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Heart Surgery

Also called: Cardiac surgery

What is heart surgery?

Heart surgery can correct certain heart problems when other treatments haven't worked or can't be used.

In some cases, heart surgery may be a medical emergency. For example, surgery for a severe **heart attack** [<https://medlineplus.gov/heartattack.html>] may need to be done right away. In other cases, you can plan heart surgery ahead of time. Some heart surgeries are major operations, such as heart bypass surgery for blocked arteries in the heart. Other surgeries are more minor heart procedures, such as putting in a pacemaker.

What conditions does heart surgery treat?

There are different types of heart surgery that can help treat many heart conditions:

What conditions does heart surgery treat?

Coronary artery disease (CAD)

[<https://medlineplus.gov/coronaryarterydisease.html>]
- when a sticky substance called plaque narrows or blocks the arteries that supply blood to your heart muscle.

Heart valve diseases

[<https://medlineplus.gov/heartvalvediseases.html>] - problems with the valves that control the flow of blood through your heart.

Arrhythmia [<https://medlineplus.gov/arrhythmia.html>]

- problems with the rate or rhythm of your heartbeat. They are caused by changes in the electrical signals that control your heartbeat.

Heart failure

[<https://medlineplus.gov/heartfailure.html>] - when your heart is too weak or stiff to pump enough oxygen-rich blood to meet your body's needs.

What does the heart surgery do?

Makes a new path for blood to flow around the blocked part of an artery in the heart. This is called a coronary artery bypass graft (CABG) [<https://medlineplus.gov/coronaryarterybypassurgery.html>] , or heart bypass. It's the most common heart surgery in adults.

Repairs heart valves.

Replaces heart valves with a mechanical valve or a biologic valve made from pig, cow, or human heart tissue.

Places a pacemaker or an implantable cardioverter defibrillator [<https://medlineplus.gov/pacemakersandimplantabledefibrillators.html>] (ICD) in the chest to correct your heartbeat.

Treats atrial fibrillation [<https://medlineplus.gov/atrialfibrillation.html>] with small cuts in the heart muscle. The cuts form scars that make a path for the heart's electrical signals (Maze surgery).

Places a device in the chest which may include:

- An implantable cardioverter defibrillator (ICD) to help prevent sudden cardiac arrest [<https://medlineplus.gov/suddencardiacarrest.html>] .
- A biventricular pacemaker to coordinate the heart's pumping action so it's more powerful.
- A ventricular assist device to help the heart pump blood.
- A total artificial heart to pump blood for the heart.

Replaces a seriously diseased heart with a healthy heart (heart transplantation [<https://medlineplus.gov/hearttransplantation.html>]).

What conditions does heart surgery treat?

Heart aneurysm

[<https://medlineplus.gov/aneurysms.html>] - a balloon-like bulge in the wall of an artery. It can be life-threatening if the aneurysm tears or bursts.

Angina [<https://medlineplus.gov/angina.html>] - chest pain from coronary artery disease.

Damaged and abnormal heart structures, including congenital heart defects [<https://medlineplus.gov/congenitalheartdefects.html>] - heart structure problems that you're born with.

What does the heart surgery do?

Repairs or replaces the weak part of a heart artery using a patch or a tube made of fabric.

Uses a laser to make small channels through part of the heart muscle (transmyocardial laser revascularization).

Repairs heart damage or problems with how the heart and blood vessels are formed. Repairs depend on the type of defect or damage.

What approaches do surgeons use to do heart surgery?

The approach a surgeon uses to do heart surgery depends on your heart problem, your general health, and other factors. Approaches to heart surgery include:

- **Open-heart surgery** (also called traditional heart surgery) is when the surgeon cuts the chest open to reach the heart. Because it's difficult to operate on a beating heart, medicines are used to stop the heart. A heart-lung bypass machine keeps oxygen-rich blood pumping through the body during the surgery.
- **Off-pump heart surgery** is open-heart surgery on a beating heart without using a heart-lung bypass machine. The surgeon holds the heart steady with a device. Surgeons may use off-pump heart surgery to do coronary artery bypass grafts (CABG), but only in certain cases.
- **Minimally invasive heart surgery** uses small cuts between the ribs. The cuts may be as small as 2 to 3 inches. The surgeon inserts tools into the chest through the cuts. This type of heart surgery may or may not use a heart-lung bypass machine.
- **Robotic-assisted surgery** is a type of minimally invasive surgery. The surgeon uses a computer to control tools on the arms of a robot. This allows the surgeon to be very accurate when doing difficult operations.

What are the risks of heart surgery?

