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For patients

Venous Ultrasound



Venous ultrasound uses sound waves to produce images of the veins in the body. It is commonly used to search for blood clots, especially in the veins of the leg – a condition often referred to as deep vein thrombosis. Ultrasound does not use ionizing radiation and has no known harmful effects when used properly.

On occasion, you may be asked not to eat or drink anything but water for six to eight hours beforehand. Otherwise, little or no special preparation is required for this procedure. Leave jewelry at home and wear loose, comfortable clothing. You may be asked to wear a gown.

What is Venous Ultrasound Imaging?

Ultrasound imaging is a noninvasive medical test that helps physicians diagnose and treat medical conditions. It is safe and painless. It produces pictures of the inside of the body using sound waves. Ultrasound imaging is also called sonography (http://www.radiologyinfo.org) . It uses a small probe called a transducer and gel placed directly on the skin. High-frequency sound waves travel from the probe through the gel into the body. The probe collects the sounds that bounce back. A computer uses those sound waves to create an image. Ultrasound exams do not use radiation (http://www.radiologyinfo.org) (x-rays (http://www.radiologyinfo.org)). Because ultrasound captures images in real-time, it can show the structure and movement of the body's internal organs. The images can also show blood flowing through blood vessels.

Venous ultrasound provides pictures of the veins throughout the body.

A Doppler ultrasound study may be part of a venous ultrasound examination.

Doppler ultrasound (http://www.radiologyinfo.org) is a special ultrasound technique that evaluates movement of materials in the body. It allows the doctor to see and evaluate blood flow through arteries and veins in the body.

What are some common uses of the procedure?

The most common reason for a venous ultrasound exam is to search for blood clots (http://www.radiologyinfo.org) , especially in the veins of the leg. This condition is often referred to as deep vein thrombosis (http://www.radiologyinfo.org) or DVT. These clots may break off and pass into the lungs, where they can cause a dangerous condition called pulmonary embolism (http://www.radiologyinfo.org) . If the blood clot in the leg is found early enough, treatment can be started to prevent it from passing to the lung.

A venous ultrasound study is also performed to:

- determine the cause of long-standing leg swelling. In people with a common condition called "varicose veins", the valves that normally keep blood flowing back to the heart may be damaged, and venous ultrasound can help identify the damaged valves and abnormal blood flow.
- aid in guiding placement of a needle or catheter (http://www.radiologyinfo.org) into a vein. Sonography can help locate the exact site of the vein and avoid complications, such as bleeding or damage to a nearby nerve or artery.
- map out the veins in the leg or arm so that pieces of vein may be removed and used to bypass a narrowed or blocked blood

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vessel. An example is using portions of vein from the leg to surgically bypass narrowed heart (coronary (http://www.radiologyinfo.org)) arteries.

- examine a blood vessel graft used for dialysis (http://www.radiologyinfo.org) if it is not working as expected; for example, the graft may be narrowed or blocked.

In children, venous ultrasound is used to:

- evaluate a connection between an artery and a vein which can be seen in congenital vascular malformations (arteriovenous malformations or fistula) and in dialysis fistula.

If a line is placed in a vein of the legs or arms, there is a much higher chance of developing a clot around it due to the smaller vessel size (especially in infants and young children). In some instances, a clot can suddenly form in the arm due to compression of the vein at the inlet of the chest or in the left leg due to compression of the vein on the left side by an artery in the abdomen.

Doppler ultrasound helps the doctor to see and evaluate:

- blockages to blood flow (such as clots)
- narrowing of vessels
- tumors and congenital vascular malformations
- reduced or absent blood flow to various organs, such as the testes or ovary
- increased blood flow, which may be a sign of infection

Who interprets the results and how do I get them?

A radiologist, a doctor trained to supervise and interpret radiology exams, will analyze the images. The radiologist will send a signed report to the doctor who requested the exam. Your doctor will then share the results with you. In some cases, the radiologist may discuss results with you after the exam.

You may need a follow-up exam. If so, your doctor will explain why. Sometimes a follow-up exam further evaluates a potential issue with more views or a special imaging technique. It may also see if there has been any change in an issue over time. Follow-up exams are often the best way to see if treatment is working or if a problem needs attention.

What are the benefits vs. risks?

Benefits

- Most ultrasound scanning is noninvasive (no needles or injections).
- Occasionally, an ultrasound exam may be temporarily uncomfortable, but it should not be painful.
- Ultrasound is widely available, easy to use, and less expensive than most other imaging methods.
- Ultrasound imaging is extremely safe and does not use radiation.
- Ultrasound scanning gives a clear picture of soft tissues that do not show up well on x-ray images.
- Venous ultrasound helps to detect blood clots in the veins of the legs before they become dislodged and pass to the lungs. It can also show the movement of blood within blood vessels.
- Compared to venography (http://www.radiologyinfo.org) , which requires injecting contrast material into a vein and is rarely used today, venous ultrasound is accurate for detecting blood clots in the veins of the thigh down to the knee. because the veins become very small, ultrasound is less accurate. However, potentially dangerous venous clots are typically lodged in the larger veins. It does not use radiation or contrast material.

Risks

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- Standard diagnostic ultrasound (http://www.radiologyinfo.org) has no known harmful effects on humans when it is used properly by trained staff.

What are the limitations of Venous Ultrasound Imaging?

Veins lying deep beneath the skin, especially small veins in the calf, may be hard to see.

Venous ultrasound is very accurate for finding clots in the larger veins of the thigh and behind the knee. It is less accurate in the smaller veins of the calf. Fortunately, the clots most likely to cause serious problems are usually found in the larger veins.

Depending on how much of the leg your exam covers, your doctor may ask you to return for a second ultrasound in about a week. This is done to make sure a small clot in the calf has not grown into the larger veins. If your exam is negative but your symptoms continue or get worse, tell your doctor.

Veins deep in the pelvis and abdomen are difficult to see with ultrasound. If your doctor suspects a clot in these veins, you may need a CT or MRI exam.

Image quality depends more on the skill and experience of the person performing the exam than it does with CT or MRI.

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