

Cardiac Catheterization

What is cardiac catheterization?

Cardiac catheterization is a procedure used to diagnose and treat cardiovascular conditions. During cardiac catheterization, a long thin tube called a catheter is inserted in an artery or vein in your groin (femoral artery), or forearm (radial artery) and threaded through your blood vessels to your heart. Using this catheter, doctors can then do diagnostic examinations as part of a cardiac catheterization. Some heart disease treatments, such as coronary angioplasty, also are done using cardiac catheterization.

Usually, you'll be awake during cardiac catheterization, but given medications to help you relax. Recovery time for a cardiac catheterization is quick, and there's a low risk of complications.

Why do you need it?

Cardiac catheterization is done to see if you have a heart problem, or as a part of a procedure to correct a heart problem your doctor already knows about it. If you're having cardiac catheterization as a test for heart disease, your doctor can:

- Locate narrowing or blockages in your blood vessels that could cause chest pain (angiogram).
- Find out the amount of oxygen in your heart (hemodynamic assessment).
- Test the pressure inside your heart.
- Diagnose heart defects present from birth (congenital heart defects).
- Look for problems with your heart valves.

Cardiac catheterization is also used as part of some procedures to treat heart disease. These procedures include:

Angioplasty with or without stent placement: Angioplasty involves temporarily inserting and expanding a tiny balloon at the site of your blockage to help widen a narrowed artery. Angioplasty is usually combined with implantation of a small metal coil called a stent in the clogged artery to help prop it open and decrease the chance of it narrowing again (restenosis).

Risks?

As with most procedures done on your heart and blood vessels, cardiac catheterization has some risks. Major complications are rare, though. Risks of cardiac catheterization are:

- Bruising
- Bleeding



- Heart attack
- Stroke
- Damage to the artery where the catheter was inserted that may require medical attention (pseudoaneurysm)
- Irregular heart rhythms (arrhythmias)
- Allergic reactions to the dye or medication
- Tearing the tissue of your heart or artery
- Kidney damage
- Infection
- Blood clots

If you are either pregnant or planning to become pregnant, tell your doctor before having cardiac catheterization performed.

How to prepare before the procedures?

Cardiac catheterization is usually performed in the hospital. The examination requires some preparations. To prepare for your examination:

- Don't eat or drink anything for 8 to 12 hours before your examination, or as directed by your doctor. Having food or drink in your stomach can increase your risk of complications from anesthesia or sedation. Ask your doctor or nurse if you should take your medications with a small amount of water. If you have diabetes, ask for instructions about diabetes medications and insulin. You will usually be able to have something to eat and drink soon after your test.
- Take all your medications and supplements with you to the examination. It's best if you take the original bottles, bags of medicine or sheet of prescription so that your doctor will know the exact dose you take.
- Try to relax. It's common for people who are having a cardiac catheterization to feel anxious or nervous. You'll be given medications to help you to relax. It's possible that the test will reveal that you need a procedure such as angioplasty immediately, or that you could have a side effect from the medication given to you during the catheterization. Being nervous may cause your heart to beat more quickly or irregularly and may lead to unexpected complications.
- Once you have admitted into hospital for catheterization, you'll receive a series of tests about your physical condition. You'll be given an informed consent and asked to sign after you read it cautiously. You'll be received skin preparation including shaving of hairs, if groin route will be used. You'll be asked to remove dentures and may need to remove jewelry, especially necklaces that could interfere with pictures of your heart. You'll wait in a pre-operating room until it's time for your procedure — you can often have someone wait there with you. Any history of drug allergy you should tell to the doctor before the procedure.

What do you need to know about the procedure?

During the procedure, cardiac catheterization is done in a special operating room called a catheterization lab. The catheterization lab has special X-ray and imaging machines that normal operating rooms don't have.

Cardiac catheterization is usually performed while you're awake, and sometimes sedated. An intravenous (IV) line will be inserted in your hand or arm opposite to the arm used for cardiac catheterization, and will be used to give you any additional medications you might need during your procedure. You will also have monitors (electrodes) placed on your chest to check your heartbeat during the examination.

Before the procedure, a nurse or technician may shave the hair from the site where the catheter will be inserted if femoral approach used. Before the catheter is inserted in your artery, you'll be given a shot of anesthetics to numb the area. You may feel a quick, stinging pain before the numbness sets in.

After you feel numb, a small cut of skin and needle puncture with guide wire threading into artery or vein was done. A plastic sheath will be inserted then remove the needle and wire to allow your doctor to insert the catheter for further examination.

