

Scrotal Ultrasound

This information is reviewed by a physician with expertise in the area presented and is further reviewed by committees from the American College of Radiology (ACR) and the Radiological Society of North America (RSNA), comprising physicians with expertise in several radiologic areas.

What is Ultrasound Imaging of the Scrotum?

Ultrasound imaging, also called ultrasound scanning or sonography, involves exposing part of the body to high-frequency sound waves to produce pictures of the inside of the body. Ultrasound exams do not use ionizing radiation (as used in x-rays). Because ultrasound images are captured in real-time, they can show the structure and movement of the body's internal organs, as well as blood flowing through blood vessels.

Ultrasound imaging is a noninvasive medical test that helps physicians diagnose and treat medical conditions.

Ultrasound imaging of the scrotum provides pictures of the testicles and the surrounding tissues of a man or a boy.

What are some common uses of the procedure?

Ultrasound imaging of the scrotum is the primary imaging method used to evaluate disorders of the testicles.

This study is typically used to:

- determine whether a mass in the scrotum felt by the patient or doctor is cystic or solid.
- diagnose results of trauma to the scrotal area.
- diagnose causes of testicular pain or swelling such as inflammation or torsion.
- evaluate the cause of infertility such as varicocele.
- look for the location of undescended testis.

Ultrasound is also a valuable tool for evaluating the epididymis (a tube that collects sperm made by the testicles) and the prostate.

A sudden onset of pain in the scrotum may be very serious.

The most common cause of scrotal pain is epididymitis, an inflammation of the epididymis. It is treatable with antibiotics.

If left untreated, this condition can lead to an abscess or loss of blood flow to the testicles.

Ultrasound can detect an absent or undescended testicle as well. In rare cases a testicle may fail to develop. More often, patients have an undescended testicle. It is estimated that approximately three percent of full-term baby boys have undescended testicles. It's important to diagnose an undescended testicle because it has a very high probability of developing cancer if left untreated.

Ultrasound can identify testicular torsion, the twisting of the spermatic cord that contains the vessels that supply blood to the scrotum. Caused by abnormally loose attachments of tissues that are formed during fetal development, torsion commonly appears during adolescence and is very painful. Torsion requires immediate surgery to avoid permanent damage to the testes.

Ultrasound also can be used to locate and evaluate masses (lumps or tumors) in the scrotum. The majority of scrotal masses are located outside of the testes. Most masses found outside the testicles are benign or non-cancerous; most inside the testicles are malignant or cancerous. Collections of fluid and abnormalities of the blood vessels may appear as masses and can be assessed by ultrasound.

How should I prepare?

You should wear comfortable, loose-fitting clothing for your ultrasound exam. You may need to remove all clothing and jewelry in the area to be examined.

You may be asked to wear a gown during the procedure. No other preparation is required.

What does the equipment look like?

Ultrasound scanners consist of a console containing a computer and electronics, a video display screen and a transducer that is used to scan the body and blood vessels.

The transducer is a small hand-held device that resembles a microphone, attached to the scanner by a cord. The transducer sends out high frequency sound waves into the body and then listens for the returning echoes from the tissues in the body. The principles are similar to sonar used by boats and submarines.

The ultrasound image is immediately visible on a nearby screen that looks much like a computer or television monitor. The image is created based on the amplitude (strength), frequency and time it takes for the sound signal to return from the patient to the transducer.

In order to perform a scrotal sonogram, most commonly a linear small parts transducer is used.



How does the procedure work?

Ultrasound imaging is based on the same principles involved in the sonar used by bats, ships and fishermen. When a sound wave strikes an object, it bounces back, or echoes. By measuring these echo waves it is possible to determine how far away the object is and its size, shape, and consistency (whether the object is solid, filled with fluid, or both).

In medicine, ultrasound is used to detect changes in appearance of organs, tissues, and vessels or detect abnormal masses, such as tumors.

In an ultrasound examination, a transducer both sends the sound waves and records the echoing waves. When the transducer is pressed against the skin, it directs small pulses of inaudible, high-frequency sound waves into the body. As the sound waves bounce off of internal organs, fluids and tissues, the sensitive microphone in the transducer records tiny changes in the sound's pitch and direction.

These signature waves are instantly measured and displayed by a computer, which in turn creates a real-time picture on the monitor. One or more frames of the moving pictures are typically captured as still images.

How is the procedure performed?

For most ultrasound exams, the patient is positioned lying face-up on an examination table that can be tilted or moved.

A clear water-based gel is applied to the area of the body being studied to help the transducer make secure contact with the body and eliminate air pockets between the transducer and the skin. The sonographer (ultrasound technologist) or radiologist then presses the transducer firmly against the skin and sweeps it over the area of interest.

When the examination is complete, the patient may be asked to dress and wait while the ultrasound images are reviewed. However, the sonographer or radiologist is often able to review the ultrasound images in real-time as they are acquired and the patient can be released immediately.

This ultrasound examination is usually completed within 30 minutes.

What will I experience during and after the procedure?

Most ultrasound examinations are painless, fast and easy.

After you are positioned on the examination table, the radiologist or sonographer will apply some warm water-based gel on your skin and then place the transducer firmly against your body, moving it over the area of interest until the desired images are captured. There is usually no discomfort from pressure as the transducer is pressed against the area being examined.

If scanning is performed over an area of tenderness, you may feel pressure or minor pain from the transducer.

Once the imaging is complete, the gel will be wiped off your skin.

After an ultrasound exam, you should be able to resume your normal activities within a few hours.

Who interprets the results and how do I get them?

A radiologist, a physician specifically trained to supervise and interpret radiology examinations, will analyze the images and send a signed report to your primary care physician or the physician who referred you for the exam, who will share the results with you. In some cases the radiologist may discuss results with you at the conclusion of your examination.

What are the benefits vs. risks?

Benefits

- Most ultrasound scanning is noninvasive (no needles or injections) and is usually painless.
- Ultrasound is widely available, easy-to-use and less expensive than other imaging methods.
- Ultrasound imaging uses no ionizing radiation.
- Ultrasound scanning gives a clear picture of soft tissues that do not show up well on x-ray images.
- Ultrasound causes no health problems and may be repeated as often as is necessary.
- Ultrasound provides real-time imaging, making it a good tool for guiding minimally invasive procedures such as needle biopsies and needle aspiration.

Risks

- For standard diagnostic ultrasound there are no known harmful effects on humans.

What are the limitations of Scrotal Ultrasound Imaging?

Ultrasound of the scrotum does not always permit distinction between benign and malignant conditions.

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