# Malignant and Non Malignant Spinal Tumor

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**Abstract: A spinal tumor is an abnormal growth (mass) of cells within or surrounding your spinal cord and/or spinal column. Your spine (backbone) is the long, flexible column of bones that protects your spinal cord It begins at the base of your skull and ends in your tailbone, which is part of your pelvis. Your spinal cord is a cylindrical structure that runs through the center of your spine, from your brainstem (the bottom of your brain) to your low back. It contains nerve bundles and cells that carry messages from your brain to the rest of your body, and from your body to your brain. Tumors that affect the vertebrae have often spread (metastasized) from cancers in other parts of the body. But there are some types of tumors that start within the bones of the spine, such as chordoma, chondrosarcoma, osteosarcoma, plasmacytoma and Ewing's sarcoma. A vertebral tumor can affect neurological function by pushing on the spinal cord or nerve roots nearby. As these tumors grow within the bone, they may also cause pain, vertebral fractures or spinal instability. Whether cancerous or not, a vertebral tumor can be life-threatening and cause permanent disability. There are many treatment options for vertebral tumors, including surgery, radiation therapy, chemotherapy, medications or sometimes just monitoring the tumor. Spine tumors comprise a small percentage of reasons for back pain and other symptoms originating in the spine. The majority of the tumors involving the spinal column are metastases of visceral organ cancers which are mostly seen in older patients. Primary musculoskeletal system sarcomas involving the spinal column are rare. Benign tumors and tumor-like lesions of the musculoskeletal system are mostly seen in young patients and often cause instability and canal compromise. Optimal diagnosis and treatment of spine tumors require a multidisciplinary approach and thorough knowledge of both spine surgery and musculoskeletal tumor surgery. Either primary or metastatic tumors involving the spine are demanding problems in terms of diagnosis and treatment. Spinal instability and neurological compromise are the main and critical problems in patients with tumors of the spinal column. In the past, only a few treatment options aiming short-term control were available for treatment of primary and metastatic spine tumors. Spine surgeons adapted their approach for spine tumors according to orthopaedic oncologic principles in the last 20 years. Advances in imaging, surgical techniques and implant technology resulted in better diagnosis and surgical treatment options, especially for primary tumors. Also, modern chemotherapy drugs and regimens with new radiotherapy and radiosurgery options caused moderate to long-term local and systemic control for even primary sarcomas involving the spinal column.**

**Keywords: Spinal column, Sarcoma, Metastasis, Spinal neoplasms, Palliative surgery**

## DESCRIPTION

A spinal tumor is an abnormal growth in or around your spinal column. Anyone can get a spinal tumor, but they're more likely to develop in people who have cancer, especially lung, breast and prostate cancers. These are considered metastatic, or secondary, spinal tumors. Primary spinal tumors are rare but are more likely to occur in adults between the ages of 65 and 74 and in children between the ages of 10 and 16. Secondary (metastatic) spinal tumors are common — they represent 97% of all spinal tumors. Every year, approximately 10,000 people in the United States develop metastatic spinal cord tumors. Studies show that 30% to 70% of people with cancer will experience cancer metastasis to their spine. Primary spinal tumors, which begin in your spine, are uncommon. Benign (noncancerous) primary spinal tumors account for 0.5% of all newly diagnosed tumors.

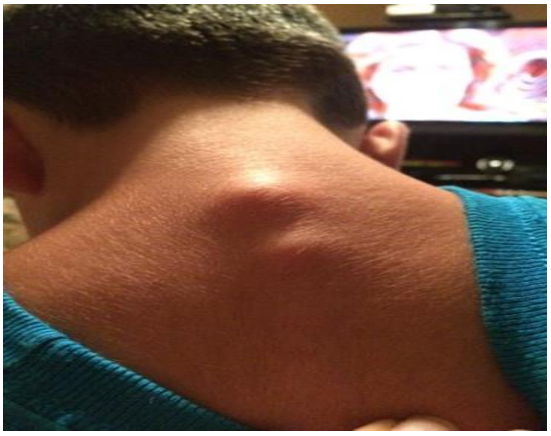

Fig-Lumps back of neck

Malignant (cancerous) primary spinal tumors are even less common.

Spinal tumors can be divided based on:The type of tissue they grow in orWhether they're malignant (cancerous) or benign (not cancerous)Pain is typically the earliest and most common symptom of a spinal tumor — if you have symptoms at all. You may also experience symptoms like muscle weakness, tingling, and numbness if the tumor pushes on your nerve root.

