TEST

Abdominal ultrasound

An abdominal ultrasound uses sound waves to create images of organs and blood vessels in your abdomen.

WHAT IT MEASURES
Size and appearance of abdominal organs and blood vessels

SAMPLE
None, imaging

FASTING NEEDED?
Sometimes, especially for gallbladder or upper abdominal imaging

HOW LONG IT TAKES
Usually 15 to 30 minutes

RESULTS IN
Same day to several days, varying by laboratory or imaging service

USED FOR
Diagnosis, screening, and monitoring abdominal conditions

MAIN LIMITATION
Bowel gas or body size can block clear images

Overview

An abdominal ultrasound uses high-frequency sound waves to create pictures of structures inside your abdomen. It does not use X-rays or ionising radiation.

Depending on the reason for the scan, it may examine the liver, gallbladder, bile ducts, kidneys, spleen, pancreas or abdominal aorta. A focused examination may look at only one organ or area.

A handheld device called a transducer sends sound waves into your body. The waves return differently from fluid, soft tissue and solid structures, and a computer converts the signals into moving images.

Doppler ultrasound may also assess the direction and speed of blood flow in vessels or organs.

Why the test is ordered

An abdominal ultrasound may be requested to investigate symptoms, monitor a condition or

screen selected people before symptoms develop.

Common reasons include:

Ultrasound is often the first imaging test for suspected gallbladder disease. It can show gallstones, gallbladder wall changes and widened bile ducts. It can also detect an enlarged abdominal aorta, called an abdominal aortic aneurysm.

Ultrasound cannot identify every cause of abdominal symptoms. Another test may be more suitable if the bowel, pancreas or another difficult-to-see area is the main concern.

- Abdominal or side pain
- Abnormal liver or kidney blood-test results
- Suspected gallstones or blocked bile ducts
- Swelling, fluid or a possible abdominal lump
- Blood in the urine or possible urinary blockage
- Monitoring a known cyst, aneurysm or organ condition
- Screening the abdominal aorta in eligible people

Who should have the test

You may be offered an abdominal ultrasound if your symptoms, examination or other test results suggest that imaging would be useful.

It can be used for adults, children and people who are pregnant. Diagnostic ultrasound has no known harmful effects when used appropriately by trained professionals.

The best test depends on the area being examined. Ultrasound is useful for gallstones and fluid-filled structures, while CT or MRI may show some deep tissues, bowel conditions or small masses more clearly.

How to prepare

Follow your appointment instructions because preparation varies according to the organs being examined.

For an upper abdominal or gallbladder scan, you may be asked not to eat for several hours. Eating causes the gallbladder to contract and may increase bowel gas, making the area harder to assess. Some services allow clear fluids.

For a kidney, bladder or urinary tract scan, you may be asked to drink water and arrive with a comfortably full bladder. This helps show the bladder and nearby structures.

Take regular medicines unless your healthcare service tells you otherwise. If fasting could affect diabetes treatment or a medicine that must be taken with food, contact the imaging service for advice rather than changing treatment yourself.

Wear loose clothing. You may need to expose your abdomen or change into a gown. Tell the sonographer if you have a painful area, wound, dressing or difficulty lying flat.

What happens during the test

A sonographer, radiologist or another trained clinician performs the examination.

You will usually lie on your back. You may be asked to turn onto your side or sit partly upright to provide a different view.

The sonographer applies water-based gel to your skin and moves the transducer across your abdomen. You may feel firm pressure, particularly when a deeper organ is being examined. Tell them if it is painful. You may also be asked to take a deep breath and hold it briefly.

The scan usually takes 15 to 30 minutes, although a detailed or technically difficult examination may take longer. You can normally return to usual activities immediately afterward.

Understanding your results

The report describes the structures examined and whether anything unusual was seen. Findings are interpreted alongside your symptoms, examination and other tests.

The report may describe:

"Limited view" or "not visualised" means an area could not be seen clearly; it does not automatically indicate a problem. "Unremarkable" generally means no significant abnormality was visible in the structures examined.

A normal ultrasound does not rule out every cause of abdominal symptoms. There is also no single reference range for every measurement. Interpretation may depend on age, sex, pregnancy status and clinical context.

