

DISEASES & CONDITIONS

# Lumbar Spinal Stenosis



Lumbar spinal stenosis is a common cause of low back and leg pain, or sciatica.

As we age, the normal wear-and-tear effects of aging can lead to narrowing of the spinal canal, which houses the spinal nerves and spinal cord. This condition is called spinal stenosis.

Degenerative changes of the spine are seen in up to 95% of people by the age of 50. Spinal stenosis most often occurs in adults over 60. Pressure on the nerve roots is equally common in men and women.

A small number of people are born with back problems that develop into lumbar spinal stenosis. This is known as congenital spinal stenosis. Typically, this occurs in people who are born with a smaller spinal canal; because there is less space within the canal, degeneration, or arthritis, can affect them sooner. Congenital spinal stenosis occurs most often in men. People usually first notice symptoms between the ages of 30 and 50.

## Anatomy

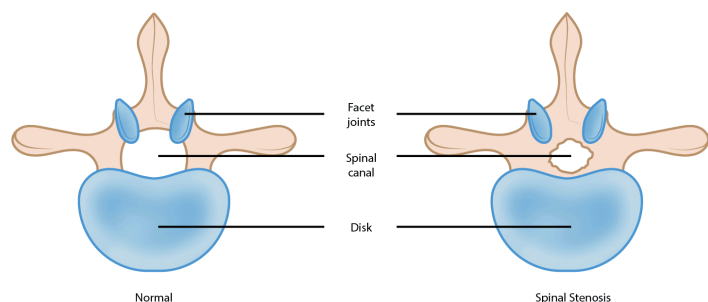
Your spine is made up of small bones, called vertebrae, which are stacked on top of one another. Muscles, ligaments, nerves, and intervertebral disks are additional parts of your spine.

Understanding your spine and how it works can help you better understand spinal stenosis. Learn more about spine anatomy: [Spine Basics](#)

## Description

Spinal stenosis occurs when the space around the spinal cord and spinal nerves narrows. This puts pressure on the spinal cord and the spinal nerve roots, and may cause pain, numbness, or weakness in the legs.

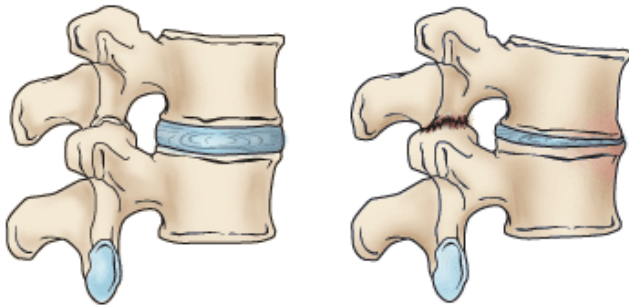
This illustration shows a healthy vertebra (cross-section view) and a vertebra with narrowing of the spinal canal, called stenosis.



## Cause

Arthritis is the most common cause of spinal stenosis. Arthritis refers to degeneration of any joint in the body.

In the spine, arthritis can result as the disk degenerates and loses water content. In children and young adults, disks have high water content. As we get older, our disks begin to dry out and weaken. This problem causes settling, or collapse, of the disk spaces and loss of disk space height.



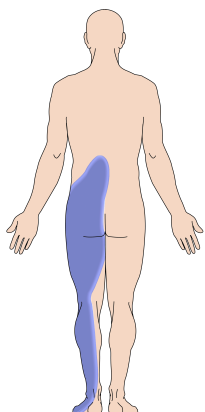
When we are young, disks have a high water content (left). As disks age and dry out, they may lose height or collapse (right). This puts pressure on the facet joints and may result in arthritis.

As the spine settles, two things occur. First, stress is transferred to the facet joints. Second, the tunnels through which the nerves exit (the foramen) become smaller.

As the facet joints experience increased pressure, they also begin to degenerate and develop arthritis, similar to that occurring in the hip or knee joint. As the facet joint wears down, the body responds by forming bone spurs to stabilize the joint. In addition, the ligaments around the joints that typically connect the bones together, called the ligamenta flava, increase in size. The combination of bone spurs and thickened ligaments crowds the space for the nerves, resulting in stenosis.

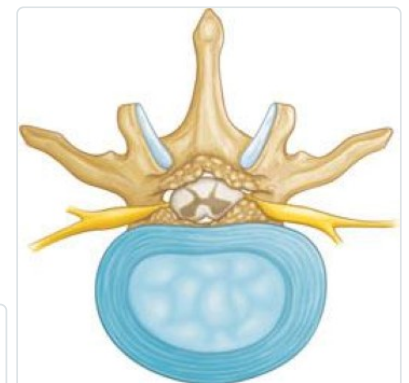
## Symptoms

- **Back pain.** People with spinal stenosis may or may not have back pain, depending on the degree of arthritis that has developed.



