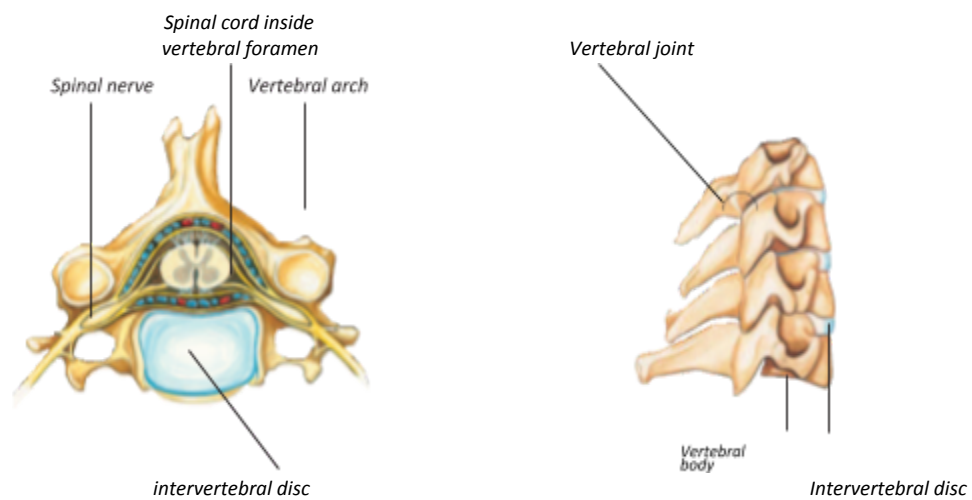


## Neck and Cervical Spine Anatomy

The vertebral bodies encase the spinal cord to provide protection. When stacked on top of each other, they form the spinal column which provides stability for the head and upper body. The spinal cord and the nerve exits are located within the spinal canal.

The intervertebral discs are located between the vertebral bodies. These discs cushion shock forces, acting as “shock absorbers”. The discs in conjunction with the vertebral joints facilitate motion by turning, stretching, and bending of the neck.



## What causes neck pain?

### Degenerative changes of the spine

Degenerative changes of the spine occur from natural aging associated with pathological changes of the vertebral bodies, intervertebral discs, ligaments, and vertebral joints. These changes can greatly limit both the mobility and stability of the spine. One of the most frequent causes of neck pain is nerve compression. Arthritis, for instance, can cause the growth of bone spurs, which press on the nerves and cause pain and other symptoms like numbness or tingling.



*Degenerative changes to the spine causing compressing of the spinal cord and nerves in the neck (cervical spine).*



*Degenerative changes resulting in arthritis of the joints, degeneration of the discs, compression of nerves, loss of normal neck alignment, and compression of the spinal cord.*

The stability of the spine can also be compromised by unnatural weight distribution caused by a hereditary abnormality, or a lack of movement associated with a sedentary lifestyle. Any previous operation or trauma to the spinal column can also cause a loss of stability. Any form of instability can progress to become a pain generator.

## Herniated Discs

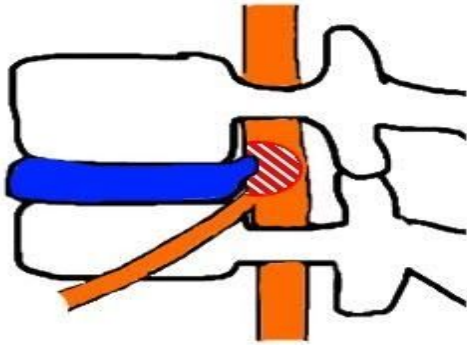
The described degenerative changes or trauma can cause tears in the intervertebral disc. The escape of the nucleus (or soft interior) of the intervertebral disc outward through these tears may cause a disc herniation. The disc herniation can impinge on the nerves and depending on the location can cause pain in the neck, arms, and shoulders. In extreme cases, it can cause paralysis. The name for nerve compression in your neck is cervical radiculopathy. Cervical myelopathy involves damage or deterioration of the spinal cord itself.

## Myelopathy

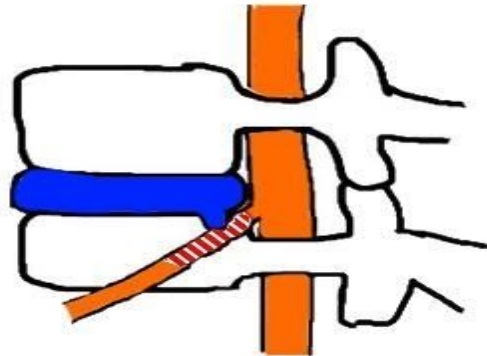
- Most commonly occurs in the cervical spine
- Develops gradually

