

What to Expect During Your Cervical Fusion

Your Pathway to Healing

Spine Services

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We believe that patient and family education is a critical component of providing excellent patient care. Therefore we designed this booklet to help guide you and your family through your cervical surgery journey from beginning to end.

You will help achieve your optimal recovery from your surgery by becoming an active, helpful part of our team before, during and after surgery.

Preparation for a cervical fusion is divided into three phases:

1. Before Surgery
2. Day of surgery
3. After surgery



Phase 1: Before Surgery

Preparation for surgery

- ❖ Discuss your medication list with your doctor
- ❖ You will be instructed when to stop aspirin, anti-inflammatory medications, supplements or any other blood thinners.
- ❖ Quit use of all tobacco and nicotine
- ❖ Eat healthy food
- ❖ Review your educational material
- ❖ Arrange family member or friend to drive you home from the hospital when you are discharged
- ❖ Arrange for a family member or friend to stay with you when you go home from the hospital

Pre-Op visit

- ❖ After a visit to our office, you will proceed to the hospital's surgery center to meet with a Surgical Care Coordinator
- ❖ Please enter the hospital through the Surgery Center entrance
- ❖ Please bring
 - Any forms from your physician relating to this visit
 - Your insurance / Medicaid / Medicare card
 - Driver's License / Photo Identification
- ❖ Medical history and current medications will be reviewed
- ❖ Blood and urine test will be collected if ordered
- ❖ Possible EKG and Chest x-ray will be performed
- ❖ Medical/Cardiology clearance may be recommended

- ❖ The nurse will instruct you as to which medications may be taken on the day of surgery

Night before surgery

- ❖ Do not eat or drink anything after midnight

Day of surgery

- ❖ Arrive at hospital's surgery center at requested time
- ❖ Enter through the Outpatient/Women's Center Entrance and sign in at the information desk
- ❖ The nurse will direct you from that point

Phase 2: Day of Surgery

Your neck is part of a long flexible column, known as the spinal column or backbone, which extends through most of your body. The cervical spine (neck region) consists of seven bones (C1-C7 vertebrae), which are separated from one another by 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, which runs the whole length of your back. This space, called the spinal canal, is the area through which the spinal cord and nerve bundles pass. The spinal cord is bathed in cerebrospinal fluid (CSF) and surrounded by three protective layers called the meninges (dura, arachnoid, and pia mater).

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

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

Neck pain may be caused by disc degeneration, narrowing of the spinal canal, arthritis, and, in rare cases, cancer or meningitis. For serious neck problems, a primary care physician and often a specialist, such as a neurosurgeon, should be consulted to make an accurate diagnosis and prescribe treatment.

You should consult a neurosurgeon for neck pain if:

- It occurs after an injury or blow to the head
- Fever or headache accompanies the neck pain
- Stiff neck prevents you from touching your chin to your chest
- Pain shoots down one arm
- There is tingling, numbness or weakness in your arms or hands

- Neck symptoms associated with leg weakness or loss of coordination in arms or legs.
- Your pain does not respond to over-the-counter pain medication
- Pain does not improve after a week

Age, injury, poor posture, or diseases such as arthritis can lead to degeneration of the bones or joints of the cervical spine, causing disc herniation or bone spurs to form. Sudden severe injury to the neck may also contribute to disc herniation, whiplash, blood vessel destruction, vertebral injury, and, in extreme cases, permanent paralysis. Herniated discs or bone spurs may cause a narrowing of the spinal canal or the small openings through which spinal nerve roots exit.

Pressure on the spinal cord in the 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). This can potentially compromise the function of many important organs.

Cervical stenosis

Cervical stenosis occurs when the spinal canal narrows and compresses the spinal cord and is most frequently caused by aging. The discs in the spine that separate and cushion vertebrae may dry out. As a result, the space between the vertebrae shrinks, and the discs lose their ability to act as shock absorbers. At the same time, the bones and ligaments that make up the spine become less pliable and thicken. These changes result in a narrowing of the spinal canal. In addition, the degenerative changes associated with cervical stenosis can affect the vertebrae by contributing to the growth of bone spurs that compress the nerve roots. Mild stenosis can be treated conservatively for extended periods of time as long as the symptoms are restricted to neck pain. Severe stenosis requires referral to a neurosurgeon.

