CONDITION

Subcutaneous emphysema

Subcutaneous emphysema is air trapped beneath the skin, usually around the chest, neck, or face.

WHAT IT IS
Air trapped beneath the skin

BODY SYSTEM
Skin and tissues, often over chest and neck

MAIN SYMPTOMS
Swelling, crackling under skin, neck fullness, voice change

WHAT CAUSES IT
Air leaks from injury, procedures, lungs, or airways

HOW IT IS DIAGNOSED
Examination plus chest X-ray or CT

MAIN TREATMENT
Treating the air leak, with drainage when needed

CAN IT BE CURED?
Yes - usually resolves when the air leak stops

IS IT AN EMERGENCY?
Sometimes - breathing trouble or rapidly spreading swelling

LONG-TERM OUTLOOK
Usually clears after the underlying cause is controlled

Overview

Subcutaneous emphysema means that air or another gas has become trapped in the layer of tissue beneath the skin. It most often affects the chest, neck, or face. The area may look swollen and feel crackly when touched.

Despite the name, this is different from emphysema of the lungs, a long-term lung disease often linked to smoking. In subcutaneous emphysema, the word "emphysema" simply refers to air within body tissues.

The trapped air usually comes from a leak in the lung, airway, or another air-containing structure. It can happen after a chest injury, surgery, a medical procedure, or a collapsed lung. Less often, it develops after severe coughing or vomiting, or because an infection is producing gas within the tissues.

A small amount of trapped air is often absorbed by the body after the leak has stopped. However, the condition matters because it can be a sign of an injury or air leak that needs treatment. Large or rapidly increasing amounts can also press on the airway or other structures in the chest and neck.

Symptoms

The main feature is swelling beneath the skin. When the area is gently pressed, it may make a crackling or popping sensation. Clinicians call this sensation crepitus .

Other symptoms can include:

The swelling may spread away from the original leak because air can travel between layers of tissue. For example, air escaping from the chest may move into the neck or face.

Symptoms from the underlying cause may be more important than the swelling itself. A collapsed lung can cause sudden chest pain and breathlessness. An airway injury may cause coughing or difficulty breathing. An infection may cause fever, worsening pain, redness, or a person feeling very unwell.

- Fullness or puffiness of the chest, neck, face, or eyelids
- A change in voice, such as hoarseness
- Neck discomfort or trouble swallowing
- Chest pain, cough, or shortness of breath

Causes and risk factors

Subcutaneous emphysema develops when air enters the tissues faster than the body can absorb it. The source is often within the chest.

Common situations linked to it include:

Risk is higher after recent chest, neck, abdominal, or facial surgery; chest trauma; or procedures involving the lungs and airways. Existing lung disease may also make some air leaks more likely.

Sometimes the cause is not immediately clear. Investigation then focuses on finding where the air came from and whether the leak is continuing.

- Chest injury: A broken rib, penetrating injury, or forceful impact can damage the lung or airway.

- Collapsed lung: Air leaking around a lung can move through the chest wall and under the skin.
- Medical procedures: Chest surgery, keyhole surgery, placement of a chest drain, airway procedures, and some dental or facial procedures can introduce or release air.
- Mechanical ventilation: A breathing machine can occasionally contribute to an air leak, particularly when the lungs are already injured.
- Airway or lung damage: A tear in the windpipe or larger breathing tubes can allow air to escape.
- Air in the centre of the chest: This is called pneumomediastinum. It can follow severe coughing, an asthma flare, vomiting, strenuous effort, or inhaled drug use.
- A tear in the oesophagus: The oesophagus is the tube carrying food to the stomach. A tear is uncommon but serious, particularly after repeated forceful vomiting.
- Gas-producing infection: Rarely, bacteria can produce gas in the soft tissues. This requires urgent treatment.

Diagnosis

A clinician may suspect subcutaneous emphysema from the swelling and characteristic crackling beneath the skin. They will also check breathing, oxygen level, heart rate, blood pressure, temperature, and the speed at which the swelling is changing.

Imaging is usually needed to confirm the extent of the air and look for its source. A chest X-ray may show air under the skin, a collapsed lung, or air in the centre of the chest.

A CT scan gives more detailed pictures. It can show small air leaks, airway injuries, chest damage, or air extending through deeper tissues. CT is especially useful when symptoms are substantial, an injury has occurred, or the cause remains uncertain.

Further tests are chosen for the suspected cause. These might include examination of the airways with a small camera, known as bronchoscopy, or imaging of the oesophagus using swallowed contrast material. Blood tests may help when infection, bleeding, or significant illness is suspected.

Treatment and management

Treatment is guided by the amount of trapped air, whether it is increasing, and what caused it. The aim is to stop the leak and protect breathing while the body absorbs the remaining air.

Small, stable areas may only need observation and treatment of discomfort. Oxygen may be used in hospital when clinically appropriate. Repeat examinations or imaging can check that the air is not spreading and that no hidden chest problem is developing.

If a collapsed lung is causing the leak, treatment may include a chest drain. This is a tube placed between the ribs to remove air from around the lung. If a drain is already present, the clinical team may check whether it is positioned correctly or has become blocked.

