Lumbar spinal stenosis is the most common cause of low back pain and a common cause of gait impairment and disability in older adults. It is also the most frequent reason why older adults undergo lumbar spine surgery.

What is the Syndrome of Lumbar Spinal Stenosis?

Lumbar spinal stenosis is a narrowing of the central lumbar spinal canal and/or the intervertebral foramina. It results in low back pain that often radiates to the buttocks or thigh, and which is classically worse when standing or walking upright, and relieved when sitting or bending forward. As a result, patients often report it easier and less painful to walk when bending over and pushing a shopping cart than to walk erect. This pain syndrome is often called “neurogenic claudication” to distinguish it from vascular claudication, in which patients experience leg pain when walking (in any position) due to vascular insufficiency.

Symptoms of lumbar spinal stenosis may worsen over time, but the progression is gradual. Indeed, patients followed for a year or more usually report no substantial worsening of symptoms. Furthermore, patients with lumbar spinal stenosis do not experience rapid neurological impairment.

What Causes Lumbar Spinal Stenosis?

The pain of lumbar spinal stenosis may involve more than just direct mechanical compression of the spinal cord or nerves by arthritic bone, intervertebral disks, or hypertrophic ligaments. In fact, many people with marked narrowing of the spinal canal or vertebral foramina on imaging tests have no symptoms at all. Thus, other contributing mechanisms have been proposed, including venous engorgement or abnormal cerebrospinal fluid flow with upright posture, or endothelial dysfunction resulting in neural ischemia.

Diagnosis

Diagnosis is based on the aforementioned history plus examination findings that reproduce symptoms with lumbar extension and relief of symptoms with flexion.

The diagnosis can be confirmed with magnetic resonance imaging (MRI) or computerized tomography (CT). Imaging will reveal narrowing of the central spinal canal and/or the intervertebral foramina. CT is better at showing bony abnormalities while ligamentous and disk abnormalities are more easily seen with MRI.

Keep in mind, though, that narrowing of the spinal canal or intervertebral foramina can be seen in many people who have no symptoms at all. So, especially if findings on imaging are not convincing, consider whether a patient may have some other cause of pain, such as peripheral vascular disease, peripheral neuropathy, or trochanteric arthritis.

TIPS FOR DEALING WITH LUMBAR SPINAL STENOSIS

- Consider the diagnosis of lumbar spinal stenosis when a patient complains of back, buttock, or thigh pain when walking, that is relieved or less severe when they bend forward.
- Confirm the diagnosis by imaging the lumbar spine with either MRI or CT.
- If symptoms are not severe or disabling, consider non-invasive treatments such as abdominal strengthening exercises or corsets to reduce lumbar extension.
- Recommend that patients consider surgery for disabling symptoms. For those who are not good surgical candidates, epidural steroid injections may sometimes be helpful.
Treatment

Only surgery has been clearly shown to improve the symptoms of lumbar spinal stenosis. However, because of the risks of surgery for older adults, the slowly progressive nature of symptoms, and the fact that patients can delay surgery for years and still have a good response to surgery, many patients are treated initially with non-surgical therapies. The evidence supporting their benefit is limited.

**Physical Therapy** is often used with the aim of strengthening the abdominal muscles to help avoid excessive lumbar extension. Abdominal corsets are sometimes recommended for intermittent use, also to minimize lumbar extension.

**Drug Therapy** with acetaminophen or non-steroidal anti-inflammatory drugs (NSAIDS) is frequently prescribed, though such treatment has not been rigorously studied and does not alter the underlying anatomical problems. NSAIDS should be used with caution in older individuals, and are generally contraindicated in those with renal impairment or conditions that may cause gastrointestinal bleeding. Gabapentin has been evaluated in one non-blinded study and showed benefit, but it is not currently considered standard care for lumbar spinal stenosis.

**Epidural Steroid Injections** are often favored for patients who do not respond to physical or drug therapy, and who have medical problems that might increase the risk of surgery. Unfortunately, studies of epidural steroid injections show conflicting results, with one trial failing to show superiority to simple anesthetic injections. In studies that do show pain relief following epidural steroid injections, patients usually report that pain relief lasts only for months.

**Surgery** to remove tissues compressing the spinal cord or spinal nerves is appropriate for patients who can tolerate surgery and when symptoms are more severe and not responsive to the aforementioned non-surgical treatments. The most common procedure is laminectomy, which typically involves partial removal of the lamina, excision of obstructing portions of the ligamentum flavum, and excision of bony material from the facets and vertebral foramen that impinges on neural tissue. Individual results vary widely, but about 2/3 of patients report improvement. Benefits are seen even for patients in their 80s. In recent years, complex spinal fusion procedures, often with the use of screws, plates, and recombinant human bone protein, are being performed in conjunction with laminectomy. Indeed, there has been a nearly 15-fold increase in such procedures among Medicare beneficiaries since the early 2000s. While theoretically attractive, a recent study showed that in general, these complex fusion procedures lead to higher rates of major complications and post-operative death, without clear benefit for most patients. And, they are extraordinarily expensive, costing as much as 10 times more than a simple decompression laminectomy. Some experts now recommend considering these complex fusion procedures only for patients with spinal stenosis who also have other spinal problems, such as scoliosis or spondylolisthesis.

References and Resources

Carragee EJ. The increasing morbidity of elective spinal stenosis surgery. *JAMA* 2010; 303:1309-1310.