The following procedure depends on why you need a cardiac catheterization:

- **Coronary angiogram.** If you're having this examination to check for blockages in the arteries leading to your heart, a dye will be injected through the catheter, and X-ray images of your heart arteries will be taken. In a coronary angiogram, the catheter is usually placed in the artery in your groin or wrist.
- **Right heart catheterization.** This procedure checks the pressure and blood flow in the right side of your heart. For this procedure, the catheter is inserted in the artery and vein in your neck or groin. The catheter has special sensors in it to measure the pressure and blood flow in your heart.
- **Balloon angioplasty with or without stenting.** This procedure is used to open a narrowed artery in your heart. The catheter will likely be inserted in the artery in your arm of groin for this procedure. A long, flexible catheter with will be threaded through your arteries and engaged into the orifice of the narrowed coronary artery. Then, a smaller balloon catheter will be led through the flexible catheter with balloon guiding wire and inflated at the narrowed area to open it. In many cases, your doctor will also place a mesh coil called a stent at the narrowed portion to help keep the artery open.

You'll be awake during the procedure so that you can follow instructions. Throughout the procedure you may be asked to take deep breaths, hold your breath, cough or place your arms in various positions. Your table will be moved for



different direction during the procedure.

Threading the catheter shouldn't be painful, and you won't feel it moving through your body. Tell your doctor if you have any discomfort.

Any procedures different from above you just do not hesitate to ask your doctor for details.

After the procedure:

It usually takes several hours to recover from a cardiac catheterization. After your procedure is finished, you'll be taken on a gurney to a recovery room while the anesthesia wears off. This usually takes about an hour. The plastic sheath inserted in your groin, neck or arm will be removed soon after the procedure unless you need to stay on blood-thinning medication (anticoagulants).

After you leave the recovery room, you'll go back to a ordinary room of the hospital. After your catheter is removed, the technician or nurse will apply pressure to the insertion sites for hemostasis. You'll need to lie flat for four to six hours after the procedure to avoid serious bleeding if femoral approach used and to allow the artery to heal.

You'll be able to eat and drink after the procedure. The length of your stay in the hospital will depend on your condition. You may be able to go home the same day as your catheterization, or you may need to stay overnight or longer. Longer stays are common if you have a more serious procedure immediately after your catheterization, such as angioplasty and stent placement.

Trans-radial situation:

The wound at wrist will be compressed by specially designed bungee belt for 3-4 hours. Place your hand outside the quilt, in order to notice wound bleeding earlier. Keep your wrist above your heart and do not push or lift anything heavy. You can have your food when your return to your room. If you feel any discomfort, including wrist numbness, finger cyanosis, inform nursing staff immediately. Do not release the bungee belt by yourself.

Trans-femoral situation:

If you received exam through groin route, you need to rest on bed in supine position for 6 hours, and the wound will be compressed for 4 hours. If you feel any discomfort, including foot numbness, dizziness, chest pain, inform nursing staff immediately. You'll be asked to stay on bed include eating and you cannot use toilet in these 6 hours. Nursing staff will help you if you need to emit urine. Be sure there is an adult company, when you get out of bed after 6 hours.



Day after the Procedure:

You may resume normal daily activities the following morning after your procedure.

1. Resume your low-fat, low-cholesterol diet upon discharge from the hospital.
2. To help eliminate the contrast material from your body, we encourage you to increase your fluid intake following your catheterization procedure. (8-10 eight (8) oz. non-alcoholic fluids), i.e., water, juice.
3. Wear loose fitting clothing over the catheter insertion site for the next 72 hours.
4. Remove all bandages or dressings the morning after the procedure. Keep the catheter insertion site clean and dry.
5. You may take a shower the morning after the procedure. Avoid immersing the insertion site in water. Wash the insertion site with soap and water and then pat dry. Do not apply powder, perfumes or ointments in the area. Avoid activities such as swimming or sitting in the hot tub until the catheter insertion site has completely healed. This healing process takes approximately seven days.
6. You may have a small knot (not larger than the size of a quarter) in the groin. You may also have a bruise in the groin, near the insertion site. This will gradually go away.
7. The incidence of bleeding after you have completed your bed rest is rare. However, if bleeding occurs, it requires immediate attention. If you see blood or notice pain and tenderness accompanied by an enlarged knot that gets progressively larger, it means that you may have started to bleed. If this should occur, lie down flat and have someone apply firm pressure with both hands next to and above the incision for 15-20 minutes. Should swelling and/or bleeding continue while pressure is applied, it may be necessary to reposition the point of pressure. If the bleeding still persists, continue to hold pressure and call 119 (in Taiwan).
8. When at home following the catheterization if you start to experience chest pain, pressure, tightness or burning in the chest, arm, jaw or stomach call 119 (in Taiwan), they should take you immediately to the nearest emergency center.
9. Should you notice any of the following signs or symptoms; please notify your cardiologist.
 - Pain or swelling over the catheter insertion site
 - Numbness, pain or tingling in your ankles, knees, or toes
 - Redness or drainage from catheterization site
 - Fever or chills
10. You should avoid activities such as swimming or sitting in a hot tub until the catheter site has completely healed. The healing process takes about 7 days.