



## Introduction

1. Angiography is a special X-ray examination of blood vessels to diagnose blood vessel diseases. Examination of the blood vessels over the heart (coronary angiography) is beyond the scope of this leaflet.
2. One of the most common reasons for angiograms is to see if there is blockage or narrowing in a blood vessel that may interfere with normal blood flow. Angiogram is also performed for stroke or bleeding in the brain, to diagnose and locate blood vessel malformations or tumours rich in blood supply. It is sometimes used to define anatomy of blood vessels before surgery (e.g. prior to organ transplantation). Normally blood vessels do not show up on plain X-ray.
3. This procedure will be performed by radiologists with special training in interventional radiology. The procedure will generally be performed in the Department of Radiology under X-ray guidance.

## The Procedure

1. The procedure is performed under local anaesthesia using aseptic techniques.
2. Your vital signs (blood pressure, pulse and oxygenation status) will be monitored throughout the entire procedure.
3. The femoral artery at the groin is punctured by the radiologist and an arterial sheath inserted via a small nick in the skin. It provide an access to the arterial system. An alternative access is from the upper arm.
4. The radiologist then inserts a thin plastic tube (called a catheter) into a blood vessel through the arterial sheath. An X-ray dye (called a contrast medium) will be injected into the blood vessel through the catheter to make the blood vessels visible on X-ray.
5. The X-ray equipment will then be used to navigate the catheter into the desired position and then the contrast medium will be injected through the catheter and X-rays taken.
6. As the contrast medium passes around your body, you may get a warm feeling which will soon pass off. The duration of each angiogram procedure is different for every patient, depending on the complexity of the condition. As a general guide, each patient having diagnostic angiogram stays in the X-ray department for about one and a half hour altogether.
7. At the end of the procedure, the catheter is removed and puncture site is compressed manually for about ten to twenty minutes to stop bleeding.
8. Your vital signs will be monitored after the procedure. Attention should be paid on the skin puncture site to make sure there is no bleeding from it.

## Before the Procedure

1. A written consent is required.
2. Inform medical staff before the examination if patient is or may be pregnant as the examination involves high dose of X-ray that is harmful to a foetus. Pregnancy test may be necessary in case of any doubt if the examination is to be proceed.
3. Inform doctor of history of allergy to food and drugs, and in particular any previous reaction to contrast medium, asthma, urticarial, eczema and allergy rhinitis etc. Oral or intravenous steroid premedication may be needed before injection of contrast medium.
4. Keep fasting for 4 hours prior to the examination.
5. For diabetic patients on Metformin medication, patient should inform medical staff before examination.
6. Check clotting profile for any bleeding tendency, to be corrected if abnormality detected.
7. Set up venous access.



## Risk and Complication

1. Complications can be related to the puncture site, to the catheter / guide wire or to the contrast medium injected.
2. Less than 1 in 200 patients will have complications related to the puncture site in general. There may occasionally be a small bruise (called haematoma) around the needle puncture site. Normally it is self-limiting. There is however, a slight chance that the bruise may become large, requiring surgery to drain it in hospital. Rarely, the blood vessel at the puncture site will be thrombosed / obstructed or very rarely, abnormal communication (called arteriovenous fistula) is formed between an artery and a vein. Only 1 in 10,000 requires limb amputation.
3. Complications related to catheter or guide wire also occur in less than 1 in 200 patients. Among these, perforation of the blood vessel during catheter / guide wire manipulation is the most common complications. Dislodgement of plaque in blood vessel wall causing distal vascular obstruction and tissue damage rarely occurs. Breakage and knot forming of catheter or guide wire is very rare, this may require surgical removal.
4. Allergic reaction to intravenous contrast medium.

### General Risks:

➤ Mild reactions:

For example, itching, mild skin rash, nausea, vomiting, feeling of warmth, arm pain, sneezing, coughing, and chest tightness. A few patients may experience delayed reactions usually within 24 hours, which include pain at injection site, itching, rash, painful or swollen salivary glands. The symptoms are usually transient, requiring minimal or no treatment.

➤ Moderate reactions:

These symptoms are more severe and last for longer duration. Patient may also experience rash or urticaria, fever and chills, an increase or decrease in blood pressure and palpitation. Specific treatment and close monitoring are required.

➤ Severe reactions:

The symptoms include shortness of breath, irregular heartbeat, chest pain, severe kidney failure, convulsion and unconsciousness. If these symptoms occur, the patient will require urgent medical treatment.

5. Overall death related to angiography is about 3 in 10,000.
6. Angiogram of blood vessels in the brain is associated with a slightly higher complication rate of permanent stroke and/or death. Most medical centres reported an overall complication rate for cerebral angiogram of less than 1%.

Should a complication occur, another life-saving procedure or treatment may be required immediately.

## Disclaimer

This leaflet only provides general information pertaining to this operation / procedure. While common risks and complications are described, the list is not exhaustive, and the degree of risk could also vary between patients. Please contact your doctor for detailed information and specific enquiry.

## Reference

The Hong Kong Society of Interventional Radiology Limited, Patient Information Leaflet:

Catheter Angiography / Angiogram (2010)

Smart Patient Website by Hospital Authority: Contrast study for computer-assisted tomography scan (9/2017)