

# CARDIAC/PERIPHERAL ANGIOGRAPHY

LANE REGIONAL MEDICAL CENTER





**changing** and **growing** with **you**

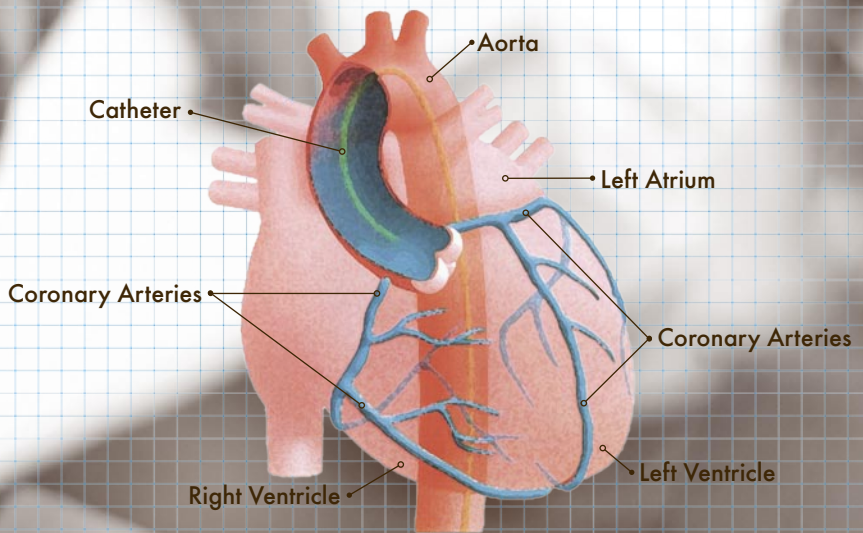




# CARDIAC/PERIPHERAL CATHETERIZATION

Cardiac Cath • Coronary Arteriogram • Coronary Angiogram

INJECTION OF DYE INTO CORONARY ARTERIES





## PROCEDURE OVERVIEW

### What is cardiac/peripheral catheterization?

Cardiac catheterization is performed to further diagnose coronary artery disease, valvular heart disease, congestive heart failure, and/or certain congenital (present at birth) heart conditions when other less invasive types of diagnostic tests indicate the presence of one of these conditions.

Peripheral catheterization is performed to further diagnose aortic aneurysms, renal artery disease, carotid artery disease, and peripheral artery disease (waist to toes), when other less invasive types of diagnostic tests indicate the presence of one of these conditions.

In catheterization, a very small hollow tube, or catheter, is advanced from a blood vessel in the groin. This catheter will be guided to the area of the body needing to be studied. Once the catheter is in place, several diagnostic techniques may be used. The tip of the catheter can be placed into various parts of the heart to measure the pressures within the chambers. The catheter can be advanced into the coronary arteries and a contrast dye injected into the arteries. The catheter can be advanced into almost any artery off of the aortic trunk.

The use of fluoroscopy (a special type of x-ray, similar to an x-ray “movie”) assists the physician in the location of blockages in the arteries as the contrast dye moves through the arteries.

An additional technique called intravascular ultrasound (IVUS), a technique that uses a computer and a transducer that sends out ultrasonic sound waves to create images of the blood vessels, may be used during a cath.

The person will remain awake during the procedure, although a small amount of sedating medication will be given prior to the procedure.

## REASONS FOR THE CARDIAC CATH PROCEDURE

A cardiac catheterization may be performed to assist in the diagnosis of the following heart conditions:

- atherosclerosis - a gradual clogging of the arteries over many years by fatty materials and other substances in the blood stream
- cardiomyopathy - an enlargement of the heart due to thickening or weakening of the heart muscle
- congenital heart disease - defects in one or more heart structures that occur during formation of the fetus
- congestive heart failure - a condition in which the heart muscle has become weakened to an extent that blood cannot be pumped efficiently
- valvular heart disease - malfunction of one or more of the heart valves that may cause an obstruction of the blood flow within the heart

A cardiac catheterization may also be performed if you have recently had an episode(s) of one or more of the following cardiac symptoms:

- chest pain or angina
- shortness of breath
- dizziness
- fatigue

If a screening examination such as an ECG or stress test suggests a possibility of some type of heart disease process that needs to be explored further, a cardiac cath may be ordered by your physician.

Other reasons for a cath procedure include evaluation of blood flow to the heart muscle if chest pain or angina occurs after the following:

- heart attack
- heart bypass surgery
- coronary angioplasty or placement of a stent

There may be other reasons for your physician to recommend a cardiac catheterization.

