PROCEDURE

Heart bypass surgery

Heart bypass surgery creates new routes for blood around narrowed or blocked heart arteries.

PURPOSE
Restore blood flow around narrowed or blocked coronary arteries

PROCEDURE TYPE
Therapeutic surgical procedure

WHERE IT IS DONE
Operating theatre

ANAESTHESIA
General

HOW LONG IT TAKES
3 to 6 hours

PREPARATION
Fasting and medication changes, especially blood thinners

RECOVERY
Several hospital days; no driving until your surgical team clears you

MAIN RISKS
Bleeding, infection, stroke, heart attack

RESULTS
Blood flow restored during surgery; symptom benefit assessed during recovery

Overview

Heart bypass surgery improves blood flow to the heart muscle. Its medical name is coronary artery bypass grafting, often shortened to CABG.

Coronary arteries supply oxygen-rich blood to your heart. If one or more become severely narrowed or blocked, a surgeon can create a new route around the affected area. The new route is made with a healthy blood vessel taken from your chest, arm, or leg.

Bypass surgery can reduce chest pain, improve activity levels, and lower the risk of certain heart problems in appropriately selected people. It does not cure the underlying process that caused the arteries to narrow.

Why the procedure is performed

Bypass surgery is used to treat coronary artery disease when the heart is not receiving enough blood.

It may be considered when:

In an emergency, bypass surgery may be needed when blood flow cannot be restored adequately by other methods.

- Several important coronary arteries are narrowed
- The main artery supplying much of the heart is severely narrowed
- The pattern of narrowing is complex or unsuitable for a stent
- Chest pain continues despite medicines and other treatment
- A previous stent or bypass has stopped working
- Other heart surgery, such as valve surgery, is also needed

Who should and should not have it

Whether bypass surgery is right for you depends on your symptoms, test results, artery anatomy, overall health, and treatment preferences. A heart team may compare surgery with medicines or angioplasty and stenting.

Surgery may offer particular benefit when several major arteries are affected or when the disease is too complex for reliable treatment with stents. Your expected surgical risk and likely long-term benefit should both be discussed.

Bypass surgery may be avoided when there are no suitable blood vessels to bypass, the heart arteries are too small or widespreadly damaged, or another treatment is likely to work as well with less risk. It may also be unsuitable when severe illness or frailty makes meaningful recovery unlikely.

Planned surgery may be delayed for an active infection or another uncontrolled medical problem. In an emergency, the need to restore blood flow may outweigh reasons that would normally delay surgery.

How to prepare

Follow the treating facility's instructions first, even if they differ from general information here.

Before surgery, you may have blood tests, a chest X-ray, an electrocardiogram, and tests of heart and lung function. Your team may also check which blood vessels could be used for grafts.

Give the team a complete list of your medicines, vitamins, and supplements. Blood thinners like warfarin or apixaban , diabetes medicines, and some supplements may need adjustment. Do not stop a prescribed medicine unless your surgical team tells you to.

You will receive instructions about when to stop eating and drinking. You may be asked to wash with a special antiseptic product. If you smoke, stopping before surgery can support lung function and wound healing.

Arrange help for your return home. Recovery usually limits lifting, driving, and strenuous household tasks for a period.

What happens during the procedure

You receive a general anaesthetic, so you are unconscious and do not feel the operation. A breathing tube and monitoring lines are placed after you are asleep.

Most bypass operations use an incision through the breastbone. The surgeon takes a healthy artery or vein from the chest, arm, or leg and connects it beyond the blocked section of coronary artery. More than one graft may be needed.

Many operations use a heart-lung machine, which temporarily pumps and oxygenates your blood while the heart is still. Some procedures are performed while the heart continues beating. Selected people may be offered surgery through smaller incisions, but this is not suitable for every pattern of disease.

After the grafts are in place, the breastbone and skin are closed. You are then moved to intensive care or a specialist cardiac recovery unit.

Recovery and what to expect afterward

Pain and soreness are expected around the chest incision and any area where a graft was taken. Medicines are provided to control pain. Holding a pillow against your chest may make coughing more comfortable.

You usually begin with drinks and light food, then return to your usual diet as your appetite and bowel function recover. A heart-healthy eating plan remains important after surgery.

Nurses and physiotherapists help you sit, stand, walk, cough, and take deep breaths soon after

the operation. Activity increases gradually. Your breastbone takes several weeks to heal, so follow instructions about lifting, pushing, pulling, and upper-body exercise. Cardiac rehabilitation provides supervised exercise and education.

