



# Coronary Angiography

## What is Coronary Angiography?

Coronary angiography is a detailed X-ray examination of your heart's coronary arteries<sup>1</sup>. The procedure itself takes about **30** minutes and can be performed electively as an outpatient procedure, in which case you should expect to spend several hours in the hospital (from admission to discharge). Coronary angiography can also be performed urgently during an inpatient admission, as an essential investigative tool for the assessment and management of a suspected or a definite heart attack.

Coronary angiography investigates for the presence of Coronary Artery Disease<sup>2</sup>, and provides the necessary information that allows the Cardiologist to determine the best way to treat it.

Before you undergo the procedure, the Cardiologist will explain its steps to you in details, and will also explain to you the anticipated benefits of the procedure and its potential risks so you are fully informed of what to expect. In addition, you will be given a consent form to sign, indicating that you have had the procedure explained to you in details (including the benefits and risks), and that you are happy to proceed with it.

## When is Coronary Angiography required?

1. If you are experiencing symptoms of exertional chest pain or breathlessness and the Cardiologist suspects that they may be caused by Coronary Artery Disease. In this case, coronary angiography will diagnose and quantify the severity of any underlying Coronary Artery Disease.
2. If you are already known to have Coronary Artery Disease and have started to experience recent recurrence or worsening of your symptoms, coronary angiography will detect any additional worsening of your existing Coronary Artery Disease.
3. If you are being prepared for valve or any other form of nonCoronary Artery Disease related open heart surgery, the heart surgeon will want to know whether you have significant underlying Coronary Artery Disease that could necessitate Coronary Artery Bypass Grafting<sup>3</sup> to be performed simultaneously along with your planned other heart surgery.
4. If you are experiencing other unexplained symptoms, and the Cardiologist feels that Coronary Artery Disease should be definitively confirmed or excluded.

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<sup>1</sup>**Coronary Arteries:** The blood vessels that supply the heart muscle.

<sup>2</sup>**Coronary Artery Disease:** Deposition of cholesterol plaques within the interior lining of the coronary arteries, thereby causing lumen obstruction and impedance to blood flow, resulting in lack of adequate blood supply to the heart muscle. CAD causes symptoms of chest pain and breathlessness, mostly on exertion.

<sup>3</sup>**Coronary Artery Bypass Grafting:** Open heart surgery, wherein blood vessels from inside the interior chest wall and from inside the leg are taken and used as new conduits to deliver blood to the heart muscle, bypassing the obstructions within the coronary arteries caused by CAD.

## Preparing for Coronary Angiography

Most likely, if you are reading this leaflet, you will have already met the Cardiologist in the outpatient clinic, who will have explained to you why you are having the coronary angiogram test. You will be given a specific date and time to attend for your coronary angiogram. Please follow the below instructions:

1. **Withhold Certain Medications:** If you are taking blood thinning treatment (e.g. Warfarin), you must withhold it for **5** days before your coronary angiogram procedure and then restart it one day afterwards, unless the Cardiologist instructs you otherwise. Also, if you are taking Metformin treatment (for Diabetes), you must withhold it for **48** hours before your coronary angiogram procedure and then restart it **48** hours afterwards, unless the Cardiologist instructs you otherwise.
2. **Observe Fasting Instructions:** Patients are not usually asked to fast before coronary angiography. However, in some cases, the Cardiologist might ask patients to fast for six hours or so prior to the test. Please comply if you are requested to fast before your scheduled coronary angiogram procedure.
3. **Report to the Cardiology Centre Reception on the Ground Floor:** On the day of your scheduled coronary angiogram procedure, please report to the Cardiology Reception Office, where you will be registered and be shown to your private room where you will be admitted. You will be given a hospital gown to dress in for the procedure. A small needle will be inserted in your hand or arm to aid the administration of any sedative or pain relief medications that might be required during the Coronary Angiogram procedure.
4. **Sign the Consent Form:** If you haven't already signed the Consent Form in the Cardiology clinic, you will be requested to sign one once you have been admitted to your room.
5. **Transfer to the Cardiac Catheter Laboratory (Cathlab):** Once the above **4** steps have been completed, you will be transferred on a trolley or a wheelchair to the Cardiac Cathlab, where the Coronary Angiogram procedure will be performed.

## How is Coronary Angiography performed?

Coronary angiography is performed inside a special procedures room called the Cardiac Catheter Laboratory (Cathlab). You will be asked to lie on your back on a table, and your wrist and groin areas will be cleaned using a sterile solution. Several ECG wires will be positioned on your chest and connected to a heart monitor so your heart beats can be viewed on the screen. You will then be covered with sterile drapes to ensure that no contamination occurs. You will also notice that the Cardiologist and his assistant will be wearing sterile gowns and gloves.

