

Abscess

Introduction

An abscess is a painful collection of pus caused by a bacterial infection.

This article focuses on two types of abscess:

- **skin abscesses** – which can develop anywhere on the body and occur when a bacterial infection causes pus to collect in the skin
- **internal abscesses** – which develop inside the body following an infection or an injury

The symptoms of an abscess can vary depending on which type you have.

A skin abscess is often painful and appears as a swollen, pus-filled lump under the surface of the skin, or an open break in the skin.

It's more difficult to identify an abscess inside the body, but signs include pain in the area, a high temperature and generally feeling unwell.

What causes an abscess?

Most abscesses are caused by a bacterial infection.

When bacteria enter your body, your immune system sends infection-fighting white blood cells to the affected area. As the white blood cells attack the bacteria, some nearby tissue dies. A hollow then develops and fills with pus to form an abscess.

Most skin abscesses are caused by an infection in the root of a hair or by a blocked sweat gland. They usually affect people who are otherwise well.

It may be possible to help prevent a skin abscess through good hygiene, a healthy lifestyle and looking after your skin.

Internal abscesses often develop as a complication of an existing condition. Those with an underlying health condition or weakened immune system are more likely to get internal abscesses.

Treating an abscess

A small skin abscess may drain naturally, or simply shrink, dry up and disappear without any treatment.

Larger abscesses may need to be treated with antibiotics to clear the infection and surgery to drain the pus. Without treatment, an abscess may continue to get larger and more painful until it eventually bursts.

Other types of abscess

There are a number of other types of abscess not fully covered in this article including:

- a **dental abscess** – a build-up of pus inside a tooth that is caused by a bacterial infection
- a **brain abscess** – a rare but potentially life threatening build-up of pus caused by bacteria following trauma to the skull, after surgery or from a previous infection
- a **Bartholin's cyst** – a build-up of pus from one of the Bartholin's glands, found on each side of the opening of the vagina
- a **liver abscess** – caused by an abdominal infection, such as appendicitis, a blood infection or an infection of the passages that transport bile around the body (the biliary tracts)
- a **spinal cord abscess** – caused by an infection inside the spine that results in inflammation (swelling) and a build-up of pus around the spinal cord
- an **anorectal abscess** – a collection of pus that builds up in the rectum and anus due to a sexually transmitted infection (STI), a blocked gland or infection of an anal fissure (a tear or ulcer in the lining of the anal canal)
- a **peritonsillar abscess** – the most common infections of the head and neck region and usually a result of tonsillitis (an infection of the tonsils)

Symptoms of an abscess

The symptoms of an abscess depend on where it develops in your body.

Skin abscesses

Skin abscesses often develop into a swollen, pus-filled lump under the surface of the skin, or they may appear as an open break in the skin. Abscesses are often red and painful. Boils are a common type of skin abscess.

If you have a skin abscess, you may have the following symptoms:

- a smooth swelling under your skin that can feel hard or firm
- tenderness in the affected area
- pain, warmth and redness (erythema) in the affected area
- an open wound or closed sore
- pus in the affected area that appears white or yellow
- a high temperature (fever) of 38C (100.4F) or above
- chills

Skin abscesses are typically 1-3cm in diameter, although size can vary. The skin over the abscess may be thin if it is close to tearing.

Internal abscesses

Internal abscesses are more difficult to identify than skin abscesses. They can develop inside an organ, such as in the lungs or brain, or in the spaces between organs, causing pain in the affected area.

Symptoms of an internal abscess may include:

- discomfort in the area of the abscess
- feeling generally unwell
- a high temperature (fever) of 38C (100.4F) or above
- pain in your abdomen (tummy)

The symptoms of certain types of deep abscess can also include:

- weight loss
- loss of appetite
- pain and tenderness
- drowsiness (fatigue)
- lack of appetite
- diarrhoea (loose, watery stools)
- a need to frequently pass urine

Types of abscess

Depending on exactly where inside your body the abscess is, you may also have a number of other symptoms.

For example:

- a dental abscess can cause toothache, a bitter taste in your mouth and bad breath
- a breast abscess can cause redness, pain and a discharge from your nipple
- a brain abscess can cause a headache, confusion and a high temperature (fever) of 38C (100.4F) or above

Causes of an abscess

Most abscesses are caused by a bacterial infection.

Bacteria

When bacteria enter your body, your immune system tries to fight the infection by sending white blood cells to the affected area. As the white blood cells attack the bacteria, it causes inflammation (swelling) and the death of nearby tissue, leading to the formation of a cavity.

The cavity fills with pus to form the abscess. The pus contains a mixture of dead tissue, white blood cells and bacteria. The abscess may get larger and more painful as the infection continues and more pus is produced.

Staphylococcus aureus and streptococci are the most common types of bacteria that cause skin abscesses on the following areas of the body:

- head and neck
- limbs
- underarms
- torso

PVL Staphylococcus aureus

Staphylococcus aureus (*S. aureus*) is a type of bacterium found on the surface of healthy skin, particularly in the nose and moist, damp areas such as armpits and groins. It can cause skin infections, such as skin abscesses and boils, and prefers to live in moist areas of the body such as the armpits and groin.

