

Cervical Spine Disorders Neck Disorders

You have probably been referred to see a neurosurgeon because of pain in your neck or shoulder, or perhaps tingling or numbness in your arms. You may also have experienced some weakness when using your arms or hands.

You may be wondering if there is a chance that everything will return to normal or whether the surgery that may have been talked about is very risky. These questions and concerns can be addressed by your neurosurgeon, who is a physician trained in the surgical treatment of disorders of the nervous system.

He will ask a number of questions and then perform a neurological examination.

Following a review of any x-rays or other diagnostic tests you may have brought with you, additional tests may be ordered if further information is needed. Finally, he will propose a course of treatment which may or may not involve surgery.

The decisions regarding your care should be reached after discussions between you, your family and your neurosurgeon.

Understanding the Problem

Your neck is part of a long flexible column extending through most of your body often referred to as the spinal column, or backbone. The neck region of the spinal column (the cervical spine) consists of seven bones (vertebrae) shaped like building blocks, which are separated from one another by shock absorbing pads (intervertebral discs)

These discs allow the spine to move freely and act as shock absorbers during activity. Attached to the back of each vertebral body is an arch of bone that forms a continuous hollow longitudinal space much like a tube that runs the whole length of your back. This space is the spinal canal, through which runs the spinal cord and nerve bundles. The spinal cord is surrounded by fluid (cerebrospinal fluid) and three layers of protective membrane: the dura, the pia and the arachnoid.

At each vertebral level a pair of spinal nerves exit through small openings called foramina (one to the left and one to the right). These nerves serve the muscles, skin and tissues of the body and thus provide sensation and movement to all parts of the body. The delicate spinal cord and nerves are further supported by strong muscles and ligaments that are attached to the vertebrae.

Cervical Disc Disease

With age, injury, poor posture or diseases such as arthritis there can be damage to the bone or joints of the cervical spine. The cervical discs may become worn out and abnormal growths (bone spurs) may form as a result of repetitive movement of the disc.

Sudden movement or injury such as whiplash may cause the disc to slip or herniate. The herniated disc or bone spurs may narrow the spinal canal through which the spinal cord runs or the small openings (foramina) through which spinal nerves exit

What problems might you experience?

Pressure on a nerve by a herniated (slipped) disc or a bone spur may irritate the nerve resulting in pain in the neck and arm, incoordination, or numbness or weakness in the arm, forearm or fingers. Pressure on the spinal cord in the neck (cervical) region can be a very serious problem because virtually all of the nerves to the rest of the body have to pass through the neck to reach their final destination (arms, chest, abdomen, legs); therefore, the function of many important organs is potentially at risk.

Initially, the symptoms of cervical disc disease may be limited to neck pain and later arm pain; weakness or numbness may also occur along with difficulty walking or incoordination of the legs. Further progression may lead to severe impairment or even paralysis.

Diagnosis

Your doctor will document your symptoms and find out the extent to which these symptoms affect your life. The physical examination will include an assessment of sensation, strength and reflexes in various parts of your body to help pinpoint which nerves or what parts of your spinal cord are affected.

Your doctor may then order studies to confirm the diagnosis and determine more precisely the nature and extent of the disease process. These studies may include:

X rays

A simple x-ray will show the bones of the neck and determine if there is significant wear and tear or disease of the bone. It will also show whether the bones are lined up properly.

Myelogram

The myelogram is an x-ray with a special dye that highlights the spinal cord and nerves. The dye is usually injected into the spine with a needle and then the x-rays are obtained.

Computed Tomography (CT)

A CT (also known as CAT scan) of the spine is a computerized map of an x-ray of the neck. The CT will show the anatomy of the neck in more detail and from different angles. It will also better define the relationship of the disc or bone spurs to the spinal cord and nerves. The CT may be done in conjunction with a myelogram of the neck to provide additional information.

Magnetic Resonance Imaging (MRI)

The MRI uses a powerful magnetic field rather than x-rays to produce a detailed anatomical picture of the neck and the structures within it. During the study you will hardly feel that anything is going on.

Electromyogram and Nerve Conduction Studies (EMG/NCS)

Unlike the previous tests, which help your doctor determine anatomy and structure, these tests primarily study how the nerve and muscles are actually working together. This information can assist in determining which nerves or muscles are functioning abnormally.

Treatment

Cervical disc disease does not always mean that you require surgery. In fact, many of your symptoms can be relieved by nonsurgical management.

Your doctor may prescribe medications to reduce the pain or inflammation and allow time for healing to occur. Bed rest, reduction of physical activity or a cervical collar may also be prescribed. The collar provides support for the spine, reduces mobility and may reduce the pain and irritation.

To further relieve the pressure on the nerves in your neck your doctor may prescribe a cervical traction device. This device is attached to your head and pulls up on it using a pulley system and weights. It is usually applied a few times a day and can be used while sitting or lying in bed. Cervical traction device for non-surgical treatment of cervical disc disease.

What kind of surgery may be helpful?

There are several operations that may be used to treat cervical disc disease. The selection of which operation and the determination of when to perform the operation depend on many factors, which obviously differ for each patient and doctor combination. However, some general factors include the kind of disc disease you have (herniated disc or bone spurs), whether there is pressure on the spinal cord or spinal nerve, the presence of one or more areas of disease within the cervical spine, and if the spine is dislocated in addition to pressure on the cord or nerves.

