Common Disorder of the Lumbar Spine

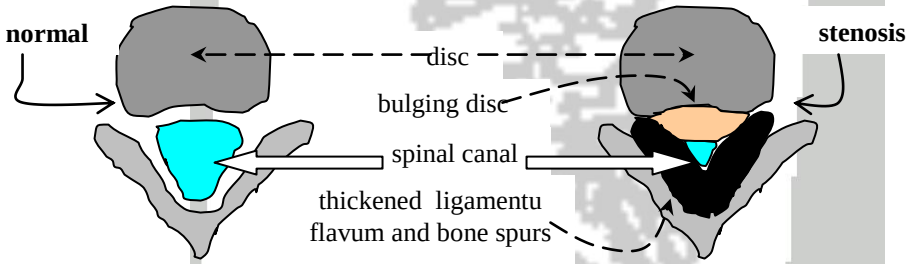
Lumbar Stenosis:

This condition is extremely common in people over the age of 60. As in the cervical spine, there is a compression of the spinal nerves inside the spinal canal. Typically the spinal cord ends at the last thoracic vertebral level (T12). Therefore only spinal nerves become compressed. The compression occurs as a result of bone spurs, aging, collapsed and protruding discs, and thickening of the protective ligament (**ligamentum flavum**) around the covering of the spinal nerves and spinal fluid (**dura**).

Patients generally complain more of hip, buttock and thigh pain, numbness, and tingling. They have difficulty walking. Relief is obtained from bending over as in leaning over a shopping cart at a grocery store or sitting. In doing so, patients are increasing the room where the nerves exit out of the spinal canal. Standing upright, getting out of a chair or out of a car can bring on the symptoms. These maneuvers actually pinch the nerves even more. More than half of these patients can have associated back pain as a result of aged discs.

Treatment:

Patients respond well to physical therapy to temporarily increase the size of the room where nerves exit out of the spinal canal. Epidural steroid injection can bring about significant relief in about 1/3 of the patients. Failing all conservative options or if the pain is intolerable, surgical decompression of the compressed nerve roots (**decompression laminectomy**) can bring out pain relief and increase in walking endurance. This procedure entails removing the back portion of the lumbar spine to relieve the circumferential pressure around the spinal nerves. In addition, each nerve is relieved of any surrounding pressure as it exits out of the spinal canal. Relief in back pain may require a **fusion**. Fusion is manipulation of two or more vertebra into one segment of bone. This is done with a patient's own pelvic bone in younger patients. Frequently, fusion is enhanced with a cadaver bone in older patients when the quality of their own bone is poor or not enough of bone is available.



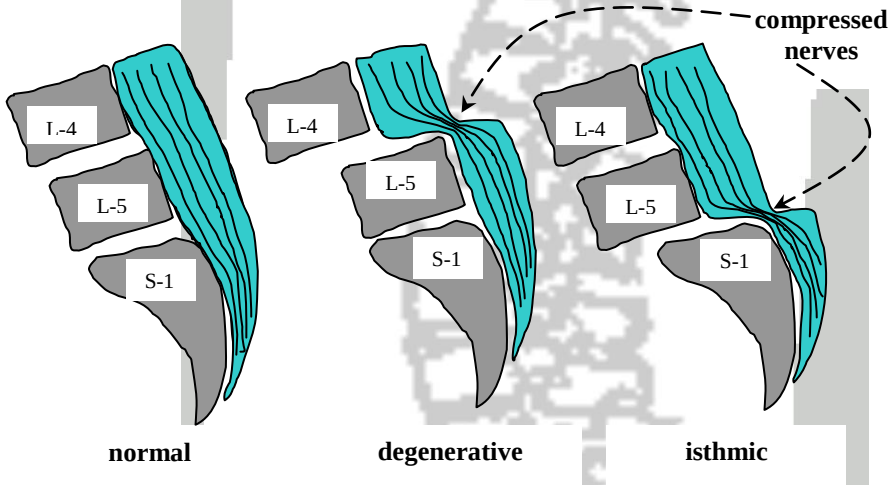
Spondylolisthesis:

Spondylolisthesis means slippage of a vertebral body (**spondylo** = spine, **listhesis** = slippage), not the disc. This occurs most frequently between the fourth (**L4**) and the fifth (**L5**) lumbar vertebral bodies as a result of **degenerative condition**. This is a result of the aging of a disc between the vertebral bodies and the laxity of the joints (**facet**) connecting the two vertebral bodies. In addition, a constant downward force of upper body contributes to the slippage. Ultimately the **L4** slides in front of the **L5**, causing decrease in the space available for the spinal nerves.

