

# Understanding Cardiac Catheterization



**CGH Medical Center**  
**Cardiac Cath Lab**  
**(815) 625-0400 Ext. 4800**



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## Meet Your Cardiologists



### **Steven Mackay, DO, FACC, FSCAI**

***Education:***

*DO: Midwestern University, Chicago College of Osteopathic Medicine, Downers Grove, IL*

***Internship and Residency:***

*Lutheran General Hospital, Park Ridge, IL (Internship)  
Lutheran General Hospital, Park Ridge, IL (Residency)*

***Cardiology Fellowships:***

*Duke University Medical Center, Durham, NC  
(Interventional)  
National Naval Medical Center/Walter Reed Army Hospital, Bethesda, MD*

### **Thomas Kurian, M.D., F.A.C.C.**

***Education:***

*M.D. - Seth G. S. Medical College and King Edward Memorial Hospital, Bombay, India*

***Internship and Residency:***

*Henry Ford Hospital, Detroit, MI (Internship)  
Division of Internal Medicine, Henry Ford Hospital, Detroit, MI (Residency)*

***Cardiology Fellowships:***

*Henry Ford Hospital, Detroit, MI (Adult)  
Riverside Methodist Hospital, Columbus, OH  
(Interventional)*



# Introduction

We prepared this brochure for patients, like you, who are going to have a **“cardiac angiogram,”** also called a **“cardiac catheterization,”** or more simply a **“cardiac cath.”** This is to help you understand what to expect before, during, and after your cardiac catheterization. We want you to understand what will happen and what you need to do to get ready.

## **Rajan Gopal, M.D.**

### **Education:**

*M.B.B.S., (M.D.) - Mualana Azad Medical College, Delhi Univ., New Delhi, India*

### **Internship and Residency:**

*Mualana Azad Medical Center of Chicago, Chicago, IL (Rotating Internship)*

*Mualana Azad Medical College, Delhi Univ., New Delhi, India (Internal Medicine)*

*Mount Sinai Hospital Medical Center of Chicago, Chicago, IL*

### **Cardiology Fellowship:**

*Mount Sinai Hospital Medical Center of Chicago, Chicago, IL*



# How Does the Heart Work?

The human heart is amazing! It is a muscle that lies slightly to the left, under the ribs in the chest. The heart pumps oxygen-filled blood to all parts of the body. The heart muscle itself needs a good blood supply to keep working. The arteries that supply the heart muscle with blood are called **coronary arteries**. If they become narrowed or blocked, the blood flow to the heart muscle is reduced. This causes symptoms of **Coronary Artery Disease**.

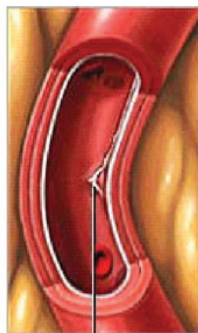
## What Is Coronary Artery Disease?

Coronary Artery Disease (CAD for short) happens when one or more coronary arteries of the heart become narrowed with a build-up of deposits of fats and cholesterol. Then the heart muscle does not receive enough oxygen. This blockage is called **plaque**. Blood clots may form on the plaque causing the artery to narrow even faster. It can lead to chest pain known as **angina**.

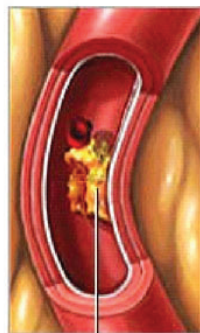
### Progression of plaque build-up in coronary artery



Normal



Tear in lining of artery



Fat and cholesterol  
accumulate

# Why Do People Get Coronary Artery Disease?

It is still not clear what triggers Coronary Artery Disease (CAD). Several things have been shown to increase the build-up of plaque. We call these **“risk factors.”** Some of these risk factors, such as a family history of heart problems, cannot be changed. The good news is you can modify or change some risk factors, and this can improve your future health a lot.

## What Are Some Steps to Take to Reduce Risk Factors?

- ♥ Stop smoking
- ♥ Control your diabetes
- ♥ Control blood pressure with regular check-ups and/or medication
- ♥ Choose foods low in fat and cholesterol
- ♥ Exercise regularly
- ♥ Maintain an ideal body weight

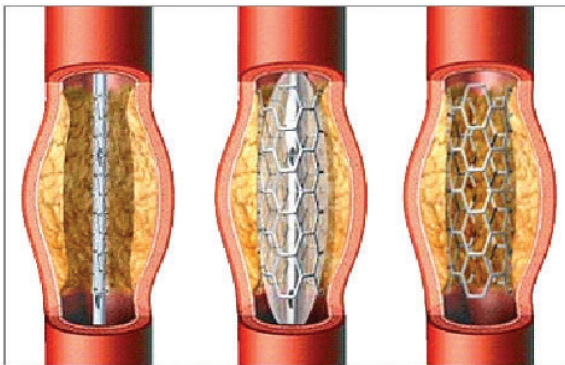
If you do not correct “risk factors,” your other vessels may become blocked in the future.