You cannot drive home. Do not drive until your surgical team says it is safe and you meet local licensing or insurance requirements. Healing, pain, movement, concentration, and medicines can all affect driving.

Returning to work depends on your recovery and the physical demands of your job. Desk work may be possible sooner than heavy manual work. Your team can give more specific advice at follow-up.

Risks and possible complications

Bypass surgery is major surgery. Your personal risk depends on factors such as age, heart function, kidney or lung disease, diabetes, and whether the operation is planned or urgent.

Possible complications include:

Your surgeon should explain your estimated risk and how it compares with the expected benefit.

- Bleeding, sometimes requiring transfusion or another operation
- Infection of the chest, leg, arm, or breastbone wound
- An irregular heartbeat, especially atrial fibrillation
- Heart attack, stroke, kidney injury, or breathing problems
- Temporary confusion or difficulty concentrating
- Blood clots or failure of a graft
- Death

Results and follow up

The grafts begin carrying blood around the narrowed arteries during surgery. Your surgeon can explain what was done once you are stable. Improvement in chest pain, breathing, and activity may take time to assess because early recovery itself causes discomfort and tiredness.

You will have routine appointments to check your wounds, breastbone healing, heart symptoms, and medicines. Cardiac rehabilitation is an important part of recovery when available.

Bypass surgery does not remove coronary artery disease. Grafts and other arteries can narrow over time. Medicines to reduce clotting, cholesterol, blood pressure, or heart workload may still be needed. Take them as prescribed and discuss side effects before making changes.

Alternatives

The main alternatives depend on the location and complexity of your artery narrowing.

Medicines and lifestyle treatment avoid an operation. They can control symptoms and reduce future cardiovascular risk, but they may not restore enough blood flow when disease is severe.

Angioplasty and stenting use a thin tube passed through an artery to open a narrowing. Recovery is usually faster than after bypass surgery. However, stenting may be less suitable for complex or widespread disease and may be more likely to require another procedure in some situations.

Hybrid treatment combines a limited bypass operation with stenting. It uses smaller surgical access in selected cases, but it is not available everywhere and does not suit every artery pattern.

If surgery offers little benefit or its risks are too high, continued medical treatment may focus on controlling symptoms and supporting your priorities. Ask why the recommended option is expected to be better for you than each alternative.

When to call your healthcare team

Routine soreness, tiredness, reduced appetite, and mild swelling near a graft site can occur during recovery. Mention symptoms that are not improving at routine follow-up.

Contact your surgical team promptly for:

Call emergency services for severe or new chest pressure, major trouble breathing, fainting, uncontrolled bleeding, or signs of stroke such as facial drooping, arm weakness, or difficulty speaking. Do not drive yourself.

- Fever meeting the threshold in your discharge instructions
- Increasing wound redness, warmth, swelling, drainage, or opening
- Worsening pain rather than gradual improvement
- New or persistent palpitations
- Increasing leg swelling, breathlessness, or rapid weight gain

- Vomiting or inability to eat, drink, or take medicines

Common questions

Will I be asleep?

Yes. Heart bypass surgery is performed under general anaesthesia. You remain unconscious throughout the operation and initially have a breathing tube.

Can I drive home?

No. Someone must take you home after discharge. Resume driving only when your surgical team clears you and local rules allow it.

How painful is heart bypass surgery?

You will not feel the operation. Chest and graft-site soreness are expected afterward, but pain medicine should make movement, coughing, and sleep more manageable. Tell the team if pain is not controlled.

How long will I be in hospital?

Most people remain in hospital for several days. The stay may be longer after an emergency operation or if complications need treatment.

When will I know if it worked?

The surgeon knows during the operation whether the planned grafts were placed. Relief of chest pain and improved activity are usually judged during recovery, after surgical soreness and fatigue begin to settle.

Will I still need heart medicines?

Usually, yes. Medicines help protect the grafts and treat the coronary artery disease that remains. Do not stop them because your symptoms have improved.

Sources

- National Heart, Lung, and Blood Institute: Coronary Artery Bypass Grafting
- NHS: Coronary artery bypass graft
- MedlinePlus Medical Encyclopedia: Heart bypass surgery
- ACC/AHA/SCAI Guideline for Coronary Artery Revascularization, Circulation , 2022