CONDITION

# Spinal cord abscess

A spinal cord abscess is a pocket of infection in or around the spinal cord that can damage nearby nerves.

**WHAT IT IS**
Pus-filled infection within or around the spinal cord

**BODY SYSTEM**
Nervous system

**MAIN SYMPTOMS**
Back pain, fever, weakness, numbness

**WHAT CAUSES IT**
Usually bacteria reaching spinal tissues

**HOW IT IS DIAGNOSED**
Contrast MRI, blood cultures, and abscess sample

**MAIN TREATMENT**
Urgent antibiotics, often with surgical drainage

**CAN IT BE CURED?**
Sometimes - infection clears; nerve damage may remain

**IS IT AN EMERGENCY?**
Yes - new weakness or bladder changes need emergency care

**LONG-TERM OUTLOOK**
Better with early treatment; lasting disability is possible

## Overview

A spinal cord abscess is a pocket of infected fluid and pus inside the spinal canal. The spinal canal is the bony passage that contains the spinal cord and its nerves.

Most of these abscesses form in the epidural space , between the bones of the spine and the protective covering around the spinal cord. This is called a spinal epidural abscess. Much less often, an abscess forms within the spinal cord itself. This is called an intramedullary spinal cord abscess.

As an abscess grows, it can press on the spinal cord or interrupt its blood supply. The infection can also directly injure nerve tissue. This may affect movement, feeling, and bladder or bowel control.

A spinal cord abscess needs urgent hospital assessment and treatment. Early treatment can clear the infection and reduce pressure on the nerves. Delays increase the chance of lasting nerve damage, but the outcome cannot be predicted from symptoms alone.

## Symptoms

Symptoms may develop over hours or days, although some infections progress more slowly. Early symptoms can resemble more common causes of back pain.

Possible symptoms include:

Not everyone has a fever. Symptoms can also be less obvious in older adults, young children, or people whose immune system is weakened.

The location of the abscess affects which parts of the body are involved. An abscess in the neck may affect both the arms and legs. One lower in the spine may mainly affect the legs, bladder, bowel, or sensation around the buttocks and genitals.

- Severe or steadily worsening neck or back pain
- Pain that spreads into an arm, leg, chest, or abdomen
- Fever, chills, sweating, or feeling generally unwell
- Tenderness over part of the spine
- Weakness, heaviness, or poor coordination in the arms or legs
- Numbness, tingling, or reduced feeling
- Difficulty walking or unexplained falls
- Trouble starting urination, loss of bladder control, or loss of bowel control

## Causes and risk factors

Most spinal abscesses are caused by bacteria. Staphylococcus aureus , including antibiotic-resistant strains, is a common cause. Other bacteria and, less often, fungi or tuberculosis can also be responsible.

The infection may reach the spine through the bloodstream from another part of the body. Possible starting points include a skin infection, infected wound, urinary infection, pneumonia, or infection of a heart valve.

An abscess can also develop when infection spreads from a nearby vertebra or spinal disc.

Infection of a vertebra is called vertebral osteomyelitis. Infection of a disc is called discitis.

Less commonly, germs enter during a spinal operation, injection, or other procedure. A true abscess within the spinal cord may be linked to an abnormal channel between the skin and spinal canal, especially in children. This channel is called a dermal sinus.

Factors that may increase risk include:

Some people who develop a spinal abscess have no clear risk factor or source of infection.

- Diabetes
- A weakened immune system
- Injecting drugs
- A recent bloodstream or skin infection
- Recent spinal surgery or an implanted spinal device
- Long-term vascular access, such as a central line
- Kidney failure requiring dialysis
- A previous spinal infection
- Certain congenital abnormalities of the spine or skin

## Diagnosis

A healthcare team will ask when the symptoms began, how they have changed, and whether there has been a recent infection, injury, procedure, or operation. They will check strength, reflexes, sensation, walking, and bladder or bowel function.

An MRI scan with contrast is usually the most useful imaging test. Contrast is a substance given into a vein to make infected or inflamed areas easier to see. MRI can show where the abscess is, whether the spinal cord is being compressed, and whether nearby bones or discs are infected.

If MRI cannot be performed, a CT-based test may be considered. It may not show the spinal cord and surrounding soft tissues as clearly as MRI.

Blood tests look for signs of inflammation and infection. Blood cultures test whether bacteria or fungi are growing in the bloodstream. Cultures should be collected before antibiotics like amoxicillin or doxycycline when this can be done without delaying urgent treatment.

A sample taken during drainage or surgery helps identify the germ. This allows the antibiotic treatment to be adjusted. If tuberculosis, fungi, or another unusual infection is possible, the

laboratory may perform additional tests.

A lumbar puncture, also called a spinal tap, is not usually the main test for a suspected spinal abscess. Imaging is generally needed first.

## Treatment and management

Treatment takes place in hospital. Its goals are to control the infection, relieve pressure on the spinal cord, and protect nerve function.

Antibiotics are usually given into a vein. Initial treatment may cover several likely bacteria while culture results are pending. The treatment can then be narrowed to target the identified germ. Fungal or tuberculosis-related abscesses require different medicines.