## REASONS FOR THE PERIPHERAL CATH PROCEDURE

A peripheral catheterization may be performed to assist in the diagnosis of:

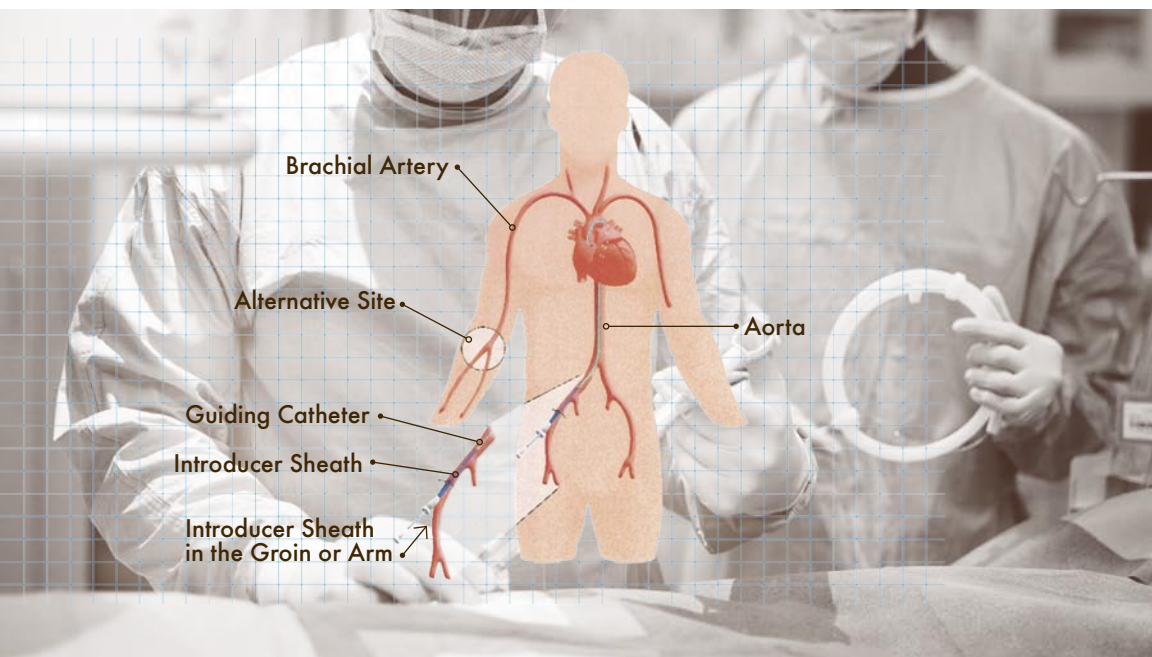
- atherosclerosis - a gradual clogging of the arteries over many years by fatty materials and other substances in the blood stream.

Atherosclerosis can occur in any artery of the body. A peripheral cath is performed on any body area other than the heart (cardiac). Arteries that can be viewed are: arms (upper extremities), legs (lower extremities), kidney, liver, intestine, and carotid. The catheter doesn't necessarily have to reach the area. The dye can be followed with the monitors.

Typically, ultrasound or CT testing is done before a catheterization. Symptoms warranting testing would be:

- 1) pain in leg, calf or buttocks when walking or at rest
- 2) ulcers from lack of circulation
- 3) gangrene from ulcers going untreated
- 4) cold leg or toe (no pulses)

Other reasons for a cath procedure would include evaluation of symptoms after a peripheral intervention (PTA/stent).



## RISKS OF THE PROCEDURE

Possible risks associated with catheterization include, but are not limited to, the following:

- bleeding at the catheter insertion site (usually the groin, but the arm may be used in certain circumstances)
- blood clot or damage to the blood vessel at or below the insertion site
- infection at the catheter insertion site
- problems with heart rhythm (usually temporary)
- ischemia (decreased blood flow to the heart tissue), chest pain, or angina
- stroke (rare)

If you are pregnant or suspect that you may be pregnant, you should notify your physician due to risk of injury to the fetus from a catheterization. Radiation exposure during pregnancy may lead to birth defects. If you are lactating, or , you should notify your physician.

There is a risk for allergic reaction to the cath dye. Patients who are allergic to or sensitive to medications, contrast dye, iodine, shellfish, or latex should notify their physician when discussing procedure options. Also, patients with kidney failure or other kidney problems should notify their physician when discussing procedure options.

There may be other risks depending upon your specific medical condition. Be sure to discuss any concerns with your physician prior to the procedure.

## BEFORE THE PROCEDURE

- Your physician will explain the procedure to you and offer you the opportunity to ask any questions that you might have about the procedure.
- You will be asked to sign a consent form that gives your permission to do the test. Read the form carefully and ask questions if something is not clear.



