CONDITION

Pectus excavatum

Pectus excavatum is a chest wall condition in which the breastbone grows inward.

WHAT IT IS
Inward growth of the breastbone and front chest wall

BODY SYSTEM
Chest wall, heart and lungs

MAIN SYMPTOMS
Sunken chest, exercise breathlessness, chest pain, reduced stamina

WHAT CAUSES IT
Usually unknown; family and connective-tissue factors

HOW IT IS DIAGNOSED
Physical examination; CT or MRI for detailed assessment

MAIN TREATMENT
Monitoring, physiotherapy, vacuum bell, or corrective surgery

CAN IT BE CURED?
Sometimes - surgery can correct chest shape

IS IT AN EMERGENCY?
Sometimes - sudden severe breathlessness or fainting

LONG-TERM OUTLOOK
Most people live full lives; severe cases may limit exercise

Overview

Pectus excavatum is a chest wall condition in which the sternum, or breastbone, grows inward. This creates a hollow or sunken area in the middle of the chest. It is sometimes called a funnel chest.

The condition is usually present from birth or becomes noticeable during childhood. It may deepen during growth spurts, especially around puberty. The hollow can be even or deeper on one side.

Pectus excavatum mainly affects appearance in many people. A deeper indentation can reduce the space available for the heart and lungs. This may contribute to breathlessness, reduced exercise ability, chest discomfort, or a fast heartbeat. Symptoms and appearance do not always match: a deep-looking chest may cause few physical problems, while a less obvious change may still be troubling.

Concerns about body image can also matter. Some people avoid swimming, changing clothes around others, or activities that make the chest visible. These effects deserve the same thoughtful assessment as physical symptoms.

Symptoms

The most visible sign is an inward curve of the breastbone and nearby ribs. It may be mild and limited to one area, or it may involve much of the front chest wall.

Possible symptoms include:

Some people have no symptoms other than the change in shape. Others notice more difficulty during adolescence as the chest grows and exercise becomes more demanding.

Chest pain, breathlessness, and palpitations have many possible causes. Their presence does not automatically mean that pectus excavatum is affecting the heart or lungs. A medical assessment can look for other explanations.

- Breathlessness or tiring sooner during exercise
- Reduced stamina compared with other people of a similar age
- Chest pain or pressure, especially during activity
- A racing, pounding, or irregular heartbeat
- Poor posture, such as rounded shoulders
- Distress or self-consciousness about chest appearance

Causes and risk factors

The exact cause is usually unknown. Pectus excavatum appears to involve unusual growth of the cartilage connecting the ribs to the breastbone. Cartilage is firm, flexible tissue that helps form the front of the rib cage.

The condition can run in families, although there is no single inheritance pattern in most cases. Having a close relative with a chest wall difference may increase the chance of developing it.

Pectus excavatum is also seen more often in people with certain connective-tissue conditions. Connective tissue supports structures such as joints, blood vessels, skin, and the chest wall. Associated conditions include Marfan syndrome and some forms of Ehlers-Danlos syndrome.

Scoliosis, which is a sideways curve of the spine, may occur alongside pectus excavatum. Some people also have other posture or chest wall differences.

These associations do not mean that everyone with pectus excavatum has an inherited syndrome. Further assessment may be suggested if you also have features such as unusual joint flexibility, very long limbs, significant spinal curvature, or a family history of aortic or connective-tissue problems.

Diagnosis

Pectus excavatum is usually identified by examining the chest. A clinician may look at the depth and symmetry of the hollow, posture, spinal alignment, and how the chest moves during breathing. They will also ask about exercise tolerance, pain, palpitations, growth, and family history.

Photographs or simple chest measurements may be used to follow changes over time. Imaging is not always needed for a mild condition without symptoms.

If detailed assessment is needed, a CT scan or MRI can show the chest wall and the space around the heart and lungs. These images can be used to calculate measurements such as the Haller index, which compares the chest's width with the distance between the breastbone and spine. No single measurement decides treatment by itself.

Other tests may include:

Testing is more likely when symptoms are significant, the indentation is deep, an associated condition is suspected, or surgery is being considered.

- An electrocardiogram, or ECG, to record the heart's electrical activity
- An echocardiogram, which uses ultrasound to examine heart structure and movement
- Lung function tests to measure airflow and lung volume
- An exercise test to assess breathing, heart function, and stamina during activity

Treatment and management

Treatment is based on symptoms, chest shape, growth, test results, and how the condition affects daily life. Not everyone needs active correction.

Regular follow-up may be enough for a mild, symptom-free chest. During childhood and adolescence, follow-up can show whether the indentation is becoming deeper as the body grows.

Physiotherapy may help with posture, shoulder position, chest flexibility, breathing technique,

and general fitness. It can improve comfort and how the chest looks when posture is part of the problem. Exercise does not usually move a deeply sunken breastbone into a permanently normal position.

A vacuum bell is a device placed over the hollow. It uses controlled suction to lift the breastbone gradually. It is generally considered for selected people whose chest wall is flexible enough. Treatment requires regular use over months or years under specialist guidance. Temporary redness, bruising, discomfort, or small skin injuries can occur.