Many people need an operation to drain the abscess and create more space for the spinal cord. Surgery may also remove infected or damaged tissue and provide a sample for testing. It is more likely to be needed when there is weakness, loss of feeling, bladder or bowel dysfunction, spinal instability, a large abscess, or worsening symptoms.

Antibiotics without immediate surgery may be considered in selected situations, such as when there is no nerve impairment or surgery would carry unusually high risk. This approach still requires very close monitoring. A change in strength, sensation, pain, or bladder function may alter the plan quickly.

During treatment, the team may repeat neurological examinations, blood tests, and imaging. If bones or discs are infected, treatment may continue for an extended period. The exact length is based on the germ, the infection's location, the response to treatment, and whether infected material remains.

Pain management and physical or occupational therapy may be needed. Rehabilitation can help with walking, strength, daily activities, and bladder or bowel problems after the infection is controlled.

## Complications

Pressure, inflammation, and reduced blood flow can permanently damage the spinal cord or nearby nerves. Possible complications include lasting weakness, paralysis, numbness, chronic pain, and loss of bladder, bowel, or sexual function.

The infection may spread into the bloodstream and cause sepsis, a serious whole-body response to infection. It may also damage vertebrae or discs, sometimes making the spine

unstable.

An abscess can return if the infection is not fully cleared or if its original source remains. Follow-up is important even when symptoms have improved.

## Prevention

A spinal cord abscess cannot always be prevented. Some infections spread before their source is known, and some people have no identifiable risk factor.

Steps that may lower risk include getting medical care for persistent skin, wound, or bloodstream infections and following instructions for the care of surgical wounds, central lines, and implanted devices.

If you inject drugs, using new sterile equipment each time and never sharing equipment reduces the risk of serious infections. Support is available if you want help reducing or stopping drug use.

Good management of diabetes may also reduce susceptibility to infection. A congenital dermal sinus cannot be prevented, but identifying and treating it may help prevent infection from reaching the spinal canal.

## Living with it and what to expect

Recovery is different for each person. It is influenced by how much nerve function was affected before treatment, how quickly pressure was relieved, the germ involved, and whether bones or discs were also infected.

Pain and fever may improve as the infection comes under control. Nerve recovery is often slower. Strength, sensation, balance, and bladder function may continue to change over weeks or months. Some people recover well, while others have lasting disability despite successful treatment of the infection.

Rehabilitation may continue after leaving hospital. Depending on your needs, it can include exercises, walking aids, help with daily activities, or support for bladder and bowel care. Progress may be gradual and can level off over time.

Follow-up usually includes neurological examinations and blood tests. Repeat MRI may be used when symptoms do not improve as expected, blood markers remain raised, or there is concern that infection has returned.

Keep routine follow-up appointments even if you feel better. Tell your healthcare team about

ongoing pain, medication side effects, rehabilitation needs, or difficulties managing daily activities. These concerns need attention but are different from the emergency warning signs below.

## When to get medical help

Seek emergency medical care for new or rapidly worsening:

These symptoms do not always mean there is a spinal abscess, but they can indicate pressure or infection affecting the spinal cord. Prompt assessment is important.

If you are already being treated for a spinal abscess, seek urgent advice for returning fever, worsening pain, drainage from a surgical wound, or new tingling or numbness. New weakness or bladder or bowel changes require emergency assessment rather than waiting for a routine appointment.

- Arm or leg weakness
- Trouble standing or walking
- Numbness around the genitals, buttocks, or inner thighs
- Loss of bladder or bowel control
- Inability to urinate
- Severe back or neck pain with fever or marked illness

## Common questions

Is a spinal cord abscess the same as a spinal epidural abscess?

Not always. A spinal epidural abscess forms around the spinal cord, inside the spinal canal. A true intramedullary abscess forms within spinal cord tissue and is much less common. Both can damage the spinal cord and need urgent treatment.

Can a spinal cord abscess be cured?

The infection can often be cleared with antibiotics and, when needed, drainage. However, nerve damage that occurred before treatment may not fully heal. Clearing the infection and recovering nerve function are separate parts of the outcome.

Will I need surgery?

Many people do, particularly if the abscess is pressing on the spinal cord or causing weakness, numbness, or bladder problems. Some carefully selected people can be treated with medicines

and close monitoring. The decision is based on imaging, neurological findings, infection type, and surgical risk.

Can I walk again after a spinal cord abscess?

Some people regain much or all of their walking ability, while others have lasting weakness or paralysis. Recovery is generally more likely when treatment begins before severe nerve impairment develops. Rehabilitation may support improvement over several months.

Is a spinal cord abscess contagious?

The abscess itself is not passed from person to person. Some germs that can cause infection may spread in other ways, but ordinary contact with someone who has a spinal abscess does not usually put you at risk.

Can a spinal cord abscess come back?

Yes, recurrence is possible, although it does not happen to everyone. Risk may be higher if infected tissue remains, the original source has not been controlled, or treatment is interrupted. Returning fever, worsening spinal pain, or new neurological symptoms should be assessed promptly.

## Sources

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