TEST

Venogram - leg

A leg venogram uses contrast dye and X-rays to show blood flow through the veins

WHAT IT MEASURES
Blood flow and blockages in the leg veins

SAMPLE
None, for imaging

FASTING NEEDED?
Sometimes, especially if sedation is planned

HOW LONG IT TAKES
About 30 to 90 minutes

RESULTS IN
Often same day; timing varies by laboratory or imaging service

USED FOR
Diagnosis and planning vein procedures

MAIN LIMITATION
Poor vein filling can hide clots or mimic blockage

Overview

A leg venogram is an imaging test that shows the veins in your leg. It is also called contrast venography.

During the test, an iodine-based contrast dye is injected into a vein, usually in the foot or ankle. The contrast makes blood vessels visible on X-ray images. Real-time X-ray imaging, called fluoroscopy, may be used to follow the contrast as it moves through the veins.

The test can show a blood clot, narrowed vein, complete blockage or an unusual pattern of veins. It can also show collateral veins, which are alternative channels that develop when normal blood flow is obstructed.

Ultrasound is usually the first imaging test used when a deep vein thrombosis, or DVT, is suspected. A DVT is a clot in a deep vein. Venography is now mainly used when ultrasound does not provide a clear answer or when detailed vein mapping is needed before a procedure.

Why the test is ordered

A leg venogram may be ordered to:

The test may be useful when a blockage is suspected higher in the leg or pelvis. Those veins can be harder to see with a standard leg ultrasound.

- Investigate a possible DVT when ultrasound results are unclear
- Find the location and extent of a vein blockage
- Examine veins that are difficult to assess with ultrasound
- Plan treatment for chronic vein obstruction
- Guide procedures such as clot removal, stent placement or vein reconstruction
- Check whether a procedure has restored blood flow

Who should have the test

A venogram is not a routine screening test. It is generally reserved for people whose symptoms, medical history or earlier imaging suggest that more detailed information is needed.

You may be offered one if an ultrasound was incomplete or did not match the clinical concern. It may also be part of a planned procedure to treat a narrowed or blocked vein.

The decision requires extra care if you have had a previous reaction to iodine-based contrast, have reduced kidney function, are pregnant or may be pregnant. These factors do not always prevent the test, but they may change how it is performed or whether another test is preferred.

How to prepare

Follow the instructions from the imaging department. Preparation differs according to whether you will receive sedation and whether the venogram is being combined with treatment.

You may be asked not to eat or drink for several hours. If fasting is not required, you may be encouraged to drink normally unless you have a medical reason to limit fluids.

Tell the imaging team about:

A shellfish allergy by itself does not mean that you are allergic to X-ray contrast. A previous reaction to the same type of contrast is more relevant.

Do not stop prescription medicines unless the imaging team or prescriber gives you specific

instructions. Local policies for metformin and blood-thinning medicines may differ according to kidney function and the planned procedure.

Wear comfortable clothing and leave jewellery at home if possible. You may need to change into a gown.

- Previous reactions to X-ray contrast
- Kidney disease, dialysis or a recent kidney test
- Pregnancy or the possibility of pregnancy
- Asthma or significant allergies
- Diabetes and any medicines containing metformin
- Blood-thinning medicines
- Bleeding problems or previous blood clots

What happens during the test

You will usually lie on a movable X-ray table. A small intravenous cannula is placed into a vein, commonly on the top of your foot or near your ankle. The area is cleaned first.

Tourniquets or pressure bands may be placed around parts of the leg. These help direct the contrast into the deeper veins. The table may be tilted so that gravity helps fill the veins.

Contrast is injected while X-ray images are taken. You may notice warmth, pressure or a brief metallic taste. Tell the staff immediately if you develop itching, hives, throat tightness, breathing difficulty or feel faint.

In some procedures, a thin tube called a catheter is guided farther into the venous system. This allows pressure measurements or treatment to be performed at the same appointment.

After the images are complete, the cannula or catheter is removed. Pressure and a dressing are applied to the insertion site. You may be observed for a short time before leaving.

Understanding your results

A venogram does not usually produce a single number or reference range. A radiologist examines the images and writes a report.

A normal result generally means that contrast moved through the examined veins without a clear filling defect, major narrowing or blockage.

A report may describe:

An abnormal-looking area does not always prove that a new clot is present. The radiologist considers the pattern across several images, how the contrast was injected and findings from ultrasound or other tests.

Interpretation varies with the imaging technique, age, sex, pregnancy status, medicines and clinical context. Kidney function mainly affects contrast safety rather than whether a clot appears on the images.

- A filling defect, where contrast flows around a possible clot
- An abrupt cutoff, where a vein appears blocked
- Narrowing, also called stenosis
- Collateral veins suggesting a longer-standing obstruction
- Slow or uneven contrast flow
- Changes from a previous clot, procedure or surgery

What affects the results

The quality of a venogram depends on the veins filling evenly with contrast. Several factors can make an image misleading even when the equipment is working correctly.

