

Venography

Venography is an x-ray examination that uses an injection of contrast material to show how blood flows through your veins. Your doctor may use it to find blood clots, identify a vein for use in a bypass procedure or dialysis access, or to assess varicose veins before surgery.

Tell your doctor if there's a possibility you are pregnant and discuss any recent illnesses, medical conditions, medications you're taking, and allergies, especially to iodinated contrast materials. You may be instructed to not eat or drink anything several hours before your exam. Leave jewelry at home and wear loose, comfortable clothing. You may be asked to wear a gown.

What is a venogram?

A venogram is an x-ray test that involves injecting contrast material into a vein to show how blood flows through your veins. This allows a physician to determine the condition of your veins.



An x-ray exam helps doctors diagnose and treat medical conditions. It exposes you to a small dose of ionizing radiation to produce pictures of the inside of the body. X-rays are the oldest and most often used form of medical imaging.

What are some common uses of the procedure?

A venogram is commonly used to:

- assess the status of a vein or system of veins
- find blood clots within the veins
- assess varicose veins before surgery
- find a vein in good condition to use for a bypass procedure or dialysis access
- help a physician place an IV or a medical device, such as a stent, in a vein
- guide treatment of diseased veins.

How should I prepare?

Other than medications, your doctor may tell you to not eat or drink anything for several hours before your procedure.

The doctor may allow you to drink clear liquids on the day of your procedure.

Tell your doctor about all the medications you take. List any allergies, especially to iodine contrast materials. Tell your doctor about recent illnesses or other medical conditions.

Women should always tell their doctor and technologist if they are pregnant. Doctors will not perform many tests during pregnancy to avoid exposing the fetus to radiation. If an x-ray is necessary, the doctor will take precautions to minimize radiation.

exposure to the baby. See the *Safety in X-ray, Interventional Radiology and Nuclear Medicine Procedures* page (<https://www.radiologyinfo.org/en/info/safety-radiation>) for more information about pregnancy and x-rays.

What does the equipment look like?

This exam typically uses a radiographic table, one or two x-ray tubes, and a video monitor. Fluoroscopy converts x-rays into video images. Doctors use it to watch and guide procedures. The x-ray machine and a detector suspended over the exam table produce the video.

This procedure may use other equipment, including an intravenous line (IV), ultrasound machine and devices that monitor your heart beat and blood pressure.

How does the procedure work?

X-rays are a form of radiation like light or radio waves. X-rays pass through most objects, including the body. The technologist carefully aims the x-ray beam at the area of interest. The machine produces a small burst of radiation that passes through your body. The radiation records an image on photographic film or a special detector.

Different parts of the body absorb the x-rays in varying degrees. Dense bone absorbs much of the radiation while soft tissue (muscle, fat, and organs) allow more of the x-rays to pass through them. As a result, bones appear white on the x-ray, soft tissue shows up in shades of gray, and air appears black.

Veins cannot be seen on an x-ray; therefore, an iodine-based contrast material is injected through an IV line into veins to make them visible on the x-ray.

How is the procedure performed?

Your doctor will likely do this exam on an outpatient basis.

A venogram is done in a hospital x-ray department.

A venogram is performed in the x-ray department or in an interventional radiology suite, sometimes called special procedures suite.

You will lie on an x-ray table. Depending on the body part being examined (e.g., the legs), the table may be situated to a standing position. If the table is repositioned during the procedure, you will be secured with safety straps.

The physician will insert a needle or catheter into a vein to inject the contrast agent. Where that needle is placed depends upon the area of your body where the veins are being evaluated. As the contrast material flows through the veins being examined, several x-rays are taken. You may be moved into different positions so that the x-rays can take pictures of your veins at different angles.

What will I experience during and after the procedure?

You may need to remove some clothing and/or change into a gown for the exam. Remove jewelry, removable dental appliances, eyeglasses, and any metal objects or clothing that might interfere with the x-ray images.

You will feel a slight pinch when the nurse inserts the needle into your vein for the IV line and when they inject the local anesthetic. Most of the sensation is at the skin incision site. The doctor will numb this area using local anesthetic. You may feel pressure when the doctor inserts the catheter into the vein or artery. However, you will not feel serious discomfort.

As the contrast material passes through your body, you may feel warm. This will quickly pass.

You may have a metallic taste in your mouth. Your arm or leg may feel like it is getting numb or "falling asleep." After the test is complete, this feeling will go away.

You must hold very still and may need to hold your breath for a few seconds while the technologist takes the x-ray. This helps reduce the possibility of a blurred image. The technologist will walk behind a wall or into the next room to activate the x-ray machine.

When the examination is complete, the technologist may ask you to wait until the radiologist confirms they have all the necessary images.

A venogram takes between 30 and 90 minutes to perform. Fluids will be run through your IV to remove the contrast material from your veins. You will also be instructed to drink a lot of fluids for the next day. After the catheter is removed, a bandage will be placed on the IV site. Then you will be observed for any signs of complications, such as bleeding from the injection site, infection or an allergic reaction.

Who interprets the results and how do I get them?

A radiologist (<https://www.radiologyinfo.org/en/info/article-your-radiologist>), a doctor trained to supervise and interpret radiology examinations, will analyze the images. The radiologist will send a signed report to your primary care or referring physician who will discuss the results (<https://www.radiologyinfo.org/en/info/article-read-radiology-report>) with you.

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 some of the possible risks?

- There is a very slight risk of an allergic reaction if the procedure uses an injection of contrast material.
- In rare cases, a venogram can cause a deep vein thrombosis (blood clot).
- There is a risk of injury to the kidneys with contrast injection. Patients with impaired kidney (renal) function should be given special consideration before receiving iodine-based contrast materials by vein or artery. Such patients are at risk for developing contrast-induced nephropathy, in which the pre-existing kidney damage is worsened. *See the Contrast Materials (<https://www.radiologyinfo.org/en/info/safety-contrast>) page for more information.*
- Any procedure that places a catheter inside a blood vessel carries certain risks. These risks include damage to the blood vessel, bruising or bleeding at the puncture site, and infection. The doctor will take precautions to mitigate these risks.
- There is always a slight chance of cancer from excessive exposure to radiation. However, given the small amount of radiation used in medical imaging, the benefit of an accurate diagnosis far outweighs the associated risk.
- The radiation dose for this procedure varies. *See the Radiation Dose in X-Ray and CT Exams (<https://www.radiologyinfo.org/en/info/safety-xray>) page for more information about radiation dose.*
- Because children are more sensitive to radiation exposure than adults, equipment and procedures will be monitored in order to deliver the lowest possible dose to young patients.

A Word About Minimizing Radiation Exposure

Doctors take special care during x-ray exams to use the lowest radiation dose possible while producing the best images for evaluation. National and international radiology protection organizations continually review and update the technique standards radiology professionals use.

Modern x-ray systems minimize stray (scatter) radiation by using controlled x-ray beams and dose control methods. This ensures

that the areas of your body not being imaged receive minimal radiation exposure.

What are the limitations of venography?

The results of a venogram can be altered or affected if you are unable to sit still during the procedure since that will affect how the contrast material moves through your veins. Further exams may also be required if the more central veins located in the pelvis, abdomen and chest are not fully evaluated with contrast injection via an IV placed in the extremity.

In some cases, ultrasound is a preferred procedure because it has fewer risks and side effects.

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