CONDITION

Collapsed lung

Learn about pneumothorax, often called a collapsed lung, including symptoms, causes, diagnosis, treatment, recovery, and when to seek emergency care.

WHAT IT IS
Air between a lung and chest wall causing collapse

BODY SYSTEM
Lungs and breathing

MAIN SYMPTOMS
Sharp one-sided chest pain, shortness of breath, dry cough, chest tightness

WHAT CAUSES IT
Unknown, lung disease, injury or medical procedures

HOW IT IS DIAGNOSED
Chest X-ray, lung ultrasound or CT scan

MAIN TREATMENT
Monitoring or trapped-air removal, sometimes surgery

CAN IT BE CURED?
Yes - lung can re-expand after treatment

IS IT AN EMERGENCY?
Sometimes - severe or rapidly worsening breathing difficulty

LONG-TERM OUTLOOK
Normal activity usually resumes, but recurrence is possible

Overview

A collapsed lung, medically called a pneumothorax , happens when air enters the space between a lung and the inside of the chest wall. This space is called the pleural space . It normally contains only a thin layer of fluid that helps the lung move smoothly.

Air in the pleural space pushes on the lung. Part or all of the lung may then pull away from the chest wall and become unable to expand normally. A small pneumothorax may cause few symptoms, while a larger one can make breathing difficult.

In a tension pneumothorax , pressure continues to build inside the chest. This can compress the lungs, heart, and major blood vessels. It is a life-threatening emergency that requires immediate treatment.

The term "collapsed lung" is sometimes also used for atelectasis , in which small areas of lung tissue lose air because of a blockage, shallow breathing, or another problem. Atelectasis is different from pneumothorax. This article focuses on pneumothorax.

A pneumothorax may occur without an obvious injury, because of an underlying lung condition, or after trauma or a medical procedure. Treatment depends on its size, symptoms, cause, and whether it is getting larger. Some small pneumothoraces can heal with monitoring, while others require removal of the trapped air.

Symptoms

Symptoms often begin suddenly. The most common are sharp chest pain, usually on one side, and shortness of breath. Pain may become worse when taking a deep breath or coughing.

Other possible symptoms include:

A small pneumothorax may cause only mild discomfort. People with existing heart or lung disease may have more serious symptoms even when the pneumothorax is not large.

Seek urgent medical assessment for new, unexplained one-sided chest pain or shortness of breath. These symptoms have many possible causes and cannot be safely identified without an examination.

Call emergency services for severe or rapidly worsening breathing difficulty, fainting, confusion, blue or gray skin, severe chest pain, or extreme weakness. These may indicate a tension pneumothorax or another medical emergency. Do not drive yourself if you are severely short of breath or feel faint.

- A dry cough
- A feeling of chest tightness
- A rapid heartbeat
- Faster or more difficult breathing
- Fatigue or reduced ability to exercise
- Bluish or gray lips or skin when oxygen levels are low

Causes and risk factors

A pneumothorax is classified partly by why it happened.

A primary spontaneous pneumothorax develops without a known injury in someone who does

not have a diagnosed lung disease. It may result from the rupture of a small air-filled area near the lung surface, sometimes called a bleb or bulla. These areas may not have caused symptoms before they rupture.

Smoking tobacco raises the risk of a first spontaneous pneumothorax and of another episode. Primary spontaneous pneumothorax is also seen more often in tall, thin adolescents and younger adults, although it can affect people of different ages and body types.

A secondary spontaneous pneumothorax occurs in a person with an underlying lung disorder. Possible causes include:

Some inherited conditions, including Birt-Hogg-Dubé syndrome and certain connective tissue disorders, can increase the risk. A clinician may consider a genetic cause when pneumothorax runs in a family, occurs on both sides, or is associated with other distinctive medical findings.

A traumatic pneumothorax can follow a penetrating or blunt chest injury. Broken ribs may damage the lung. A wound through the chest wall can allow outside air to enter the pleural space.

Pneumothorax can also occur as a complication of medical care. Procedures involving the chest, lungs, or large veins may occasionally introduce air or injure the lung. Mechanical ventilation, which uses pressure to support breathing, can cause pneumothorax in some critically ill people.

Changes in surrounding air pressure do not usually cause a first pneumothorax in a healthy lung, but flying or scuba diving can be dangerous when a pneumothorax is present or has not fully healed.

- Chronic obstructive pulmonary disease, or COPD
- Cystic fibrosis
- Severe asthma
- Pneumonia, including certain opportunistic infections
- Tuberculosis
- Interstitial lung disease, which causes inflammation or scarring
- Lung cancer
- Endometriosis involving the chest, which can cause pneumothorax around the time of menstruation

Diagnosis

A clinician will ask when symptoms started and whether there has been an injury, lung disease, recent procedure, previous pneumothorax, or smoking history. During the examination, the affected side may have quieter breath sounds. Heart rate, breathing rate, blood pressure, and blood oxygen level are checked.

