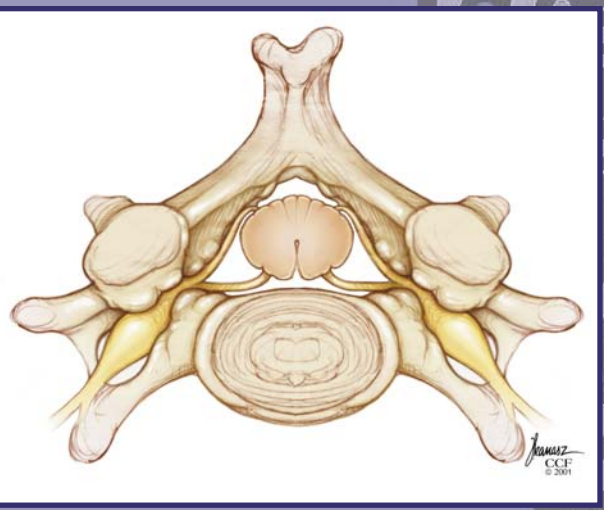
CERVICAL STENOSIS & MYELOPATHY



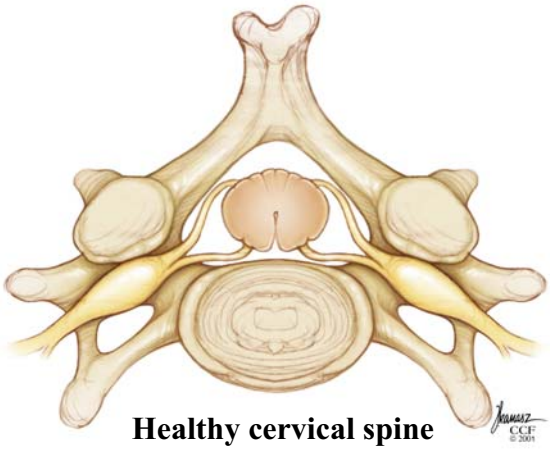
North American Spine Society
Public Education Series

WHAT ARE CERVICAL STENOSIS & MYELOPATHY?

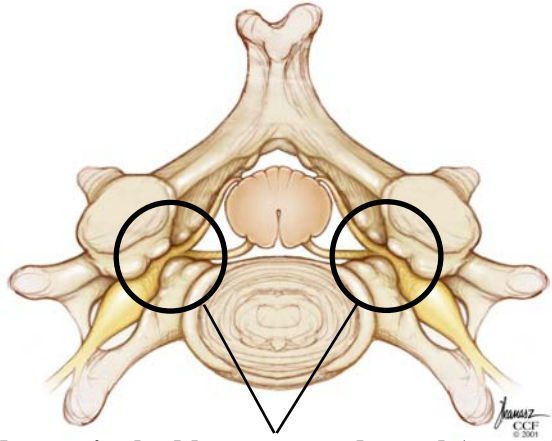
The cervical spine (neck) is made up of a series of connected bones called vertebrae. The bones protect the spinal canal that runs through the vertebrae and carries the spinal cord. The spinal cord contains nerves that give strength and sensation to the arms and legs, and provide bowel and bladder control. Numerous connections (discs, joints, ligaments and muscles) between the cervical vertebrae provide support, stability and allow motion.

With age, intervertebral discs become less spongy and lose water content. This can lead to reduced disc height and bulging of the hardened disc into the spinal canal. The bones and ligaments of the spinal joints thicken and enlarge, also pushing into the spinal canal. These changes are common after age 50 and are generally called “cervical spondylosis” or “cervical stenosis.”

Cervical stenosis may occur at a very slow or very fast rate. These changes cause narrowing of the spinal canal and can pinch the spinal cord and nerve roots. Spinal cord or nerve function may be affected, causing symptoms of cervical radiculopathy or myelopathy. (Cervical stenosis is the name for the actual narrowing of the canal, while cervical myelopathy indicates injury to the spinal cord and its function.)



Healthy cervical spine



Nerve pinched by narrowed canal (stenosis)

WHAT ARE THE SYMPTOMS?

Stenosis does not necessarily cause symptoms; if symptoms do appear, they usually indicate the presence of radiculopathy or myelopathy.

About half of patients with cervical myelopathy have pain in their neck or arms; most have symptoms of arm and leg dysfunction. Arm symptoms may include weakness, stiffness or clumsiness in the hands, such as being unable to button a shirt, turn a doorknob or open a jar. Leg symptoms may include weakness, difficulty walking, frequent falls or the need to use a cane or walker as the disease progresses.

Urinary urgency is also common. In late cases, bladder and bowel incontinence can occur.

Symptom progression may also vary.
You may:

- experience a slow, steady decline;
- progress to a certain point and become stable; or
- progress rapidly.

The first signs are often increased knee and ankle reflexes. These may only be detected in a neurologic exam. Early detection is important to determine treatment which may help slow symptom progression.