- Notify your physician if you have ever had a reaction to any contrast dye, or if you are allergic to iodine or seafood.
- Notify your physician if you are sensitive to or are allergic to any medications, latex, tape, and anesthetic agents (local and general).
- You will need to fast for a certain period of time prior to the procedure. Your physician will notify you how long to fast, usually overnight.
- If you are pregnant or suspect that you may be pregnant, you should notify your physician.
- Notify your physician if you have any body piercings on your chest and/or abdomen.
- Notify your physician of all medications (prescription and over-the-counter) and herbal supplements that you are taking.
- Notify your physician if you have heart valve disease, as you may need to receive an antibiotic prior to the procedure.
- Notify your physician if you have a history of bleeding disorders or if you are taking any anticoagulant (blood-thinning) medications, aspirin, or other medications that affect blood clotting. It may be necessary for you to stop some of these medications prior to the procedure.
- Your physician may request a blood test prior to the procedure to determine how long it takes your blood to clot. Other blood tests may be done as well.
- Notify your physician if you have a pacemaker.
- You may receive a sedative prior to the procedure to help you relax. If a sedative is given, you will need someone to drive you home afterwards.
- The area around the catheter insertion site (groin area) may be shaved.
- Based upon your medical condition, your physician may request other specific preparation.

## DURING THE PROCEDURE

A catheterization may be performed on an outpatient basis or as part of your stay in a hospital. Procedures may vary depending on your condition and your physician's practices.

Generally, a catheterization follows this process:

1. You will be asked to remove any jewelry or other objects that may interfere with the procedure. You may wear your dentures or hearing aids if you use either of these.
2. You will be asked to remove clothing and will be given a gown to wear.
3. You will be asked to empty your bladder prior to the procedure.
4. An intravenous (IV) line will be started in your hand or arm prior to the procedure for injection of medication and to administer IV fluids, if needed.
5. You will be placed in a supine (on your back) position on the procedure table.
6. You will be connected to an ECG monitor that records the electrical activity of the heart and monitors the heart during the procedure using small, adhesive electrodes. Your vital signs (heart rate, blood pressure, breathing rate, and oxygenation level) will be monitored during the procedure.
7. There will be several monitor screens in the room, showing your vital signs, the images of the catheter being moved through the body into the heart, and the structures of the heart as the dye is injected.
8. You will receive a sedative medication in your IV before the procedure to help you relax. However, you will likely remain awake during the procedure.
9. Your pulses below the catheter insertion site will be checked and marked so that the circulation to the limb below the site can be checked after the procedure.
10. A local anesthetic will be injected into the skin at the insertion site. You may feel some stinging at the site for a few seconds after the local anesthetic is injected.

11. Once the local anesthetic has taken effect, a sheath, or introducer, will be inserted into the blood vessel. This is a plastic tube through which the catheter will be inserted into the blood vessel and advanced into the heart. If the arm is used, a small incision (cut) may be made to expose the blood vessel for insertion of the sheath.

12. For cardiac cath, the catheter will be advanced through the aorta to the left side of the heart. Fluoroscopy will be used to assist in advancing the catheter to the heart. For peripheral cath, the catheter will be advanced to the appropriate area.

13. Once the catheter is in place, contrast dye will be injected through the catheter to visualize the arteries. You may feel some effects when the contrast dye is injected into the IV line. These effects may include a flushing sensation, a salty or metallic taste in the mouth, and/or a brief headache. These effects usually last for a few moments.

14. You should notify the physician if you feel any breathing difficulties, sweating, numbness, nausea and/or vomiting, chills, itching, or heart palpitations.

15. After the contrast dye is injected, a series of rapid, sequential x-ray images of the arteries will be made. You may be instructed to take in a deep breath and hold it for a few seconds during a cardiac cath.

16. Once sufficient information has been obtained, the catheter will be removed. The insertion site may be closed with a closure device that uses collagen to seal the opening in the artery, by the use of sutures, or by applying manual pressure over the area to keep the blood vessel from bleeding. Your physician will determine which method is appropriate for your condition.

17. If a closure device is used, a sterile dressing will be applied to the site. If manual pressure is used, the physician (or an assistant) will hold pressure on the insertion site so that a clot will form. Once the bleeding has stopped, a very tight bandage will be placed on the site. A small sandbag or other type of weight may be placed on top of the bandage for additional pressure on the site, especially if the site is in the groin.

18. You will be assisted to slide from the table onto a stretcher so that you can be taken to the recovery area.



## AFTER THE PROCEDURE

**In the hospital:** After the procedure, you may be taken to the recovery room for observation or returned to your hospital room. You will remain flat in bed for several hours after the procedure. A nurse will monitor your vital signs, the insertion site, and circulation/sensation in the affected leg or arm.

