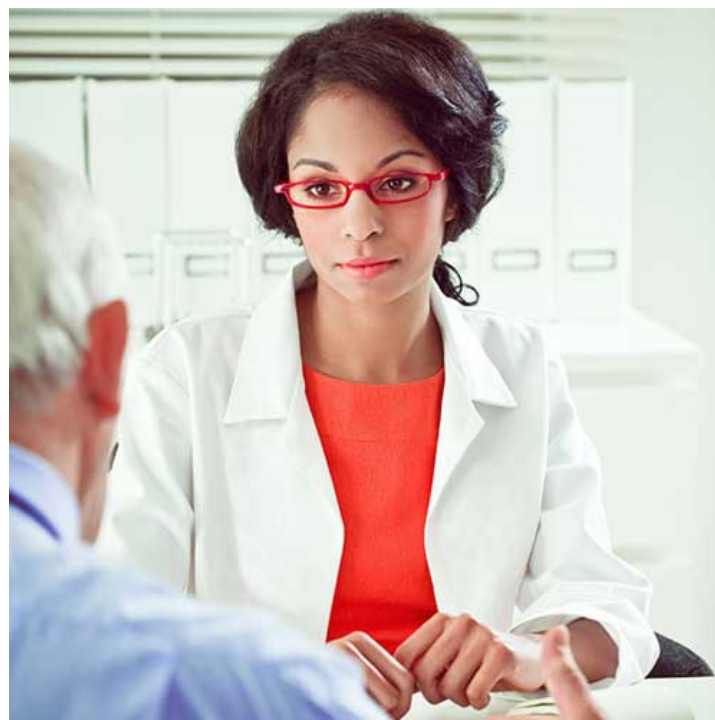




Venography

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 (radiograph) is a noninvasive medical test that helps physicians diagnose and treat medical conditions. Imaging with x-rays involves exposing a part of the body to a small dose of ionizing radiation to produce pictures of the inside of the body. X-rays are the oldest and most frequently 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, you may be instructed to not eat or drink anything for several hours before your procedure.

You may be allowed to drink clear liquids on the day of your procedure.

You should inform your physician of any medications being taken and if there are any allergies, especially to iodinated contrast materials. Also inform your doctor about recent illnesses or other medical conditions.

Women should always inform their physician and x-ray technologist if there is any possibility that they are pregnant. Many imaging tests are not performed during pregnancy so as not to expose the fetus to radiation. If an x-ray is necessary, precautions will be taken to minimize radiation exposure to the baby. See the Safety page for more information about pregnancy and x-rays.

What does the equipment look like?

The equipment typically used for this examination consists of a radiographic table, one or two x-ray tubes and a television-like monitor that is located in the examining room. Fluoroscopy, which converts x-rays into video images, is used to watch and guide progress of the procedure. The video is produced by the x-ray machine and a detector that is suspended over a table on which the patient lies.

Other equipment that may be used during the procedure includes 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. Once it is carefully aimed at the part of the body being examined, an x-ray machine produces a small burst of radiation that passes through the body, recording 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, such as 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?

This examination is usually done 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 will be asked to remove some of your clothes and to wear a gown during the exam. You may also be asked to remove jewelry, removable dental appliances, eye glasses and any metal objects or clothing that might interfere with the x-ray images.

You will feel a slight pin prick when the needle is inserted into your vein for the intravenous line (IV) and when the local anesthetic is injected. Most of the sensation is at the skin incision site which is numbed using local anesthetic. You may feel pressure when the catheter is inserted into the vein or artery.

As the contrast material passes through your body, you may experience a warm feeling which quickly subsides.

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 be asked to keep from breathing for a few seconds while the x-ray picture is taken to 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, you may be asked to wait until the radiologist determines that all the necessary images have been obtained.

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, a physician specifically trained to supervise and interpret radiology examinations, will analyze the images and send a signed report to your primary care or referring physician, who will discuss the results with you.

Follow-up examinations may be necessary. Your doctor will explain the exact reason why another exam is requested. Sometimes a follow-up exam is done because a potential abnormality needs further evaluation with additional views or a special imaging technique. A follow-up examination may also be necessary so that any change in a known abnormality can be monitored over time. Follow-up examinations are sometimes the best way to see if treatment is working or if a finding is stable or changed over time.

What are some of the possible risks?

- There is a very slight risk of an allergic reaction if contrast material is injected.
- 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 Safety page for more information about contrast materials.
- Any procedure that involves placement of 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. However precaution is taken to mitigate these risks.
- There is always a slight chance of cancer from excessive exposure to radiation. However, the benefit of an accurate diagnosis far outweighs the risk.
- The effective radiation dose for this procedure varies. See the Safety 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

Special care is taken during x-ray examinations 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 used by radiology professionals.

Modern x-ray systems have very controlled x-ray beams and dose control methods to minimize stray (scatter) radiation. This ensures that those parts of a patient's 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.

Disclaimer

This information is copied from the RadiologyInfo Web site (<http://www.radiologyinfo.org>) which is dedicated to providing the highest quality information. To ensure that, each section is reviewed by a physician with expertise in the area presented. All information contained in the Web site is further reviewed by an ACR (American College of Radiology) - RSNA (Radiological Society of North America) committee, comprising physicians with expertise in several radiologic areas.

However, it is not possible to assure that this Web site contains complete, up-to-date information on any particular subject. Therefore, ACR and RSNA make no representations or warranties about the suitability of this information for use for any particular purpose. All information is provided "as is" without express or implied warranty.

Please visit the RadiologyInfo Web site at <http://www.radiologyinfo.org> to view or download the latest information.

Note: Images may be shown for illustrative purposes. Do not attempt to draw conclusions or make diagnoses by comparing these images to other medical images, particularly your own. Only qualified physicians should interpret images; the radiologist is the physician expert trained in medical imaging.

Copyright

This material is copyrighted by either the Radiological Society of North America (RSNA), 820 Jorie Boulevard, Oak Brook, IL 60523-2251 or the American College of Radiology (ACR), 1891 Preston White Drive, Reston, VA 20191-4397. Commercial reproduction or multiple distribution by any traditional or electronically based reproduction/publication method is prohibited.

Copyright © 2017 Radiological Society of North America, Inc.