Some *S. aureus* bacteria can produce a poisonous substance called Panton-Valentine leukocidin (PVL), which kills the white cells, causing the body to make more white cells to continue to fight the infection.

PVL-positive strains of bacteria are therefore more likely to cause skin infections and abscesses.

Both types of *S. aureus* can also cause more serious conditions such as:

- septicaemia – blood poisoning caused by bacteria multiplying in the blood
- pneumonia – swelling (inflammation) of the lungs caused by an infection

Skin abscesses

Bacteria can cause a skin abscess when they get under the surface of your skin. An abscess may occur if you have a minor skin wound, such as a small cut or graze, or if a sebaceous gland (oil gland) or a sweat gland in your skin becomes blocked.

Boils develop as the result of bacteria entering the root of a hair on your skin.

In most cases, skin abscesses are not a sign of an underlying health problem. However, you are more likely to develop a skin abscess if you have diabetes. Diabetes can cause nerve damage, which can mean you are unable to feel minor cuts and grazes to your skin.

Methicillin-resistant Staphylococcus aureus (MRSA) has been a common cause of skin abscesses in recent years.

Internal abscesses

Abscesses that occur in the abdomen (tummy) can be caused by:

- an infection
- a tear (rupture) of the intestine
- an injury
- surgery to the abdomen

An abscess can develop inside your body when bacteria spread from an existing infection.

For example, a lung abscess can occur as a result of a bacterial infection in your lungs, such as pneumonia (inflammation of the lung tissue), that becomes isolated by the body's immune system. This then develops into a collection of pus (abscess). Bacteria can also spread from other areas of your body through your bloodstream.

Internal abscesses tend to develop in people who have an underlying health problem, such as a brain abscess that occurs after a head wound. Internal abscesses are also more common in people with weakened immune systems, such as those with HIV and AIDS or cancer.

Risk factors

Things that increase the likelihood of an abscess developing include:

- trauma to a specific area of the body
- a weakened immune system
- any material getting into the body
- a drainage system in the body becoming blocked
- a build-up of fluid in the tissues of the body
- a haematoma (collection of blood outside a blood vessel)
- a PVL-positive strain of bacteria (see above)

Hidradenitis Suppurativa

Hidradenitis suppurativa is a rare inflammatory skin disease that can cause painful abscesses to appear in the armpits and groin.

It is a chronic (long-term) disease that often begins between ages 20-40. It is also more common in females.

The condition is believed to be caused by pores of the apocrine glands (found in the armpits and groin) becoming blocked, but the exact cause is not fully known.

Severe cases of hidradenitis suppurativa can lead to psychological affects or inflammation of the joints (arthritis).

Read more information about hidradenitis suppurativa.

Diagnosing an abscess

See your doctor if you think you may have an abscess. There are several tests used to diagnose an abscess depending on where it is located.

Skin abscesses

If you have a skin abscess, your doctor will examine the affected area. They may also ask how long you have had the abscess, whether you had an injury in that area and whether you have any other symptoms.

A sample of pus may be taken from your abscess and sent to a laboratory for a gram stain test.

This allows the scientists to see the colour and shape of the bacteria causing the infection then grow the bacteria in the lab (culture). Finally, the bacteria is tested against different antibiotics to see which work best at killing it (sensitivity tests).

If you have had more than one skin abscess, you may be asked to give a urine sample. This will be tested for glucose, which is a sign of diabetes. People with diabetes have an increased risk of developing skin abscesses.

If you have recurring boils and abscesses, your doctor may ask the laboratory to test the *Staphylococcus aureus* bacteria further to see if it is producing Panton-Valentine leukocidin (PVL) toxin. Additional treatments may then be recommended, such as a body wash or an antibiotic cream, to stop the bacteria living on the body.

Internal abscesses

Abscesses that develop inside your body are more difficult to diagnose than skin abscesses because they cannot be seen. Your doctor will ask you about your symptoms and any other health conditions you may have.

A number of procedures can be used to confirm identify an internal abscess. For example, you may have:

- a computerised tomography (CT) scan, where X-rays are taken to produce an image of the inside of your body
- a magnetic resonance imaging (MRI) scan, where a magnetic field and radio waves are used to produce an image of the inside of your body
- an ultrasound scan, where high-frequency sound waves are used to produce an image of the inside of your body
- an X-ray, where high-energy radiation is used to produce an image of the inside of your body, such as a chest X-ray to help diagnose a suspected lung abscess

These techniques will help determine the size of the abscess and where it is in your body.

Your doctor may also want to take a sample of the pus from your abscess to rule out the possibility of it being a tumour.

Treating an abscess

Abscesses can be treated in a number of different ways depending on the type of abscess and how large it is.

The main treatment options include:

- antibiotics
- a drainage procedure
- surgery

These are described in more detail below.

