Baylor Medicine

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PATIENT EDUCATION

Surgery

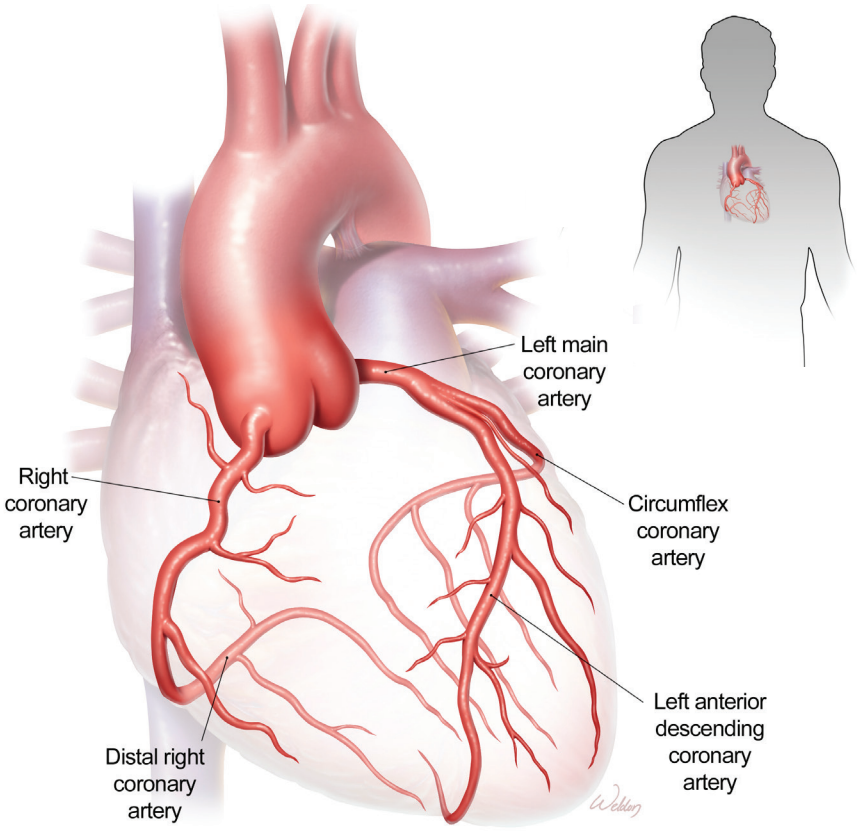
CORONARY ARTERY BYPASS GRAFTING (CABG)

The goal of coronary artery bypass grafting (CABG) surgery is to improve the blood flow to your heart.

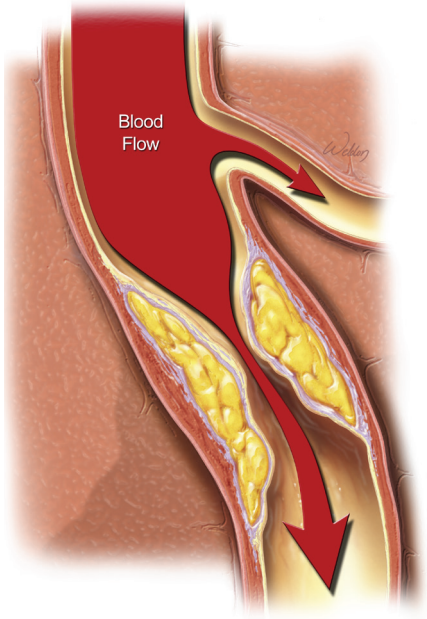
What Are Coronary Arteries?

The heart is a muscle about the size of your fist. Your heart pumps blood and oxygen to all the organs and tissues of the body through a network of "pipes" called arteries and veins.

The heart muscle needs oxygen-rich blood to do its job. The vessels that feed the heart are called coronary arteries (shown in the diagram to the right). They branch off from the body's main artery, the aorta, which carries oxygenated blood throughout the body.



