



all about
**Cardiac Catheterisation
And Percutaneous
Coronary Intervention (PCI)**



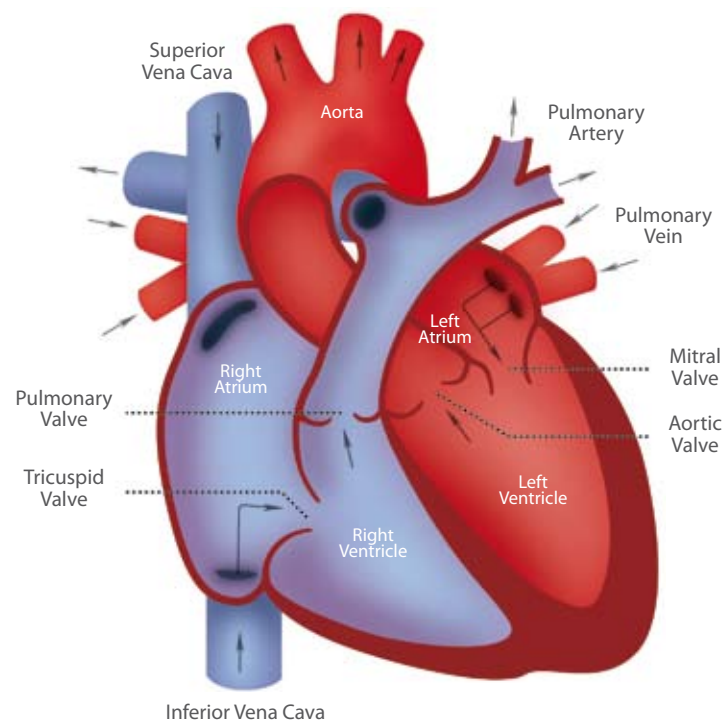
Changi
General Hospital
SingHealth

The Heart

The heart is a muscular pump. It is located within the chest and lies beneath and to the left of the breastbone. Its normal size is about that of a man's fist.

The heart has four chambers. It has two chambers (atria) which collect blood while two others (ventricles) are muscular pumps that send blood to various parts of the body.

Like any other organ, the heart must also be supplied with oxygen-rich blood. The heart gets its supply of oxygen with blood from three coronary arteries, two on the left side and one on the right side.



Coronary Artery Disease (CAD)

The blood vessels of the heart are called coronary arteries. Sometimes, fatty material from cholesterol build-up may narrow the blood vessels of the heart. This narrowing reduces the amount of oxygen supply to the heart, causing chest discomfort or pain (angina). Other symptoms of CAD include irregular heartbeat, breathlessness and tiredness.



Prolonged chest pain occurs when the narrowed arteries are blocked off suddenly and completely. This is due to the lack of oxygen to the heart muscle resulting in their death – a condition called myocardial infarction or more commonly, heart attack.

Medical research has identified some risk factors for CAD. People with the following risk factors have a higher chance of developing CAD:

- Diabetes
- High blood pressure
- Smoking
- High cholesterol
- Overweight
- Lack of exercise
- Stress
- Family history of heart disease

What Is Cardiac Catheterisation?

A cardiac catheterisation is an invasive, non-surgical procedure done to study the arteries that bring blood to the heart muscle and to check the function of the main pumping chamber of your heart.

During the procedure, a small hollow tube (catheter) is inserted into an artery (blood vessels) of the wrist or groin. The catheter is then passed through the blood vessel into a heart chamber or to an artery supplying blood to the heart.

Special X-ray dye or contrast is injected through the catheter into the arteries. This will outline the coronary arteries to show any existing blockages or narrowing.

This procedure is done under local anaesthesia. Most patients have minimal discomfort during cardiac catheterisation. However, you may feel a transient hot flushing sensation when dye or medications are injected into the heart or your arm.

