



DeBary Animal Clinic

30 South Highway 17-92, DeBary, FL, 32713

Phone: (386) 668-8371

Fax: 386-668-0774

Email: doctorsdebary@debaryac.comcastbiz.net

Website: debaryanimalclinic.com

Ultrasound Examination in Cats

What is ultrasound?

Ultrasound equipment emits and receives high frequency ultrasound waves through a transducer or probe. The probe is placed over the area of interest, directing the sound waves into the body. The ultrasound waves may be transmitted through, reflected from, or absorbed by the tissues that they encounter. Ultrasound is a non-invasive imaging technique that is considered safe and does not involve radiation.



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Reflected ultrasound waves return to the probe as echoes and are converted to an image that is displayed on the monitor, giving a 2-dimensional representation of the tissues under examination.

The technique is invaluable for the examination of internal organs and was first used in veterinary medicine for pregnancy diagnosis. However, the technique is also extremely useful in evaluating heart conditions and identifying changes in abdominal organs. Ultrasonography is very useful in the identification of cysts and tumors.

Does the technique have any drawbacks?

Ultrasound examinations are of little value in examining organs that contain air. Since the lungs are air-filled, they cannot be studied with ultrasound. The exception to this rule is the ultrasound study of a mass located within the lungs. Bone also stops ultrasound waves, so the brain and spinal cord are unable to be seen with an ultrasound study, and obviously, bones cannot be examined.

What types of diseases are diagnosed with an ultrasound examination?

The ultrasound examination allows for a detailed view of many of the body's organs. Ultrasound is an ideal imaging technique for pregnancy diagnosis and monitoring, since the fetuses can be seen in real time, and their development and viability can be tracked.

Ultrasound examination also allows your veterinarian to view the internal or inner structures of the kidneys, liver and other abdominal organs, and allows the recognition of cysts and tumors. It is excellent for viewing the interior of hollow organs such as the bladder.

An ultrasound examination is especially helpful for diseases of the heart, and when used to examine the heart, the procedure is called **echocardiography**. The thickness of the heart walls, the size of its chambers, and the motion of the valves and other cardiac structures are all measured, allowing an assessment of the heart's function. Doppler ultrasound is another form of cardiac ultrasound in which the direction and speed of blood flow in the heart and blood vessels can be measured. Color-flow Doppler technology makes it even easier to observe the flow of blood through the heart and important blood vessels. Some ultrasound machines can measure the velocity and direction of blood flowing in and out of the four chambers of the heart.

Some diseases can be diagnosed because they have a specific ultrasound appearance, while other conditions have non-specific ultrasound findings.

What about biopsies?

One of the important features of an ultrasound examination is the ability to identify abnormal areas in a specific organ.

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Seeing an abnormal section of an organ permits precise biopsy of those areas using a technique called an ultrasound-guided biopsy. A biopsy gives a pathologist a section of tissue that can be examined under the microscope for more information. In many cases, the pathologist is able to provide a diagnosis.

What steps need to be taken to prepare for an ultrasound exam?

No special preparation is needed if the heart is to be studied.

If an abdominal ultrasound is going to be performed, food should be withheld from your cat for twelve hours. The urinary bladder is best visualized if it is full of urine; therefore, do not let your cat urinate within three to six hours of the ultrasound procedure if possible.

Is anesthesia required?

If your cat is cooperative, no anesthesia or sedation is needed to perform ultrasound on the heart or the abdomen. However, if biopsies are to be taken, a short-acting anesthetic or a heavy sedative will be needed to help relax your pet during the procedure and prevent potential complications. Your veterinarian will discuss this with you ahead of time.

Is it necessary to shave my cat's hair?

In most cases, the fur must be shaved to perform an ultrasound examination. Since ultrasound waves are not transmitted through air, it is imperative that the hand-held probe makes complete contact with the skin. In some cases, such as pregnancy diagnosis, it may be possible to get adequate images by moistening the hair with rubbing alcohol and applying a large amount of water-soluble ultrasound gel. However, in all cases the ultrasound images will be of better quality if the area to be examined is shaved.

When will I know the results of the examination?

Since an ultrasound study is performed in real time, the results of what is seen are known immediately. In some cases, the ultrasound images may be sent to a veterinary radiologist for further consultation. When this occurs, the final report may not be available for a few days.

Is the technique affordable?

Although the initial cost of a scan may seem high, it has to be equated with the high cost of the equipment, the fact that specialized training is required in order to interpret the images, and a significant amount of time is involved in carrying out the examination. Its usefulness for pregnancy diagnosis, evaluation of the internal organs, assessment of heart function, and evaluation of certain eye diseases, make it an invaluable, non-invasive diagnostic tool to help protect to your pet's well-being.

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