HOW IS IT DIAGNOSED?

Your doctor will begin by asking you questions and performing a physical examination, and may order tests. In addition to the symptoms you describe to your doctor, a physical examination may reveal other findings such as:

- increased reflexes in the knee and ankle, called hyperreflexia, sometimes found with depressed reflexes in the arms;
- changes in your gait (walk) such as clumsiness or loss of balance; and
- loss of sensitivity in the hands and/or feet, sometimes making it difficult to button a shirt or sense a change in the position of your feet.

Other findings include rapid foot beating triggered by turning the ankle upward (clonus), extension of the big toe when the foot is stroked (Babinski's sign), contraction of the thumb and index finger after flipping of the middle finger (Hoffman's sign). One or several of these findings may lead your doctor to suspect spinal cord dysfunction. Range of motion or flexibility of the neck often decrease with age and does not necessarily indicate nerve or spinal cord dysfunction.

Cervical spine X-rays may not provide enough information to confirm cervical stenosis, but may rule out other conditions. Magnetic resonance imaging (MRI) is often used. MRI images are very detailed and show the tight spinal canal and pinching of the spinal cord.

Cervical stenosis (narrowing of the spinal canal) and myelopathy can occur at one level or many levels of the spine and MRI is useful for looking at several levels at one time. A computed tomography (CT) scan may give clearer information about bony invasion of the canal and can be combined with an injection of dye into the fluid around the spinal cord and nerves (myelography).

Electrical studies assess or distinguish between myelopathy and other conditions. Electromyography (EMG) and nerve conduction velocity (NCV) may help rule out peripheral nerve problems such as a pinched nerve in your neck or arm that can cause symptoms like those of myelopathy. Somatosensory Evoked Potentials (SSEP) testing is done by stimulating the arms and/or legs and reading a signal in the brain. A delay in the length of time it takes the signal to reach the brain can indicate spinal cord compromise. This study may also rule out other disorders that may be confused with myelopathy.

WHAT TREATMENTS ARE AVAILABLE?

In mild cases of cervical stenosis with or without myelopathy, nonoperative treatment may be suitable. However, in cases with increasing weakness, pain or the inability to walk, surgical treatment is usually recommended. Surgical options include anterior decompression and fusion, where the disc and bone material causing spinal cord compression is removed from the front and the spine is stabilized. The stabilizing of the spine, called a fusion, places a bone graft (implant) between cervical segments to support the spine and compensate for the bone and discs that have been removed. Often, your surgeon may choose to add a small metallic plate and screw fixation device for even more strength.

Another surgical option, laminectomy, involves surgery from the back of the neck. Laminectomy is a procedure where the bone and ligaments pressing on the spinal cord are removed. In some cases, your surgeon might add a fusion to stabilize the spine as well. A second option, called laminaplasty, involves expanding the spinal canal. In this procedure, part of the bony arch is removed and a hinge created. This hinge is "opened" to increase the room for the spinal cord.

MEDICATION AND PAIN MANAGEMENT

Medications used to treat cervical myelopathy reduce pain, muscle spasm or other symptoms. Your doctor may prescribe one or several types of medication to decrease your discomfort and increase function. However, you should take the medication only as directed and needed. Taking more will not help you recover faster, might cause unwanted side effects (such as constipation and drowsiness) and can result in addiction. Make sure your doctor knows about all medications you are taking (even over-the-counter, natural, herbal or alternative medications) and any allergies or other problems you have had with medications in the past (including any history of substance abuse). All medications have risks and benefits that you should review with your doctor. A physician should monitor long-term use of any medication.

Medications used to control pain are called analgesics. Many do not require a prescription. However, if you have severe persistent pain, your doctor might prescribe higher doses of non-steroidal anti-inflammatory drugs (NSAIDs) or muscle relaxers. For even more severe pain, he/she may prescribe stronger narcotics (opioids).

NSAIDs are analgesics that also reduce swelling and inflammation. NSAIDs include aspirin, ibuprofen, naproxen and a variety of

prescription drugs. If your doctor prescribes anti-inflammatory medications you should watch for side effects like stomach upset or bleeding. (*For more information about the proper use of nonsteroidal anti-inflammatory drugs, see the NASS patient education brochure on NSAIDs.*)

Corticosteroids are very powerful anti-inflammatory medications taken either orally or by injection for pain relief. These medications are associated with more side effects, especially when taken for a long time.

Epidural steroid injections may be recommended if your doctor feels they are appropriate. These are injections of corticosteroids into the epidural space (the area around the spinal cord) performed by a physician with special training in this technique. The purpose of the injection is to reduce inflammation and may be used in conjunction with a rehabilitation program. An initial injection may be followed by others depending on your response.

Your doctor may prescribe antidepressants, antiseizure or other medications that are known to help painful conditions. These work by decreasing symptoms through different mechanisms than analgesic medications.

