CONDITION

Spinal tumor

A spinal tumor is an abnormal growth in or around the spinal cord or spinal bones.

WHAT IT IS
Abnormal growth in or around the spine

BODY SYSTEM
Nervous system and bones

MAIN SYMPTOMS
Back pain, weakness, numbness, bladder or bowel changes

WHAT CAUSES IT
Often unknown or cancer spread

HOW IT IS DIAGNOSED
MRI, neurological examination, and sometimes biopsy

MAIN TREATMENT
Surgery, radiation, medicines, or monitoring

CAN IT BE CURED?
Sometimes - when localized and safely removable

IS IT AN EMERGENCY?
Sometimes - new weakness or bladder or bowel loss

LONG-TERM OUTLOOK
Cancer type and nerve damage shape the outcome

Overview

A spinal tumor is an abnormal growth of cells in or around the spine. It may develop within the spinal cord, in the tissues covering it, around nearby nerves, or in the bones of the spine, called vertebrae.

Some spinal tumors are benign, meaning they are not cancer. Others are malignant, meaning they are cancer. Even a benign tumor can cause serious problems if it presses on the spinal cord or nerves. The spinal canal is a narrow space, so a growing mass may leave little room for these structures.

A primary spinal tumor begins in the spine or spinal cord. A secondary, or metastatic, tumor starts as cancer elsewhere in the body and spreads to the spine. Metastatic tumors are more common than primary malignant spinal tumors.

Doctors also describe tumors by their location:

Location, tumor type, growth rate, and pressure on nerves all affect symptoms and treatment. A pathology report, which examines tumor tissue under a microscope and may include molecular testing, usually provides the most exact diagnosis.

- Extradural tumors are outside the spinal cord's protective covering, often in bone
- Intradural-extramedullary tumors are inside the covering but outside the cord
- Intramedullary tumors grow within the spinal cord itself

Symptoms

Back or neck pain is a common symptom, but most back pain is not caused by a tumor. Pain from a spinal tumor may be persistent, gradually worsen, or feel different from a previous back problem. It may be worse at night or when lying down. Pain can also travel along a nerve into an arm, chest, abdomen, or leg.

Pressure on the spinal cord or nerve roots may affect movement and sensation. Possible symptoms include:

Symptoms may appear slowly over months or develop more quickly. A rapidly growing tumor, bleeding into a tumor, a spinal fracture, or sudden spinal cord compression may cause a faster change.

The level of the tumor matters. A neck tumor may affect the arms and legs, while a tumor lower in the spine may mainly affect the legs. Tumors involving the lower bundle of spinal nerves, called the cauda equina, can affect bladder, bowel, sexual function, and sensation around the groin.

- Weakness, heaviness, or poor coordination in an arm or leg
- Numbness, tingling, burning, or reduced feeling
- Trouble walking, frequent falls, or loss of balance
- Pain that wraps around the chest or abdomen
- Reduced control of the bladder or bowel
- Numbness around the buttocks, genitals, or inner thighs
- Sexual function changes

Causes and risk factors

A spinal tumor develops when cells grow in an uncontrolled way. For many primary tumors, it is not clear why this happens.

Some inherited conditions raise the chance of particular nerve or spinal cord tumors. These include neurofibromatosis, schwannomatosis, and von Hippel-Lindau disease. Having one of these conditions does not mean a spinal tumor will definitely develop.

A previous cancer is an important risk factor for metastatic spinal tumors. Cancers that may spread to the spine include breast, prostate, lung, kidney, thyroid, and blood cancers. Almost any cancer can spread there.

A tumor in a vertebra can weaken the bone. This may cause the vertebra to collapse or make the spine unstable. In other cases, symptoms come mainly from a mass extending into the spinal canal.

Spinal tumors are not contagious. An injury does not usually cause one, although an injury or scan performed afterward may bring an existing tumor to attention.