Symptoms

- Neck or arm pain
- Numbness and weakness in both hands
- Unsteady gait when walking
- Muscle spasms in the legs
- Loss of coordination

Diagnosis

Diagnosis is made by a neurosurgeon based on your history, symptoms, a physical examination, and results of tests, including the following:

- **Computed tomography scan (CT or CAT scan):** A diagnostic image created after a computer reads x-rays; can show the shape and size of the spinal canal, its contents, and the structures around it.
- **Electromyogram and Nerve Conduction Studies (EMG/NCS):** These tests measure the electrical impulse along nerve roots, peripheral nerves, and muscle tissue. This will indicate whether there is ongoing nerve damage, if the nerves are in a state of healing from a past injury, or whether there is another site of nerve compression.
- **Magnetic resonance imaging (MRI):** A diagnostic test that produces three-dimensional images of body structures using powerful magnets and computer technology; can show the spinal cord, nerve roots, and surrounding areas, as well as enlargement, degeneration, and tumors.
- **Myelogram:** An x-ray of the spinal canal following injection of a contrast material into the surrounding cerebrospinal fluid spaces; can show pressure on the spinal cord or nerves due to herniated discs, bone spurs or tumors.
- **X-ray:** Application of radiation to produce a film or picture of a part of the body can show the structure of the vertebrae and the outline of the joints.

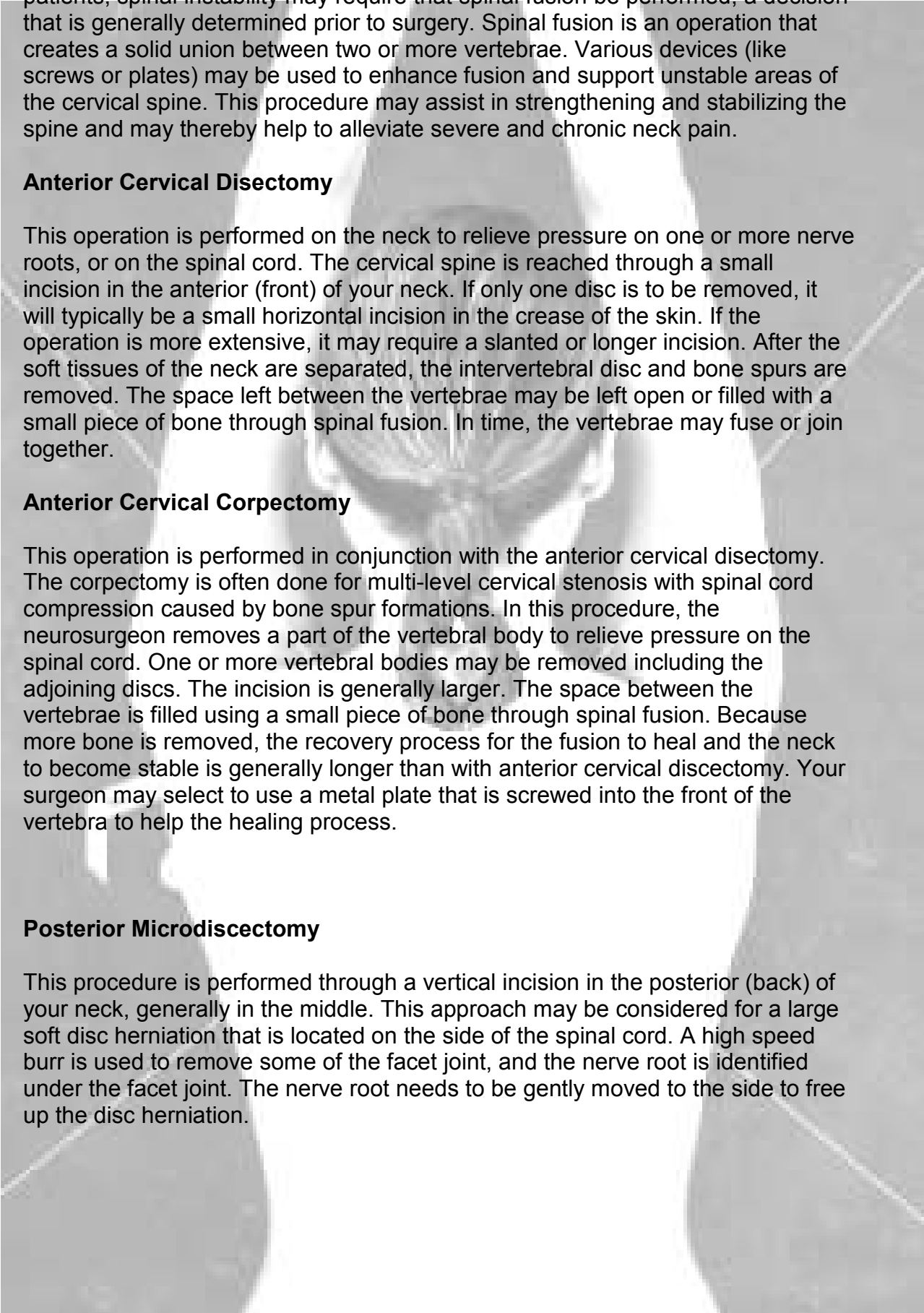
Treatment

Nonsurgical treatment is the first approach in patients with common neck pain not involving trauma. For example, many patients with cervical disc herniations improve with conservative treatment and time and do not require surgery. Conservative treatment includes pain medication, bed rest, reduction of physical activity, and physical therapy. Your doctor may prescribe medications to reduce the pain or inflammation and muscle relaxants to allow time for healing to occur. An injection of corticosteroids may be used to temporarily relieve pain.