When a slippage occurs as a result of repetitive stress associated with unrecognized small fractures, this is called **isthmic spondylolisthesis**. This generally occurs in preadolescents who are involved in strenuous sports such as football, gymnastics or volleyball. The involved segment typically is present between the fifth lumbar (**L5**) and first sacral (**S1**) vertebral bodies. In both cases, symptoms of spinal stenosis occur. Spondylolisthesis can even occur at multiple levels, either towards the abdomen (**anterior spondylolisthesis**) or towards the back (**retro-displacement**).

Treatment:

As with spinal stenosis, physical therapy program is recommended to allow the abdominal and the lower back muscles to participate in "stabilizing" the spine. Anti-inflammatory medication, epidural injection and brace are recommended. If the symptoms are intolerable, surgical stabilization (**spinal fusion**) is performed for the unstable vertebral segment, following the relief in the compression of the spinal nerves (**decompression laminectomy**).



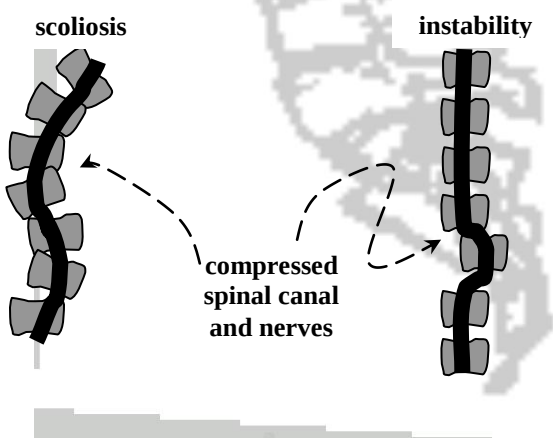
Degenerative Scoliosis and or Coronal Instability:

These are adult acquired spinal deformities primarily involving the lumbar spine. This is a result of unequal collapse of the discs resulting in a curve. Patients complain of primarily back pain and associated buttock, hip and leg pain. Because the spinal nerves can be compressed from the curve, degenerative scoliosis quite often leads to symptoms of **lumbar stenosis**. With time the curve can become quite severe and fixed. Arthritic changes also accompany the curvature leading to back pain.

With coronal instability, a collapse of only one side of the disc space occurs without a noticeable scoliosis. This causes an intense leg pain on the side of the collapse. This can occur many years after a disc herniation where the site of the injury deteriorates early than the non-injured side.

Treatment:

Due to the presence of a structural deformity, physical therapy usually does not relieve the symptoms as in patients with only lumbar stenosis. In some cases of coronal instability, a nerve root block can temporarily decrease the leg pain. The reason is that these conditions are fixed, mechanical problems. Anti-inflammatory medications, physical therapy, brace and epidural injections are still pursued in order to obtain initial relief. Depending on the severity of the symptoms, surgical stabilization (**spinal fusion**) is performed to hold and partially correct the curve, as well as to relieve the compression of the spinal nerves. Surgical stabilization requires the use of **screws and rods** (**instrumentation**) to hold the spine in an optimum position while the patient's own body fuses the curvature in an improved alignment.



Commonly asked questions about Spine Surgery

Who is a "Spine Surgeon"?

A spine surgeon is a physician who dedicates himself in the complete care of all aspects of spinal disorders. They include trauma, infection, tumor, and degenerative conditions such as arthritis and disc herniation. In the past, both orthopaedic surgeons and neurosurgeons would participate in one particular aspect of spinal surgery. Due to overwhelming amount of research and development accomplished in the field during the past 20 years, subspecialty training was created for those surgeons whose sole commitment is strictly to spine surgery. This requires additional fellowship training in a major university hospital where a wide variety and complex procedures are performed. For a patient, it would be in one's best interest to seek out a fellowship trained spine surgeon.

Can you be paralyzed from spinal surgery?

Many patients have come to me stating that a surgeon told them that they would be paralyzed unless they had immediate surgery. This is almost never the case. A complete paralysis as in not being able to use arms and legs can only occur in complex cervical (neck) surgery. A paralysis in legs only can happen with surgery at the level of the thoracic spine (upper back) and not in the lumbar spine (lower back). Most spinal surgeries are commonly done in the lumbar spine. At that level, it is virtually impossible to become paralyzed, lose bowel or bladder control or become wheel chair bound. At worst, one may experience a numbness or weakness in a leg, an ankle or a foot.

Paralysis generally does not occur even if one has an extremely large disc herniation or very tight spinal canal. If one already has severe weakness, disturbance in bowel or bladder, then these symptoms may persist even despite surgery. Unless one is already partially paralyzed, almost all spinal surgery can be done electively, not emergently.