- You should immediately inform your nurse if you feel any chest pain or tightness, or any other pain, as well as any feelings of warmth, bleeding, or pain at the insertion site in your leg or arm.
- Bed rest may vary from two to six hours depending on your specific condition. If your physician placed a closure device, your bed rest may be of shorter duration.
- In some cases, the sheath or introducer may be left in the insertion site. If so, the period of bed rest will be prolonged until the sheath is removed. After the sheath is removed, you may be given a light meal.
- You may feel the urge to urinate frequently because of the effects of the contrast dye and increased fluids. You will need to use a bedpan or urinal while on bed rest so that your affected leg or arm will not be bent.

After the specified period of bed rest has been completed, you may get out of bed. The nurse will assist you the first time you get up, and will check your blood pressure while you are lying in bed, sitting, and standing.

- You should move slowly when getting up from the bed to avoid any dizziness from the long period of bed rest.
- You may be given pain medication for pain or discomfort related to the insertion site or having to lie flat and still for a prolonged period.
- You will be encouraged to drink water and other fluids to help flush the contrast dye from your body.
- You may resume your usual diet after the procedure, unless your physician decides otherwise.

When you have completed the recovery period, you may be discharged to your home unless your physician decides otherwise. If this procedure was performed on an outpatient basis, you must have another person drive you home.



**At home:** Once at home, you should monitor the insertion site for bleeding, unusual pain, swelling, and abnormal discoloration or temperature change at or near the insertion site. A small bruise is normal. If you notice a constant or large amount of blood at the site that cannot be contained with a small dressing, notify your physician.

- If your physician used a closure device for your insertion site, you will be given specific information regarding the type of closure device that was used and how to take care of the insertion site. There will be a small knot, or lump, under the skin at the site. This is normal. The knot should gradually disappear over a few weeks.
- It will be important to keep the insertion site clean and dry. Your physician will give you specific bathing instructions.
- You may be advised not to participate in any strenuous activities. Your physician will instruct you about when you can return to work and resume normal activities.

**Notify your physician to report any of the following:**

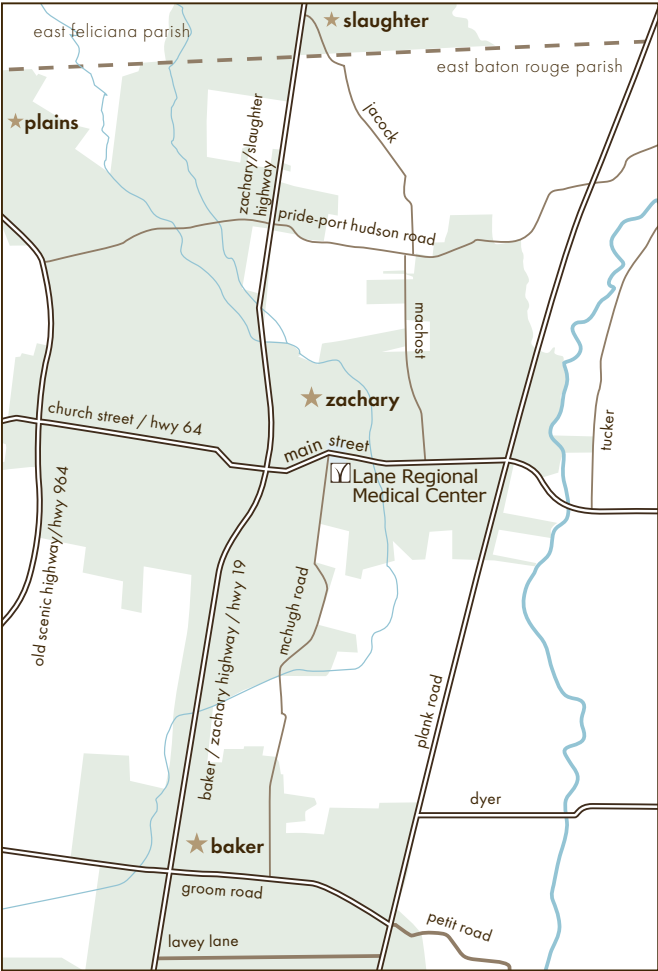
- fever and/or chills
- increased pain, redness, swelling, or bleeding or other drainage from the insertion site
- coolness, numbness, heaviness, pain, and/or tingling, or other changes in the affected extremity
- chest pain/pressure, nausea and/or vomiting, profuse sweating, and/or fainting
- dizziness or blurred vision

Your physician may give you additional or alternate instructions after the procedure, depending on your particular situation. The content provided here is for informational purposes only, and was not designed to diagnose or treat a health problem or disease, or replace the professional medical advice you receive from your physician.

Please consult your physician with any questions or concerns you may have regarding your condition.

At Lane Regional Medical Center, we're committed to providing quality healthcare services to meet the needs of our community.

Our ultimate purpose is to help you heal, which is why we have a local investment of more than 650 caring staff members and 100 dedicated physicians providing state-of-the-art equipment and services.





# Lane Regional Medical Center

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