

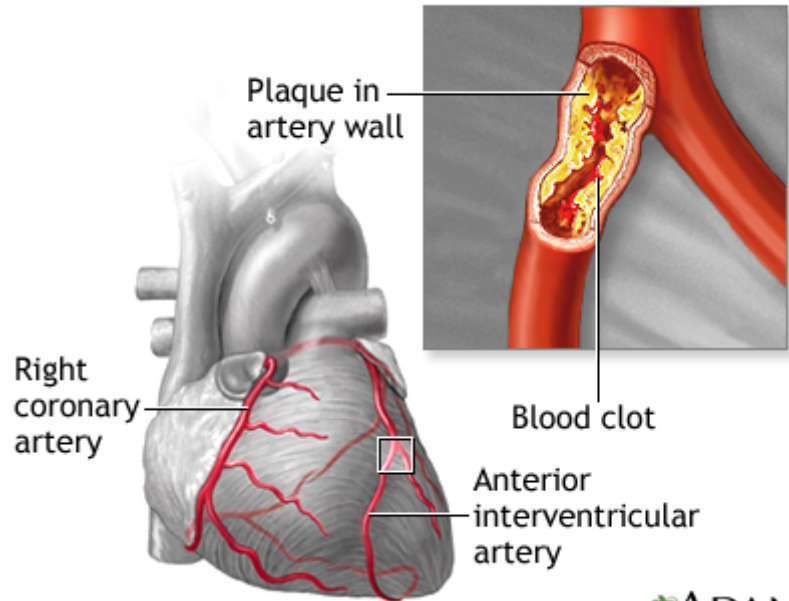
## Heart bypass surgery

### Definition

Heart bypass surgery creates a new route, called a bypass, for blood and oxygen to go around a blockage to reach your heart.

### Alternative Names

Off-pump coronary artery bypass; OPCAB; Beating heart surgery; Bypass surgery - heart; CABG; Coronary artery bypass graft; Coronary artery bypass surgery; Coronary bypass surgery; Coronary artery disease - CABG; CAD - CABG; Angina - CABG



ADAM.

### Description

Before your surgery, you will get general anesthesia. You will be asleep (unconscious) and pain-free during surgery.

Once you are unconscious, the heart surgeon will make an 8 to 10-inch (20.5 to 25.5 cm) surgical cut in the middle of your chest. Your breastbone will be separated to create an opening. This allows your surgeon to see your heart and aorta, the main blood vessel leading from the heart to the rest of your body.

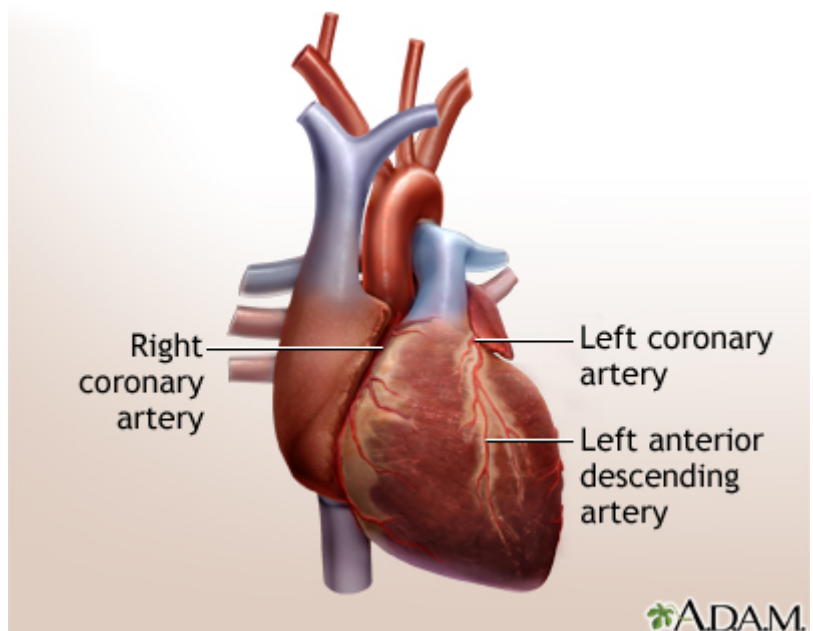
Most people who have coronary bypass surgery are connected to a heart-lung bypass machine, or bypass pump.

- Your heart is stopped while you are connected to this machine.
- This machine does the work of your heart and lungs while your heart is stopped for the surgery. The machine adds oxygen to your blood, moves blood through your body, and removes carbon dioxide.

Another type of bypass surgery does not use the heart-lung bypass machine. The procedure is done while your heart is still beating. This is called off-pump coronary artery bypass, or OPCAB.

To create the bypass graft:

- The doctor will take a vein or artery from another part of your body and use it to make a detour (or graft) around the blocked area in your artery. Your doctor may use a vein, called the saphenous vein, from your leg.
- To reach this vein, a surgical cut will be made along the inside of your leg, between your ankle and groin. One end of the graft will be sewn to your coronary artery. The other end will be sewn to an opening made in your aorta.



ADAM.

- A blood vessel in your chest, called the internal mammary artery (IMA), can also be used as the graft. One end of this artery is already connected to a branch of your aorta. The other end is attached to your coronary artery.
- Other arteries can also be used for grafts in bypass surgery. The most common one is the radial artery in your wrist.

After the graft has been created, your breastbone will be closed with wires. These wires stay inside you. The surgical cut will be closed with stitches.

This surgery can take 4 to 6 hours. After the surgery, you will be taken to the intensive care unit.

### **Why the Procedure Is Performed**

You may need this procedure if you have a blockage in one or more of your coronary arteries. Coronary arteries are the vessels that supply your heart with oxygen and nutrients that are carried in your blood.