Anatomy of the coronary arteries



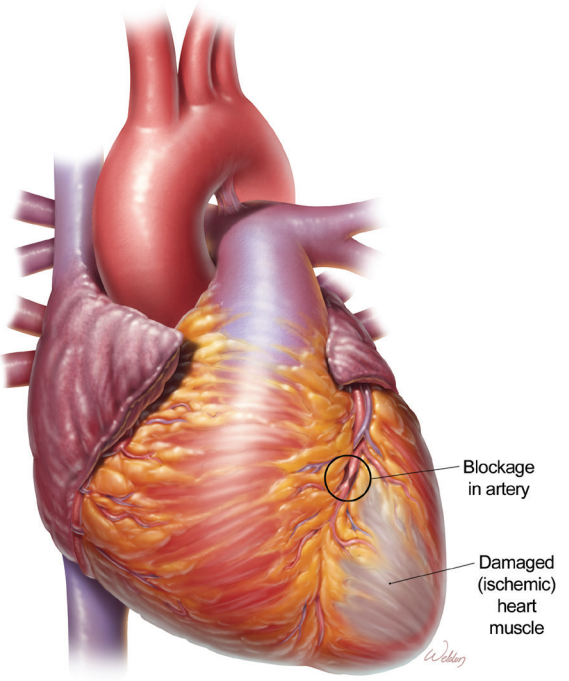
Narrowed, ischemic coronary artery

Coronary Artery Disease

What causes clogged arteries? Healthy arteries are like hollow pipes. When they're wide open, blood flows through them easily. As we age, these pipes can narrow or become blocked like the plumbing in your house. These blockages are caused by a buildup of cholesterol, fat, and other substances. Narrowing of the arteries is called coronary artery disease (CAD).

Chest Pain and Heart Attacks

When the heart muscle isn't getting the blood it needs, your body may let you know. Physical or emotional stress may cause you to feel pain or tightness in your chest. This pain is called "angina." If you've ever felt this, you may know that rest or certain medications may make this feeling go away. But angina is NOT a heart attack. Heart attacks happen when part of the heart's blood supply gets completely cut off and can't find another route to supply needed oxygen to the heart. When this happens, parts of the heart muscle can die or become "ischemic" and muscle is then replaced with scar tissue. This scar tissue cannot help the heart beat properly and is not efficient at keeping oxygenated blood pumping through your body.



How Can I Tell If I'm Having a Heart Attack and Not Angina Pain?

The pain of a heart attack can be severe. Some people say it feels like an elephant sitting on their chest. Unlike angina, the pain of a heart attack doesn't go away after resting or taking medication. By creating clear pathways around the blockages, CABG surgery can help prevent a heart attack and improve the symptoms.

Treatment

Treating CAD involves various options, and surgery may be recommended based on specific indications.

Lifestyle Changes: Making healthy choices in your daily life can significantly impact CAD. Eating a balanced diet, exercising regularly, and quitting smoking are crucial steps. These lifestyle changes help control risk factors like high blood pressure, high cholesterol, and diabetes.

Medications: Your doctor may prescribe medications to manage CAD. These can include blood thinners, cholesterol-lowering drugs, and medications to control blood pressure. Taking these as prescribed helps improve blood flow to the heart.

Angioplasty and Stent Placement: In some cases, a procedure called angioplasty may be suggested. During angioplasty, a small balloon is used to widen narrowed arteries, and a stent (a tiny mesh tube) may be placed to keep the artery open. This helps restore proper blood flow to the heart.

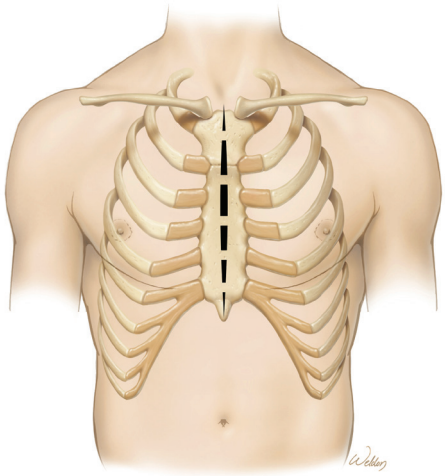
Surgery: If lifestyle changes and medications are not sufficient, or if the blockages are severe, surgery might be recommended.