Like all surgery, heart surgery has risks even though the results are often excellent. The risks include:


- Bleeding [<https://medlineplus.gov/bleeding.html>]
- Infection, fever [<https://medlineplus.gov/fever.html>] , and swelling [<https://medlineplus.gov/edema.html>]
- A problem from anesthesia [<https://medlineplus.gov/anesthesia.html>] (medicine that makes you sleep during surgery)
- Arrhythmia
- Damage to the heart, kidneys, liver, and lungs
- Stroke [<https://medlineplus.gov/stroke.html>]

The risks of heart surgery tend to be higher if:

- The surgery is an emergency.
- You have other medical conditions, including:
 - Diabetes [<https://medlineplus.gov/diabetes.html>]
 - Kidney diseases [<https://medlineplus.gov/kidneydiseases.html>]
 - Lung diseases [<https://medlineplus.gov/lungdiseases.html>]
 - Peripheral artery disease [<https://medlineplus.gov/peripheralarterialdisease.html>] (PAD)

NIH: National Heart, Lung, and Blood Institute

Start Here

- Heart Procedures and Surgeries [<https://www.heart.org/en/health-topics/heart-attack/treatment-of-a-heart-attack/cardiac-procedures-and-surgeries>] (American Heart Association)
- What Is Heart Surgery? [<https://www.nhlbi.nih.gov/health/heart-surgery>]  (National Heart, Lung, and Blood Institute)
Also in Spanish [<https://www.nhlbi.nih.gov/es/salud/cirugia-cardiaca>]

Living With

- Cardiac Rehabilitation: MedlinePlus Health Topic [<https://medlineplus.gov/cardiacrehabilitation.html>]
 (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/cardiacrehabilitation.html>]
- What to Expect After Heart Surgery [<https://www.sts.org/sites/default/files/AHSBrochureFinal.pdf>]
(Society of Thoracic Surgeons) - **PDF**


Related Issues

- Dressler Syndrome [<https://www.mayoclinic.org/diseases-conditions/dresslers-syndrome/symptoms-causes/syc-20371811?p=1>]
(Mayo Foundation for Medical Education and Research)
Also in Spanish [<https://www.mayoclinic.org/es/diseases-conditions/dresslers-syndrome/symptoms-causes/syc-20371811?p=1>]

Specifics

- Limited-Access Heart Surgery [<https://www.texasheart.org/heart-health/heart-information-center/topics/limited-access-heart-surgery/>] (Texas Heart Institute)
- Maze Surgery [<https://www.texasheart.org/heart-health/heart-information-center/topics/maze-surgery/>] (Texas Heart Institute)
Also in Spanish [<https://www.texasheart.org/heart-health/heart-information-center/topics/cirugia-de-cox/>]
- Transmyocardial Laser Revascularization [<https://www.texasheart.org/heart-health/heart-information-center/topics/transmyocardial-laser-revascularization/>] (Texas Heart Institute)
Also in Spanish [<https://www.texasheart.org/heart-health/heart-information-center/topics/revascularizacion-transmiocardica-con-laser-rtml/>]
- Valve Repair or Replacement [<https://www.texasheart.org/heart-health/heart-information-center/topics/valve-repair-or-replacement/>] (Texas Heart Institute)
Also in Spanish [<https://www.texasheart.org/heart-health/heart-information-center/topics/reparacion-o-sustitucion-valvular/>]
- What Is a Total Artificial Heart? [<https://www.nhlbi.nih.gov/health/total-artificial-heart>]  (National Heart, Lung, and Blood Institute)
Also in Spanish [<https://www.nhlbi.nih.gov/es/salud/corazon-artificial-total>]
- Why Do I Need Heart Valve Surgery? [<https://www.heart.org/-/media/files/health-topics/answers-by-heart/what-is-heart-valve-surgery.pdf>] (American Heart Association) - **PDF**

Clinical Trials


- ClinicalTrials.gov: Heart Surgery [<https://clinicaltrials.gov/search?intr=%22heart+surgery%22&aggFilters=status:not%20rec>]
 (National Institutes of Health)

Journal Articles

References and abstracts from MEDLINE/PubMed (National Library of Medicine)

