



For enquiries and appointments,
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Service Hours

Monday to Friday 9:00 am – 5:00 pm

Saturday 9:00 am – 1:00 pm

Closed on Sundays and Public Holidays

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Saturday 10:00 am – 1:00 pm

Closed on Sundays and Public Holidays

Consultation by Appointment

☎ For emergency, please contact us through

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Diagnosis & Treatment of Coronary Artery Disease



養和醫療集團成員 Members of HKSH MEDICAL GROUP

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HKSH Cardiology Centre

Coronary artery disease is the most prevalent amongst cardiovascular diseases. The coronary arteries supply the heart muscle with oxygen and nutrients. When atherosclerotic plaque builds up on the vessel walls, or blood clots form in the lumen, the arteries narrow or become blocked. The reduced blood flow deprives the heart muscle of oxygen and nutrients, causing ischaemic heart disease.

Cardiac catheterization and coronary angiography are invasive "gold standard" procedures used to diagnose coronary artery disease. Balloon angioplasty and stent implantation is an interventional therapeutic procedure commonly performed to open up clogged arteries. In many cases, if blockages are detected, therapeutic procedures are performed immediately in the same session.

The Diagnosis

Cardiac Catheterization & Coronary Angiography

What is the Purpose of Cardiac Catheterization & Coronary Angiography?

Cardiac catheterization and coronary angiography provide important information about the structure and function of the heart, and determine if there is a blockage in one's coronary arteries. Based on the findings of the angiography, doctors can choose the most suitable treatment regimen for their patients. One of the treatment options is balloon angioplasty and stenting.



How to Prepare for the Procedure

1. You will be admitted to the hospital either on the day of the procedure or one day prior
2. Take the pre-procedural medications as prescribed. You are required to notify your doctor of any other drugs you are currently taking so that your doctor can make any necessary adjustments
3. Routine blood tests and electrocardiogram (ECG) will be undertaken on the day of admission. You should inform your doctor of any allergies, especially allergies to iodine, seafood, X-ray dye or medications
4. If a trans-femoral procedure (access from the groin) is more suitable, nursing staff will cleanse and shave at the site (groin) to facilitate insertion of the catheter and help prevent infection
5. No eating and drinking at least four to six hours before the procedure

How Is the Procedure Performed?

1. An intravenous (IV) needle and a catheter will be placed in the vein of your forearm. IV fluids or medications can be administered quickly and easily through this catheter if necessary
2. A mild sedative drug may be given to help you relax at the discretion of your doctor
3. You will be transferred to the Cardiac Catheterization & Intervention Centre for the procedure. Before the procedure, you must have an empty bladder
4. You will be connected to a device that monitors rhythm and oxygen content
5. A disinfectant will be used to cleanse the puncture site. You may be asked to put your hands alongside your body or above your head
6. Coronary angiography is performed under local anaesthesia. A small puncture is usually made in the wrist (trans-radial approach) or groin (trans-femoral approach). A sheath is inserted into the opening and a catheter is advanced through the sheath into the coronary artery

7. After a dye is injected, the coronary arteries will come into view under X-ray. This allows the doctor to assess if there is any narrowing or blockage of the coronary arteries. Nowadays, balloon angioplasty and stenting is usually performed to open the clogged arteries right after the diagnostic procedures



8. Your doctor may ask you to take a deep breath in and hold it for a few seconds in order to obtain clear pictures of your heart



9. You may experience a transient “hot flush” when the X-ray dye runs through the heart, especially with a higher dosage (~20-30ml) for left ventriculography. This feeling is normal. There is no need to worry
10. You will be fully awake during the procedure. You should inform the doctor of any discomfort

What Happens after the Procedure?

1. The sheath will be removed immediately after the procedure with the assistance of a device such as C-clamp or closure device to stop bleeding. Alternatively, the doctor will apply firm and direct pressure for 10-15 minutes over the puncture site in order to stop the bleeding. A pressure dressing will be applied afterwards
2. Lie flat in bed for at least six hours after the operation
3. The nurse will check your blood pressure, pulse, puncture site and foot sensation frequently
4. Stay lying flat in bed with the leg straight. Do not try to bear down, strain or sit up until instructed by the nurse or doctor
5. If you cough or sneeze, gentle pressure should be applied to the dressing site with the fingers to prevent bleeding
6. If there is blood on the dressing or a numb / painful sensation in the area of the puncture or the lower limb / hand, call a nurse at once
7. You may resume eating after the procedure. Increasing fluid intake will help flush the X-ray dye from your body more quickly

* If the condition is stable and there is no bleeding from the puncture site, you may be discharged on the same day or early next day (at the discretion of your attending doctor).



