

SPINE SURGERY

Rationale for Spine Surgery

Removing pressure from the nerve roots or spinal cord can ease extremity pain. Problems from pressure on the nerves, such as numbness or weakness in the upper or lower extremities or difficulty walking, may also improve.

Procedures

Cervical Discectomy

Anterior cervical discectomy is one of the most common surgical procedures for problems in the cervical spine. The term discectomy means to "remove the disc." This procedure is routinely used to relieve pressure on a spinal nerve or the spinal cord caused by a herniated disc.

Discectomy is also done when the surgeon intends to fuse two or more bones of the neck together. This procedure of disc removal and fusion (described below) is often used to treat degenerative problems (called spondylosis) in the neck.

In the cervical spine, the disc is usually removed from the front. An incision is made in the front of the neck beside the trachea (windpipe). The muscles are moved to the side. The arteries and nerves in the neck are also protected.

Upon reaching the front of the spine, the surgeon uses an X-ray to identify the correct disc. The problem disc is removed all the way back to the spinal cord. If any bone spurs are found sticking off the back of the vertebrae and your surgeon thinks they may also be causing you pain, they may be removed at the time of surgery. Great care is taken to not damage the spinal cord and nerve roots. After the disc has been removed between the vertebrae, a cervical fusion is performed. The space where the disc was taken out is filled with a block of bone taken from the top rim of the pelvis. Bone taken from your own body is called autograft. Your surgeon may obtain bone from a source other than your body, called allograft. This bone is kept in a bone bank. Placing a bone graft between two or more vertebrae causes the vertebrae to fuse. The anterior cervical fusion may also be done in a way that spreads the vertebrae apart a bit, trying to restore the space between them. This is done to recreate the normal height of the disc space and to restore the normal inward curve of the neck (called lordosis). Increasing the distance between the vertebrae also widens the opening (foramina) where the nerves come out of the spine. Restoring the size of the foramina is done to relieve pressure and irritation from bone spurs where the nerves pass through the foramina.

Most neck problems are from a degenerative, or aging, condition of the spine. Degenerative disc disease and cervical stenosis are two diagnoses that can lead to pressure on the spinal cord or nerve roots. Surgery to remove this pressure can be done from the front (anterior) or back (posterior) of the neck. Doctors use the anterior approach more often because the pressure is usually on the front portion of the nerves or spinal cord.

Anterior Interbody Cervical Fusion

When an interbody fusion is done, the disc between two vertebrae is removed, and a bone

graft is positioned in its place. As the body heals, the graft fuses to the vertebrae above and below it. When more than one disc needs to be removed, a larger bone graft is inserted. Patients usually wear a brace after the surgery. The brace limits movement between the vertebrae, increasing the chances for a successful fusion.

Bone heals best when it is held still-without motion between the pieces trying to heal. The healing of a fusion is no different than healing a fractured bone, such as a broken arm. However, the neck is one part of the body that is difficult to hold still, even with a brace worn around the outside of the neck. Wearing a brace for several months after the surgery can be uncomfortable.

The success of a fusion can also be improved by screwing metal (titanium) plates or rods to the front of the spine. This holds the vertebrae and graft rigidly in place while the fusion heals. These implants are referred to as instrumentation or internal fixation. There are many different types of spinal implants used with the intent of stabilizing the neck and maximizing healing of the fusion. When doctors use this type of instrumentation, a brace may be needed for a shorter period of time, or not at all.

Lumbar Laminotomy and Discectomy

The traditional way of treating a herniated disc is to perform a laminotomy and discectomy. The term laminotomy means "make an opening in the lamina," and the term discectomy means "remove the disc."

This procedure is performed through an incision down the center of the back over the area of the herniated disc. The muscles are moved to the side so that the surgeon can see the back of the vertebrae. X-rays may be required during surgery to make sure the correct vertebra is located. The doctor cuts a small opening through the lamina bone on the back of the spinal column. This procedure, called "laminotomy," is used to give the doctor room to see and work inside the spinal canal. [View animation of laminotomy.](#)

The nerve roots are moved out of the way. Upon locating the problem disc, the surgeon removes it, easing pressure and irritation on the nerves of the spine. Small instruments that fit inside the disc are used to remove as much of the nucleus as possible. This prevents the remaining disc material from herniating in the future. [View animation of discectomy.](#)

The muscles of the back are returned to their normal position around the spine. The skin incision is repaired with sutures or metal staples.

Lumbar Microdiscectomy

Improvements have been made in the tools available to the spinal surgeon for performing a laminotomy and discectomy. Microdiscectomy is essentially the same as traditional discectomy, but this newer approach has several advantages. A much smaller incision is needed when performing a microdiscectomy. There is less damage to nearby parts of the spine. Patients tend to recover faster.

A small incision is made in the back just above the area where the disc is herniated. Muscles are moved aside to see the vertebrae. The surgeon positions a microscope in the small incision. The remainder of the surgery is performed like the traditional method.