Diagnosis

Assessment usually begins with a discussion of your symptoms and medical history. A neurological examination checks strength, reflexes, sensation, balance, walking, and bladder or bowel nerve function.

Magnetic resonance imaging, or MRI, is the main imaging test. It creates detailed pictures of the spinal cord, nerves, surrounding tissues, and many bone changes. A contrast substance may be given through a vein to make the tumor easier to identify.

Other tests may include:

A scan can strongly suggest a diagnosis, but it does not always confirm the exact tumor type. Tissue may be obtained with a needle or during surgery. In some situations, a biopsy is avoided because its risks outweigh its likely benefit or because immediate surgery is needed.

Doctors also assess whether the spine is stable and whether the spinal cord is compressed. These findings can affect how quickly treatment is required.

- CT scanning , which gives detailed pictures of bone and can help plan surgery
- X-rays , which may show a fracture or major bone damage
- Imaging of other body areas , if cancer spread is possible
- Blood or urine tests , which may look for signs of certain cancers

- Biopsy , in which a tissue sample is examined to identify the tumor

Treatment and management

Treatment is planned around the tumor's location, type, size, and growth rate. Your symptoms, general health, spinal stability, and whether cancer is present elsewhere also matter.

A small, slow-growing tumor that is not causing symptoms may sometimes be monitored with examinations and repeat MRI scans. Monitoring does not mean the tumor is being ignored. It allows treatment to begin if the growth or symptoms change.

Surgery may be used to remove all or part of a tumor, obtain tissue, relieve pressure, or stabilize weakened bones. Complete removal is not always safe, especially when a tumor grows within the spinal cord or is closely attached to important nerves.

Surgery can involve risks such as bleeding, infection, spinal fluid leakage, instability, or new nerve problems. The expected benefits and risks are specific to the tumor's location and the planned procedure.

Radiation therapy uses focused energy to damage tumor cells. It may be used for some metastatic tumors, tumors that cannot be fully removed, or tumor tissue left after surgery. Highly focused radiation may be suitable in selected cases, but it is not appropriate for every tumor or spinal location.

Cancer medicines may include chemotherapy, targeted therapy, immunotherapy, or hormone therapy. The choice is based on the tumor's pathology and where it began. These treatments are particularly relevant when cancer has spread from another part of the body.

Medicines may also reduce swelling around the spinal cord or control pain, nausea, muscle spasms, and other symptoms. Treatment for suspected spinal cord compression is managed urgently because the timing and choice of medicines require clinical supervision.

Rehabilitation may include physical therapy, occupational therapy, walking aids, bladder or bowel support, and help adapting work or home activities.

Complications

A spinal tumor can damage the spinal cord or nerve roots through pressure, invasion, reduced blood supply, or treatment-related injury. Some nerve changes improve after pressure is relieved, while others may be long-lasting.

Possible complications include:

The risk of lasting nerve damage is generally greater when compression is severe or has been present for longer. This is why new neurological symptoms need prompt assessment.

- Persistent pain or altered sensation
- Weakness, paralysis, or difficulty walking
- Loss of bladder or bowel control
- Sexual function changes
- Vertebral collapse or spinal instability
- Blood clots or skin problems caused by reduced mobility
- Tumor recurrence or further cancer spread

Prevention

Most primary spinal tumors cannot be prevented. Their cause is often unknown, and inherited tumor conditions cannot be avoided through lifestyle changes.

If you have an inherited condition linked to tumors, planned surveillance may help find a growth before it causes major symptoms. Genetic counselling can explain what the condition may mean for you and your relatives.

There is no screening test recommended for everyone to look for spinal tumors. If you have cancer, keeping planned oncology appointments can help your team assess new symptoms and monitor for spread. General steps that lower the risk of some cancers may also lower the chance of later spinal metastases, but they cannot prevent every case.

Living with it and what to expect

The course of a spinal tumor can be very different from one person to another. Some benign tumors grow slowly and remain stable for years. Others cause progressive symptoms because of their position, even if they do not spread elsewhere.