How do I know if I should have a spine surgery?

There are only a few true indications that require surgery. The only true indications are intractable pain and diminished quality of life or global neurological deterioration. Pain can be constant or intermittent yet severe. In order to avoid pain, some patients no longer pursue activities that they enjoy, such as traveling, golf, or even simply shopping in a mall. Working people find it hard to work their normal schedule. Sleep disturbance can be another reason. Only the patient can determine when the problem is severe enough.

A spine surgeon's responsibility is to educate, reassure and inform the patient to make the right decision. Unless the patient is already having severe neurologic problems, such as weakness, bowel or bladder disturbance, surgery can be postponed indefinitely.

MRI's, CAT scans, and X-rays are only tools to identify problems. They are not the only criteria used to determine the surgical indication.

How successful is spine surgery?

Even though every spine surgeon strives to accomplish the best outcome, not every surgery is successful. Depending on the surgery, 85% to 90% success rate is common. Even in the best of hands, complications do occur. Rather than focusing on what can go wrong, emphasis should be on what is done to prevent complications and to manage them appropriately. This can only come from experience and knowledge in the field of spine surgery. Many patients have heard horror stories with poor outcomes. Although they can occur, they are infrequent. If complications were to occur all the time, then patients would never benefit from any spinal surgery.

In Florida, there are many elderly patients who have spinal problems that may require surgery. The outcome of the procedure depends not only on the surgery itself, but the overall medical condition of the patient and the medical treatment obtained before, during and after hospitalization.

About the author and the illustrator

Don K. Moore, M.D., is a graduate of the **University of Michigan Medical School**. He completed his orthopaedic surgical training at the **University of South Florida** and **University of Michigan**. Dr. Moore pursued subspecialty training in orthopaedic trauma at **Kantonsspital Chur** in Switzerland under the guidance of **Professor Thomas Rüdi**. He completed a fellowship in Spine Surgery at the **University of Wisconsin** in Madison.

Dr. Moore specializes in both surgical and non-surgical aspects of the **cervical** (neck), **thoracic** (upper back) and **lumbar** (lower back) spinal disorders. They include disc herniation, sciatica, spinal stenosis, arthritis, scoliosis, spinal cord and nerve problems, tumors, infections, and fractures. During his fellowship training, he has worked with the world-renown **Dr. Thomas Zdeblick** at the University of Wisconsin (**website = www.spine.surgery.wisc.edu**). Dr. Moore was involved in numerous clinical, biological and animal research projects. From this experience, Dr. Moore offers the advantages of the latest advancements in spinal surgery to this community.

Dr. Moore has presented before the prestigious **Cervical Spine Research Society** and **North American Spine Society** meetings for his own research and development in the field of spine disorders. He is also a member of the **North American Spine Society**. He is board certified in **American Board of Orthopaedic Surgery** and has taken this board examination as an orthopaedic surgeon who mainly performs spinal surgeries. Dr. Moore **only performs spine surgeries** in his elective practice. He provides general orthopaedic care for emergency room patients and his established patients who request his services.

Author's Comment

From my interaction with patients, it became evident that the concept of spinal disorders and the treatments can often be complex and challenging to understand. There are several spinal disorders that are fairly common to majority of the patients. Although I explain these matters as best I can during each office visit, it is frequently too much information within a too little time for a patient. To make these explanations as simple as possible and for the patients to remember them after they leave my office, it was necessary to put these explanations into words. This 8th edition spine handout is written to help patients understand technical terms, concepts and treatment options for common degenerative disorders of the spine. Frequent updates are done in an effort to improve the content. Your input is always appreciated. I hope that you will find the information helpful in understanding the information discussed in the office as well in explaining it to others.

Don K. Moore, MD

The power of the Internet

It is simply amazing how the Internet has changed our lives. This is particularly true in information gathering. You too can put the power of Internet to use by logging onto helpful websites to enhance your knowledge regarding spinal disorders. Recommended sites are **www.spine-health.com**, **www.spine.org** (**North American Spine Society**) **www.back.com, www.aaos.org** (**American Academy of Orthopaedic Surgeons), www.iscoliosis.com, www.necksurgery.com, and www.understandspinesurgery.com**. These sites explain many of the concepts that are mentioned in this booklet to a greater detail. If you do not have an Internet access, then you should be able to go to a public library and access the Internet with some help from your librarian. If you are a hardcore scientific journal reader and know how to use a Medline search, **www.ncbi.nlm.nih.Gov/PubMed** will help you. You can also link to this site through **www.aaos.org**. Finally, to look up your favorite **Florida Orthopaedic Specialists** physicians, log onto **www.floridaorthospec.com**.

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