Other pain management strategies may also be used. Trigger point injections place local anesthetics (sometimes combined with corticosteroids) directly into painful soft tissue or muscles. Facet joint injections also may be used. Your doctor may also prescribe ice or heat for the painful area. These may be done as part of a complete rehabilitation and treatment program.

NONOPERATIVE TREATMENT

Nonoperative treatment of cervical stenosis with or without myelopathy is aimed at reducing pain and increasing function. Nonoperative treatments do not change the spinal canal narrowing, but may provide long-lasting pain control and improved life function without surgery. A comprehensive rehabilitation program may require 3 or more months of supervised treatment.

People with cervical myelopathy symptoms frequently avoid activity. Decreased activity reduces flexibility, strength and cardiovascular endurance. A physical therapy or exercise program usually begins with stretching exercises to restore flexibility to tight muscles in the neck, trunk, arms and legs. You may be asked to stretch frequently to preserve flexibility. Cardiovascular exercises for arms and legs (arms and/or leg cycle, treadmill, swimming) may be added to build endurance and improve circulation. Improved blood supply may ease some of the symptoms of myelopathy. You may also be given specific strengthening exercises for arm, leg and trunk muscles. Your therapist may work with you on everyday activities such as changing positions from sitting to standing, standing to sitting and getting out of bed.

Everyday activities will be easier if flexibility, strength and endurance are maintained and increased. Your physical therapist and doctor

can tell you how to add a continuing exercise program into your life, either at home using simple equipment or at a fitness facility.

For people needing additional assistance, home alterations and safety should be considered. An occupational therapist can provide suggestions for easy performance of everyday tasks such as bathing, dressing and fine motor tasks such as turning keys, opening jars, using phones and computers. Perhaps the washer and dryer should be moved to a more convenient place. A bedside commode may be helpful. Bathroom safety devices are prescribed if needed. Plans for preparing meals, pacing activities and saving energy may be reviewed. Proper fitting of equipment such as canes and walkers can be recommended. For some, a home health aide or personal care assistant may be arranged. Transportation alternatives may be explored.

WHAT IF I NEED SURGERY?

Your doctor may recommend surgery if you fail to respond to nonoperative treatment. Surgery may be done from the front of the neck (anterior) or from the back of the neck (posterior). It will always involve removing pressure from the spinal cord and spinal nerves (decompression) and will generally involve some form of stabilization (fusion) of the affected areas. Your doctor may recommend metal implants (instrumentation) as an accessory to the surgery to support the vertebrae while they heal and fuse together. Occasionally, a combined or anterior/posterior approach may be necessary. After surgery, your doctor may recommend the use of a brace, ranging from a soft collar up to a halo-vest, depending upon the surgical procedure.

Several factors are considered by your doctor when choosing your surgical procedure. Typically, these include the alignment of your spine, location of the compression (front or back), quality of your bone, number of levels involved and your overall medical status. Based on these factors, your doctor may recommend anterior, posterior or combined approaches.

Anterior surgery is performed through the front of the neck. Two similar but separate procedures may be recommended. The first is an anterior cervical discectomy and fusion. This may be done at one or more levels. This

procedure removes the disc and bone spurs pinching the spinal cord and spinal nerves. The disc is replaced with an implant to fuse and support the spine. If more than one level of the spine is involved, your doctor may recommend a corpectomy and strut graft. This procedure removes the disc above and below the vertebra and the intervening vertebra to completely remove pressure from the spinal cord. The bone is replaced with a strut graft to stabilize the spine.

Posterior surgery is performed through the back of the neck. Two common operations are laminectomy and laminaplasty. These operations are very similar in that they both remove pressure from the spinal cord and spinal nerves. In laminectomy, the rear elements of the vertebra, also known as the lamina, are removed. In laminaplasty, part of the bony arch is removed and a hinge created. This hinge is "opened" to make the room for the spinal cord.

After surgery, you will remain in the hospital for at least a few days. Most patients are able to return to all activities within 6 to 9 months. A postoperative rehabilitation program is usually prescribed to guide return to activities and normal life. (*For more information, see the NASS patient education brochure on Spinal Fusion Surgery*.)

NOTES

Last Visited 12/17/2012

FOR MORE INFORMATION,
PLEASE CONTACT:

NORTH AMERICAN SPINE SOCIETY
22 CALENDAR COURT, 2ND FLOOR
LAGRANGE, IL 60525
PHONE (877) 774-6337
FAX (708) 588-1080

VISIT US ON THE INTERNET AT:
WWW.SPINE.ORG

DISCLAIMER

This brochure is for general information and understanding only and is not intended to represent official policy of the North American Spine Society. Please consult your physician for specific information about your condition.

Special thanks to Dr. Jonathan Schaffer and the Cleveland Clinic for the illustrations used here.