Spinal nerves relay sensation in specific parts of your body. Pressure on the nerves can cause pain in the areas that the nerves supply, including pain in the buttocks that radiates down the leg – called sciatica.

*Printed with permission from Griffen LY (ed): Essentials of Musculoskeletal Care, Edition 3. Rosemont, IL American Academy of Orthopaedic Surgeons, 2005. p. 770.*



Arthritic bone spurs narrow the spinal canal.

- **Burning pain in buttocks or legs (sciatica).** Pressure on spinal nerves can result in pain in the areas that the nerves supply. The pain may be described as an ache or a burning feeling. It typically starts in the area of the buttocks and radiates down the leg. As it progresses, it can result in pain in the foot.

- **Numbness or tingling in buttocks or legs.** As pressure on the nerve increases, numbness and tingling often accompany the burning pain, although not all patients will have both burning pain, and numbness and tingling.
- **Weakness in the legs or foot drop (difficulty lifting the front part of the foot).** Once the pressure reaches a critical level, weakness can occur in one or both legs. Some patients will have a foot drop, or the feeling that their foot slaps on the ground while walking.
- **Acute [cauda equina syndrome](#).** This rare condition is considered a medical emergency that requires prompt treatment. If the compression of the nerves is severe, you can experience numbness in your private area and lose control of your bowel and/or bladder. You may also lose strength in your legs and not be able to walk. If these symptoms occur, you may need emergency surgery.

In spinal stenosis, people typically experience less pain with leaning forward, and especially with sitting. Studies of the lumbar spine show that leaning forward can increase the space available for the nerves. Pain is usually made worse by standing up straight and walking. Some people note that they can ride a stationary bike or walk leaning on a shopping cart. Walking more than 1 or 2 blocks, however, may bring on severe sciatica or weakness.

## Doctor Examination

### *Medical History and Physical Examination*

After discussing your symptoms and medical history, your doctor will examine your back. This will include looking at your back and pushing on different areas to see if it hurts. Your doctor may have you bend forward, backward, and side-to-side to look for limitations or pain.

### *Imaging Tests*

Other tests which may help your doctor confirm your diagnosis include:

**X-rays.** Although they only visualize bones, X-rays can help determine if you have spinal stenosis. They will show aging-related changes, like loss of disk height or bone spurs.

X-rays taken while you lean forward and backward can show instability in your joints. X-rays can also show when there is too much mobility in your spine. This is called [spondylolisthesis](#).

**Magnetic resonance imaging (MRI).** An MRI can create better images than an X-ray of soft tissues, such as muscles, disks, nerves, and the spinal cord.

**Additional tests.** Computed tomography (CT) scans can create cross-section images of your spine and show the bony structures better than X-rays. Your doctor may also order a myelogram. In this procedure, dye is injected into the spine to make the nerves show up more clearly. It can help your doctor determine whether the nerves are being compressed.

# Treatment

## ***Nonsurgical Treatment***

Nonsurgical treatment options focus on restoring function and relieving pain. Although nonsurgical methods do not improve the narrowing of the spinal canal, many people report that these treatments do help relieve symptoms.

**Physical therapy.** Stretching exercises, massage, and lumbar and abdominal strengthening often help manage symptoms.

**Lumbar traction.** Although it may be helpful in some patients, traction offers very limited results. There is no scientific evidence of its effectiveness.

**Anti-inflammatory medications.** Because stenosis pain is caused by pressure on a spinal nerve, reducing inflammation (swelling) around the nerve may relieve pain. [Non-steroidal anti-inflammatory drugs \(NSAIDs\)](#) initially provide pain relief. When used over the course of 5 to 10 days, they can also have an additional anti-inflammatory effect.

Most people are familiar with nonprescription NSAIDs, such as aspirin, ibuprofen, and naproxen. Whether over-the-counter or prescription strength, these medicines must be used carefully. They can lead to gastritis, stomach ulcers, and kidney problems. If you develop acid reflux or stomach pains while taking an anti-inflammatory, be sure to talk with your doctor.