## What Are Symptoms of Coronary Heart Disease?

- ♥ Angina Pain
- ♥ Heartburn
- ♥ Nausea/Vomiting
- ♥ Fatigue
- ♥ Short of Breath
- ♥ Excessive Sweating

# How Can I Help Control Coronary Artery Disease?

- ♥ Controlled Exercise and Low Fat Diet
- ♥ Medical Therapy
- ♥ Bypass Surgery
- ♥ **Balloon Angioplasty** – Procedure to improve blood flow to your heart. A balloon and wire are placed across an area of blockage, and the balloon is inflated, squeezing the plaque against the artery wall.
- ♥ **Coronary Stents** – A small mesh tube, called a **stent**, is placed in a coronary artery to help keep it open. The stent is put on a balloon catheter and pushed to the site of blockage. The balloon is inflated, spreading the stent to support the wall of the artery. The stent stays in forever, and the balloon is removed. Your doctor will prescribe a medication that prevents blood clots from forming on the stent. You will need to stay the night after your stenting, so you may want to pack a bag.



**Stent  
insertion**

**Stent  
expansion**

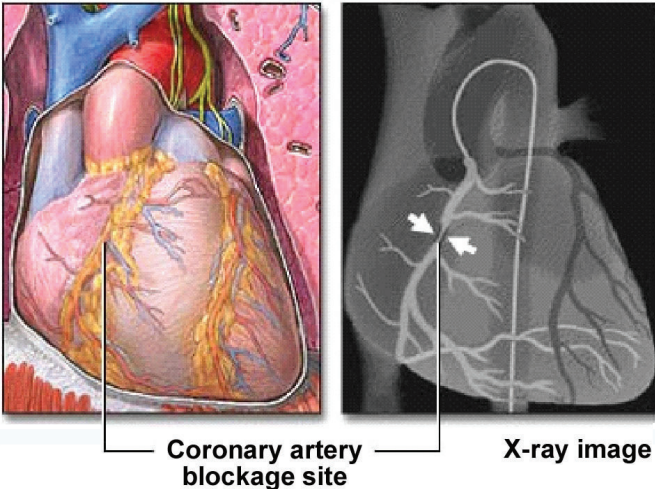
**Stent remains in  
coronary artery**



# What Is A Cardiac Catheterization?

A cardiac catheterization is **NOT** an operation or surgery. It is a special x-ray of your heart and is done to help the doctor make a diagnosis. A **catheter** (a long, bendable, narrow tube) is put into your artery and/or vein and is guided into your heart. The catheter is then guided through the blood vessel into a heart chamber or a coronary artery (a coronary artery is one of the “fuel lines” that supplies the heart muscle with blood). Dye is then injected. It lets the doctor see the coronary arteries and the chambers of the heart on the screen. Sometimes, blood samples are taken and pressures are measured during the catheterization. The doctor looks for arteries that have become narrowed or blocked and also sees how your heart valves are working. During the catheterization, the doctor may be able to open up the blocked artery by doing an **angioplasty (balloon procedure) or insert a stent**. The doctor may also find that bypass surgery or medications are needed.

**Dye is injected into the coronary arteries**



## Before Your Procedure...

Follow any instructions you were given and these also:

- ❑ Continue taking all of your medications as usual with the following exceptions...
  - Stop Coumadin 3 days prior to your procedure.
  - Stop Metformin 24 hours before and 48 hours after your procedure.
  - Continue taking your aspirin and Plavix.
- ❑ Arrange for a responsible adult to drive you home. Usually you will be ready to go home about 4 hours after your procedure is over.
- ❑ Arrange for a responsible adult to be available to stay with you overnight after your procedure in case you need help.
- ❑ If you need help to change your clothes or read forms, you should have a family member or friend stay with you at the hospital before and after your procedure.
- ❑ The hospital has an interpreter available if one is needed. Please inform the nurse at the clinic or at the Cath Lab so they can make arrangements.

## The Night Before Your Procedure...

- ❑ If you have diabetes, please discuss instruction about food and medication with your doctor.
- ❑ Take a shower or bath the night before your cardiac catheterization procedure.