You will be awake throughout the procedure. No general anaesthetic is required, although sedation can sometimes be offered to anxious patients. The vast majority of patients experience no or very little discomfort. If you experience pain, please let the Cardiologist know and you will be given adequate pain relief.

A local anaesthetic will be injected in your wrist or groin area, which will sting slightly for a few seconds. Then a short thin tube (sheath) will be inserted via either the wrist or groin artery, through which another long thin tube (cardiac catheter) will be advanced all the way up the artery to the heart under X-ray guidance. A contrast substance (dye) will then be injected into each of your three coronary arteries. Multiple X-ray images will be obtained of the dye delineating the interior of those arteries, thereby clearly illustrating any blockages or narrowings that might be present. During image acquisitions, you will see the X-ray camera moving at different angles and may come close to you but will not touch you. The table you are lying on will also be moving slightly in different directions in order to optimise the quality of the acquired X-ray images. Different catheters are needed to study the various coronary arteries. One will be removed and the next introduced through the sheath positioned in your groin. Exchanging catheters is usually painless.

In some cases, the Cardiologist may find it necessary to directly proceed to angioplasty and stent implantation (also known as Percutaneous Coronary Intervention) after coronary angiography has been completed, in which case the puncture site(s) will not be sealed but the procedure will be extended into PCI. You will have been informed of this possibility at the time of giving your consent, and you will have also been given the relevant information leaflet.

After all the required X-ray images have been obtained, the cardiac catheter and sheath will be removed. If the wrist artery was used then a special pressure band will be applied around your wrist for about **2 to 4** hours to ensure that the puncture site has healed well. If the groin artery was used, then the artery will be sealed either with a special closure device or with direct manual pressure. You will then be moved out of Cathlab and transferred back to your room or to the Cardiac Care Unit if the Cardiologist has felt that you require closer monitoring after your coronary angiogram procedure.

Before you are discharged, the Cardiologist will explain to you the results of the procedure, the available treatment options and the follow up arrangements.

You will most likely be allowed home within four to six hours. Some people may need to stay in hospital longer for further monitoring. The X-ray dye will be excreted through your kidneys.

## **Are there any risks involved?**

Coronary Angiography is an extremely safe procedure, particularly when performed by an experienced cardiologist of the Hadi Clinic calibre. However, as it is an invasive procedure, there are some risks but serious problems are scarcely rare. It is important to keep in mind that the vast majority of people suffer no complications, and that the procedure benefits usually far outweigh the potential risks. Please read through your consent form, which contains a list of the potentially serious risks of the procedure, then discuss with the Cardiologist any questions or concerns that you may have about coronary angiography.

## **Treatment options for Coronary Artery Disease**

If the Coronary Angiogram procedure demonstrates that your coronary arteries are completely normal, then no treatment will be needed. However, if the procedure reveals that you have Coronary Artery Disease, the treatment usually involves medical management (taking tablets). In addition, the Cardiologist may recommend either coronary angioplasty and stent insertion or Coronary Artery Bypass Graft open heart surgery, depending on the extent of the blockages in your coronary arteries.

### **Medical Management (taking tablets):**

If your angiogram confirms that you have coronary artery disease, the Cardiologist will prescribe a number of medicines to relieve any symptoms and reduce the risk of a heart attack. A small daily dose of aspirin and cholesterol-lowering medicine are usually prescribed. Other medicines may be recommended to slow your heart rate, widen your blood vessels and/or lower your blood pressure.

**Coronary Angioplasty and stent insertion:**

Coronary angioplasty improves blood flow to your heart by using a special balloon to dilate the narrowed artery in a procedure similar to a coronary angiogram. A small expandable metal tube called a stent is implanted at the balloon-dilated site to keep the artery open.

**Coronary Artery Bypass Grafting:**

This is open heart surgery and is performed under general anaesthesia. A healthy section of blood vessel from your leg or interior chest wall, or sometimes your forearm, is grafted to your coronary artery beyond its narrowed part. The blood can then detour through the conduit vessel past the narrowing to provide oxygen and nutrients to your heart muscle.

## Reducing your future risk of Coronary Artery Disease

The best ways to prevent Coronary Artery Disease from getting worse are to:

- Take your medicines as prescribed
- Stop smoking if you are a smoker
- Enjoy healthy nutrition (eat less sugary and fatty foods, and more lean meat, fresh vegetables & fruits)
- Achieve and maintain a healthy body weight
- Be physically active – take regular moderate exercise on a daily basis
- If you have high blood pressure, ensure you have it adequately treated
- If you have diabetes, ensure that your sugar levels are always within the normal range
- Maintain your psychological and social wellbeing – our Wellness Centre will provide you with information and help if required

## Further information

For more information, call our Cardiology Centre on **66 88 40 35** between **8 am** and **8 pm** (Saturday to Thursday)