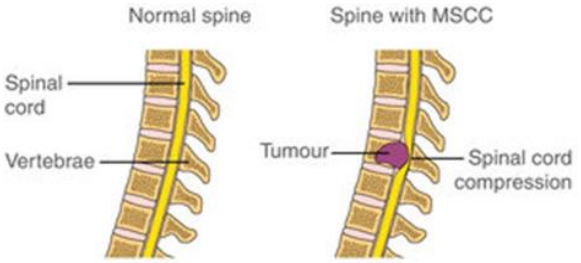


Fig-2 spinal cord compression

Types of spinal tumors that are usually benign include:

Spinal hemangioma.Hemangiomas develop from abnormal blood vessels. Only about 0.9 to 1.2 percentTrusted Source of these tumors cause symptoms.

Eosinophilic granuloma.Eosinophilic granuloma is a rare bone tumor that tends to happen in children. This type of tumor can affect any bone, but it's most common in your skull, jaw, long bones, spine, or ribs.

Osteoid osteoma. Osteoid osteoma is a type of bone tumor that most commonly develops in your long bones. They tend to be smaller than 1.5 centimeters (0.6 inches) and don't grow or spread.

Spinal osteoblastoma. A rare bone tumor that typically develops in your 20s or 30s. They typically develop on the posterior part of your vertebrae.

Spinal osteochondroma.Osteochondroma is the most commonTrusted Source type of benign bone tumor. When they occur in your spine, they most often occur in your cervical spine just below your skull.

Spinal neurofibroma.Neurofibromas develop on your nerves and often don't cause symptoms. When they develop around your spine, they often occur in the roots of your sensory nerves.

Aneurysmal bone cyst. Aneurysmal bone cysts are blood-filled tumors surrounded by a wall of bone that grows over time. They most commonly occur near your knee, pelvis, or spine.

Giant cell tumor. Giant cell tumors are noncancerous but aggressive and can destroy surrounding bone. They only about one in a million people each year.

Meningiomas. Meningiomas occur in the layers of tissue covering your brain and spinal cord. They tend to grow slowly and are usually noncancerous.

Nerve sheath tumors.Nerve sheath tumors tend to be benign and grow slowly. They develop in the protective layer wrapping around your nerves.

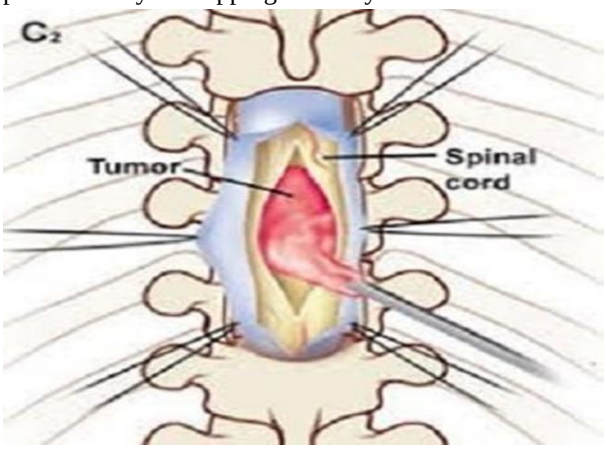


Fig-3 Spinal cord Tumor

Most cancerous spinal tumors spread from other parts of your body. Cancerous tumors that start in your spinal cord are the rarest typeTrusted Source of tumor that involve your spine.

Types of malignant spinal tumors include:

- Metastases of organ cancers. Cancer that spreads from another part of your body is known as metastasized cancer. About 97 percentTrusted Source of tumors in the spinal column spread from internal organs.
- Chordoma. Chordoma is a rare type of bone cancer that can occur anywhere in your spine. It's most commonly found near your tailbone and affects about 1 in a millionTrusted Source people each year.
- Ewing's sarcoma. Along with osteosarcoma, Ewing sarcoma is the most common Trusted Source type of spinal tumor in young people. It develops in bone or the soft tissue around your bone.
- Osteosarcoma.Osteosarcoma is one of the most common types of bone cancer but rarely develops in your spine. It typically develops near the end of long bones in children and teens while they're still growing.

