

Cervical Myelopathy: Overview and Management

Abstract: Questions from patients concerning cervical myelopathy after laminectomy and decompression surgery are answered to help patients understand the associated symptoms and signs of myelopathy, potential causes, workup, and treatment options for this neurological disorder.

Keywords: stenosis, cervical myelopathy, post-laminectomy, surgery, rehabilitation.

Question from a patient: Do you have any information on neurological neck pain, numbness and poorly functioning hands/fingers? My legs are weak and I have a serious imbalance walking. This is 14 months after my cervical laminectomy and decompression; I have to wear a collar daily. I was active and walked regularly, even one month before surgery. What can I do to get better? Are there researchers working on this?

Cervical spinal canal stenosis is a condition where narrowing of the spinal canal in the neck region has occurred. Most commonly, arthritic changes involving the bony structures, disc, and soft tissues within the neck (called cervical spondylosis) can lead to progressive canal narrowing. When narrowing of the canal becomes severe to the point where significant compression or pinching of the spinal cord occurs, this can lead to a condition called cervical myelopathy. Your cervical decompression and laminectomy surgery is actually one of the surgical treatments available for cervical stenosis and/or myelopathy. The symptoms you describe 14 months after surgery sound more severe and are concerning for cervical myelopathy.

Cervical myelopathy is a condition where patients develop neurological deficits due to compression of the spinal cord in the neck region. This commonly occurs gradually, however sometimes can occur after an acute injury. Associated symptoms could include:

- Neck pain
- Weakness, numbness, pain, or tingling in the arms and/or legs
- Muscle wasting
- Difficulty with coordination of arms and/or legs
- Poor balance affecting walking
- Muscle stiffness or tightness (called spasticity)
- Difficulty controlling bowel or bladder function (called incontinence) if there is severe compression

Typically, myelopathy in middle-aged adults is caused by spondylosis (also known as cervical spondylotic myelopathy or CSM); however, other neurological conditions can cause myelopathy such as multiple sclerosis, ALS, or spinal tumors. Another cause of myelopathy that can occur after surgery is a condition called syringomyelia, where a fluid-filled cyst can slowly form within the spinal cord and cause compression.

The diagnosis of cervical myelopathy involves correlation between findings from a careful history, physical examination, and diagnostic tests including imaging and/or electrodiagnostic studies. MRI is

generally the preferred imaging study due its safety and its improved ability to look at the spinal cord and other soft tissues for narrowing or other abnormalities. Electrodiagnostic studies such as a needle electromyography and nerve conduction study (EMG/NCS) can provide useful information to elaborate on the degree of nerve injury and to exclude other neurological disorders.

Depending on the cause of myelopathy, treatment options can vary. Once the cause of symptoms has been established, options may include conservative vs surgical measures. Conservative measures may include bracing, physical therapy, restriction of high-risk or aggravating activities, and various pain management strategies which are beyond the scope of this response, but may include medications, injection therapies, or even minor surgical procedures to alleviate pain such as a spinal cord stimulator implantation device. Surgical options generally involve decompression, but vary depending on the cause of stenosis. Overall, treatment options are controversial with only a few, small comparative studies that may suggest short-term improvement in neurological symptoms after surgery, but these are not definitive. Although there is no supportive evidence by large clinical trials, it is common practice to consider surgical options when severe neurological deficits, such as difficulty with walking, are present due to the increased risk for progressive deficits and further disability. Consultation with a spine surgeon should including a discussion of the various surgical procedures appropriate for the cause of symptoms as well as the potential risks, benefits, and alternatives for further surgery. Surgical complications can occur in up to 16% of patients and include death in approximately 1 percent. There is currently no definitive evidence regarding when to have surgery or what type of surgical procedure is best although the focus of recent research publications has included attempts to identify predictors for better surgical outcomes, comparisons of various surgical approaches, and reporting of patient outcomes following surgical treatment. Once a patient has adequately recovered from surgery, most patients generally undergo rehabilitation (while still in the hospital and/or upon discharge from the hospital) with physical and/or occupational therapy to improve function and independence through work on strengthening and flexibility of muscles, coordination of arms and/or legs, and improving speed and safety of activities such as walking, dressing, grooming, and other activities of daily living.

REFERENCES

1. Levin K. Cervical spondylotic myelopathy. Available at http://www.uptodate.com/contents/cervical-spondylotic-myelopathy?source=search_result&selectedTitle=1%7E11, updated Feb 2011. Available at <http://www.uptodate.com>. Accessed July 4, 2011.
2. DePalma MJ, Slipman CW. Treatment of Common Neck Problems. In Braddom RL et al., *Physical Medicine and Rehabilitation*, 3rd ed. Philadelphia: Elsevier-Saunders; 2006: 815-817.
3. Nikolaidis I, Fouyas IP, Sandercock PAG, Statham PF. Surgery for cervical radiculopathy or myelopathy. *Cochrane Database of Syst Rev*. 2010 Jan 20;(1):CD001466.
4. Chagas H, Domingues F, Aversa A, Vidal FA, de Souza JM. Cervical spondylotic myelopathy: 10 years of prospective outcome analysis of anterior decompression and fusion. *Surg Neurol* 2005; 64 Suppl 1:S1:30.

Lanny Hsu, DO, is a Fellow in Pain Medicine at the University of California, Davis Medical Center, Sacramento, California, USA.

Address correspondence to Lanny Hsu, DO, Department of Anesthesiology and Pain Medicine, University of California, Davis, 4860 Y Street, Suite 3020, Sacramento, CA 95817, USA (E-mail: lanny.hsu@ucdmc.ucdavis.edu)