Surgery may be considered when the condition is severe, causes physical limitations, has a major emotional effect, or produces concerning test findings. The decision involves the expected benefits, the timing of growth, and the risks of surgery.

The main surgical approaches are:

Pain control and gradual return to movement are important after surgery. Recovery takes time, and restrictions may apply to lifting, sports, sleep positions, and activities that could move the bars. Surgery often produces a lasting improvement, but it cannot guarantee complete symmetry or eliminate every symptom.

Medicines do not correct the chest wall itself. They may be used for pain relief around treatment or when another condition is contributing to symptoms.

- Nuss procedure: One or more curved metal bars are passed behind the breastbone to lift it forward. The bars remain in place for a period and are removed during another operation.
- Ravitch procedure: An open operation reshapes or removes abnormal rib cartilage and repositions the breastbone. It may be used for certain complex, stiff, or uneven chest shapes.

Complications

Many people have no major medical complications. In a deeper chest, the breastbone may compress or shift the heart and may limit how fully the lungs expand during effort. This can contribute to reduced exercise capacity, although test results differ from person to person.

Possible longer-term effects include poor posture, recurring discomfort, and distress about appearance. Associated scoliosis or a connective-tissue condition may need separate monitoring.

Surgical complications can include bleeding, infection, air around a lung, movement of a support bar, persistent pain, injury to nearby structures, or recurrence after correction. Serious complications are uncommon but are part of the discussion before surgery.

Prevention

Pectus excavatum usually cannot be prevented. It is linked to how the chest wall grows, and it is not caused by poor posture, exercise habits, or anything a parent did during pregnancy.

Posture work and physical activity may improve strength, comfort, and confidence, but they do not prevent an inherited or growth-related chest wall difference from developing.

Early assessment cannot stop the condition from forming. It can identify progression, associated conditions, and treatment options at a useful stage of growth.

Living with it and what to expect

Pectus excavatum may become more noticeable during periods of rapid growth. Once growth is complete, the basic chest shape often becomes more stable, although posture, muscle development, ageing, and weight changes can alter its appearance.

A mild condition may never interfere with work, exercise, relationships, or general health. People with more marked pectus excavatum may need to adjust the pace of strenuous activity or investigate unexplained limits in stamina.

You usually do not need to avoid exercise solely because of pectus excavatum. Gradual aerobic exercise, strength work, and activities that support posture can be helpful when they are comfortable. Significant chest pain, faintness, or unusual breathlessness during activity should be assessed rather than pushed through.

If appearance affects your confidence, practical support may include physiotherapy, clothing choices, peer support, or counselling. Emotional impact is a valid reason to discuss the condition, even when heart and lung tests are normal.

Vacuum-bell treatment and surgery both require long-term participation. Vacuum treatment may continue for months or years. Surgical correction involves recovery, follow-up, and usually a later procedure to remove the bars. Results are often durable, but some unevenness or recurrence is possible.

When to get medical help

Arrange a routine medical appointment if the chest indentation is becoming deeper, particularly during a growth spurt. Assessment is also appropriate for recurring chest discomfort, reduced exercise ability, frequent palpitations, or concerns about posture or body

image.

Seek prompt advice if symptoms worsen or start affecting school, work, sleep, or usual activities. After chest surgery, contact the surgical team about increasing pain, fever, wound redness or drainage, new clicking or movement around a bar, or breathing symptoms.

Get urgent or emergency help for:

These symptoms can have causes unrelated to pectus excavatum and should not be assumed to come from the chest shape.

- Sudden or severe difficulty breathing
- Fainting, especially during exercise
- Severe or persistent chest pain
- Blue or grey lips or skin
- A rapid or irregular heartbeat with faintness or chest pain
- Sudden chest pain or breathlessness after pectus surgery

Common questions

Can pectus excavatum get worse with age?

It often becomes more noticeable during childhood and adolescent growth spurts. After growth ends, the underlying shape is less likely to change quickly. Posture, muscle mass, and ageing can still affect how it looks and feels.

Can exercise fix a sunken chest?

Exercise can strengthen the chest and back, improve posture, and increase fitness. It does not usually reposition the breastbone permanently. Physiotherapy can still be valuable for comfort, movement, and appearance.

Does pectus excavatum affect the heart or lungs?

It can in some people, especially when the indentation is deep. The heart may be shifted or compressed, and exercise capacity may be reduced. Imaging, heart tests, lung tests, or exercise testing can help determine whether this is happening.

Is pectus excavatum surgery only cosmetic?

No. Surgery may be considered for physical limitations, heart or lung effects, pain, or substantial emotional distress. Appearance is also a legitimate concern, but the balance of benefits and risks should be assessed individually.

Will my child grow out of pectus excavatum?

The condition does not usually disappear with growth. It may remain mild, or it may deepen during puberty. Monitoring during growth can help show whether specialist assessment is needed.

Can pectus excavatum come back after surgery?

Recurrence is possible, although many corrections remain stable. The chance may be influenced by age, chest flexibility, the type of deformity, surgical method, healing, and whether the chest continues to grow.

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