

# Spinal Stenosis

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## A Quick Overview of the Spine:

Your spine, or backbone, consists of the column of 33 bones and tissue that extends from your skull down to your pelvis. Providing the support of your head and body, your backbone encloses and protects a cylinder of nerve tissues, called the spinal chord. The 33 bones in your spine are called vertebrae (one is called a vertebra). The upper 24 vertebrae join together like links in a chain. In between each vertebra is an intervertebral disk, a band of cartilage that acts as a shock absorber between the vertebrae. When someone has a "slipped disk," he or she has an intervertebral disc that has slipped out of position, thus causing friction between two vertebrae and extreme pain from nerves being exposed. The lowest nine vertebrae are fused (joined) together in two groups, forming the sacrum and coccyx.

The cervical vertebrae are the seven vertebrae that form the upper part of your spine, between the skull and the chest.

The thoracic vertebrae are the 12 bones between your neck and your lower back. Thoracic vertebrae have cup-shaped surfaces called facets, in which the ribs rest and connect to the spine. These 'joints' help the ribs to move up and down during breathing.

The lumbar vertebrae are the five largest and strongest of all vertebrae. They are found in your lower back between the chest and hips. The strong muscles of the back are attached to the lumbar vertebrae.

Your sacrum and coccyx are the bones found at the base of your spine. The triangular sacrum—made up of five vertebrae fused together—supports the spine and connects it to the pelvis. Your coccyx, or tailbone, is formed from four fused vertebrae and has little function.

The vertebral foramen is the hollow part of the vertebrae where the spinal chord (nerve tissues) attaches to your brain and sends signals all over your body.



## General Information

Stenosis refers to a narrowing of the spinal canal, usually at the lower back (lumbar) region. This narrowing often occurs as part of the normal degenerative aging process. The space can become narrowed when bone and tissue grow, or when the normal degenerative changes of age occur such as in *arthritis*. Usually the process is gradual, and slowly takes away the space that the spinal cord and nerve roots need.

While degenerative change in the spine is normal, not everyone is affected by spinal stenosis. A small amount of narrowing can occur and will not cause pain.

For many people, however, as the space narrows further, the nerves that travel through the spinal column to the legs become squeezed. This can cause back and leg pain, and even leg weakness.

Another result of **spinal stenosis** is the growth of bony spurs. These spurs also place pressure on the nerve roots, causing greater pain in the legs and lower back.

## Causes of Spinal Stenosis?

The most common cause is age and degeneration. It occurs most commonly in older adults, and is the result of many changes in the spine.

As the disks that separate the vertebrae lose water, the space between the vertebrae becomes smaller, causing more friction between the bones. The loss of water in the disks makes them less pliable, and thus unable to act as effective shock absorbers in the spine. Daily wear and tear on the spine becomes more significant without these shock absorbers.

Arthritis and falls also contribute to the narrowing of the spinal canal, compressing the nerves and nerve roots, causing pain and discomfort.

## Symptoms of Spinal Stenosis?

The most common symptom of **spinal stenosis** is fairly constant lower back pain when standing or walking. Leg pain and numbness may also be present, and are generally aggravated by walking. This numbness is typically in the calves, and may be severe enough to limit the ability to walk more than a few steps. Over time, the normal lumbar curve or sway may disappear and the back will look flat.

Some patients describe an inability to "find their legs." This kind of numbness is referred to as pseudoclaudication. Claudication is usually a condition brought on by poor circulation in the legs resulting in pain in the legs, relieved only by stopping activity and waiting minutes until the pain leaves. With **spinal stenosis**, this numbness generally subsides after sitting down for a short time, as the pressure is taken off the nerve roots that are compressed.

Generally, bending forward or sitting is the preferred position for relief of symptoms. Bringing the knees to the chest may assist in temporarily providing the additional space the nerves need, relieving pain.



## Treatment

Treatment generally focuses on relief of pain and inflammation. Use of non-steroidal anti-inflammatory medications (NSAIDs) may provide relief.

Cortisone injections directly into the spinal column (called 'epidural', since they are injected under the dura, which is the thin layer of membrane around the spinal cord) may be used to provide short-term pain relief, though long-term use of steroids is not recommended.

