TEST

Extremity angiography

Extremity angiography uses X-rays and injected contrast to examine blood vessels in an arm or leg.

WHAT IT MEASURES
Blood-vessel narrowing or blockage in an arm or leg

SAMPLE
None, using X-ray imaging with injected contrast

FASTING NEEDED?
Sometimes, usually several hours before catheter angiography

HOW LONG IT TAKES
About one to three hours

RESULTS IN
Preliminary immediately; final timing varies by imaging department

USED FOR
Diagnosis and treatment planning

MAIN LIMITATION
Two-dimensional views can hide or overstate vessel narrowing

Overview

Extremity angiography is an imaging test that shows blood vessels in an arm or leg, usually the arteries carrying blood away from the heart.

This article describes catheter angiography . A clinician guides a thin, flexible catheter into an artery, usually through the groin or wrist. Iodinated contrast dye is injected while X-ray images are taken, making the vessels visible.

The test can show narrowing, blockage, injury, or an abnormal bulge called an aneurysm. Unlike CT or MR angiography, catheter angiography is invasive, but it provides detailed images and may allow treatment during the same procedure. A narrowed artery may be widened with a balloon and sometimes supported with a stent.

Why the test is ordered

Extremity angiography may be ordered when symptoms or another test suggest reduced

blood flow to an arm or leg. Reasons include:

A less invasive test is often performed first, such as an ankle-brachial index, Doppler ultrasound, CT angiography, or MR angiography.

- Leg pain during walking that may be caused by reduced blood flow
- Persistent foot or leg wounds when poor circulation is suspected
- Sudden loss of blood flow to a limb
- An injury that may have damaged a blood vessel
- Planning angioplasty, stent placement, or surgery
- Checking a bypass graft, stent, or previous repair
- Evaluating an aneurysm or an abnormal connection between arteries and veins

Who should have the test

You may be offered extremity angiography when detailed images are needed to guide treatment. It is particularly useful if angioplasty, stent placement, clot removal, or another catheter-based treatment might be performed at the same appointment.

It is not a routine screening test for people without symptoms or other evidence of vascular disease. Because it involves an artery puncture, contrast, and radiation, the expected benefit should outweigh the risks.

Tell the imaging team if you are or could be pregnant, have kidney disease or bleeding problems, have previously reacted to contrast, or take medicines or supplements. These factors may change how the procedure is planned.

How to prepare

Follow the instructions from your imaging department, especially about fasting, medicines, and sedation. You may be asked not to eat for several hours. Rules for clear liquids vary, so contact the department if your instructions are unclear.

Tell the team about:

Do not stop prescribed medicine unless the procedure team tells you to. Plans for blood thinners and diabetes treatments must be individualized.

You may need blood tests to check kidney function and clotting. If sedation is planned, arrange for someone to take you home and, if advised, stay with you afterward.

- Blood thinners, including anticoagulants and antiplatelet medicines
- Diabetes medicines, including insulin and metformin
- Kidney problems or recent kidney blood-test results
- Previous reactions to iodinated contrast
- Asthma, allergies, or bleeding disorders
- Pregnancy or the possibility of pregnancy

What happens during the test

You will change into a gown and lie on an X-ray table. Staff will monitor your blood pressure, pulse, and oxygen level. An intravenous line may be inserted for fluids, medicines, or sedation.

The groin or wrist is commonly used as the access site. The skin is cleaned and numbed with local anaesthetic, which may briefly sting. A short tube called a sheath is placed in the artery, and the catheter is guided through the vessels using live X-rays. You generally cannot feel it moving.

Contrast is injected while images are taken. It may cause temporary warmth or flushing. You must remain still and may need to hold your breath briefly.

If a treatable narrowing is found, angioplasty or stent placement may be performed. This possibility should be discussed during consent unless an unexpected emergency requires immediate treatment.

The catheter is then removed, and pressure or a closure device seals the artery. After groin access, you may need to lie flat and keep the leg straight for several hours.

Understanding your results

There is no single normal number. A radiologist or vascular specialist assesses the vessels and the flow of contrast. The report may describe:

The meaning of a finding depends on your symptoms, examination, previous procedures, other test results, and treatment goals. Imaging departments may use different wording or measurement methods.

