

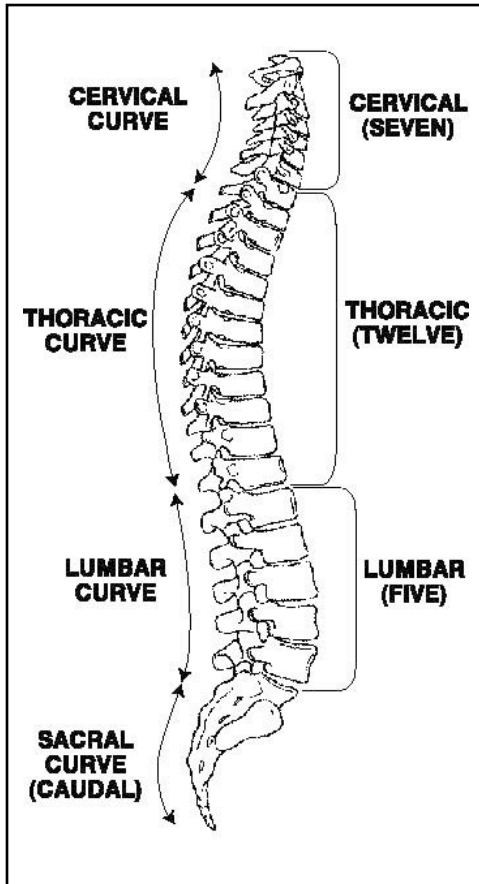
Understanding Your Back





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The Normal Spine



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Labeled parts of your spinal column.

Your back is made up of a spinal column, discs, spinal cord, spinal nerves, ligaments and muscles. A back injury, spine disorder or disease may affect one or more of these parts.

Spinal column (vertebrae)

Your spinal column is an S-shaped chain of vertebrae (bones). Your spinal column serves three basic roles:

- protects your spinal cord and nerve branches
- supports your body
- lets your body move (twist, bend, run or jump).

The flexible vertebrae start at the base of your skull and end at your hips (pelvis). These spine bones are linked together and protect the spinal cord and nerves, which run through the center of your spinal column.

They have bony knobs on each side and connect to other vertebrae or muscles and ligaments. When stacked, they form your spinal column.

There are 24 individual vertebrae from your neck to your low back that move:

- **cervical:** Located in your neck, these seven are the lightest and smallest of your vertebrae. They support the weight of your head and give your neck the ability to move. Your cervical vertebrae have a slight inward curve (called lordosis). They are numbered C1 to C7.
- **thoracic:** Located in your midback, these 12 vertebrae are larger than the cervical vertebrae. They support the weight of your chest and upper body. Your ribs connect to your thoracic vertebrae. Your thoracic vertebrae have a slight outward curve (called kyphosis). They are numbered T1 to T12.
- **lumbar:** Located in your low back, these five are the largest of your vertebrae. They support most of your body weight and the stress of your spinal column. Your lumbar vertebrae also have a slight inward curve (lordosis). They are numbered L1 to L5.

There are nine joined (fused) vertebrae that do not move:

- **sacrum:** These five fused bones are located between your hips.
- **coccyx:** These four fused bones are located at the end of your spinal column. They form your tailbone.

The vertebrae are connected by facet joints. These are located on both sides and on the top and bottom of each vertebra. They allow the vertebrae to move. A special fluid (synovial) helps lubricate the facet joints so they move with ease.

Discs

Discs are thick pads of soft tissue (cartilage) between the bones that let the bones move and provide “shock absorption” when you move.

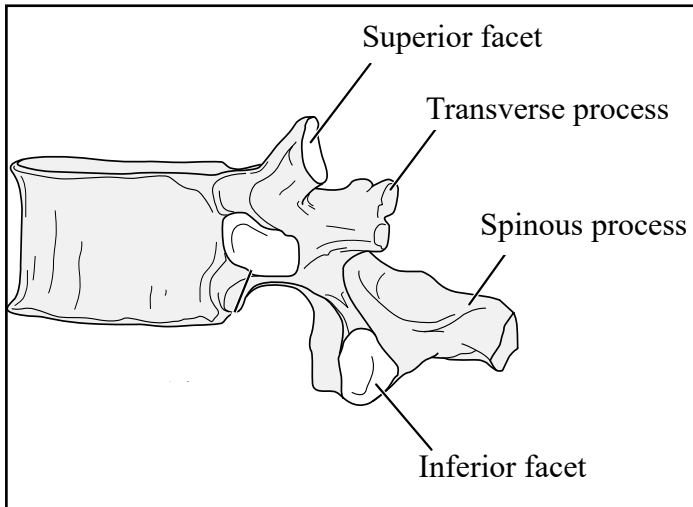
Spinal cord and nerves

Your spinal cord contains nerve bundles that carry messages to and from your brain. You also have 31 pairs of nerves that branch out from your spinal cord. The roots of those nerves leave your spinal column through vertebral holes (foramen) and branch out to your body. These nerves provide sensation and functional ability to your spine’s discs, muscles and joints.

