through the mouth, into the oesophagus and down towards the stomach and duodenum. Or, the endoscope can be gently inserted into the back passage and through the colon.

The tip of the endoscope contains a light and a tiny video camera so the operator can see inside your gut. In an EUS the endoscope also contains an ultrasound probe.

The endoscope also has a 'side channel' down which instruments can pass. These can be manipulated by the operator. For example, the operator may take a small sample (biopsy) by using a thin 'grabbing' instrument or a fine needle which is passed down a side channel.



How does an endoscopic ultrasound scan work?

Endoscopy is an excellent way to look at and take samples from parts of the gut. By attaching an ultrasound probe, the endoscope can also help to create detailed pictures of parts of the body that are difficult to show in other scans.

Ultrasound is a high-frequency sound that you cannot hear but it can be emitted and detected by special machines.

Ultrasound travels freely through fluid and soft tissues. However, ultrasound is reflected back (it bounces back as 'echoes') when it hits a more solid (dense) surface. For example, the ultrasound will travel freely through blood in a heart chamber. But, when it hits a solid valve, a lot of the ultrasound echoes back. Another example is that when ultrasound travels through bile in a gallbladder it will echo back strongly if it hits a solid gallstone.

So, as ultrasound 'hits' different structures of different density in the body, it sends back echoes of varying strength. This helps to build a picture of the structures surrounding the probe.

What is an endoscopic ultrasound scan used for?

EUS can be used for a wide range of different things, including to:

- Find **gallstones**.
- Diagnose diseases of the internal organs such as the pancreas. For example, to detect inflammation of the pancreas (**chronic pancreatitis**) or cysts of the pancreas.
- Accurately collect fluid samples from the lungs or the abdominal cavity for analysis.
- Look for certain types of **cancer**.

What happens during an endoscopic ultrasound scan?

EUS is a routine test most commonly performed by inserting the endoscope into the upper part of the gut, as is described below. For more information on the way the test is carried out on the lower part of the gut (the colon and rectum) see separate leaflets called **Sigmoidoscopy** and **Colonoscopy**.

The operator may numb the back of your throat by spraying on some local anaesthetic, or give you an anaesthetic lozenge to suck. You may be given a sedative to help you to relax. This is usually given by an injection into a vein in the back of your hand. The sedative can make you drowsy but it does not 'put you to sleep'. It is not a general anaesthetic.

You lie on your side on a couch. You may be asked to put a plastic mouth guard between your teeth. This protects your teeth and stops you biting the endoscope. The operator will then ask you to swallow the first section of the endoscope. Modern endoscopes are quite thin and easy to swallow. The operator then gently pushes it further down your oesophagus and into your stomach and duodenum. The video camera at the tip of the endoscope sends pictures to a screen. The operator watches the screen for abnormalities of the oesophagus, stomach and duodenum. Air is passed down a channel in the endoscope into the stomach to make the stomach lining easier to see. This may cause you to feel 'full' and want to belch.

The ultrasound probe will send back signals which make a picture of the parts of the body surrounding the probe. You will not feel the ultrasound working but may be able to see the pictures on a TV screen near the bed if you wish.

The operator may take one or more small samples (biopsies) - depending on why the test is done and what they see. This is painless. The biopsy samples are sent to the laboratory for testing and to look at under the microscope. The endoscope is then gently pulled out.

An EUS usually takes about 10-20 minutes. However, you should allow at least two hours for the whole test, to prepare, give time for the sedative to work (if you have one), for the endoscopy itself, and to recover. An EUS does not usually hurt but it can be a little uncomfortable, particularly when you first swallow the endoscope.

What should I do to prepare for an endoscopic ultrasound scan?

You should get instructions from the hospital department before your test. The sort of instructions given commonly include:

- You should not eat for 4-6 hours before the test. The stomach needs to be empty. (Small sips of water may be allowed up to two hours before the test.)

- If you have a sedative you will need somebody to accompany you home.
- Advice about medication which may need to be stopped before the test.

What can I expect after an endoscopic ultrasound scan?

Most people are ready to go home after resting for half an hour or so.

If you have had a sedative - you may take a bit longer to be ready to go home. The sedative will normally make you feel quite pleasant and relaxed. However, you should not drive, operate machinery or drink alcohol for 24 hours after having the sedative. You will need somebody to accompany you home and to stay with you for 24 hours until the effects have fully worn off. Most people are able to resume normal activities after 24 hours.

The operator may write a report and send it to the doctor who requested the test. The result from any biopsy may take a few days which can delay the report being sent. The operator may also tell you what they saw before you leave. However, if you have had a sedative you may not remember afterwards what they said. It may be helpful to take a friend or relative so they can record/remember any explanations given.

Are there any side-effects or complications from an endoscopic ultrasound scan?

Most endoscopies are done without any problem. Some people have a mildly sore throat for a day or so afterwards. You may feel tired or sleepy for several hours if you have a sedative. There is a slightly increased risk of developing a chest infection or pneumonia following an endoscopy.

Occasionally, the endoscope causes some damage to the gut. This may cause bleeding, infection and, rarely, perforation. If any of the following occur within 48 hours after an EUS, consult a doctor immediately:

- Abdominal pain. (In particular, if it becomes gradually worse and is different or more intense to any 'usual' indigestion pains or heartburn that you may have.)
- Raised temperature (fever).
- Difficulty breathing.
- Vomiting blood.

A small number of people have a heart attack or stroke during, or soon after, an endoscopy. These tend to be older people who are already in poor health. These serious complications are rare in most people who are otherwise reasonably healthy.

Rarely, some people have an allergic reaction to the sedative.

Further reading & references

- [Kim EY](#); Endoscopic ultrasound, where are we now in 2012? *Clin Endosc.* 2012 Sep;45(3):321-3. Epub 2012 Aug 22.
- [Kwon KA](#), [Choi IJ](#), [Kim EY](#), et al; International digestive endoscopy network 2012: a patchwork of networks for the future. *Clin Endosc.* 2012 Sep;45(3):209-10. Epub 2012 Aug 22.

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