**Steroid injections, also known as epidural steroid injections.** Cortisone is a powerful anti-inflammatory drug. Cortisone injections around the nerves or in the "epidural space" can decrease swelling, as well as pain. They also reduce numbness, but not weakness, in the legs. Patients should receive no more than three injections per year. Learn more: [Spinal Injections](#)

**Acupuncture.** Acupuncture can be helpful in treating some of the pain in less severe cases of lumbar stenosis. Although it can be very safe, long-term success with this treatment has not been proven scientifically.

**Chiropractic manipulation.** Chiropractic manipulation is generally safe and can help with some of the pain from lumbar stenosis. Take care, however, if you have osteoporosis or a herniated disk. Manipulation of the spine in these cases can worsen symptoms or cause other injuries.

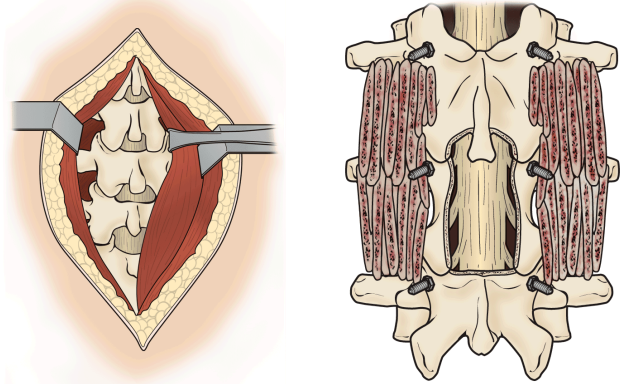
## ***Surgical Treatment***

Surgery for lumbar spinal stenosis is generally reserved for people who have poor quality of life due to pain and weakness, including difficulty walking for extended periods of time. This is often the reason that people consider surgery.

There are two main surgical options to treat lumbar spinal stenosis: laminectomy and spinal fusion. Both options can result in excellent pain relief. Be sure to discuss the advantages and disadvantages of both with your doctor.

**Laminectomy.** This procedure involves removing the bone, bone spurs, and ligaments that are compressing the nerves. This procedure may also be called a decompression. Laminectomy can be performed as open surgery, in which your doctor uses a single, larger incision to access your spine. The procedure can also be done using a minimally invasive method, where several smaller incisions are made. Your doctor will discuss the right option for you.

**(Left)** In traditional open surgery, to access the spine, the surgeon pulls back muscles to expose the bone. **(Right)** After the laminectomy, the surgeon places bone graft material and screws along the sides of the vertebrae to help with healing.



**Spinal fusion.** If arthritis has progressed to spinal instability, your surgeon may recommend a combination of decompression and stabilization or [spinal fusion](#).

**Rehabilitation.** After surgery, you may stay in the hospital for a short time, depending on your health and the procedure performed. Healthy people who undergo decompression alone may go home the same or next day and may return to normal activities after only a few weeks. Fusion generally adds 2 to 3 days to the hospital stay.

Your surgeon may give you a brace or corset to wear for comfort. They will likely encourage you to begin walking as soon as possible. Most people only need physical therapy to strengthen their backs.

Your physical therapist may show you exercises to help you build and maintain strength, endurance, and flexibility for spinal stability. Some of these exercises will help strengthen your abdominal muscles, which help support your back. Your physical therapist will create an individualized program, taking into consideration your health and history.

Most people can go back to a desk job within a few days to a few weeks after surgery. They may return to normal activities after 2 to 3 months. Older patients who need more care and assistance may be transferred from the hospital to a rehabilitation facility prior to going home.

**Postoperative opioid medication.** For people who are not on opioids before surgery, a short course (a few weeks) of opioids is typical after a laminectomy. After a fusion procedure, the duration may be longer. If you have been on opioids for a long period of time prior to surgery, you may still be on them after surgery, as your body is used to the pain medication.

**Surgical risks.** There are minor risks associated with every surgical procedure. These include bleeding, infection, blood clots, and reaction to anesthesia. These risks are usually very low.

Elderly people, overweight people, diabetics, smokers, and those with multiple medical problems have higher rates of complications from surgery.

Specific complications from surgery for spinal stenosis include:

- Tear of the sac covering the nerves (dural tear)

- Failure of the bone fusion to heal if a fusion is performed
- Failure of screws or rods if a fusion is performed
- Nerve injury
- Need for further surgery
- Failure to relieve symptoms
- Return of symptoms

**Surgical outcomes.** Overall, the results of laminectomy with or without spinal fusion for lumbar stenosis are good to excellent in the majority of patients. Patients tend to see more improvement of leg pain than back pain, and most people can resume a normal lifestyle after a period of recovery from surgery.

### **Last Reviewed**

August 2021

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