- Whether an artery is open, narrowed, or blocked
- The location, length, and apparent severity of narrowing

- Smaller collateral vessels carrying blood around a blockage
- Aneurysms, leaks, blood clots, or traumatic injury
- The appearance of a bypass graft or stent
- Blood flow beyond the affected area

What affects the results

Movement, very slow blood flow, or incomplete contrast filling can hide or blur narrowing. Arteries may also tighten temporarily around the catheter, called vasospasm, and resemble fixed narrowing.

Because angiography creates two-dimensional views, overlapping vessels or an unsuitable X-ray angle can hide or overstate disease. Calcium may obscure vessel edges, although catheter angiography is generally less affected by calcium than CT angiography.

Previous bypass surgery, stents, amputation, or altered anatomy can change how contrast travels. Kidney function does not usually change the anatomical finding, but reduced function may limit how much contrast can be used.

Accuracy and limitations

Catheter angiography provides detailed, real-time images and can show small vessels that may not be clear on ultrasound, CT, or MRI. It is especially useful when treatment is being considered.

However, overlapping branches, movement, poor contrast filling, vasospasm, or the viewing angle can cause narrowing to be missed or overstated. The test mainly shows the artery's inner channel and provides less information about its wall and surrounding tissue.

It also cannot always determine whether moderate narrowing is causing symptoms. Ultrasound, pressure measurements, CT or MR angiography, or imaging from inside the vessel may provide additional information. Less invasive imaging may be preferred when catheter-based treatment is unlikely.

Risks and complications

A small bruise, mild tenderness, or slight swelling at the puncture site is common. Less common complications include bleeding, infection, a larger collection of blood under the skin,

artery damage, or a clot reducing blood flow to the limb.

Iodinated contrast can cause an allergic-like reaction and may worsen kidney function, particularly if kidney function is already reduced. The procedure also uses a controlled amount of ionising radiation.

Serious complications are uncommon. Seek emergency help for:

A small stable bruise and mild soreness usually need routine follow-up. Contact the procedure team if pain, redness, swelling, or drainage worsens.

- Bleeding that does not stop with firm pressure
- Rapidly increasing swelling at the puncture site
- A hand, foot, arm, or leg becoming cold, pale, blue, weak, or numb
- Severe chest pain, trouble breathing, facial drooping, or difficulty speaking

What happens next

A clinician may discuss the main findings shortly after the procedure. The final report is sent to the healthcare professional who requested the test.

Before leaving, you should receive instructions about activity, bathing, medicines, wound care, dressings, and driving. You may need to avoid heavy lifting for a short period, depending on the access site and whether treatment was performed.

Next steps may include monitoring, medicine changes, angioplasty, surgery, or further imaging. Narrowing does not automatically mean a procedure is needed; your symptoms, blood flow, overall health, and preferences also matter.

Common questions

Can I drink coffee before extremity angiography?

Only if your instructions allow it. Coffee may not count as a permitted clear liquid, especially with milk. Follow the imaging department's fasting instructions.

Can I take my usual medicines?

Many medicines can continue, but blood thinners and diabetes medicines may require a specific plan. Do not stop them yourself. Bring an up-to-date medication list.

Can I exercise beforehand?

Light normal activity is usually acceptable. Avoid unusually strenuous exercise that day unless your team says otherwise, especially if exercise worsens your symptoms.

Will I be awake?

Usually, yes. Local anaesthetic numbs the access site, and you may receive medicine to help you relax. General anaesthesia is not normally needed for diagnostic angiography.

Does the contrast dye hurt?

It may cause brief warmth or flushing. Tell staff immediately if you develop itching, throat tightness, breathing difficulty, or feel unwell.

Can I drive home afterward?

Do not drive if you received sedation. Restrictions may also apply without sedation while the artery puncture seals. Follow your discharge instructions and arrange transport in advance.

Sources

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- ACR Appropriateness Criteria: Lower Extremity Arterial Claudication-Imaging Assessment for Revascularization , American College of Radiology
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- Practice Guidelines for Adult Sedation and Analgesia , American Society of Anesthesiologists, Anesthesiology