Skin abscesses

Some small skin abscesses may drain naturally and get better without the need for treatment. Applying heat in the form of a warm compress, such as a warm flannel, may help reduce any swelling and speed up healing.

However, the flannel should be thoroughly washed afterwards and not used by other people to avoid spreading the infection.

For larger or persistent skin abscesses, your doctor may prescribe antibiotics to help clear the infection and prevent it from spreading.

Sometimes, especially with PVL-positive strains of bacteria or with recurrent infections, you may need to wash off all the bacteria from your body to prevent re-infection (decolonisation). The skin is disinfected using additives in the bath or shower and an antibiotic cream is used inside the nose.

In most cases, antibiotics alone will not be enough to clear a skin abscess and the pus will need to be drained to clear the infection. If a skin abscess is not drained, it may continue to grow and fill with pus until it bursts, which can be very painful.

If an abscess is allowed to burst and drain of pus on its own, there is also a risk that it will not drain properly, causing the abscess to return or the infection to spread.

Incision and drainage

If your skin abscess needs draining, you will probably have a small operation carried out under anaesthetic. The type of anaesthetic used will depend on the size and severity of your skin abscess. However, it is likely you will have a local anaesthetic, where you remain awake and the area around the abscess is numbed.

During the procedure, your surgeon will make a cut in the abscess to allow all of the pus to drain out. They may also take a sample of pus for testing to confirm which bacteria caused the infection. Once all of the pus has been removed, the surgeon will clean the hole that is left by the abscess using a saline (salt) solution.

Your abscess will be left open so that any more pus produced can be drained away easily. If your abscess is deep, you may need an antiseptic dressing placed inside it to keep it open (gauze wick). The procedure may leave a small scar.

Internal abscesses

The pus must be drained from an internal abscess, either through surgery or by using a needle (percutaneous abscess drainage).

The method used will depend on the size of your abscess and where it is in your body. In most cases, antibiotics are used alongside drainage to help kill the infection and prevent it spreading.

Incision and drainage

If the internal abscess is small, your surgeon may be able to drain it using a fine needle. Depending on the location of the abscess, this may be carried out using either local or general anaesthetic.

The surgeon may use ultrasound to help guide the needle into the right place. Once the abscess has been located, your surgeon will make a cut in your skin over the abscess, before inserting a drainage catheter (a fine, plastic tube) into it. The catheter will allow the pus to drain out into a bag and it will be left in place until all the pus has been removed.

Surgery

If your internal abscess is too large to be drained with a needle, or if needle drainage has not been effective in removing all of the pus, you may need to have surgery to remove the pus.

The type of surgery you have will depend on the type of internal abscess and where it is in your body. You may also need surgery if a needle cannot get to the abscess safely.

Complications

Possible complications of percutaneous abscess drainage include:

- needing to have surgery if the drainage tube cannot be placed in the abscess successfully during the procedure
- experiencing a shivering attack while the procedure takes place due to bacteria getting into the bloodstream (this can be treated with antibiotics)

Possible complications of skin abscesses include the spread of infection throughout the bloodstream, leading to more abscesses forming.

Preventing an abscess

You may be able to help prevent skin abscesses with skin care and a healthy lifestyle. It is difficult to prevent internal abscesses as they are often complications of other conditions.

The following advice may help prevent skin abscesses.

Skin care

Ensuring that your skin is clean, healthy and free of bacteria can help reduce the risk of skin abscesses developing.

You can reduce the risk of spreading bacteria by:

- washing your hands regularly
- encouraging people in your family to wash their hands regularly
- using separate towels and not sharing baths
- waiting until your skin abscess is fully treated and healed before using any communal equipment, such as gym equipment, saunas or swimming pools

Do not squeeze the pus out of the abscess yourself because this can easily spread the bacteria to other areas of your skin. If you use tissues to wipe any pus away from your abscess, dispose of them straight away to avoid germs spreading. Wash your hands after you have disposed of the tissues.

Take care when shaving your face, legs, underarm areas or bikini area to avoid nicking your skin. Clean any wounds immediately and visit your DOCTOR or local NHS walk-in centre if you think there may be something trapped in your skin. Do not share razors or toothbrushes.

Eat healthily

Eating a diet that is rich in vitamins and minerals can help your immune system work properly and fight off infection. Fruit and vegetables are high in vitamins and minerals (aim to eat at least five portions a day).

Read about maintaining a healthy, balanced diet for more information about the different food groups.

Weight control

If you are overweight, you are more at risk of developing skin abscesses.

This can occur as a result of bacteria found naturally on your body becoming trapped in the folds of your skin. People who are overweight or obese are also at greater risk of developing diabetes, which increases the likelihood of skin abscesses developing.

Read more information about losing weight.

Do not smoke

Smoking causes a wide range of serious health problems that can affect your immune system's ability to fight infection. If you smoke, giving up is the best thing you can do to improve your general health.

Your doctor can give you help, advice and support about giving up smoking.

Recurrent boils and abscesses

If you have relatives or close contacts with similar boils and abscesses, make sure you tell your doctor so that they can organise testing for PVL-positive strains of bacteria.