Possible Risks

- 1. Bruise**
Bruising around the point of puncture. It will usually disappear after two to four weeks.
- 2. Vascular injury**
Injury to the blood vessel may occur.
- 3. Bleeding**
Blood oozing or formation of clots at the injection site causing a swelling may occur.
- 4. Allergic reaction to the dye**
Some patients may develop an allergic reaction to the dye used. The doctor may give you an injection to counter this reaction if it occurs.

5. Infection

Infection at the insertion site may occur although this is rare.

6. Rare complications

Renal impairment, heart attack, abnormal heart rhythms, stroke or death may occur although these are rare. (About 0.1%-0.4%)

Before Your Procedure

Your procedure may be done as a Day Surgery or you might be admitted to the ward.

Your doctor or nurse will give you specific instructions about what you can or cannot eat or drink before the procedure.

If you have cough or fever two days before the procedure, please call our appointment centre at tel: 6850 3333 to change your procedure date.

Pre-admission testing

Most patients will need to have a routine chest X-ray, blood tests and electrocardiogram performed within two weeks before the procedure.

Medications

Take your routine medications including aspirin with sips of water as per instructions from your nurse or doctor on the day of procedure.

If you have diabetes, ask your doctor or nurse how to adjust your diabetes medications for the procedure. For example, if you are taking Metformin, you may be advised by your doctor to stop this medication before the procedure and re-start this medication after the procedure.

If you are taking blood-thinning medications such as Warfarin, check with your doctor about when to stop taking these medications.

The Procedure

Other preparations at home

- Fast for 6 hours before the procedure.
- Take a shower before you come to the hospital.
- Leave all valuables at home when you come for your procedure.

While you are at the hospital

The procedure usually takes about 30 minutes, but the preparation and recovery time add several hours. Plan on being at the hospital at least half a day for the procedure.

Most scheduled procedures are performed on time. However, your scheduled procedure time may be delayed if there are emergency cases.

At discharge from the Day Surgery ward, please arrange for someone to bring you home. You may not drive for 24 hours following the procedure.

Prior to the procedure, you will be asked to sign several consent forms stating that you understand the procedure and the risks. You can ask your doctor any questions you may have before undergoing the procedure.

Inform your doctor and nurse if you have any allergies to any medications, especially iodine, alcohol, shellfish, X-ray dye, plasters, or if you have a history of bleeding problems.

To prepare you for the procedure, an intravenous cannula (IV) will be inserted, usually in your left arm. The hair at the puncture site (groin and wrist) will be shaved. If required, a sedative will be given to you before or during your procedure. It will help you to be calm.

You will be given a hospital gown to wear before going to the Cardiac Catheterisation Laboratory.

At the Cardiac Catheterisation room, you will be assisted on to a narrow table and connected to a ECG machine and monitors to check your heart rhythm and blood pressure.

The puncture sites will be cleaned with cleansing solution and you will be covered with sterile sheets.

You will be awake and conscious during the procedure.

The sites will be numbed with an injection of local anaesthetic and catheters will be inserted through a plastic sheath into the arm or leg artery.

Once a catheter is in place, dye is injected through it and X-ray pictures are taken.

Try to remain as still as possible throughout the procedure and follow the cardiologist's instructions.

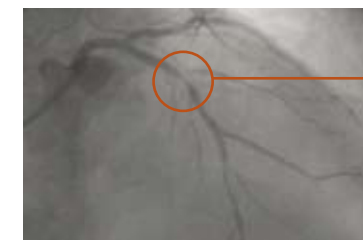
You may experience hot flushes but these feelings should go off quickly. If it persists, inform your doctor and nurse.

Your doctor may ask you to take a deep breath, hold your breath or cough during the procedure.

Once the X-ray images are taken, the catheter and sheath will be removed.



Normal
Coronary Arteries



Narrowing of the
blood vessel

Single Vessel
Disease

After The Procedure

Your doctor will decide if you are able to return home or will need to stay overnight. In either case, you will be monitored for several hours after the procedure.

