

Patient Information Sheet on Surgical Indications and Procedures

Myelopathy: what is it?

Your surgeon believes you have a condition called myelopathy. This is usually caused by narrowing of the bony canal (channel) in the back of your neck that contains the spinal cord. This can cause numbness of the hands and arms. There may be weakness in the hands and arms as well as clumsiness. You may be dropping things or have difficulty buttoning your clothing. Some people will feel unsteady on their feet or lose the ability to walk. Your physician has examined you for signs of this problem, looking for weakness, muscle shrinkage, abnormal reflexes and changes in your feeling. Finally, your surgeon has confirmed the diagnosis with studies, which may have included x-rays, myelogram, computerized tomography (CT) and magnetic resonance imaging (MRI). These tests will help your physician and you choose the procedure to treat your condition. In very mild cases your physician may not recommend surgery. If it worsens you and your physician should reassess your situation.

Anterior (front side) operations for myelopathy

When myelopathy is caused by a disk herniation (ruptured or slipped disk), simple removal of the disk may suffice. These disks are safely removed from the front side of the neck. An incision is made in the skin and muscle layers are spread. The trachea (windpipe) and esophagus (swallowing tube) are gently moved to the side, exposing the neck portion of the spine. Some surgeons will simply remove the disk. Many surgeons will fill the gap with bone, a bone substitute or other implant. A plate may be placed on the front of the spine. There are many issues with the grafts that are discussed in another booklet in this series. Your surgeon will help you decide on the best option for you.

When there is spinal cord pressure by several disks or by the bones themselves, your surgeon may recommend a corpectomy. In this procedure two disks and the bone between them are removed. This is an excellent way to relieve pressure on the spinal cord. This decompressed area needs to be reconstructed to support your head and neck. This can be accomplished with bone (from the lower leg, the pelvis or the bone bank) or a metallic implant containing bone. You and your surgeon will select the best option for you.

The anterior approach allows your surgeon to decompress the spinal cord, achieve stability and relieve neck pain. Total elimination of all problems may not occur, and some new ones can develop. Some patients may need a breathing tube left in for awhile after surgery to let swelling go down. Some may even need a tube put into the airway through the skin (tracheostomy tube). **This, fortunately, is rarely required.** Many patients will experience difficulty swallowing. There is often pain when first drinking or eating, but this generally gets better with time. Others feel as though food gets stuck in the throat. Some will have food or drink go down the wrong tube and end up in the lungs. This is potentially quite serious, **resulting in pneumonia and other complications.** Depending upon the severity of the problem, other specialists may be called in. Other tests and treatments may be necessary. In some cases, a feeding tube will be needed. **Again, this is rare.** Some patients will have voice problems. A person may sound hoarse or may not be able to speak loudly. Others cannot sing as well as they could before (usually the high notes are harder to reach). Some people just sound different than they did before. Voice changes are usually temporary, but for some they are permanent. If your voice is very important to your job or recreational activities, you should discuss your concerns with your surgeon.

Fusion stiffens the neck and produces permanent loss of movement. It does not always take (heal bone to bone). This is called a nonunion or pseudarthrosis. When this occurs, it may be painful or unstable and more surgery may be necessary. **Finally, the skin scar may be noticeable and cosmetically displeasing.**

Posterior (back side) operations for myelopathy

When many portions of the channel containing the spinal cord are narrow it is sometimes easier on the patient and simpler for the surgeon to enlarge the channel by removing bone or rearranging bone from the back side. An incision is made in the back of the neck. The simplest procedure is simply to remove bone (laminectomy). This is simple and quick but may make the neck unstable in some cases.

Another technique is laminoplasty. The bones are cut in several places and rearranged to enlarge the size of the spinal cord channel. There are many techniques to do this and your surgeon can discuss his or her preference with you. Laminoplasty takes longer but preserves stability. It also preserves movement that fusion does not.

Some people have instability or flexible kyphosis (reversal of the normal curvature) that contributes to the myelopathy. Laminectomy or laminoplasty by themselves may be inappropriate in these people unless a fusion is done at the same time. This will eliminate some movement but still allow decompression of the spinal cord.

The posterior approach gives your surgeon easy access to the entire neck but may not relieve all of your problems, especially neck pain. For many patients, moving the muscles to have surgery from the backside is more painful than going from the front. **This pain can persist for some time.** Sometimes the muscles will shrink (atrophy). The scar may be prominent in some people. Nonunion can occur with this surgery too. It may require more surgery. **The infection rate is higher with posterior than with anterior surgery. Some doctors have reported that it is three times as high.**

Combined anterior and posterior approaches (front and back) for myelopathy

Some individuals with myelopathy have kyphosis, an abnormal curvature of the spine that contributes to the myelopathy. Particularly when this is stiff, the combined approach is necessary. Your surgeon will usually perform the anterior (front) procedure (one of those described in the first section) and then reinforce it in the back with a fusion, usually using some form of metal fixation in addition to bone graft to hold the bones steady while the fusion heals. When many levels are treated anteriorly, a supplemental posterior fusion will improve the stability of the reconstruction and reduce the risk of failure. These combined procedures have a high fusion rate but are more complex. Your surgeon can explain why he or she feels that you might benefit from this more extensive surgery. Please see the sections above (*anterior operations for myelopathy* and *posterior operations for myelopathy*) for details on possible problems **or complications.**

Radiculopathy: what is it?

