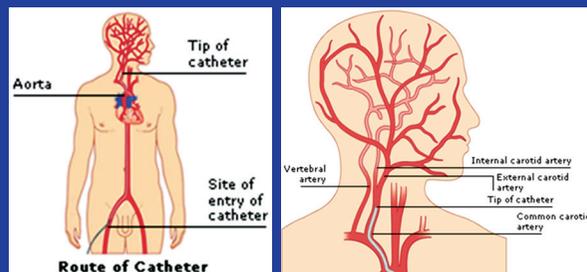


# What is Cerebral Angiography?

Angiography is a minimally invasive medical test that uses x-rays and an iodine-containing contrast material to produce pictures of blood vessels in the brain. In cerebral angiography, a thin plastic tube called a catheter is inserted into an artery in the leg or arm through a small incision in the skin. Using x-ray guidance, the catheter is navigated to the area being examined. Once there, contrast material is injected through the tube and images are captured using ionizing radiation (x-rays).



- If you have diabetes or kidney disease, the kidneys may be injured due to the contrast material. In most cases, the kidneys will regain their normal function within five to seven days.
- 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.
- There is a small risk that blood will form a clot around the tip of the catheter, blocking the artery and making it necessary to operate to reopen the vessel.
- There is a risk of stroke with this procedure if the catheter dislodges plaque from a vessel wall that blocks blood flow within the brain. Although stroke may be a complication associated with cerebral angiography, it is uncommon.
- Rarely, the catheter punctures the artery, causing internal bleeding. It is also possible that the catheter tip will separate material from the inner lining of the artery, causing a block downstream in the blood vessel.
- 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 Cerebral Angiography?

Patients with impaired kidney function may not be good candidates for this procedure.  
Patients who previously have allergic reactions to iodine-containing x-ray contrast materials are at risk of having a second reaction to similar contrast agents.



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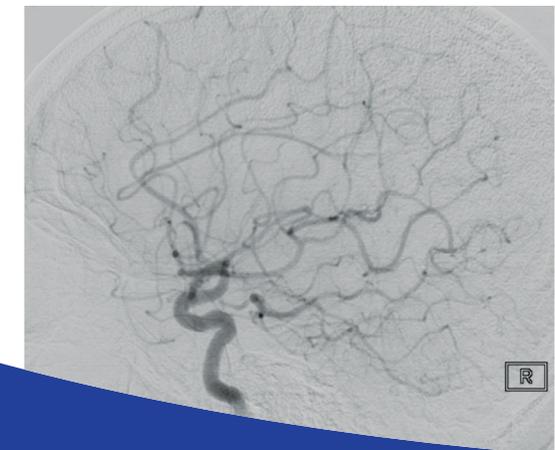
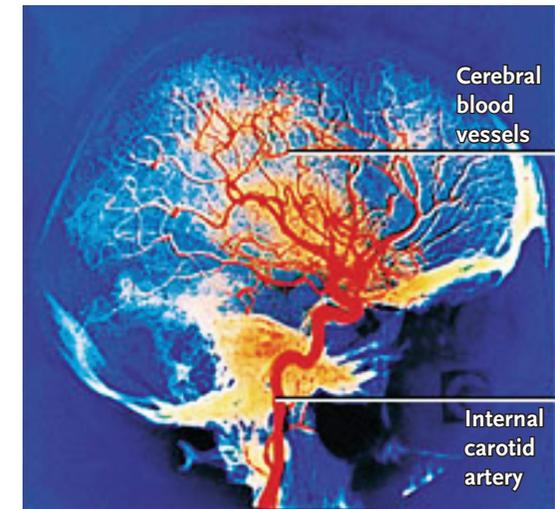
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# Cerebral Angiography



## What are some common uses of the procedure?

Physicians use the procedure to detect or confirm abnormalities within the blood vessels in the brain, including:

- an aneurysm, a bulge or sac that develops in an artery due to weakness of the arterial wall.
- atherosclerosis, a narrowing of the arteries.
- arteriovenous malformation, a tangle of dilated blood vessels that disrupts normal blood flow in the brain.
- vasculitis, an inflammation of the blood vessels, generally narrowing them.
- a tumor.
- a blood clot.
- a tear in the wall of an artery, known as a vascular dissection.
- a stroke.

A cerebral angiogram may be performed:

- to evaluate arteries of the head and neck before surgery.
- to provide additional information on abnormalities seen on MRI or CT of the head, such as the blood supply to a tumor.
- to prepare for other medical treatment, such as in the surgical removal of a tumor.
- in preparation for minimally invasive treatment of a vessel abnormality.

The procedure may also be used to help diagnose the cause of symptoms, such as:

- severe headaches
- memory loss
- slurred speech
- dizziness
- blurred or double vision
- weakness or numbness
- loss of coordination or balance.

