

Cervical Fracture

The seven bones in the neck are the cervical vertebrae. They support the head and connect it to the shoulders and body. A fracture, or break, in one of the cervical vertebrae is commonly called a broken neck.

Cervical fractures usually result from high-energy trauma, such as automobile crashes or falls. Athletes are also at risk. A cervical fracture can occur if:

- A football player "spears" an opponent with his head.
- An ice hockey player is struck from behind and rams into the boards.
- A gymnast misses the high bar during a release move and falls.
- A diver strikes the bottom of a shallow pool.

Any injury to the vertebrae can have serious consequences because the spinal cord, the central nervous system's connection between the brain and the body, runs through the center of the vertebrae. Damage to the spinal cord can result in paralysis or death. Injury to the spinal cord at the level of the cervical spine can lead to temporary or permanent paralysis of the entire body from the neck down.

Emergency Response

In a trauma situation, the neck should be immobilized until x-rays are taken and reviewed by a physician. Emergency medical personnel will assume that an unconscious individual has a neck injury and respond accordingly. The victim may experience shock and either temporary or permanent paralysis.

Conscious patients with an acute neck injury will usually have severe neck pain. They may also have pain spreading from the neck to the shoulders or arms, resulting from the vertebra compressing a nerve. There may be some bruising and swelling at the back of the neck. The physician will perform a complete neurological examination to assess nerve function and may request additional radiographic studies, such as MRI or computed tomography (CT), to determine the extent of the injuries.

Treatment

Treatment will depend on which of the seven cervical vertebrae are damaged and the kind of fracture sustained. A minor compression fracture can be treated with a cervical brace worn for 6 to 8 weeks until the bone heals. A more complex or extensive fracture may require traction, surgery, and internal fixation, 2 to 3 months in a rigid cast, or a combination of these treatments.

Improvements in athletic equipment and rule changes have reduced the number of sports-related cervical fractures over the past 20 years. You can help protect yourself and your family if you:

- Always wear a seat belt when you are driving or a passenger in a car.
- Never dive in a shallow pool area, and be sure that young people are properly supervised when swimming and diving.
- Wear the proper protective equipment for your sport and follow all safety regulations, such as having a spotter and appropriate cushioning mats.

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Fracture of the Thoracic and Lumbar Spine

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.

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