- Organ size, shape and appearance
- Gallstones or urinary tract stones

- Widened bile ducts or kidney drainage systems
- Cysts or solid areas needing assessment
- Fluid within the abdomen
- The width of the abdominal aorta
- Blood flow measured with Doppler ultrasound

What affects the results

Bowel gas is a common limitation because sound waves do not pass well through gas. It may hide parts of the pancreas, aorta or other deep structures.

Body size can affect how far sound waves travel and reduce image detail without meaning an organ is abnormal. Movement or difficulty holding your breath may also blur images.

Eating before a gallbladder scan can make the gallbladder smaller and may conceal stones. An underfilled bladder can limit a urinary tract scan, while an extremely full bladder may be uncomfortable.

Dressings, wounds, tenderness or recent surgery may restrict where the transducer can be placed. Surgery and pregnancy can also change the position or appearance of organs.

Some medicines affect digestion, gallbladder contraction or bladder filling. Tell the imaging service what you take, but do not stop prescribed treatment unless specifically instructed.

Ultrasound is operator-dependent, so image quality is influenced by the examiner's technique and ability to obtain the required views.

Accuracy and limitations

Abdominal ultrasound is useful for detecting gallstones, cysts, abdominal fluid, urinary obstruction and enlargement of the abdominal aorta. There is no single accuracy figure because performance varies by organ, condition, equipment, examiner and image quality.

Small or deep abnormalities may be missed, particularly when hidden by bowel gas. The pancreas and bowel can be difficult to examine fully. This can produce a false-negative result, where the scan appears reassuring despite a problem.

Normal structures, shadows or other image effects may appear abnormal, producing a false-positive result. Harmless cysts or other incidental findings unrelated to symptoms may also be found.

A limited scan may need to be repeated. CT or MRI may provide better views of the bowel, pancreas, deep tissues or complex masses. Endoscopic ultrasound may give closer images of selected digestive organs. The appropriate next test depends on the clinical question.

Risks and complications

External abdominal ultrasound has no known harmful effects when used appropriately. It uses no radiation and usually requires no injection, needle or sedative.

Pressure from the transducer may be uncomfortable over a tender area. The gel may feel cold or wet but is wiped away afterward.

What happens next

Some services explain basic findings during the appointment. In others, a radiologist reviews the images and sends a report to the clinician who requested the test.

Routine results may be available the same day or within several days. Your next step may be no further testing, routine follow-up, blood tests, repeat imaging or another type of scan. Unexpected findings are not always serious and may only require comparison with older images.

Do not wait for a routine results appointment if you develop severe or rapidly worsening abdominal pain, fainting, a rigid or markedly swollen abdomen, persistent vomiting, yellow skin or eyes with fever, or signs of heavy bleeding. Seek urgent or emergency medical care according to the severity of your symptoms.

Common questions

Can I drink coffee before an abdominal ultrasound?

If you were told to fast, avoid coffee unless the imaging service permits it. Coffee can stimulate digestion and gallbladder contraction, even without milk. Follow your appointment instructions about water and other fluids.

Does the time of day matter?

Usually not, although morning appointments may be easier if you must fast.

Can I exercise beforehand?

Light activity is generally fine. Strenuous exercise is unlikely to change routine findings but

may make fasting or maintaining a full bladder uncomfortable.

Can I take my medicines?

Usually, yes, often with a small amount of water. Ask for specific instructions if medicine must be taken with food or if you use insulin or other diabetes treatment.

Will I get the results immediately?

Sometimes. A sonographer may not be permitted to discuss findings. The final report may first need review by a radiologist.

What if the scan cannot see an organ clearly?

The report may describe the examination as limited or recommend another test. This often reflects bowel gas, body size, movement or organ position rather than a definite abnormality.

Sources

- RadiologyInfo.org: Abdominal Ultrasound , American College of Radiology and Radiological Society of North America
- NHS: Ultrasound scan , National Health Service
- American Institute of Ultrasound in Medicine. Practice Parameter for the Performance of an Ultrasound Examination of the Abdomen and/or Retroperitoneum
- NICE guideline CG188: Gallstone disease-diagnosis and management , National Institute for Health and Care Excellence
- NICE guideline NG156: Abdominal aortic aneurysm-diagnosis and management , National Institute for Health and Care Excellence
- US Food and Drug Administration: Ultrasound Imaging