An injury to the airway, oesophagus, or chest wall may need specialist care and sometimes surgery. A gas-producing infection requires urgent antibiotics and removal of infected or damaged tissue.

Very extensive swelling can occasionally interfere with breathing, vision, swallowing, or blood flow. In these situations, clinicians may release the trapped air using small cuts, drains, or suction dressings. These measures are generally reserved for severe or worsening cases because most trapped air is absorbed once its source is controlled.

Avoid pressing, massaging, or trying to puncture a swollen area. This will not repair the source and could cause injury or infection.

Complications

Most complications are related to the underlying air leak rather than the air beneath the skin.

Possible complications include:

Severe airway compression is uncommon, but it requires immediate treatment. A serious chest injury, oesophageal tear, or deep tissue infection can also be dangerous even when the skin swelling initially appears limited.

- Increasing pressure around a collapsed lung
- Air collecting in the centre of the chest
- Compression of the throat or airway
- Difficulty swallowing or speaking
- Spread of air across the chest, neck, face, or abdominal wall
- Infection when bacteria are the source of the gas
- Return of the swelling if the leak continues

Prevention

Subcutaneous emphysema cannot always be prevented. Accidental injuries, unexpected complications of necessary procedures, and spontaneous air leaks may occur without warning.

After chest, lung, neck, or facial treatment, follow the activity and wound-care instructions provided by the clinical team. Report new swelling, crackling beneath the skin, chest pain, or breathlessness rather than trying to release the air yourself.

If you have a lung condition such as asthma, following your established treatment plan may reduce episodes of severe coughing or breathing difficulty, although it cannot guarantee prevention. Avoiding inhaled recreational drugs may reduce the risk of pressure-related lung and airway injury.

Do not fly, scuba dive, or return to activities involving major pressure changes while an active chest air leak or collapsed lung is suspected. A clinician should confirm when these activities are safe again.

Living with it and what to expect

Subcutaneous emphysema is usually a temporary condition rather than a long-term disease. Once the leak has stopped, the body gradually absorbs the trapped air. The crackling and swelling often improve over days, but larger amounts can take longer to clear.

During recovery, the swollen area may shift or seem to spread slightly before it improves. This does not always mean the underlying problem is worsening, but a clear increase should be assessed.

Follow-up may include another examination or chest X-ray, especially after a collapsed lung, injury, procedure, or hospital admission. The purpose is to confirm that the lung remains expanded and the air is being absorbed.

Long-term effects are uncommon when the cause is found and treated. Future risk is shaped mainly by the cause. A one-time surgical complication may not return, while an ongoing lung disorder or an unresolved air leak may lead to another episode.

Recovery from a major chest injury, infection, or surgery can take much longer than the skin swelling itself. Activity limits and follow-up will therefore reflect the underlying problem, not only the subcutaneous air.

When to get medical help

Call emergency services if swelling beneath the skin occurs with:

Prompt assessment is also needed for fever, rapidly worsening pain, spreading redness, skin discolouration, or a person feeling severely unwell. These can be signs of a deep tissue infection.

Contact a clinician soon if you notice new crackling or swelling after surgery, a chest procedure, dental treatment, forceful vomiting, or a prolonged coughing episode. This is important even if breathing feels normal, because the source of the air may need investigation.

For a small, already assessed area that is not growing, routine follow-up is usually appropriate. Seek earlier review if it does not improve as expected, returns, or is joined by new chest or breathing symptoms.

- Severe or worsening difficulty breathing
- Rapidly expanding swelling of the neck, face, or chest
- Blue, grey, or unusually pale lips or skin
- Fainting, confusion, or extreme drowsiness
- Severe chest pain, especially after an injury
- Noisy breathing, choking, drooling, or inability to swallow
- A major chest, neck, or facial injury

Common questions

What does subcutaneous emphysema feel like?

It often feels like bubble wrap or crisp cereal beneath the skin. Pressing gently may produce a crackling sensation. The area can also feel swollen, tight, or mildly tender.

Can subcutaneous emphysema go away on its own?

A small amount may be absorbed without direct treatment once the leak has stopped. It is still important to identify the source, because a collapsed lung, airway injury, or infection may need treatment even if the swelling is mild.

Is it the same as smoking-related emphysema?

No. Smoking-related emphysema damages the air sacs inside the lungs over many years. Subcutaneous emphysema is air trapped beneath the skin and is usually temporary.

How long does it take to disappear?

Small amounts may improve over several days. More extensive swelling can take days to weeks to clear. The timing is affected by the amount of air and whether the source has fully

stopped leaking.

Can I fly with subcutaneous emphysema?

Flying can expose trapped gas to changes in air pressure. Do not fly while an active air leak, collapsed lung, or unexplained subcutaneous emphysema is present. Wait until a clinician has confirmed that the underlying problem has resolved and that flying is safe.

Does crackling under the skin always mean an air leak?

Air beneath the skin commonly causes crackling, but gas-producing infections can sometimes feel similar. New crackling should be medically assessed, particularly when accompanied by fever, severe pain, redness, skin colour changes, recent surgery, or an injury.

Sources

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