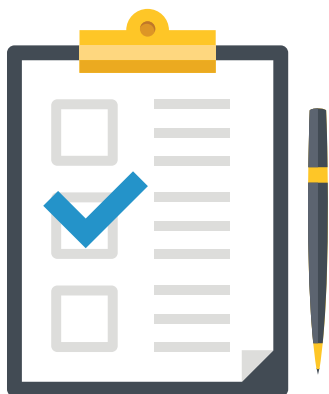
## The Day of Your Procedure...

- ❑ Take your usual medications the morning of your procedure with a sip of water, unless you are told otherwise.
- ❑ For your comfort, wear loose clothing.
- ❑ Do **NOT** bring valuables to the hospital. Leave your jewelry and any large amounts of money at home.

## Please Bring With You:

- ❑ Your reading glasses or contact lenses, as well as the case.
- ❑ The name and phone number of the responsible adult who will drive you home if you are scheduled for same day discharge.
- ❑ Your dentures and hearing aids.
- ❑ Bring in all of the prescription medications you take currently so we can verify the medications, dosages and how often you take it.
- ❑ A list of all over the counter vitamins, herbals, pain medications, etc. you take every day (*i.e. Multiple Vitamin - one daily*).





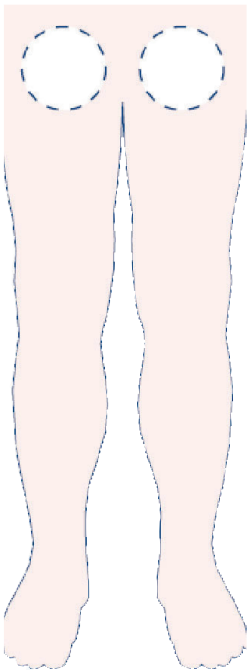
# Admitting

## Admission Process

- ♥ Please come to the hospital one and a half (1½) hours before your procedure is scheduled, unless instructed differently.
- ♥ Go to the hospital **Admitting Office** first to register.
- ♥ You will then be taken to the Cardiac Catheterization Lab on the second floor of the hospital.
- ♥ The nurse verifies all of your information at this time. This includes information about your medications, diet, activities, and allergies.
- ♥ Be sure to mention if you have allergies to iodine, shellfish, or any medications.
- ♥ You should also tell the nurse if you have ever had an allergic reaction during or after an x-ray if dye was used.
- ♥ You will then change into a hospital gown. Your clothes will be placed in a patient belongings bag.

# Preparing You for the Procedure

A member of the Cath Lab staff will check your temperature, blood pressure, pulse, and record your height and weight. If you have not had all blood tests or EKG before you came, it will be done now. One intravenous (I.V.) line will be inserted into a vein, usually in your arm. These will be used to give you fluids and medication before, during, and after the procedure. You will be asked to urinate so that your bladder is empty. You may be given medication to help you relax. You may remain awake during the procedure.

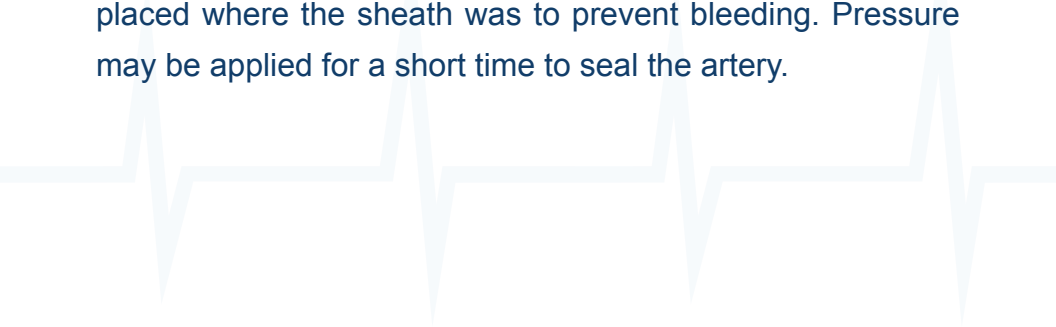


The doctor will select either groin or the wrist as the site used during the procedure. If your groin area is used, it will be shaved. (Only a small area on each side of your groin will be uncovered for shaving. The rest of the area will be covered.) Shortly before the procedure, the staff performing the cardiac catheterization will remind you again what will happen, and answer your questions. The doctor will numb the groin or wrist area before starting the procedure. You will be given medication to keep you comfortable and relaxed

during the procedure. It usually takes 15-20 minutes to prepare you before the doctor arrives. ***Pagers are available for your family at the desk so they can be reached at any time. (If they are in the cafeteria, for example.)***

