Cardiac Catheterization

A Patient's Guide to Cardiac Catheterization

What is cardiac catheterization?

Cardiac catheterization is a common, minimally invasive medical procedure that allows your doctor to take a closer look at the blood vessels that supply the heart muscle (coronary arteries), along with determining the pressures inside your heart chambers. This procedure can be used to diagnose or treat a variety of heart problems. It may also be done to treat some types of heart conditions, or to find out if you need heart surgery.

Your doctor may perform cardiac catheterization to diagnose or evaluate:

- Blockages in the blood vessels that could cause chest pain, called coronary artery disease
- Elevated pressures inside the heart
- Heart defects that are present at birth (congenital)
- High blood pressure in the lung vasculature (pulmonary hypertension)
- Heart valve disease
- Blot clots in the blood vessels

Other procedures may also be done during cardiac catheterization:

- Opening of blocked arteries in the heart (angioplasty with or without stenting)
- Repair of certain types of heart defects or replacement of heart valves
- Opening of a narrowed (stenotic) heart valve
- Sampling of heart tissue (biopsy)
- Measurement of pressure and oxygen levels in different parts of the heart During cardiac catheterization, a small, long, flexible, hollow plastic tube called a catheter is inserted into a blood vessel in the wrist, groin, or neck through a puncture made with a needle. Local anesthetic is applied to numb the insertion site first. The catheter is threaded through the major blood vessels and into the chambers of the heart and/or into the coronary arteries. Once the catheter is inserted, doctors can perform the necessary test(s) or treatment. The procedure is done in a catheterization laboratory (cath lab) and can last anywhere from 30 minutes to 3 hours, depending on the complexity of treatment.

Cardiac catheterization is safe for most people. Complications are rare but can include bleeding and kidney injury (from the dye used). Your doctor should have a detailed discussion with you about the risks and benefits of the procedure, as these vary depending on what is being planned.

How does cardiac catheterization work?

What happens during cardiac catheterization depends partly on the type of test or treatment your doctor has ordered. For example, a dye may be injected through the catheter to see the heart and its arteries (a test called coronary angiography or arteriography). Alternatively, electrical impulses may be sent through the catheter to study irregular heartbeats (tests called electrophysiology studies).

Regardless of what type of test or treatment will be done, you can expect the following:

- In the cath lab, you will lie on an examination table, which is usually near an x-ray camera, monitors, and machines.
- Small metal disks called electrodes will be placed on your chest. These electrodes have wires called leads, which hook up to an electrocardiogram machine. This machine will monitor your heart rhythm during the test.
- To prevent infection, you will be shaved and cleansed around the area of your leg or wrist where the catheter will be inserted.
- A needle with a tube connected to it will be put in your arm. This is called an intravenous line, or IV. You will get a mild sedative through the IV to relax you throughout the test.
- You will be given an anesthetic to numb the area around where the catheter is to be inserted. Once doctors see the vessel into which the catheter will go, a special needle is inserted into it. You should not feel pain during this part of the test.
- The catheter is gently threaded through the artery and into your heart. At this point, doctors may perform tests or another procedure. Once the doctors are finished, the catheter and IV will be removed. Firm pressure will be applied to the site where the catheter was inserted to stop any bleeding. You will also be bandaged.
- You will be moved to another room where you will need to rest for a few hours. You may feel a little sleepy until the sedative has worn off. If the procedure was done through your leg, you may need a few hours of bed rest.

Nurses will watch you to see that your heart rate and blood pressure are normal. After this time of rest, you will be able to go home.

How do I prepare for cardiac catheterization?

Knowing what to expect ahead of time will make your experience easier.

Your doctor will talk to you about how to prepare for the procedure, including:

- When to arrive at the hospital and where to go
- When you should stop eating or drinking
- If and when you should start or stop taking medicines
- How long you should expect to stay
- Instructions to follow after the procedure, including what medicines to take

You will be asked to provide important information:

- List any allergies to seafood or medicines.
- Report whether you have previously had a bad reaction to contrast dye or iodine.
- Indicate if you may be pregnant.

Some things to keep in mind:

- Before the procedure, your doctor may need to do diagnostic tests, such as blood tests, heart imaging tests, or a stress test, to determine how well your heart is working and to help guide the procedure.
- During the procedure, you may not be completely asleep.
- You may feel some discomfort or pressure where the catheter is placed. You may also have some discomfort from lying still during the test or from lying flat on your back after the procedure.
- Plan to have someone take you home after you have recovered from the procedure.

How will I know the results after the procedure?

If cardiac catheterization was done to diagnose a heart condition, your doctor should explain the results to you.

If your doctor finds a blockage during cardiac catheterization, he or she may treat the blockage with placement of a stent right away so that you will not need to have another catheterization procedure. Your doctor should discuss whether this is a possibility before the procedure begins.

Additional Resources

Merck Manuals – Cardiac Catheterization and Coronary Angiography

NHLBI, NIH – Cardiac Catheterization

Medline Plus Encyclopedia – Coronary Angiography

Medline Plus Encyclopedia – Cardiac Catheterization