Coronary Artery Bypass Grafting (CABG) Surgery

During this operation, the surgeon will take healthy vessels from another part of your body to 'bypass' the blocked arteries that are preventing oxygenated blood from efficiently reaching your heart. A healthy artery in your chest or veins from your leg can be used to bypass the blockage. To obtain the healthy veins, the surgeon will make one or two small incisions in the leg.

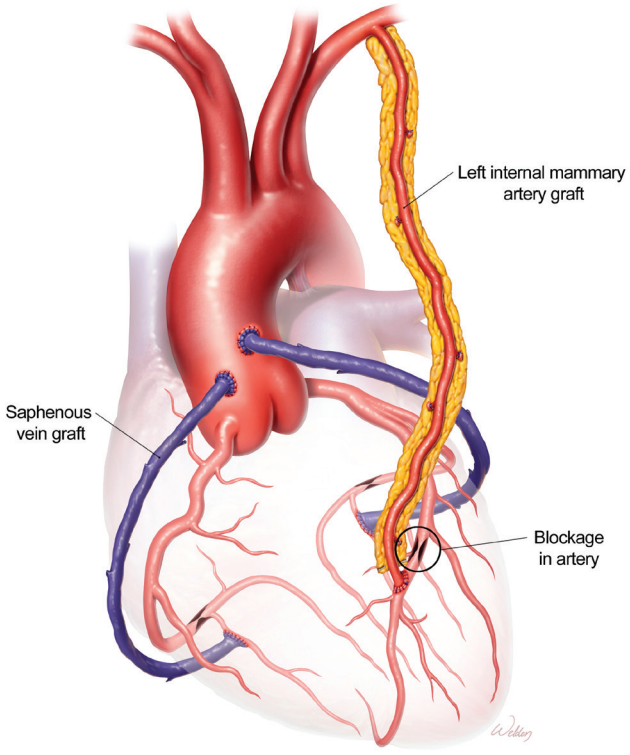
During most open-heart surgeries it is necessary to connect you to a heart-lung bypass machine. During this time, your heart will stop. This machine takes over the work of the heart, oxygenating your blood and circulating it throughout the body. Your heart will begin beating again once the procedure is complete.

Coronary artery bypass grafting (CABG) surgery can often be performed at the same time as other open-heart surgery takes place. For example, CABG surgery can be combined with surgery to repair or replace a heart valve, to repair an aortic aneurysm, or to treat an irregular heart beat (atrial fibrillation). Completing these procedures at the same time saves you from undergoing an additional surgery.



Median sternotomy incision

Endovascular vein harvest incisions



Coronary artery bypass grafting

During Surgery

- You will be given general anesthesia, so you will be asleep and pain-free
- Through an IV, you will be receiving fluids and other medicines like antibiotics during the surgery.
- After you are completely asleep, a breathing tube will be put into your windpipe through your mouth to help you breathe.
- You will also have a catheter placed in your bladder to drain your urine. This will be removed once you are awake and moving around comfortably.
- A vertical incision is made in the middle of the chest, and the breastbone (sternum) is divided to provide access to the heart.
- The surgeon identifies healthy blood vessels, usually from the leg (saphenous vein) or chest (internal mammary artery), to use as grafts. The grafts are prepared for attachment to the coronary arteries.
- To redirect blood flow away from the heart, you will be connected to a heart-lung machine. The machine takes over the pumping of blood, allowing the surgeon to temporarily stop the heart.
- The surgeon attaches one end of the grafts to the aorta and the other end to the coronary arteries, bypassing the blocked or narrowed segments.
- The heart is restarted, and you are gradually weaned off the heart-lung machine.
- The surgeon ensures that the grafts are functioning well through various tests, such as injecting a dye to visualize blood flow.
- Finally, the surgeon closes the chest incision using wires to reconnect the sternum.
- Chest tubes may be inserted to drain any excess fluids.

Recovery

It will take you approximately two months to recover from undergoing your CABG surgery. You will likely be in the hospital for five to ten days, and then will need to be away from work, getting your full strength back for a total of six to eight weeks.

Your surgery team will give you a detailed guide to your postoperative course, including specific restrictions.

Participating in a cardiac rehabilitation program will be beneficial in your recovery. Ask your cardiologist and surgery team about options for cardiac rehab close to your home, so that you can make arrangements early.