

Coronary Artery Bypass Grafting

Coronary artery bypass grafting (CABG) is a surgical procedure that uses veins from the leg or arteries from another part of the body to reroute blood around a blockage in the arteries that supply the heart with blood and oxygen (coronary arteries). The April 21, 2004, issue of *JAMA* includes an article that compares the results of CABG surgery with and without use of a heart-lung bypass pump. The heart-lung bypass pump takes over pumping blood and allows surgeons to stop the heart while they attach the new blood vessels. Without the heart-lung bypass pump, the heart continues to beat throughout the operation.

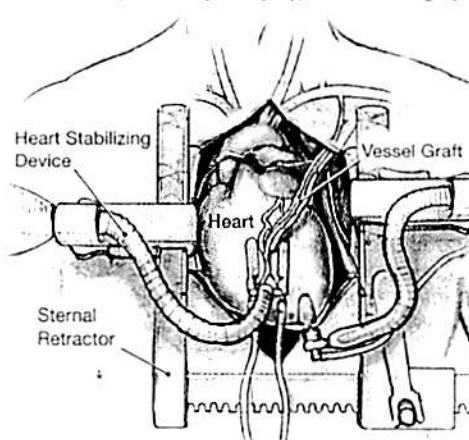
CORONARY ARTERY DISEASE

- In persons with coronary artery disease (CAD), yellow deposits of cholesterol and fats called **plaque** form in the coronary arteries. This process is called **atherosclerosis** (hardening of the arteries).
- If plaque continues to build up, blood vessels can become partially or completely blocked so the heart does not receive enough oxygen carried by red blood cells, leading to **angina** (chest pain) or even a **myocardial infarction** (heart attack).
- CABG surgery may be done to bypass blocked coronary arteries.

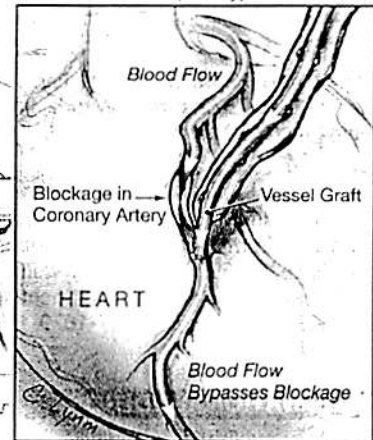
CABG SURGERY PROCEDURES

- Before undergoing CABG surgery, a special dye that can be seen on x-ray film is injected into the coronary arteries while x-rays are taken. This will provide the surgeon with a "roadmap" of the coronary arteries.
- During surgery, the chest is opened by cutting down the center of the **sternum** (breastbone).
- Blood-thinning drugs called **anticoagulants** are given to help prevent blood clot formation during the operation.
- If a heart-lung bypass machine is used, the machine takes over pumping blood for the heart (conventional "on-pump" CABG).
- If a heart-lung bypass machine is not used, the heart is positioned and the coronary artery to be bypassed is stabilized with special suction devices ("beating heart" or "off-pump" CABG).
- A blood vessel from another part of the body (vessel graft) is sewn into place so that blood flow can bypass the blockage in the coronary artery. If more than one artery is blocked, more blood vessels will be used to bypass them (called **double, triple, or quadruple bypass surgery**).

Off-Pump Coronary Artery Bypass Graft Surgery



Close-up of Bypass



FOR MORE INFORMATION

- American Heart Association
800/AHA-USA-1 (242-8721)
www.americanheart.org
- Cardiothoracic Surgery Network
www.ctsnet.org/innovation/beatheart

INFORM YOURSELF

To find this and other JAMA Patient Pages, go to the Patient Page link on JAMA's Web site at www.jama.com. A Patient Page on percutaneous coronary intervention was published in the February 11, 2004, issue.

RECOVERING FROM CABG SURGERY

- After CABG surgery, the patient recovers in the intensive care unit (ICU).
- Many patients can go home about 3 to 6 days after surgery.
- It will take another 4 to 6 weeks for the patient to feel stronger and resume his or her normal activities.

Sources: American Heart Association, National Heart, Lung, and Blood Institute, Heart Information Network

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