Other factors are determined by your age, how long you have had the disease, other medical problems, previous operations on the neck, and so on.

The particular combination of these and other factors will determine the choice of surgical treatment.

Anterior Cervical Disectomy

This operation is performed on the neck to relieve pressure on one or more nerve roots, or on the spinal cord. The procedure is performed from the front, or anterior, approach. Disectomy means to remove the disc.

Surgery for anterior cervical disectomy is performed with the patient under general anesthesia lying on his or her back. The surgeon may place a traction device to pull on the neck. During the course of the operation x-rays may be obtained to assist the surgeon in the surgery.

The surgeon will make an incision in the front of your neck; if only one disc is to be removed it will typically be a small horizontal incision in the crease of the skin. If the operation is to be more extensive, the incision may be oblique (slanted) or longer.

The soft tissues within the neck are separated to allow the surgeon to reach the front of the spine, following which the intervertebral disc and bone spurs are removed. An operating microscope may be used to better display the area while part of the disc is removed with forceps. Other instruments such as a drill or bone-cutting instruments may be used to enlarge the disc space. This will help the surgeon to relieve any pressure on the nerve or spinal cord due to bone spurs or the ruptured (herniated) disc.

Sometimes the space between the vertebrae is refilled with a small piece of bone or other material (fusion). The bone may be yours (for example, from your hip bone) or it may be taken from a

bone bank. In time, the vertebrae may fuse, or join together. In addition to the piece of bone, some surgeons may place a metal plate at the fusion site to strengthen it.

The neck incision is closed in several layers. Skin suture material may need to be removed or the surgeon may use absorbing sutures and strips of tape which you can later remove by yourself.

Historically and statistically, there are few surgical risks with anterior cervical discectomy; however, some risk is unavoidable and the unexpected may occur resulting in complications.

Although every precaution will be taken to avoid complications, common risks possible with surgery are: infection, excessive bleeding (hemorrhage) and an adverse reaction to anesthesia. Other risks possible with anterior cervical discectomy include: stroke; injury to the recurrent laryngeal nerve, which causes hoarseness and may or may not be permanent; and injury to the involved nerve root(s) or the spinal cord, both of which can cause varying types and degrees of paralysis.

The process of informed consent is designed to make you familiar and comfortable with the reasonable expectations and foreseeable risks. Your surgeon and anesthesiologist will discuss these with you and assist you in your decision-making.

Recovery After Surgery

Following surgery, you will be taken to the recovery room for a short while and then spend a few days in a hospital room. When you awake you may have a collar or brace around your neck or a drainage tube coming out of your neck. Typically, the drainage tube is removed in a day or two.

If you had an anterior cervical discectomy or corpectomy, your throat may be slightly sore. If a piece of bone was taken from your hip, the area of incision is usually sore. Your physician will give you appropriate medication to address these problems. Fortunately, most of them are temporary.

Intravenous (I.V.) fluids will be ordered during the early recovery period.

Discharge from the Hospital

Your length of stay in the hospital will be determined by your progress and by your home situation. When you are ready to leave the hospital you will be provided with instructions regarding your brace, care of your incision(s) and physical activity.

It is unlikely that you will be allowed to drive, lift heavy objects or engage in contact sports or vigorous physical activity for a while. Keep your incision clean and dry and report any signs of drainage or inflammation promptly to your doctor.

Unless instructed otherwise, you may take a shower after surgery. This should be done with a dressing in place to protect the incision.

Practice good posture and body mechanics even during routine daily tasks. It is normal to have some pain, especially in the incision area; pain in the neck or arms is also not unusual, and is caused by inflammation of the previously compressed nerve. It will slowly lessen as the nerve heals. Medication may also help. Discomfort is normal while you gradually return to normal activity, but pain is a signal to stop what you are doing or proceed more slowly.

Follow-up

Your doctor will see you in the office after surgery and examine your incision. He may remove skin sutures and will evaluate nerve and muscle function. X-rays may be ordered to check on the fusion of the bone graft. Physical therapy may be recommended.

Numbness or tingling sensations are often the last symptoms to leave. Your doctor will help determine when you can return to work and with what limitations.

Driving a motor vehicle will be possible once your doctor determines that you have recovered full coordination and are experiencing minimal pain and that your neck is stable.

The Role of the Neurosurgeon

If you are perceiving problems in your cervical spine caused by pressure on the nerves, a neurosurgeon is the appropriate medical professional to direct your treatment. Although his primary concerns will be diagnosis, interpretation of test results (when necessary) and surgery, you will most likely have other medical professionals involved in your treatment as well, such as anesthesiologists, physical therapists and other specialists.

Neurological surgery is the medical specialty concerned with the diagnosis and treatment of disorders of the nervous system, the brain or the spinal cord.

Neurosurgeons treat patients with injuries to the head, spinal cord or nerves; patients with a stroke or in danger of a stroke due to clogged arteries in the neck; patients with tumors or malformations of the brain or spinal cord; as well as patients with back or neck pain associated with a slipped disc.

Neurosurgeons undergo six to eight years of rigorous training following medical school. After successfully completing this training, two years of medical practice and a written examination, neurosurgeons can become Board Certified.