PROCEDURE

Congenital heart defect - corrective surgery

Surgery that repairs or improves a heart problem present from birth.

PURPOSE
Repair or improve heart structure and blood flow

PROCEDURE TYPE
Therapeutic; surgical, sometimes minimally invasive or catheter-assisted

WHERE IT IS DONE
Operating theatre

ANAESTHESIA
General

HOW LONG IT TAKES
Two hours to most of a day, based on complexity

PREPARATION
Fasting, medication review, blood tests, and heart imaging

RECOVERY
Several hospital days; no driving until the surgeon approves

MAIN RISKS
Bleeding, infection, rhythm problems, heart or lung complications

RESULTS
Repair assessed during surgery, with ongoing follow-up afterward

Overview

Congenital heart defect corrective surgery treats an abnormal heart structure present from birth. Examples include holes between heart chambers, narrowed valves or blood vessels, and incorrectly connected blood vessels.

The operation may close a hole, widen a narrowed area, repair or replace a valve, reconnect blood vessels, or redirect blood flow.

"Corrective" does not always mean the heart becomes anatomically typical. Some complex defects require staged operations or procedures that improve circulation without fully correcting the anatomy.

Most procedures are open-heart operations. Some use smaller chest incisions or combine surgery with catheter treatment, in which a thin tube is passed through a blood vessel.

Why the procedure is performed

Surgery may be recommended when a defect affects blood flow, oxygen levels, heart function, growth, or pressure in the heart or lungs. It may also prevent permanent damage when symptoms are limited.

The aims may include:

Surgery may be performed from the first days of life through adulthood. Timing depends on the defect, symptoms, test results, growth, and heart and lung function.

- Improving oxygen-rich blood flow
- Reducing strain on the heart
- Protecting the lungs from high blood pressure
- Repairing a valve, chamber, or major blood vessel
- Supporting growth and activity
- Preventing complications

Who should and should not have it

Surgery may be appropriate when its expected benefits outweigh its risks. A congenital heart team usually reviews scans, oxygen levels, symptoms, previous procedures, and overall health.

An operation may be avoided or delayed when:

These factors may change the timing, type, or goal of treatment rather than rule it out. For a complex defect, consider a second opinion from another congenital heart centre before consenting.

- The defect is small and unlikely to cause harm
- A catheter procedure offers a less invasive repair
- Infection or another temporary illness makes surgery less safe
- Severe lung, kidney, liver, or neurological illness increases risk
- Lung blood vessel damage makes the repair unsafe
- More growth or another treatment stage is needed first
- The likely benefit does not justify the burden of surgery

How to prepare

Follow your treating facility's instructions because preparation varies by operation, age, and medical history.

Tests usually include an echocardiogram, which uses ultrasound to examine the heart. You may also need blood tests, an electrocardiogram, chest imaging, or cardiac catheterisation.

Give the team a complete list of medicines, vitamins, and supplements. Ask about blood thinners like warfarin or apixaban , diabetes medicines, and medicines for heart rhythm or blood pressure. Do not stop prescribed medicine unless the surgical team tells you to.

Follow instructions about when to stop food, milk, and clear liquids before anaesthesia exactly. Tell the team about any fever, cough, vomiting, diarrhoea, dental or skin infection, or other new illness.

Arrange transport home and help during early recovery. Bring requested records, identification, and current medicine information. Adults should discuss pregnancy or possible pregnancy with the team.

What happens during the procedure

General anaesthesia keeps you unconscious and free of pain. The team continuously monitors breathing, blood pressure, heart rhythm, oxygen, and temperature.

The surgeon reaches the heart through the breastbone, between the ribs, or through smaller incisions. Many operations use a heart-lung bypass machine, which circulates and oxygenates blood while the surgeon works on a still heart.

The repair may use stitches, a patch, an artificial tube called a conduit, or a replacement valve. Imaging may check the repair during surgery.

The team may place drainage tubes and temporary pacing wires if needed. Afterward, you or your child will usually be monitored in intensive care.