If the procedure is done via the hand approach, you will be observed for a few hours and discharged home if you are well. Inform the nurse if you think you are bleeding or feel any numbness or tingling in your fingers. You will be given instructions regarding how to care for your hand when you return home.

If the procedure is done via the groin approach, you will need to lie flat and keep the leg straight for six hours. The nurse will check on your groin bandage regularly. Inform your nurse if you feel pain, wet and warm sensation over your bandage or if your toes begin to tingle or feel numb. If you have to cough or sneeze, apply gentle pressure at the groin site with your palm. You will be given instructions regarding how to care for your groin and leg when you return home.

You will need to drink plenty of fluids to clear the dye from your body, unless you have been instructed to restrict your fluids.

Your doctor will discuss your results, medications and treatment options with you prior to discharge. Please ask your doctor if you have any questions about your procedure findings.

Your nurse will advise you on care of the wound site, activity and follow-up care.

You should avoid strenuous activity and heavy lifting for 24 hours.

Please contact the Cardiac Catheterisation Laboratory at tel: 6850 3814 during office hours or seek treatment at A&E after office hours if you have:

- Swelling, bleeding around the wound
- A change in sensation or feeling in your leg/hand
- A hard lump forming at the puncture site

What Is Percutaneous Coronary Intervention (Angioplasty and Stenting)?

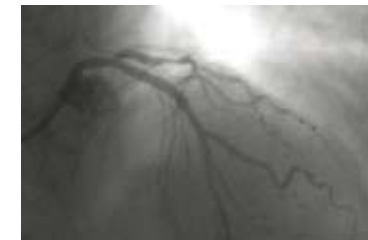
Angioplasty (ballooning) and stenting is a treatment procedure that unblocks narrowed coronary arteries. A small, hollow metal (mesh) tube called a “stent” is placed in the artery to keep it open following initial balloon dilation. The stent remains permanently in the artery, reducing the risk of the blockage or narrowing from recurring. Angioplasty is similar to an angiogram but takes longer to perform.

If you have had an angioplasty done, you will be transferred to a special cardiac care unit for an overnight stay. The nurse in the unit will continue to monitor your condition closely. Most patients go home the following day after an angioplasty.

Your medications will be reviewed and may be changed. Almost always your treatment will include both aspirin and another blood thinning drug. Treatment, including medications, dietary changes and further procedures will be discussed with you prior to your discharge. Your doctor will discuss with you when to return to work, resumption of regular physical activity and follow-up care.