A chest X-ray is commonly used to confirm the diagnosis. It can show air around the lung and how much of the lung has pulled away from the chest wall. Pneumothorax size may be described differently depending on the measurement method used.

Bedside lung ultrasound can identify a pneumothorax quickly, especially in emergency and trauma settings. A computed tomography, or CT, scan gives more detailed images. CT may be used when an X-ray is unclear, when another chest problem is suspected, or when treatment planning requires more detail.

Blood tests are not usually needed to prove that a pneumothorax is present. They may be used to assess oxygen levels, infection, bleeding, or another possible cause of symptoms.

A tension pneumothorax may be diagnosed from severe symptoms and examination findings. If a person is unstable, emergency treatment should not be delayed while waiting for imaging.

Treatment and management

Treatment aims to remove air from the pleural space, allow the lung to expand, relieve symptoms, and reduce the risk of another episode. The plan depends on the person's condition rather than on size alone.

A small spontaneous pneumothorax may sometimes be managed with observation if the person is stable, has mild symptoms, and has reliable access to follow-up. The body can gradually absorb the air. Repeat examination or imaging is used to make sure the pneumothorax is not enlarging. Supplemental oxygen may be given if the blood oxygen level is low or for another clinical reason.

Some stable people with a primary spontaneous pneumothorax may be candidates for conservative care even when the pneumothorax is not very small. This decision requires careful medical assessment and clear instructions about when to return.

If air needs to be removed, options include needle aspiration or a chest tube . During needle aspiration, a clinician passes a needle or small catheter through the chest wall and draws out the trapped air.

A chest tube is a flexible tube placed between the ribs into the pleural space. It allows air to drain until the leak closes and the lung stays expanded. The tube may be connected to a one-way valve or a drainage system. Some carefully selected patients can continue treatment

outside the hospital with a small portable device and close follow-up.

A tension pneumothorax requires immediate pressure relief, followed by placement of a chest tube. Treatment begins based on the clinical situation rather than waiting for an X-ray.

Surgery may be considered when air leakage continues, the lung does not fully expand, a pneumothorax returns, both lungs have been affected, or recurrence would create a particular occupational or safety risk. Surgery is often performed through small incisions using video-assisted thoracic surgery , or VATS.

During surgery, the clinician may remove leaking blebs or damaged areas. A procedure called pleurodesis may also be performed. Pleurodesis causes the lung surface to adhere to the chest wall, reducing the space where air could collect again. It can be done surgically or, in some situations, by placing a substance through a chest tube.

Treatment of a secondary pneumothorax also includes management of the underlying lung disease. Because people with reduced lung function may tolerate a pneumothorax poorly, hospital monitoring and drainage are more often needed.

Complications

The most immediate complication is worsening collapse of the lung. A tension pneumothorax can lower blood pressure and prevent enough blood from returning to the heart.

Other possible complications include:

Recurrence is an important concern after a spontaneous pneumothorax. The risk varies according to the cause, smoking, underlying lung disease, imaging findings, and treatment received. Preventive surgery or pleurodesis lowers recurrence risk but cannot guarantee that another episode will never occur.

- Low blood oxygen
- Persistent leakage of air from the lung
- Failure of the lung to expand fully
- Bleeding into the pleural space
- Infection related to a chest tube or surgery
- Fluid buildup in the lung after it re-expands, which is uncommon
- Another pneumothorax in the future

Follow up

Follow-up usually includes a clinical review and repeat chest imaging. The timing depends on the type of pneumothorax, treatment, symptoms, and local practice. Keep scheduled appointments even if breathing feels normal, because symptoms alone cannot confirm that all pleural air has disappeared.

Seek urgent reassessment if chest pain or shortness of breath returns or worsens during recovery. Call emergency services for severe breathing difficulty, fainting, confusion, or blue or gray skin.

Avoid smoking, including tobacco smoking. Stopping reduces the risk of another spontaneous pneumothorax and supports overall lung health. A clinician can discuss counseling and medicines used to help people quit.

Ask when it is safe to return to work, exercise, lifting, and sports. Normal activity can usually be resumed gradually after recovery, but restrictions may be needed while symptoms or pleural air remain. Contact sports and activities far from medical help may require additional planning.

Do not fly while a pneumothorax is still present. British Thoracic Society guidance advises waiting at least seven days after a chest X-ray confirms complete resolution, although individual circumstances and airline rules may differ. Recent surgery or underlying lung disease may require a longer delay.

Scuba diving carries a serious risk if trapped gas expands underwater or during ascent. People with a history of spontaneous pneumothorax should not return to diving unless they have had specialist assessment and treatment considered sufficiently protective. General medical clearance for exercise does not automatically mean that diving is safe.

Sources

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