- Multiple myeloma. Multiple myeloma is a blood cancer that develops in white blood cells. It can cause tumors to form in many bones in your body.
- Glioma. Glioma is a tumor that develops in the supportive cells around your nerves and can occur in your brain or spinal cord. Glioma can be divided into the following subcategories (depending on what cells are affected):
    - astrocytomas
    - ependymomas
    - oligodendrogliomas

It's common for spinal tumors to cause no symptoms. The most common symptom is pain. Pain caused by spinal tumors is often mistakenly attributed to a spinal injury. This kind of pain may:

- gradually get worse over time
- be sharp or burning
- be most noticeable or severe at night
- eventually be noticeable at rest

Tumors that compress your nerve roots can lead to symptoms like:

- muscle weakness
- numbness
- tingling
- decreased temperature sensation, particularly in your legs
- loss of bladder or bowel control
- sexual dysfunction
- trouble walking

primary spinal tumors often have no symptoms (asymptomatic), healthcare providers often find them incidentally (accidentally) when a person is getting an imaging test for another reason.

People with symptomatic spinal tumors often believe that their back pain is related to a real or suspected injury in the recent past. If you're experiencing back pain, it's important to see your healthcare provider, especially if you have cancer.

Your healthcare provider will ask about your symptoms and medical history. They'll also perform a neurological examination to check for the following symptoms:

- Tenderness in your spine.
- Loss of pain and/or temperature sensation.
- Abnormal reflexes.
- Muscle weakness.

Spinal tumor pain

Back pain is the most common symptom of both benign (noncancerous) and malignant (cancerous) spinal tumors. Pain from spinal tumors in your middle or lower back is more common, as tumors are more likely to develop in those regions of your spine. Pain from a spinal tumor usually:

- Isn't specifically associated with an injury, stress or physical activity but can get worse with strain, such as from exercise, sneezing or coughing.
- Is aching and deep.
- Starts slowly and gradually increases.
- Is persistent at night, sometimes to the point of disrupting sleep.
- Over time, becomes intense and disruptive even at rest.
- Doesn't respond to conservative pain relief therapies and medications.

Spinal tumors can also cause radicular pain, which is pain that radiates (spreads) from your spine to your hips, legs, feet or arms. Radicular pain often feels sharp and shooting.Depending on the location and type of the spinal tumor, other signs and symptoms in addition to pain can develop. This usually happens when the tumor grows and presses on your spinal cord or your nerve roots, blood vessels or bones of your spine.Other symptoms of spinal tumors include:

- Numbness, tingling or loss of sensation in your legs, arms or chest.
- Muscle weakness in your legs, arms or chest.
- Muscle twitches or spasms.
- Stiff back or neck.
- Loss of bowel and/or bladder control (bowel incontinence and urinary incontinence).
- Difficulty walking, which may cause falls.
- Scoliosis or other spinal deformity resulting from a large and/or destructive tumor.
- Paralysis that may occur in varying degrees and in different parts of your body, depending on which nerves the tumor is compressing.

Causes spinal tumors

The cause of a spinal tumor depends on what type it is — primary or secondary (metastatic).

Primary spinal tumor causes

Scientists aren't sure of the cause of most primary spinal tumors. Some of them may be caused by exposure to cancer-causing chemicals or substances.

Spinal cord lymphomas (cancers that affect a type of immune cell) are more common in people with weakened immune systems. Spinal tumors can sometimes run in families, so scientists think there's likely a genetic component.

Secondary spinal tumor causes

By definition, secondary (metastatic) spinal tumors are caused by cancer that formed elsewhere in your body and spread (metastasized) to your spine.Metastases most commonly develop when cancer cells break away from the main tumor and enter your bloodstream or lymphatic system. These systems carry fluids around your body, so they can carry cancer cells from one area of your body to another.Metastases can also develop when cancer cells from the main tumor, typically in your abdominal cavity, break off and grow in nearby areas, such as in your liver, lungs or bones.Since your spine has a significant blood supply and is near lymphatic and venous drainage systems, it's generally vulnerable to metastasis.