Going Home

1. Shower as usual
2. Keep the puncture site clean and dry
3. Do not lift heavy objects, do strenuous exercise or bear down (in the case of groin approach) for two weeks
4. Seek immediate medical attention if there are signs of swelling, redness or heat over the wound

The Treatment

Balloon Angioplasty & Stenting

What is the Purpose of Balloon Angioplasty & Stenting?

Balloon angioplasty and stenting, medically known as Percutaneous Transluminal Coronary Angioplasty (PTCA) and Stenting (PTCS), is usually performed after coronary angiography in the same sitting to open narrowed or blocked coronary arteries. A small inflatable balloon mounted on a catheter is used to compress the plaque against the wall of the blood vessel. In this way, the diameter of the vessel is increased and normal blood flow is restored. To reduce post-procedural re-narrowing of coronary arteries over time, doctors may recommend placing stents (small mesh metal tubes) in patients' coronary artery to keep it patent. Newer drug-eluting stent systems can reduce the incidence of re-narrowing as low as 5%.

Adjunctive devices such as high speed rotational atherectomy (for calcified blood vessels), directional coronary atherectomy, filter wire (distal protection device) and thrombectomy are sometimes employed to help in complex coronary interventions.



How to Prepare for the Procedure

1. You will be admitted one day before the operation or on the same day for basic investigations such as blood tests and electrocardiogram (ECG)
2. You should inform your doctor about your current medications so necessary adjustments can be made. Only prescribed medications should be taken after admission

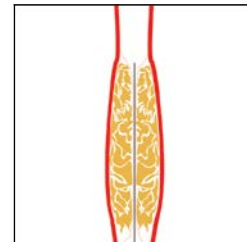
3. You should inform your doctor of any allergies to seafood, medications (e.g. aspirin) or X-ray dye
4. Nursing staff will cleanse and shave the groin area if a groin puncture is planned
5. No eating or drinking at least six to eight hours before the operation

How is the Procedure Performed?

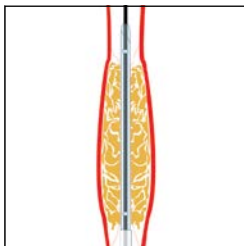
1. An intravenous (IV) needle and a catheter will be placed in the vein of your forearm. IV fluids or medications can be administered quickly and easily through this catheter if necessary
2. A mild sedative may be prescribed to help you relax at the discretion of your doctor
3. You will be transferred to Cardiac Catheterization & Intervention Centre. Before the procedure, you must have an empty bladder. A Foley's catheter may be inserted and kept until the day after the procedure
4. You will be connected to a device that monitors rhythm and oxygen content
5. A disinfectant will be used to cleanse the puncture site. You may be asked to put your hands alongside your body or above your head
6. The procedure is performed under local anaesthesia. A small puncture is usually made in the wrist (trans-radial approach) or groin (trans-femoral approach). A sheath is inserted into the opening and a catheter is advanced through the sheath into the coronary artery. You will be awake during the procedure

The Balloon Angioplasty Procedure

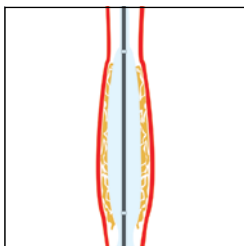
7. A guide wire crosses the narrowing and acts as a rail for the balloon catheter and other devices to pass over



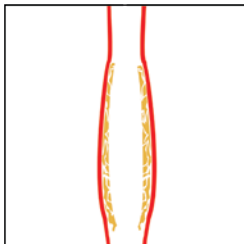
8. A balloon catheter is then advanced through the lesion under X-ray guidance



9. The balloon is inflated, compressing the plaque against the artery wall. You may experience chest discomfort when the balloon is inflated. The discomfort will subside when the balloon is deflated