Recovery and what to expect afterward

Pain around the chest and incision is expected and treated with medicine. Babies and young children may show pain through restlessness, poor sleep, or reluctance to move.

Fluids are often started before food. Appetite may return gradually, and some babies temporarily need feeding support.

Activity begins with sitting up, breathing exercises, and short walks. Follow instructions about wound care, bathing, lifting, sports, and protecting the breastbone while it heals.

Do not drive while taking sedating medicines or until the surgical team says it is safe. Arrange a ride home. Return to work or school depends on recovery; ask for a written activity plan before leaving hospital.

Risks and possible complications

Risk depends on age, the defect, heart and lung function, other conditions, previous operations, and surgical complexity.

Possible complications include:

Some people need a temporary or permanent pacemaker. Repaired valves, patches, conduits, and scar tissue may cause problems later. Ask the surgeon to explain the individual risk estimate.

- Bleeding or blood transfusion
- Infection of the incision, lungs, blood, or heart
- Abnormal heart rhythms
- Breathing problems or fluid around the heart or lungs
- Blood clots, stroke, or injury to another organ
- Kidney or neurological complications
- A remaining leak, narrowing, or valve problem
- Another catheter procedure or operation
- A reaction to anaesthesia
- Death

Results and follow up

The team usually assesses the repair during surgery and with imaging before discharge. The surgeon will explain what was repaired, what abnormalities remain, and whether more treatment is expected.

Follow-up may include examination, oxygen measurement, an electrocardiogram, and an echocardiogram. Some people later need exercise testing, magnetic resonance imaging,

catheterisation, or heart-rhythm monitoring.

Ongoing care with a congenital heart specialist is important, including during adulthood. Follow-up checks for valve problems, narrowing, rhythm changes, reduced heart function, and changes in exercise ability. It may also cover activity, pregnancy, dental care, and prevention of heart infection.

Alternatives

Watchful monitoring may be suitable for a small or stable defect, but regular testing is necessary because the condition may progress.

A catheter procedure can close some holes, widen narrowed valves or vessels, or replace a valve without opening the chest. Recovery is usually shorter, but this approach is not suitable for every anatomy or as durable as surgery in some cases.

Medicines can manage fluid buildup, blood pressure, or rhythm problems, but usually cannot repair an abnormal structure.

Complex defects may require staged or palliative surgery to improve blood flow. If a severe defect cannot be repaired, heart transplantation may be considered.

Choosing no procedure is also an option. Ask what is likely to happen without surgery and whether delay would limit future choices.

When to call your healthcare team

Contact the surgical or congenital heart team if pain is not improving, appetite remains poor, the incision becomes more tender, or you have concerns about medicines, activity, work, school, or follow-up.

Seek prompt medical advice for:

Call emergency services for severe trouble breathing, fainting, a seizure, sudden weakness, blue or grey lips or skin, severe chest pain, uncontrolled bleeding, or difficulty waking. Follow the discharge team's emergency plan if it differs.

- Fever at or above the threshold given by your facility
- Increasing incision redness, swelling, warmth, drainage, or opening
- New or worsening shortness of breath
- Repeated vomiting or inability to keep fluids down

- A new fast, slow, or irregular heartbeat
- Increasing swelling, unusual tiredness, or reduced urination

Common questions

Will I be asleep?

Yes. The procedure uses general anaesthesia with continuous monitoring.

Can I drive home?

No. Arrange for another adult to take you home. Do not drive until the team approves, you can move and react comfortably, and you no longer take sedating pain medicine.

How painful is it?

Chest and incision pain are expected, especially with movement, coughing, or deep breathing. Tell the team if pain prevents sleep, breathing exercises, or walking.

When will I know if it worked?

The repair is usually assessed during surgery and before discharge. Improvements in stamina or growth may take weeks or months.

Will another operation be needed?

Possibly. Some defects require staged surgery, and repaired valves, conduits, narrowed areas, or abnormal rhythms may need later treatment.

Will I need heart care for life?

Many people do. Lifelong follow-up with a clinician experienced in congenital heart disease helps identify changes early.

Sources

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