## How should I prepare?

You should report to your doctor all medications that you are taking, including herbal supplements, and if you have any allergies, especially to local anaesthetic medications, general anaesthesia or to contrast materials containing iodine (sometimes referred to as “dye” or “x-ray dye”). Your physician may advise you to stop taking aspirin, nonsteroidal anti-inflammatory drugs (NSAIDs) or blood thinners for a specified period of time before your procedure.

Also inform your doctor about recent illnesses or other medical conditions.

You will receive specific instructions on how to prepare, including any changes that need to be made to your regular medication schedule.

You will most likely be instructed not to eat or drink anything after midnight before your procedure. Your doctor will tell you which medications you may take in the morning.

Women should always inform their physician and radiographer if there is any possibility that they are pregnant. Many imaging tests are not performed during pregnancy so as not to expose the foetus to radiation.

If you are breastfeeding at the time of the exam, you should ask your radiologist if you can proceed. It may help to pump breast milk ahead of time and keep it on hand for use after contrast material has cleared from your body, about 24 hours after the test.

## How is the procedure performed?

- This procedure is often done on an inpatient basis/Daysurgery.
- Prior to your procedure, your blood may be tested to determine how well your kidneys are functioning and whether your blood clots normally.
- Because the cerebral angiogram and recovery period may last for several hours, you will be asked to empty your bladder before the procedure begins.
- A doctor or nurse will insert an intravenous (IV) line into a vein in your hand or arm so that sedative medication can be given intravenously. Moderate sedation may be used. As an alternative, you may receive general anaesthesia.
- Devices to monitor your heart rate and blood pressure will be attached to your body.
- You will be positioned on the examination table.
- Your head will be held in place using a strap, tape or a foam head holder so you cannot move it during the procedure.
- The area of your body where the catheter is to be inserted will be shaved, sterilized and covered with a surgical drape.
- Your physician will numb the area with a local anesthetic.
- A very small skin incision is made at the site.
- Using x-ray-guidance, a catheter (a long, thin, hollow plastic tube) is inserted into a blood vessel through a tiny hole in the skin made by a needle and directed to the area to be examined.
- The contrast material is then injected through the catheter. When the contrast material reaches the blood vessels being examined, several sets of x-rays will be taken.
- At the end of the procedure, the catheter will be removed and pressure will be applied to stop any bleeding. The opening in the skin is then covered with a dressing. No sutures are needed.
- Your intravenous line will be removed.
- The procedure is usually completed within one to three hours. Additional time may be required for exam preparation, setup and post-procedure care.

## What will I experience during and after the procedure?

You will feel a slight pin prick when the needle is inserted into your vein for the intravenous line (IV) and when the local anaesthetic is injected. The arteries have no sensation. Most of the sensation is at the skin incision site which is numbed using local anaesthetic.

If the case is done with sedation, the intravenous (IV) sedative will make you feel relaxed and sleepy. You may or may not remain awake, depending on how deeply you are sedated.

You may feel slight pressure when the catheter is inserted, but no serious discomfort.

As the contrast material passes through your body, you may get a warm feeling.

You will be asked to remain very still while the x-ray images are taken.

Once the procedure is complete, the catheter will be removed by the radiologist. Pressure is immediately applied to the puncture site to ensure there is no bleeding. It takes about 10 minutes for the tiny hole in the artery to close.

You may resume your normal diet immediately after the exam. You will be able to resume all other normal activities eight to 12 hours after the exam.

You should report to your physician immediately if you experience any of the following after your procedure:

- weakness or numbness in the muscles of your face, arms or legs
- slurred speech
- vision problems
- signs of infection at the catheter site
- dizziness
- chest pain
- difficulty breathing
- rash
- difficulty in using the extremity where the puncture/incision was made

## Who interprets the results and how do I get them?

A radiologist, a physician specifically trained to perform, supervise and interpret radiology examinations, will analyze the images and send a signed report to your referring physician, who will share the results with you.

## What are the benefits vs. risks?

### BENEFITS

- Cerebral angiography presents a very detailed, clear and accurate picture of blood vessels in the brain. This is especially helpful when a surgical procedure or other treatment is being considered.
- Results from cerebral angiography are more accurate than those produced by noninvasive imaging of the blood vessels.
- Use of a catheter makes it possible to combine diagnosis and treatment in a single procedure.
- No radiation remains in a patient’s body after an x-ray examination.
- X-rays usually have no side effects in the typical diagnostic range for this exam.

### 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.
- There is a very slight risk of an allergic reaction if contrast material is injected.
- If you have a history of allergy to x-ray contrast material, your radiologist may advise that you take special medication for 24 hours before cerebral angiography to lessen the risk of allergic reaction. However, the risk of an allergic reaction from contrast material injected into an artery is less than if it is introduced into a vein.
- The risk of serious allergic reaction to contrast materials that contain iodine is extremely rare, and radiology departments are well equipped to deal with them.
- Women should always inform their physician or x-ray technologist if there is any possibility that they are pregnant.
- Nursing mothers should wait for 24 hours after contrast material injection before resuming breastfeeding.