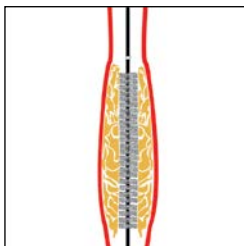


10. Once the plaque has been compressed and the artery has been opened sufficiently, the balloon catheter will be deflated and removed

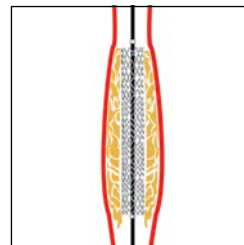


The Stenting Procedure

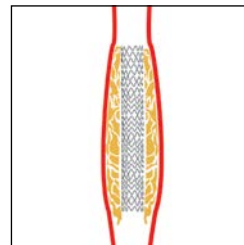
11. The stent (mounted on a balloon catheter) is advanced into the lesion



12. The delivery balloon is inflated and the stent will be expanded. In some cases, the placement of more than one stent may be necessary



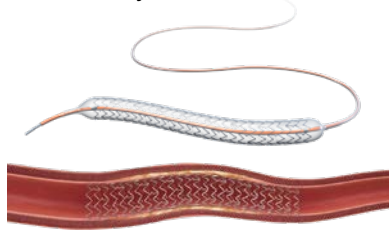
13. The balloon is deflated and withdrawn. The stent stays in place permanently, keeping the vessel open and improving the blood flow



What Happens after the Procedure?

1. After the procedure, you will be transferred to the ward or Intensive Care Unit for close monitoring
2. While you are in bed, a nurse will check your puncture site and vital signs frequently
3. If a trans-radial procedure is performed, you may be able to move around shortly after the procedure
4. If a trans-femoral procedure is performed, you should lie in bed with your face up and keep your leg straight to prevent bleeding or haematoma formation. Do not bend your leg or move it forcefully
5. Your doctor will usually remove the sheath on the operation day
6. You may resume eating after the procedure. Drinking lots of fluid can help flush the dye from your body as quickly as possible

7. If lying still gives you back pain, the nurse can make you more comfortable by elevating the head of the bed slightly and administering pain medication
8. If the chest pain persists or increases in intensity, inform the nurse or your doctor immediately



Sheath Removal (for Trans-Radial Procedure)

1. The sheath will be removed manually by your doctor immediately after the procedure
2. Firm and direct pressure will be applied by a TR-Band over the puncture site to stop bleeding. The force of pressure will be gradually reduced by your doctor or nurse
3. The nurse will examine your puncture site regularly
4. A pressure dressing will be applied over the puncture afterwards



Sheath Removal (for Trans-Femoral Procedure)

1. The sheath will be removed by your doctor with the assistance of a device such as C-clamp a few hours after the procedure to stop bleeding. Your doctor may also apply firm and direct pressure over the puncture site to stop bleeding
2. For patients with both arterial and venous sheaths, it will usually take about 15 to 20 minutes to stop bleeding

3. The force of pressure over the puncture site will be gradually reduced by your doctor or nurse
4. Our nurse will check your foot pulse frequently and report to your doctor
5. A pressure dressing will be applied over the puncture site once bleeding is stopped

How to Care for the Puncture Site after Sheath Removal

For Trans-Radial Procedure

1. You may sit up and move around after the procedure
2. Avoid physically demanding activities and heavy lifting
3. If the puncture site feels warm, wet, numb or painful, call a nurse at once

For Trans-Femoral Procedure

1. Lie flat in bed and apply gentle pressure on the puncture site with your fingers, especially when you want to move around
2. Do not try to bear down, strain or sit up until instructed by the nurse or doctor. If you happen to cough or sneeze, gently press on the puncture site with your fingers to prevent bleeding
3. If the puncture site feels warm, wet, numb or painful, call a nurse at once
4. You may get out of bed the next day with the doctor's permission

Going Home

1. You will be discharged home in one to two days
2. Your doctor will prescribe medications to prevent clogging of the stents (e.g. clopidogrel and aspirin). Take these medications as directed
3. Shower as usual
4. Keep the puncture site clean and dry
5. Do not lift heavy objects, do strenuous exercise or bear down for two weeks
6. Seek immediate medical attention if there are signs of swelling, redness and heat over the wound
7. Quit smoking