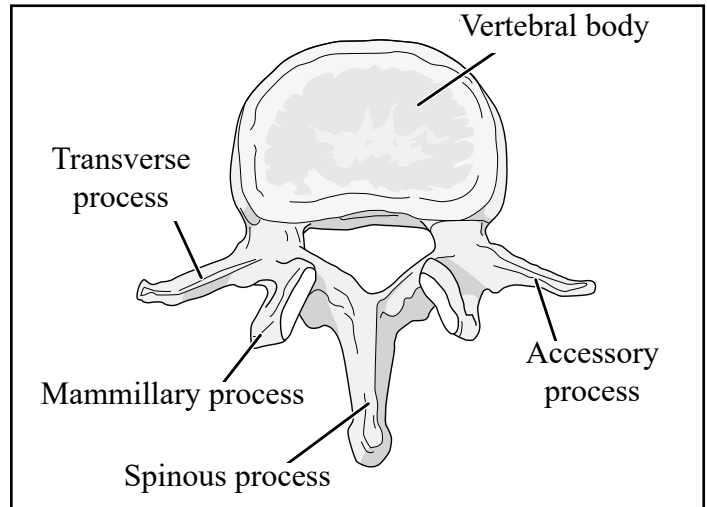
Ligaments and muscles

Ligaments are stretchy bands of tissue that support your spine by keeping the vertebrae from slipping out of place and protecting your discs. By supporting your spine, ligaments help keep your back in a natural alignment.

Muscles help keep your back strong. By exercising your back and abdominal muscles, you will be able to move and keep your spine in its natural alignment.



The labeled parts of a vertebra (from side).



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The labeled parts of a vertebra (from top).

Spine Disorders and Conditions

Many different spine disorders can lead to surgery. Your health care provider will explain your specific condition to you. Some of the spine disorders include:

- **scoliosis:** This is an abnormal side-to-side curve of the spine. When looking at the back, the spine should look like an “S” or “C” shape. There can also be an abnormal curve to the lower back (lordosis). Scoliosis is usually easy to spot, either by the curve or by uneven shoulders.
- **fractured (broken) vertebrae:** This may happen from a fall or other accident. A fracture to a vertebra may be treated with a brace or surgery.
- **herniated (ruptured) discs:** The spine’s shock absorbers have a hard outer layer and a soft inner layer. When the outer layer is damaged (torn or broken), some of the soft inner layer may spread into the opening for the nerves (spinal canal) or toward a nerve root. This causes pain and pressure on the spinal cord and nerves. A disc can tear or break (rupture) anywhere along the spine due to injury or aging.

- **spinal stenosis:** This occurs when your spinal canal becomes more narrow due to injury, aging or arthritis. These changes narrow the spinal canal. This results in pressure on the spinal cord and nerves. This can lead to pain, numbness, tingling or weakness in your legs.
- **spondylolisthesis [spon-dee-low-lis-thesis]:** This occurs when one vertebra slips forward or backward on another. It may cause back or leg pain.
- **spondylosis (spinal osteoarthritis):** This is a disorder that causes a breakdown of the spinal cartilage in the neck, midback, low back or all of these areas. How quickly this occurs varies from person to person. Age is usually the main cause.
- **ankylosing spondylitis:** This is a form of arthritis, mostly affecting the spine.
- **cauda equina syndrome:** This is a serious condition that requires medical attention right away and in most cases, surgery. In cauda equina syndrome, the bundle of nerve roots at the end of the spinal cord (cauda equina) is squeezed. This syndrome may be associated with bowel and bladder problems as well as tingling or a loss of sensation and feeling to the lower pelvic area and the legs.
- **disc degeneration:** The aging process may cause the discs to break down. The discs can also bulge (or become herniated). If arthritis is affecting the spine, tiny bone growths (spurs) may form on the vertebra. These disorders can occur on any part of the spine and put pressure on the spinal cord.

Spine Surgeries

Your health care provider will explain your specific surgery to you. Some of the most common spine surgeries include:

- **decompression:** This surgery eases pressure on the nerves by removing discs, bone or both. A spinal fusion may be done after decompression to keep the spine stable.
- **discectomy:** This surgery is done to remove the bulging (herniated) part of the disc that is pressing on a nerve.
- **endoscopic:** This surgery is done with ½-inch tubes inserted into the spinal area. A tiny camera and magnifying lens on the end of the tubes let the surgeon watch the surgery on a screen. Instruments can be passed through the tubes to do the surgery. This type of surgery may also be referred to as a “minimally invasive surgery” (MIS) or “micro” surgery.
- **foraminotomy:** This surgery is done to relieve the pressure on nerves that are being compressed in the spine.
- **laminectomy:** This surgery is done to remove a piece of bone from the back of one or more vertebrae to release pressure around the spinal cord.
- **microdiscectomy:** This surgery uses a smaller incision to remove the disc.
- **spinal fusion:** This surgery is done to stabilize the spine by fusing two or more vertebrae. This is done with a bone graft, a metal implant or a combination of the two. It can be done from the front (anterior), the back (posterior) or both.
- **spinal implants (instrumentation):** Implants are used during surgery to help stabilize the spine to keep it from moving while fusion occurs. Types of implants include rods, plates, hooks, screws or cages. Some implants are attached to the spine while others are placed between the vertebrae.
- **thoracoplasty:** This surgery is done at the chest level on your side, to shorten or remove a part of the ribs to prevent a rib hump from forming. This is done in some scoliosis surgeries to correct a curve, especially in the upper back.



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