A localized tumor that can be completely removed may not need further treatment, but follow-up imaging is often used to check for regrowth. Some tumors return after treatment or cannot be fully removed safely.

Recovery from spinal cord or nerve compression often takes time. Strength, sensation, balance, and bladder function may continue to change over weeks or months. Rehabilitation can help you make the best use of returning function and adapt to changes that remain. Full

recovery cannot be guaranteed.

With metastatic disease, the outlook is influenced by the original cancer, its response to treatment, the amount of disease elsewhere, and the degree of spinal cord injury. Treatment may control pain, protect neurological function, stabilize the spine, and support mobility even when the cancer cannot be cured.

Long-term follow-up may include MRI scans, neurological examinations, cancer treatment, and symptom support. Report a meaningful change between appointments rather than waiting for the next routine scan.

When to get medical help

Seek emergency medical care for:

These symptoms can indicate spinal cord or cauda equina compression. Prompt treatment may reduce the risk of lasting nerve damage.

Contact your healthcare team urgently if you have a known cancer and develop new, severe, or worsening back or neck pain, especially with numbness, weakness, pain around the chest or abdomen, or difficulty walking.

Arrange routine medical assessment for persistent unexplained back pain, gradually increasing numbness, balance changes, or other symptoms that do not settle. These symptoms have many possible causes and do not by themselves mean that you have a tumor.

During follow-up, report new pain, reduced mobility, changing sensation, or problems with bladder or bowel function. Routine appointments are appropriate when symptoms are stable and no emergency warning signs are present.

- New or rapidly worsening weakness in an arm or leg
- New loss of bladder or bowel control
- Inability to pass urine
- New numbness around the genitals, buttocks, or inner thighs
- Sudden inability to stand or walk
- Severe back pain with rapidly developing nerve symptoms

Common questions

Is a spinal tumor always cancer?

No. Some spinal tumors are benign and do not spread to other organs. However, a benign tumor can still press on the spinal cord or nerves and may need treatment. Other spinal tumors are malignant or have spread from cancer elsewhere.

Can a spinal tumor be cured?

Sometimes. A localized tumor may be cured if it can be removed completely or controlled with other treatment. Cure may not be possible when a tumor cannot be safely removed, has spread, or is likely to return. Treatment can still reduce symptoms and protect nerve function.

Does back pain mean I have a spinal tumor?

Usually not. Back pain is common and is more often related to muscles, joints, discs, or age-related changes. Pain that steadily worsens, occurs with neurological symptoms, or develops in someone with cancer needs medical assessment.

Can a spinal tumor cause paralysis?

It can if it severely compresses or damages the spinal cord. This does not happen to everyone. The risk is affected by the tumor's location, growth rate, and how quickly compression is treated.

Will I need surgery?

Not everyone does. Surgery may be recommended to remove a tumor, obtain a diagnosis, relieve pressure, or stabilize the spine. Monitoring, radiation, cancer medicines, or a combination of treatments may be more suitable in other cases.

Can a spinal tumor come back after treatment?

Yes, some tumors can return. The chance is related to the tumor type and whether it could be completely treated. Follow-up examinations and scans are used to look for recurrence.

Sources

- National Institute for Health and Care Excellence. Spinal metastases and metastatic spinal cord compression . NICE guideline NG234, 2023
- National Cancer Institute. Adult Central Nervous System Tumors Treatment (PDQ®)-Health Professional Version
- American Association of Neurological Surgeons. Spinal Cord Tumors
- Rudà R, Reifenberger G, Frappaz D, et al. EANO guidelines for the diagnosis and treatment of ependymal tumors . Neuro-Oncology. 2018;20(4):445-456

- WHO Classification of Tumours Editorial Board. Central Nervous System Tumours . WHO Classification of Tumours, 5th edition. International Agency for Research on Cancer, 2021