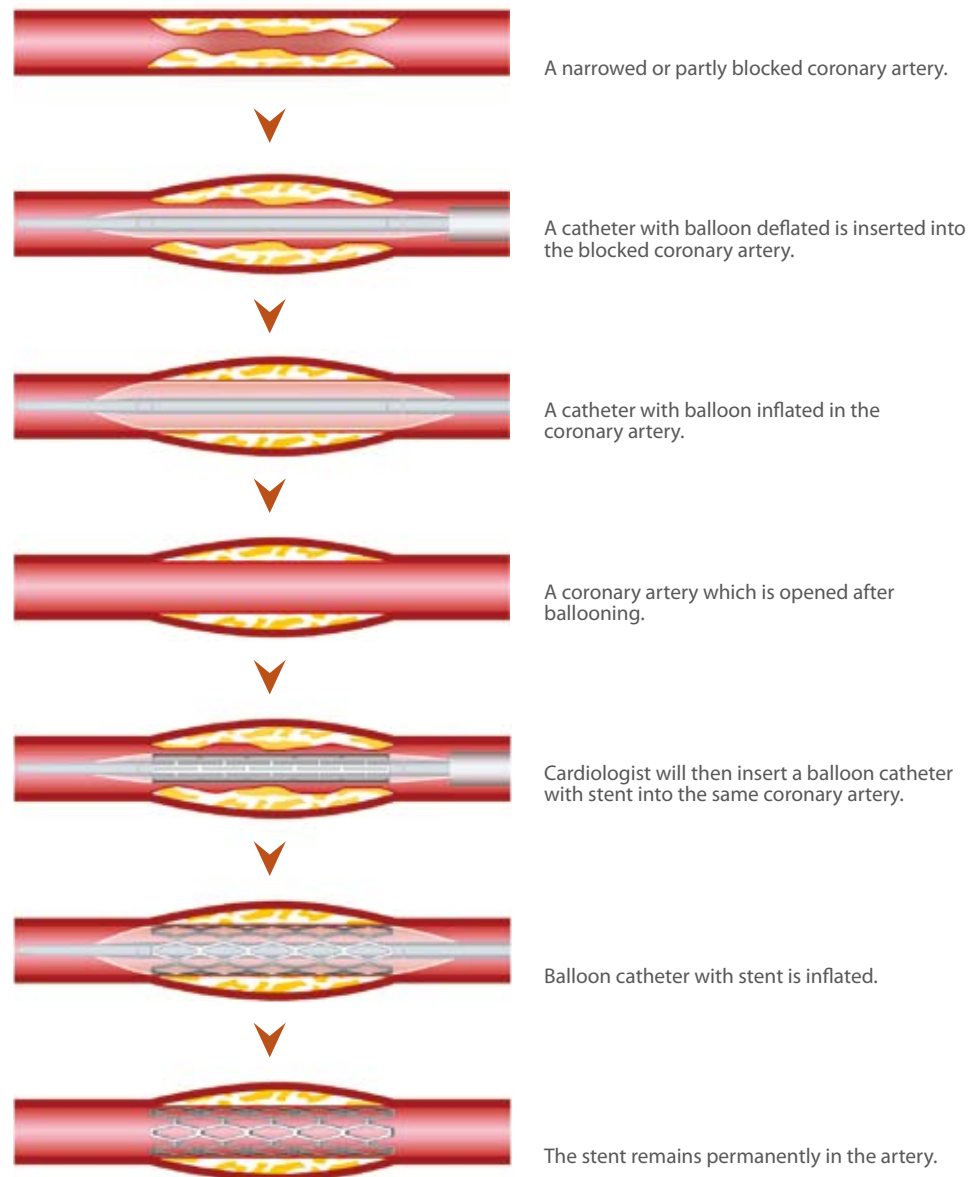
Stent Deployed



Result after Stenting

How A Stent Is Inserted

Here is an illustration to explain the angioplasty (ballooning) and stenting procedure.



Ask-a-CGH Nurse Internet Service

Changi General Hospital has an Ask-a-CGH Nurse Service on our Internet website.

This service is an additional avenue for you to ask questions about health-related concerns. The service is provided by our team of experienced nurses, in consultation with our medical specialists and paramedical staff. This service is not intended to substitute medical advice or consultation.

To use this service, go to our website at <http://www.cgh.com.sg> and click "Ask-a-CGH Nurse" to submit your question. You will hear from us within three working days.

Interactive Patient Guide www.cgh.com.sg/ipg

CGH is pleased to introduce the Interactive Patient Guide (IPG) – Singapore's first online interactive health education system.

Developed by our team of clinical specialists, IPG provides an exciting multimedia alternative to health-related information.

IPG features a list of common medical conditions, treatments, procedures, post procedures and aftercare through videos and printable text.

The video clips allow you to see exactly how a procedure is carried out or details of a health condition. For greater convenience, print-friendly versions are also available so that you can print and read at your own pace.

With IPG on the Internet, you can explore it anytime you want, in the comfort of your own home and even share it with your family and friends.

Log on today!
Interactive Patient Guide www.cgh.com.sg/ipg

For appointments and enquiries,
please call the CGH Appointment Centre at
Tel: (65) 6850 3333

CGH Appointment Centre operating hours:

8.30 am to 8.00 pm (Monday to Friday)

8.30 am to 12.30 pm (Saturday & Sunday)

Closed on Public Holidays

For more information, please visit
<http://www.cgh.com.sg>



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All information is valid at the time of printing (December 2009)
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