

Ultrasound of the Prostate

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What is Prostate Ultrasound?

Ultrasound or sonography involves sending sound waves into the body. These sound waves reflect off the internal organs and are recorded by special instruments that create images of anatomic parts. No ionizing radiation (x-ray) is involved in ultrasound imaging. Ultrasound images are captured in real time so they can show movement of internal tissues and organs, such as the flow of blood in arteries and veins.

Prostate ultrasound is used to detect possible disorders within a man's prostate gland. Ultrasound images can indicate when the prostate is enlarged or when there is an abnormal growth that might be cancer.

What are some common uses of Prostate Ultrasound?

For men, a transrectal ultrasound of the prostate gland may be warranted if a blood test result is elevated or if a nodule is felt by a physician during a routine physical exam or prostate cancer screening exam. An ultrasound exam can also indicate other types of prostate conditions, such as inflammation of the prostate, or it can be used to help diagnose the reasons for a man's infertility.

Because ultrasound provides real-time images, it also can be used to guide procedures, such as needle biopsies, in which a needle is used to sample cells from an abnormal area for laboratory testing.

How should I prepare for the Prostate Ultrasound procedure?

You should wear comfortable, loose-fitting clothing for your ultrasound exam. An enema is taken two to four hours before the ultrasound to clean out the bowel. Follow your doctor's instructions on bowel preparation. A full bladder helps with visualization of the prostate gland, so you may be asked to drink up to six glasses of water prior to your exam.

What does the Prostate Ultrasound equipment look like?

The equipment consists of a transducer and a monitoring system. The transducer is a small, cylinder-shaped probe, which is lubricated and inserted into the rectum to view the prostate or to assist with an ultrasound-guided biopsy, if cancer is suspected.

The ultrasound image is immediately visible on a nearby screen that looks much like a computer or television monitor. The radiologist or sonographer watches this screen during the examination and captures representative images for storage. Often, the patient is able to see the screen as well.

How does the Prostate Ultrasound procedure work?

Ultrasound imaging is based on the same principles as the sonar used by bats, ships at sea and anglers with fish detectors. As a controlled sound wave bounces against objects, its echoing waves can be used to identify how far away the object is, how large it is, its shape and its internal consistency (fluid, solid or mixed).

The ultrasound transducer functions as both a loudspeaker (to transmit sounds) and a microphone (to record the sounds). When the transducer is inserted into the rectum it directs a stream of inaudible, high-frequency sound waves into the body. As the sound waves echo back from the body's fluids and tissues, the sensitive microphone in the transducer records the strength and character of the reflected waves.

How is Prostate Ultrasound performed?

In men, the prostate gland is located directly in front of the rectum, so the ultrasound exam is performed transrectally. A protective cover is placed over the transducer, it is lubricated, and then placed into the rectum so the sound need only travel a short distance from the prostate. The images are obtained from different angles to get the best view of the prostate gland. Ultrasound of

the prostate is most often performed with the patient lying on his left side with his knees bent up slightly.

If a suspicious lesion is identified with ultrasound or with a rectal examination, an ultrasound-guided biopsy can be performed. This procedure involves advancing a needle into the prostate gland while the radiologist watches the needle placement with ultrasound. A small amount of tissue is taken for microscopic examination. Below is an example of a transrectal transducer (probe).

When the examination is complete, the patient may be asked to dress and wait while the ultrasound images are reviewed, either on film or on a monitor. Often the sonographer or radiologist is able to review the ultrasound images in real time as they are acquired, and the patient can be released immediately.

What will I experience during my Prostate Ultrasound procedure?

If no biopsy is required, transrectal ultrasound of the prostate is similar in discomfort to a rectal exam performed by your doctor. The examination usually takes about 15 to 25 minutes.

If a biopsy is performed, additional discomfort, due to the needle insertion, is usually minimal because the rectal wall is relatively insensitive in the region of the prostate. A biopsy will add time to the procedure.

What are the benefits vs. risks of Prostate Ultrasound?

Benefits

- Ultrasound provides real-time imaging, making it a good tool for guiding minimally invasive procedures such as needle biopsies.
- Ultrasound is widely available.
- Ultrasound uses no ionizing radiation.
- Ultrasound can visualize structure, movement and function in the body's organs and blood vessels.

Risks

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

What are the limitations of Prostate Ultrasound?

Men who have had recent surgery on their bowel are not good candidates for ultrasound of the prostate gland because this type of ultrasound requires placing a probe into the rectum. In addition, ultrasound waves are reflected by air or gas, therefore ultrasound is not an ideal imaging exam for the bowel. Barium exams and CT scanning may be the methods of choice for bowel-related problems.