# What Happens in the Cardiac Catheterization Room?

You may be awake during the procedure, even though a sedative will be given through the IV line to help you relax. EKG leads are attached to your chest so your heart rate and rhythm can be watched during the test. Before the catheter is put in, a technician scrubs the area. Then the doctor gives you a local anesthetic. You may feel the needle (it feels like a little sting), and then the area will feel numb. The doctor will then place a **short IV catheter-like device** called a “**sheath**” into your artery and/or vein. The doctor uses this sheath to change catheters during the procedure. You will not feel the catheter moving through your body. Several catheters may be used. Different catheters have different shapes so they fit properly into each heart chamber or coronary artery. The doctor uses the catheter to inject a colorless dye liquid. You may feel hot and flushed for a few seconds. You may also notice a funny taste in your mouth. As the catheter passes into the heart chambers, you may feel skipped beats or a fluttering in your chest. This is normal and will pass. **If you have any discomfort or changes in how you feel, tell the nurse or doctor.** The catheters are removed when the doctor has finished taking all the pictures. A closure device may be placed where the sheath was to prevent bleeding. Pressure may be applied for a short time to seal the artery.



## How Can You Help?

At times, you will be asked to take a deep breath and hold it for a few seconds. The doctor will tell you when to stop holding your breath. You must also hold very still and keep your hands by your sides. This helps get a clearer picture.

## When it is Done...

You will be moved to the recovery area where you may be in bed for several hours, and may have to lie flat with your head flat or your arm raised on pillows. You will be told not to bend your affected limb but ***you may move*** your unaffected limb. It is important during this time not to bend, strain or lift. If you need to cough or sneeze, place slight pressure with your fingers over the groin insertion site. The nurse will show you how to do this. Your vital signs (blood pressure, pulse and temperature) and insertion site will be checked frequently. As time passes, these checks will become less frequent. Notify the nurse if your arm or leg feels cold, numb or painful. If you notice a warm or wet feeling at your insertion site, call the nurse immediately. You may be asked to use a urinal or bedpan after the procedure as you may not be allowed get up right away if the groin site was used. You may eat and drink soon after the catheterization. Drink large amounts of fluid to help clear the dye from your body. If you feel sick to your stomach, the nurse will give you medication in your IV to make you more comfortable. During this recovery period, the local anesthetic begins to wear off, and the insertion site may become uncomfortable. Tell the

nurse if this occurs, and medication will be given to you. After a few hours of bed rest, your nurse will tell you when you may walk.

## When Will the Doctor Talk to Me About the Results?

After the procedure, the doctor or Cath Lab staff will talk with you or your family member that is present and discuss the results of your angiogram. Options for “what comes next” will also be discussed.

## When You First Go Home...

- ♥ Have someone stay with you overnight.
- ♥ Take your medications and eat as you normally would.
- ♥ You may feel tired, sleepy, or a little confused.
- ♥ Be aware you may have a wobbly or shaky feeling when trying to walk.
- ♥ You may have some trouble focusing your eyes or have blurred vision.

### **AVOID:**

- ♥ Driving for 24 hours after your catheterization.
- ♥ Physical exertion and straining (with bowel movements).
- ♥ Lifting anything weighing over 10 pounds.

### **ON THE DAYS AFTER** your cardiac catheterization:

- ♥ Soak the bandage and carefully peel it off.
- ♥ Wash and gently pat the area dry.



- ♥ For slight bleeding, put pressure on the site and call your doctor.
- ♥ You may shower but NO tub baths for 5 days.
- ♥ You may resume sexual activity 2 days after the procedure.
- ♥ Remember it can take up to 14 days for your artery to totally heal.

### **AVOID:**

- ♥ Jogging, contact sports, and rough activity. (Walking as exercise is fine after about 48 hours.)
- ♥ Sitting for more than an hour without getting up to walk around.
- ♥ Lifting anything over ten (10) pounds for 5-7 days.

## **Signs to Watch For..**

There may be some bruising at the insertion site after the procedure. It may take a week or more for it to disappear. The bruise will change colors before it disappears, and you may also be able to feel a hard lump at the site. This is normal; it is scar tissue that will gradually go away. If you notice any of the following, contact your family doctor or seek medical attention right away:

- ♥ The area where the needle was inserted is warm or hot to touch
- ♥ Increased oozing, bleeding, pus or fluid drainage from insertion site
- ♥ A temperature over 101°
- ♥ Foul smelling drainage from the insertion site
- ♥ NEW numbness, tingling, or pain in the affected arm or leg
- ♥ Chest pain

We at CGH Medical Center hope this information has been helpful to you and your family. Your concerns about cardiac catheterization are normal.

Please feel free to ask your nurse or doctor about anything that is concerning you.

We are committed to care for the whole person and are dedicated to heal, comfort, teach and promote health.

*If you have any questions,  
please feel free to contact us at  
**(815) 625-0400 Ext. 4800***

*Monday through Friday  
7 a.m. to 4:30 p.m.*