Radiculopathy is irritation of a nerve in the neck. You may experience pain radiating down the arm, forearm or hand. In the same areas you may feel numbness, tingling or burning. You may also feel weak in that extremity. This is usually due to a disk herniation (ruptured or slipped disk) or osteophyte (bone spur). While both arms may be involved, it usually involves one side. Many people with radiculopathy will get better with time, medication and therapy.

Those who do not may choose surgical treatment. Individuals with severe weakness or pain are also good surgical candidates.

Your physician has examined you looking for disturbances in your sensation (feeling), weakness in your muscles and abnormal reflexes that may accompany radiculopathy. Your surgeon will also confirm this diagnosis with tests such as x-rays, myelography, computerized tomography (CT) or magnetic resonance imaging (MRI). These tests are the road maps that your surgeon uses to guide your treatment.

Anterior (front side) operations for radiculopathy

An incision (cut) on the front of the neck allows your surgeon to gently move the trachea (windpipe) and esophagus (swallowing tube) over to get to the neck portion of your spine. This is a very safe way to remove the disk. Bone spurs can also be removed. This is all some surgeons will do, as it is an effective treatment for radiculopathy. Because disk removal alone can cause neck pain, many surgeons will insert a bone graft, bone substitute or implant into the gap between the bones, and may recommend use of a metal plate and screws. This implant will lead to fusion (permanent stiffness) at that level. There are several options for grafting. Some of these are discussed in another booklet in this series. Your surgeon will help you make the best decision for you.

Sometimes several disks are involved. To improve the fusion (bone healing) rate some physicians recommend removal of the bone between the disks. This is called a corpectomy. A corpectomy is more commonly used to treat spinal cord compression (myelopathy). It is described in that section.

Fusion helps take the pressure off the irritated nerve and may reduce neck pain but not always. Please see the section above (*anterior operations for myelopathy*) for details on possible problems.

Posterior (back side) operations for radiculopathy

When the nerve pressure is further off to the side, away from spinal cord, your surgeon may recommend going from the back. In most cases a fusion is not necessary, so this preserves mobility. With a foraminotomy, the small tunnel containing the nerve is enlarged. This can be combined with removal of disk material. Sometimes foraminotomy can destabilize the neck and

a fusion may be performed at the same time. If the radiculopathy can be caused by instability a posterior fusion may relieve the neck and arm pain. Please see the section above (*posterior operations for myelopathy*) for details on possible problems.

Axial (neck) pain without myelopathy or radiculopathy

Some individuals have no spinal cord or nerve root pressure. They experience pain with occasional abnormal sensations in the neck area. Some will also have headaches (usually the back of the head), between the shoulder blades and in the upper shoulders. Usually, this is due to degeneration (wear and tear arthritis) or soft tissue injuries. Most of the time surgery is not recommended when there is no spinal cord or nerve root problems, because surgery has been much less effective for these problems. There are some uncommon exceptions to this rule. If your physician has found abnormal movement (instability), surgical stabilization with fusion has a reasonable chance of relieving your neck pain. When there is severe deformity, realignment and fusion may be useful. If the neck pain is coming from a tumor or infection, surgical treatment may be recommended to treat the condition and relieve your neck pain.

Anterior (front side) operations for neck pain

When the painful process involves the bone or discs, your surgeon may perform a fusion from the front. This is described above in the sections on myelopathy and radiculopathy. Many infections and certain tumors will be treated this way.

Anterior approaches are usually well tolerated but have a slightly lower fusion rate. Please see the section above (*anterior operations for myelopathy*) for details on possible problems.

Posterior (back side) operations for neck pain

Operations from the back are more common for neck pain due to instability and certain deformities. An incision is made in the middle of the back of the neck. The muscles are moved and the bone surfaces prepared for bone graft. Metallic implants fix the bones and hold them steady, improving the chances of bone healing. The posterior approach is also used for tumors that occur in this portion of the neck.

Posterior fusions generally have a higher fusion (bone healing rate) but are associated with more neck pain in the healing phase. Please see the section above (*posterior operations for myelopathy*) for details on possible problems.

A final word

All surgery has risks and benefits. You and your surgeon have weighed them carefully to make the best decision for your situation. This booklet is written to help you know your problem and its treatment. Medical problems are not always easy to understand. If any part of this does not make sense to you, please ask your surgeon to explain it in words that make sense to you. Asking questions will help your surgeon to help you.

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