Mild cases can be treated with an exercise or physical therapy routine. Strengthening of the back and abdominal muscles, as well as stretching, will aid in providing support and can possibly decrease the compression on the spinal canal. This provides not only temporary, but sometimes longer-term relief of pain.

## **Magnetic Therapy In Spinal Stenosis**

Like other physical therapies, magnetic therapies may be a useful adjunct in the management of spinal stenosis. Unlike other physical therapies though, magnetic therapies have the potential for acupuncture like benefits and specific stimulation of the various levels of tissue involved in the symptom generation process. Since magnetic fields penetrate tissues without any obstruction and attenuation, there is a potential for stimulating regenerative healing processes, in addition to symptom management.

Since spinal stenosis is primarily a problem of arthritic and degenerative tissue change, numerous studies with pulsed magnetic fields (PEMFs) have been conducted to address these related conditions. PEMFs have been found to decrease the pain of arthritic conditions, associated inflammation, strength, range of motion, stiffness and mobility. PEMFs have been found to act by reducing nerve cell firing, increasing circulation to and therefore oxygenation of tissues, soft tissue repair, reduction of edema and a reduction of muscle spasticity associated with pain syndromes.

One system, I have particular experience with is the QRS. This system has been studied for use with need arthritis in a controlled study and with musculoskeletal conditions in general. The QRS is best applied at vital 10, using the pillow applicator, vertically aligned over the involved spinal area. The pillow should be applied between 10 to 30 minutes, two to the three times per day. In addition, the QRS mattress pad should be used as a general conditioning treatment on a routine basis, to help to relieve any muscle tension. Along the spine, to promote endorphin stimulation and generally stimulate the acupuncture meridians.

The QRS may be able to be used alongside most other therapies. Glucosamine sulfate and Chondroitin should be considered concurrently. Vitamin C is a general ground, substance support supplement and should be used at the level of 1-4 grams per day, with increased fluid intake.

With mild to moderate spinal stenosis results are often the most dramatic. It may take between 2-8 weeks for results to stabilize and be most evident. With severe spinal stenosis, symptom relief may be less visible, because the level of pathology is so much more severe. When there are major mechanical forces acting on local tissues, muscles and nerves in particular, surgical intervention may be the final recourse. Before surgery is ever considered or even spinal stimulation, PEMFs should be giving a serious trial. Even if surgery is considered to this is not normally entirely curative and can certainly create its own damage to surrounding tissues. From this perspective, PEMFs maybe helpful prior to surgery and facilitate recovery following surgery. While there is no good medical literature to suggest that arthritis may be slowed or reversed, there is some indication that this is a possibility. If so, long-term use of PEMFs, such as the QRS, maybe useful to prevent progression of the arthritic process. One randomized controlled study done at University of Miami in dogs showed a reduction or delay in the progression and development of need arthritis in an arthritis model with the use of static magnetic mattresses. Since PEMFs generally produce a stronger response than static magnets, the same benefits would be expected from PEMFs in preventing the progression of arthritis.

## **Surgery**

In cases where other treatment is not effective, surgery may be required. Surgery is the only way to permanently provide decompression of the spinal canal. Surgery is recommended if leg pain and numbness are making standing and/or walking difficult or impossible, and medication and exercise have been ineffective in treating the condition.

The most common surgery is called a laminectomy, because the lamina, which is a portion of the vertebra, is removed during the surgery in order to make more room for the nerves. Some ligaments and bone spurs may also be removed, depending on the nature of the narrowing.

Another type of surgery that is commonly done to treat is a foramenotomy. The foramen is the space in the vertebrae where the nerve roots exit. In a foramenotomy, this opening is expanded in order to provide more space for the exiting nerve roots.

Finally, some severe cases may require spinal fusion (surgically joining bones together) to provide sufficient stability, through the use of either screws or bone grafts.

Post-surgical rehabilitation will include some exercise almost immediately. Walking and strengthening exercises for the lower back and abdomen will increase the stability of the spine. Pain may be controlled with medication for a short time.

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