Surgery

You may be a candidate for surgery if:

- Conservative therapy is not helping
- You experience progressive neurological symptoms involving your arms and legs
- You experience difficulty with balance or walking
- You are in otherwise good health



There are several different surgical procedures which can be utilized, the choice of which is influenced by the severity of your case. In a small percentage of patients, spinal instability may require that spinal fusion be performed, a decision that is generally determined prior to surgery. Spinal fusion is an operation that creates a solid union between two or more vertebrae. Various devices (like screws or plates) may be used to enhance fusion and support unstable areas of the cervical spine. This procedure may assist in strengthening and stabilizing the spine and may thereby help to alleviate severe and chronic neck pain.

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 cervical spine is reached through a small incision in the anterior (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 more extensive, it may require a slanted or longer incision. After the soft tissues of the neck are separated, the intervertebral disc and bone spurs are removed. The space left between the vertebrae may be left open or filled with a small piece of bone through spinal fusion. In time, the vertebrae may fuse or join together.

Anterior Cervical Corpectomy

This operation is performed in conjunction with the anterior cervical disectomy. The corpectomy is often done for multi-level cervical stenosis with spinal cord compression caused by bone spur formations. In this procedure, the neurosurgeon removes a part of the vertebral body to relieve pressure on the spinal cord. One or more vertebral bodies may be removed including the adjoining discs. The incision is generally larger. The space between the vertebrae is filled using a small piece of bone through spinal fusion. Because more bone is removed, the recovery process for the fusion to heal and the neck to become stable is generally longer than with anterior cervical disectomy. Your surgeon may select to use a metal plate that is screwed into the front of the vertebra to help the healing process.

Posterior Microdiscectomy

This procedure is performed through a vertical incision in the posterior (back) of your neck, generally in the middle. This approach may be considered for a large soft disc herniation that is located on the side of the spinal cord. A high speed burr is used to remove some of the facet joint, and the nerve root is identified under the facet joint. The nerve root needs to be gently moved to the side to free up the disc herniation.

Potential advantages of this procedure are that a fusion is not necessary and the recovery time may be shorter. There are several potential disadvantages. First, because the spinal cord is in the way, visualization of the disc space is limited. Generally, only a disc herniation that is off to the side of the spine can be approached. Because a fusion is not done, the disc space is not distracted and the associated collapse that occurs with a disc herniation can continue and place pressure on the nerve where it exits the spine. Since the disc is not removed completely, it can herniate again in the future.

Posterior Cervical Laminectomy

This procedure requires a small incision in the middle of your neck to remove bone spur formations or disc material. The foramen, the passage in the vertebrae of the spine through which the spinal nerve roots travel is enlarged, to allow the nerves to pass through.

Your neurosurgeon will remove a section of the lamina (the back bony part of the vertebrae) and ligament to find the exact area of the compression. An operating microscope is used to create an opening, and part of the lamina is removed to take pressure off the nerves and spinal cord. If needed, bone spurs, tissue and any disc fragments causing the compression are also removed.

Risks and Outcome

Although complications are fairly rare, as with any surgery, the following risks may be associated with cervical spine surgery:

- Infection
- Excessive bleeding
- An adverse reaction to anesthesia
- Chronic neck or arm pain
- Inadequate symptom relief
- Damage to the nerves and nerve roots
- Damage to the spinal cord (about 1 in 10,000)
- Damage to the esophagus, carotid artery or vocal cords
- Fusion that does not heal
- Instrumentation breakage and/or failure
- Persistent swallowing or speech disturbance
- Leakage of cerebral spinal fluid

The benefits of surgery should always be weighed carefully against its risks. Although a large percentage of cervical spine patients report significant pain relief after surgery, there is no guarantee that surgery will help every individual.

Phase 3: After surgery

- ❖ Possible blood tests
- ❖ Wear brace or corset when walking if directed by surgeon.

- ❖ Continue IV fluids until eating well
- ❖ IV pain medication will be discontinued to begin oral pain medications
- ❖ Medication for nausea and muscle spasm provided as ordered by your surgeon
- ❖ Stool softener to prevent constipation provided
- ❖ Eat a high fiber and protein diet
- ❖ Drink liquids to avoid constipation

- ❖ Gradually increase activity to walking around room and hallway as instructed
- ❖ Increase activity as ordered in preparation for discharge
- ❖ Minimize bending or twisting at the waist
- ❖ Make sure you know how to get in and out of bed
- ❖ Make sure you know how to take off and put on your brace
- ❖ You will be tired and sore for first few days

- ❖ *You are ready to go home*