Poor injection flow, movement or incorrect tourniquet placement can leave part of a vein underfilled. This may hide a clot or create an apparent gap that resembles one.

Blood and contrast do not always mix evenly. Temporary swirling can look like a filling defect. Vein valves, muscle compression or a brief vein spasm may also produce an irregular outline.

Previous DVT can leave scarring, narrowed veins and collateral vessels. These chronic changes may be difficult to distinguish from a newer problem without earlier imaging and information about your symptoms.

Swelling, recent surgery, trauma or external compression can alter the position and flow of veins. Pregnancy can also change venous flow and affects decisions about radiation exposure.

Blood-thinning treatment may gradually change a clot's appearance. Tell the imaging team if treatment has already started and when the first dose was taken.

Body size and overlying structures can reduce image detail. A blockage in the pelvis may also require CT venography, MR venography or catheter imaging from a different location.

Accuracy and limitations

Conventional venography directly outlines the inside of contrast-filled veins and has historically been used as a reference test for DVT. When images are complete and technically clear, it can show detailed vein anatomy and the extent of an obstruction.

However, it can miss a clot if a vein does not fill properly, if contrast bypasses the affected area or if overlapping structures obscure the vein. It can also suggest a clot when uneven contrast mixing, a valve or vein spasm creates a false filling defect.

Venography is invasive and requires contrast and radiation. For suspected DVT in the thigh or behind the knee, compression ultrasound is usually simpler and avoids these risks. Repeat ultrasound may be more useful than venography in some situations.

CT venography may better show pelvic or abdominal veins, but it also uses radiation and iodine-based contrast. MR venography avoids ionising radiation, although it may be less available and is not suitable for every implant or clinical situation.

No imaging test should be interpreted alone. The result is considered alongside symptoms, examination findings, earlier scans and blood tests.

Risks and complications

A small bruise, soreness or minor bleeding can occur where the cannula was inserted. Some people feel faint during needle placement.

Contrast can leak into nearby tissue, causing pain and swelling. Most cases settle with observation, but significant or worsening symptoms need assessment.

Mild contrast reactions can include itching, hives, nausea or flushing. Severe allergic-like reactions are uncommon but require immediate treatment.

Iodine-based contrast can contribute to kidney injury, especially when kidney function is already severely reduced or there is an acute kidney problem. The imaging team may check recent kidney test results before proceeding.

The procedure uses ionising radiation. The amount is managed to obtain the needed images while limiting exposure. Pregnancy should be discussed before the test.

Vein inflammation, infection or a new clot can occur but are uncommon. Procedures involving a catheter or vein treatment carry more risk than a diagnostic injection into a foot vein.

What happens next

A radiologist reviews the images and sends a report to the clinician who requested the test. If the venogram was part of a treatment procedure, some findings may be explained before you leave.

Routine follow-up may include discussing the report, comparing it with ultrasound results and deciding whether monitoring, medicine or a vein procedure is appropriate.

Keep the dressing dry for the period advised. Mild tenderness or a small bruise can usually be monitored.

Seek urgent medical advice for increasing leg swelling, severe pain, spreading redness, fever, persistent bleeding or a foot that becomes pale, cold or numb.

Call emergency services for trouble breathing, swelling of the throat or face, collapse, chest pain, or sudden severe shortness of breath. These symptoms require immediate assessment rather than routine follow-up.

Common questions

Can I drink coffee before a leg venogram?

If you have not been told to fast, coffee may be allowed. If fasting is required, coffee may count as a drink even without milk. Follow the imaging department's instructions.

Does the time of day matter?

Usually not. Appointment timing is more likely to be based on fasting requirements, kidney blood tests, sedation or whether treatment is planned.

Can I exercise beforehand?

Normal daily activity is usually acceptable. Avoid unusually strenuous exercise if it worsens your leg symptoms, and follow any specific instructions given for your procedure.

Will the contrast injection hurt?

You may feel a brief sting from the cannula and warmth or pressure during injection. Tell the staff straight away if you have strong pain or rapidly increasing swelling at the injection site.

Can I drive home afterwards?

You may be able to drive after a simple diagnostic venogram if you feel well. Do not drive if you received sedation or were told to arrange an escort.

How is this different from a leg ultrasound?

Ultrasound uses sound waves and does not require radiation or contrast. Venography uses X-rays and contrast to outline the veins, so it is generally reserved for unclear cases or

procedure planning.

Sources

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- Goodacre S, Sampson F, Thomas S, van Beek E, Sutton A. Systematic review and meta-analysis of the diagnostic accuracy of ultrasonography for deep vein thrombosis. BMC Medical Imaging. 2005;5:6