

# Vertebral Thoracic and Lumbar Fractures

Fracture of one or more bones of the spinal column (vertebrae) of the middle (thoracic) or lower (lumbar) back is a serious injury. It is usually caused by high-energy trauma such as a car crash, fall, sports accident, or violent act (for example, a gunshot wound). People with osteoporosis, tumors, or other underlying conditions that weaken bone can get a spinal fracture with minimal trauma or normal activities of daily living.

Males experience fractures of the thoracic or lumbar spine four times as often as females. The spinal cord may also be injured, depending on the severity of the fracture. Never attempt to move a person with a spinal injury because movement can cause more damage. Call 911 immediately. Rescue workers know how to properly immobilize people with spine injuries.

## Symptoms

The primary symptom is moderate to severe back pain that is made worse by movement.

When the spinal cord is also involved, numbness, tingling, weakness, or bowel/bladder dysfunction may occur. Because of the high-energy mechanism of injury, patients often have other life-threatening injuries as well.

## Diagnosis

After checking heart rate, breathing, and other vital signs, a doctor will locate the fractured part or parts of the spine and determine the extent of the damage. The doctor will determine exactly how the vertebra broke (fracture pattern) and whether there is any nerve injury and/or spinal instability.

## Medical History

Every detail you can recall about what caused the injury may help the doctor. Did the accident eject the patient from a vehicle? Was there windshield or steering column damage? Was the person using a lap and/or shoulder seat belt? Did an airbag deploy? Sometimes, rescue workers or witnesses can supply more information.

## Physical Examination

The doctor will carefully remove the patient's clothing and immobilize the patient with a spine board for a complete physical examination. This may include checking for swelling, bruising, and other signs of injury to the head, chest, abdomen and back; evaluating strength, motion and alignment of arms and legs; feeling for tenderness on each rib and along the entire length of the spine; testing the tone and sensation of rectal muscles; and other evaluations.

A neurologic examination may also be needed. This may include tests of sensory (temperature, pain, and pressure sensitivity), motor (muscle strength) and reflex functions of the nervous system. If there is neurologic damage, certain tests can show whether the patient may recover some function (incomplete deficit) or not (complete deficit).

### ***Imaging***

X-rays of the entire spine from multiple angles may be necessary to see bone alignment and check for damage to soft tissue. Sometimes, computed tomography (CT) or magnetic resonance imaging (MRI) scans are required to help the doctor better visualize the injury.

### **Classification of Spine Fractures**

Doctors classify fractures of the thoracic and lumbar spine based upon pattern of injury.

- **Compression fracture.** While the front (anterior) of the vertebra breaks and loses height, the back (posterior) part of it does not. This type of fracture is usually stable and is rarely associated with neurologic problems.
- **Axial burst fracture.** The vertebra loses height on both the front and back sides. It is often caused by a fall from a height when a person lands on their feet.
- **Flexion/distraction (Chance) fracture.** The vertebra is literally pulled apart (distraction). This can happen in accidents such as a head-on car crash, in which the upper body is thrown forward while the pelvis is stabilized by a lap seat belt.
- **Transverse process fracture.** This fracture results from rotation or extreme sideways (lateral) bending and usually does not affect stability.
- **Fracture-dislocation.** This is an unstable injury involving bone and/or soft tissue, in which one vertebra may move off the adjacent one (displaced).

### **Treatment**

Treatment goals include protecting nerve function and restoring alignment and stability of the spine. The doctor will determine the best treatment method based upon the type of fracture and other factors.

#### ***Nonsurgical Treatment***

Doctors usually treat compression fractures and some burst fractures without surgery. With a simple compression fracture, patients may be required to wear a hyperextension brace for sitting and standing activities for 6 to 12 weeks. Patients should walk and do other exercises while healing and may take

medications for pain. With a transverse process fracture, patients may need to wear a thoracolumbar corset and participate in an aerobic walking program.

### ***Surgical Treatment***

Some spine fractures require surgical treatment. Steroids may be prescribed if the spinal cord is also injured. Surgery may be necessary for unstable burst fractures, flexion-distraction injuries, or fracture-dislocation injuries. Surgery realigns the spinal column and holds it together using metal plates and screws (internal fixation) and/or spinal fusion. For a compression fracture primarily in the anterior and middle columns, however, a newer and lesser invasive procedure has been developed called Kyphoplasty that can restore the vertebral height of the compression and stabilize the vertebrae with bone cement injected through small needles under direct fluoroscopic visualization.