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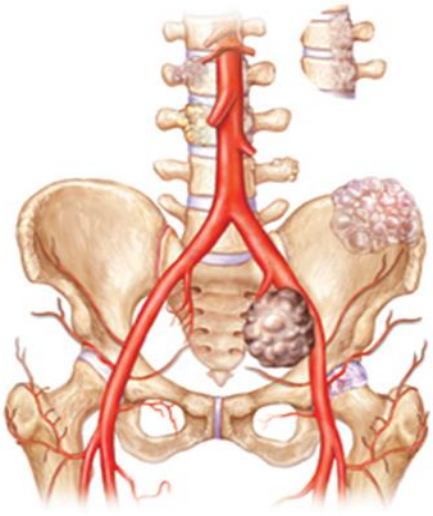

Fig-4 spinal tumor

Tumor - spinal cord.A spinal tumor is a growth of cells (mass) in or around the spinal cord.In addition to a physical and neurological exam, your healthcare provider may order several tests to confirm the presence of a spinal tumor, including:

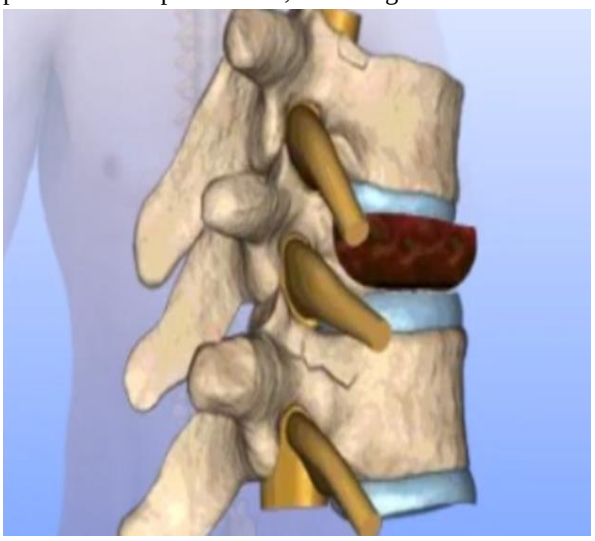

Fig-5 Spinal Tumor overview

- Imaging tests: Spine X-rays are the go-to imaging test for people with cancer who have sudden back pain. This is because metastatic spinal tumors commonly form in the bony part of your spinal column. Your healthcare provider may also order an MRI and/or CT scan to view your spinal cord, nerves and your surrounding spine (bony and soft tissue). Your healthcare provider may also use imaging tests to look at other parts of your body to determine where the tumor started if it's a metastatic spinal tumor.
- Biopsy: Your healthcare provider may order a biopsy, which involves taking a sample of tissue from the tumor to help determine if the tumor is benign or malignant. A pathologist studies the sample to learn if it's growing or spreading and if so, how quickly. If the tumor is malignant, a biopsy also helps figure out the cancer's type, which determines treatment options.
- Bone Scan: During a bone scan, your healthcare provider injects a very small amount of a radioactive substance into your vein and then uses imaging to look at your bones. Tracking the movement of the radioactive material helps detect abnormal areas in your spine.
- Blood tests: Your healthcare provider may order certain blood tests to look for abnormal levels of substances in your blood, such as calcium and alkaline phosphatase. Your body releases these substances into your bloodstream

when bone tissue breaks down, which could happen from cancer.

## CONCLUSION

A spinal tumor is an abnormal growth in or around your spinal column. Anyone can get a spinal tumor, but they're more likely to develop in people who have cancer, especially lung, breast and prostate cancers Scientists aren't sure of the cause of most primary spinal tumors. Some of them may be caused by exposure to cancer-causing chemicals or substances. Spinal cord lymphomas (cancers that affect a type of immune cell) are more common in people with weakened immune systems. Spinal tumors can sometimes run in families, so scientists think there's likely a genetic component.By definition, secondary (metastatic) spinal tumors are caused by cancer that formed elsewhere in your body and spread (metastasized) to your spine.Metastases most commonly develop when cancer cells break away from the main tumor and enter your bloodstream or lymphatic system. These systems carry fluids around your body, so they can carry cancer cells from one area of your body to another.Metastases can also develop when cancer cells from the main tumor, typically in your abdominal cavity, break off and grow in nearby areas, such as in your liver, lungs or bones.Since your spine has a significant blood supply and is near lymphatic and venous drainage systems, it's generally vulnerable to metastasis. primary spinal tumors often have no symptoms (asymptomatic), healthcare providers often find them incidentally (accidentally) when a person is getting an imaging test for another reason.People with symptomatic spinal tumors often believe that their back pain is related to a real or suspected injury in the recent past. If you're experiencing back pain, it's important to see your healthcare provider, especially if you have cancer.

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