- Article: Innovative nitric oxide delivery technology for postoperative pulmonary hypertension in congenital... [<https://www.ncbi.nlm.nih.gov/pubmed/40681972>]
- Article: Early mobilisation to enhance recovery following cardiac valvular surgery in atrial... [<https://www.ncbi.nlm.nih.gov/pubmed/40670517>]
- Article: Artificial intelligence-based action recognition and skill assessment in robotic cardiac surgery... [<https://www.ncbi.nlm.nih.gov/pubmed/40652436>]
- Heart Surgery -- see more articles [<https://pubmed.ncbi.nlm.nih.gov/?term=%22Cardiac+Surgical+Procedures%22%5Bmajr%3Anoexp%5D+AND+humans%5Bmh%5D+AND+english%5Bla%5D+AND+%22last+1+Year%22+%5Bedat%5D+AND+%28patient+education+handout%5Bpt%5D+OR+guideline%5Bpt%5D+OR+clinical+trial%5Bpt%5D%29++NOT+%28letter%5Bpt%5D+OR+case+reports%5Bpt%5D+OR+editorial%5Bpt%5D+OR+comment%5Bpt%5D%29+AND+free+full+text%5Bsb%5D+>]

Find an Expert

- American Heart Association [<https://www.heart.org/en/>]
- National Heart, Lung, and Blood Institute [<https://www.nhlbi.nih.gov/>] 

Children

- Ventricular Assist Device (For Parents) [<https://kidshealth.org/en/parents/vad.html>] (Nemours Foundation)
Also in Spanish [<https://kidshealth.org/es/parents/vad.html>]
- What Is a Pediatric Heart Surgeon? [<https://www.healthychildren.org/English/family-life/health-management/pediatric-specialists/Pages/What-is-a-Pediatric-Heart-Surgeon.aspx>] (American Academy of Pediatrics)
Also in Spanish [<https://www.healthychildren.org/spanish/family-life/health-management/pediatric-specialists/paginas/what-is-a-pediatric-heart-surgeon.aspx>]

Patient Handouts

- Aortic valve surgery - open [<https://medlineplus.gov/ency/article/007408.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/007408.htm>]
- Heart valve surgery [<https://medlineplus.gov/ency/article/002954.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/002954.htm>]
- Mitral valve surgery - minimally invasive [<https://medlineplus.gov/ency/article/007411.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/007411.htm>]
- Mitral valve surgery - open [<https://medlineplus.gov/ency/article/007412.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/007412.htm>]
- Open heart surgery [<https://medlineplus.gov/ency/article/002950.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/002950.htm>]



MEDICAL ENCYCLOPEDIA

- Aortic valve surgery - open [<https://medlineplus.gov/ency/article/007408.htm>]
- Heart valve surgery [<https://medlineplus.gov/ency/article/002954.htm>]
- Heart valve surgery - discharge [<https://medlineplus.gov/ency/patientinstructions/000291.htm>]
- Mitral valve surgery - minimally invasive [<https://medlineplus.gov/ency/article/007411.htm>]
- Mitral valve surgery - open [<https://medlineplus.gov/ency/article/007412.htm>]
- Open heart surgery [<https://medlineplus.gov/ency/article/002950.htm>]
- Pediatric heart surgery - discharge [<https://medlineplus.gov/ency/patientinstructions/000015.htm>]
- Sternal exploration or closure [<https://medlineplus.gov/ency/article/007626.htm>]

Related Health Topics

- Angioplasty [<https://medlineplus.gov/angioplasty.html>]
- Cardiac Rehabilitation [<https://medlineplus.gov/cardiacrehabilitation.html>]
- Congenital Heart Defects [<https://medlineplus.gov/congenitalheartdefects.html>]

[Coronary Artery Bypass Surgery \[https://medlineplus.gov/coronaryarterybypassurgery.html\]](https://medlineplus.gov/coronaryarterybypassurgery.html)

[Heart Attack \[https://medlineplus.gov/heartattack.html\]](https://medlineplus.gov/heartattack.html)

[Heart Diseases \[https://medlineplus.gov/heartdiseases.html\]](https://medlineplus.gov/heartdiseases.html)

[Heart Failure \[https://medlineplus.gov/heartfailure.html\]](https://medlineplus.gov/heartfailure.html)

[Heart Transplantation \[https://medlineplus.gov/hearttransplantation.html\]](https://medlineplus.gov/hearttransplantation.html)

[Heart Valve Diseases \[https://medlineplus.gov/heartvalvediseases.html\]](https://medlineplus.gov/heartvalvediseases.html)

[Pacemakers and Implantable Defibrillators \[https://medlineplus.gov/pacemakersandimplantabledefibrillators.html\]](https://medlineplus.gov/pacemakersandimplantabledefibrillators.html)

National Institutes of Health

The primary NIH organization for research on *Heart Surgery* is the National Heart, Lung, and Blood Institute
[\[http://www.nhlbi.nih.gov/\]](http://www.nhlbi.nih.gov/)

Other Languages

Find health information in languages other than English [\[https://medlineplus.gov/languages/hearturgery.html\]](https://medlineplus.gov/languages/hearturgery.html) on *Heart Surgery*

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