When one or more of the coronary arteries becomes partly or totally blocked, your heart does not get enough blood. This is called ischemic heart disease, or coronary artery disease (CAD). It can cause chest pain (angina).

Coronary artery bypass surgery can be used to improve blood flow to your heart. Your doctor may have first tried to treat you with medicines. You may have also tried exercise and diet changes, or angioplasty with stenting.

CAD is different from person to person. The way it is diagnosed and treated will also vary. Heart bypass surgery is just one type of treatment.

Other procedures that may be used:

- Angioplasty and stent placement
- Heart bypass surgery -- minimally invasive

### **Risks**

Risks for any surgery include:

- Bleeding
- Infection
- Death

Possible risks from having coronary bypass surgery include:

- Infection, including chest wound infection, which is more likely to happen if you are obese, have diabetes, or have already had this surgery
- Heart attack
- Stroke
- Heart rhythm problems
- Kidney failure
- Lung failure
- Depression and mood swings
- Low fever, tiredness, and chest pain, together called postpericardiotomy syndrome, which can last up to 6 months
- Memory loss, loss of mental clarity, or "fuzzy thinking"

### **Before the Procedure**

Always tell your health care provider what drugs you are taking, even drugs or herbs you bought without a prescription.

During the days before your surgery:

- For the 1-week period before surgery, you may be asked to stop taking drugs that make it harder for your blood to clot. These might cause increased bleeding during the surgery. They include aspirin, ibuprofen (such as Advil and Motrin), naproxen (such as Aleve and Naprosyn), and other similar drugs. If you are taking clopidogrel (Plavix), talk with your surgeon about when to stop taking it.
- Ask which drugs you should still take on the day of the surgery.
- If you smoke, try to stop. Ask your provider for help.
- Contact your provider if you have a cold, flu, fever, herpes breakout, or any other illness.
- Prepare your home so you can move around easily when you return from the hospital.

The day before your surgery:

- Shower and shampoo well.
- You may be asked to wash your whole body below your neck with a special soap. Scrub your chest 2 or 3 times with this soap.
- Make sure that you dry yourself off.

On the day of the surgery:

- You will be asked not to drink or eat anything after midnight the night before your surgery. Rinse your mouth with water if it feels dry, but be careful not to swallow.
- Take any medicines that you have been told to take with a small sip of water.

You will be told when to arrive at the hospital.

### **After the Procedure**

After the operation, you will spend 3 to 7 days in the hospital. You will spend the first night in an intensive care unit (ICU). You will probably be moved to a regular or transitional care room within 24 to 48 hours after the procedure.

Two to three tubes will be in your chest to drain fluid from around your heart. They are most often removed 1 to 3 days after surgery.

You may have a catheter (flexible tube) in your bladder to drain urine. You may also have intravenous (IV) lines for fluids. You will be attached to machines that monitor your pulse, temperature, and breathing. Nurses will constantly watch your monitors.

You may have several small wires that are connected to a pacemaker, which are pulled out prior to your discharge.

You will be encouraged to restart some activities and you may begin a cardiac rehab program within a few days.

It takes 4 to 6 weeks to start feeling better after surgery. Your providers will tell you how to take care of yourself at home after the surgery.

### **Outlook (Prognosis)**

Recovery from surgery takes time. You may not see the full benefits of your surgery for 3 to 6 months. In most people who have heart bypass surgery, the grafts stay open and work well for many years.

This surgery does not prevent the coronary artery blockage from coming back. You can do many things to slow this process down, including:

- Not smoking
- Eating a heart-healthy diet

- Getting regular exercise
- Treating high blood pressure
- Controlling high blood sugar (if you have diabetes) and high cholesterol

## References

Al-Atassi T, Toeg HD, Chan V, Ruel M. Coronary artery bypass grafting. In: Sellke FW, del Nido PJ, Swanson SJ, eds. *Sabiston and Spencer Surgery of the Chest*. 9th ed. Philadelphia, PA: Elsevier; 2016:chap 88.

Hillis LD, Smith PK, Anderson JL, et al. 2011 ACCF/AHA guideline for coronary artery bypass graft surgery: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *Circulation*. 2011;124(23):e652-e735. PMID: 22064599 [www.ncbi.nlm.nih.gov/pubmed/22064599](http://www.ncbi.nlm.nih.gov/pubmed/22064599).

Kulik A, Ruel M, Jneid H, et al. Secondary prevention after coronary artery bypass graft surgery: a scientific statement from the American Heart Association. *Circulation*. 2015;131(10):927-964. PMID: 25679302 [www.ncbi.nlm.nih.gov/pubmed/25679302](http://www.ncbi.nlm.nih.gov/pubmed/25679302).

Morrow DA, de Lemos JA. Stable ischemic heart disease. In: Zipes DP, Libby P, Bonow RO, Mann DL, Tomaselli GF, Braunwald E, eds. *Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine*. 11th ed. Philadelphia, PA: Elsevier Saunders; 2019:chap 61.

Omer S, Cornwell LD, Bakaeen FG. Acquired heart disease: coronary insufficiency. In: Townsend CM, Beauchamp RD, Evers BM, Mattox KL, eds. *Sabiston Textbook of Surgery*. 20th ed. Philadelphia, PA: Elsevier Saunders; 2017:chap 59.

---

Review Date: 2/28/2018

Reviewed By: Mary C. Mancini, MD, PhD, Department of Surgery, Louisiana State University Health Sciences Center-Shreveport, Shreveport, LA. Review provided by VeriMed Healthcare Network. Also reviewed by David Zieve, MD, MHA, Medical Director, Brenda Conaway, Editorial Director, and the A.D.A.M. Editorial team.