## Radiculopathy

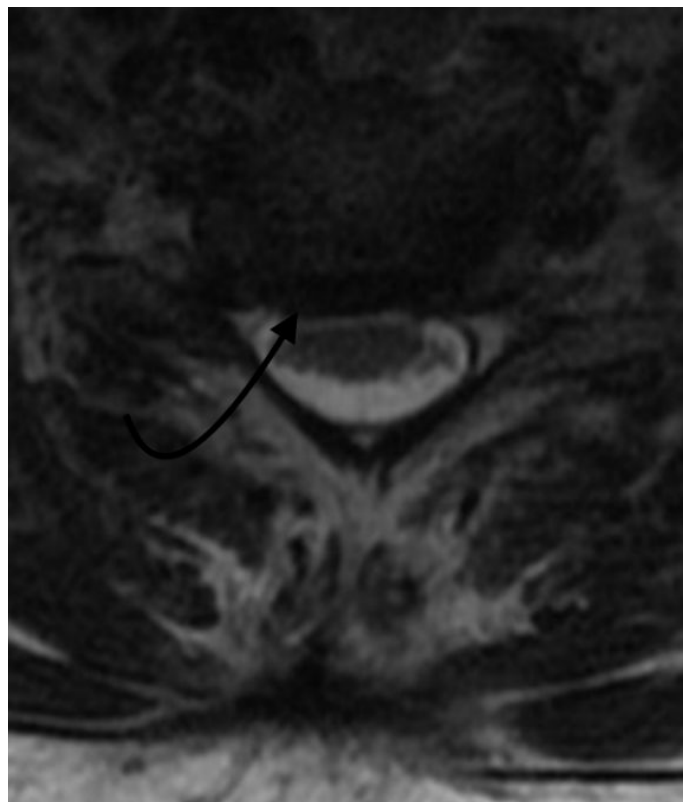
- Results in pain or impaired function of limb related to nerve root
- Normally only affects a specific area



Myelopathy



Radiculopathy



*The arrow is pointing to a disc herniation in the cervical spine.*

## How is neck pain diagnosed?

Diagnosing the cause of your neck pain is performed by carrying out a physical examination and imaging studies such as X-rays, CTs, and MRIs. Additional studies such as a nerve conduction study (EMG) may need to be performed depending on the presentation of symptoms.

## How is neck pain treated?

Initial treatments for neck pain focus on conservative approaches such as:

- Pain medication
- Physical therapy
- Massage
- Acupuncture
- Spinal injections

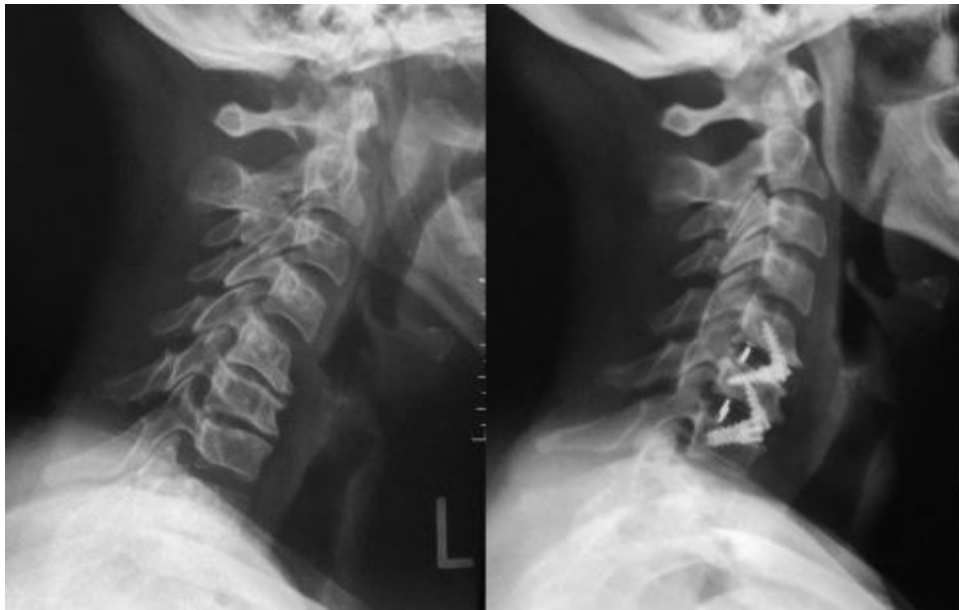
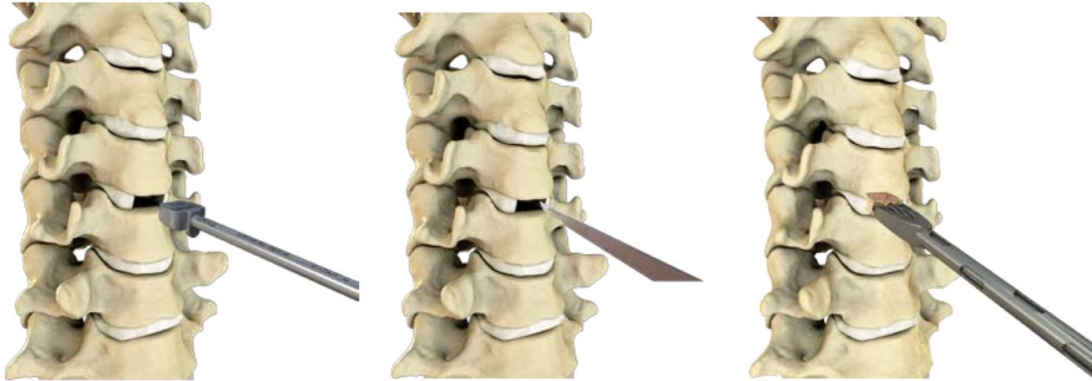
In most cases, these types of treatments help patients who have neck pain regain function and recover from the pain and other symptoms. In some cases, initial treatments like these don't help, or the cause of your neck pain might require an earlier surgical intervention to prevent the risk of nerve or spinal cord damage.

At our center we offer different surgical treatments that are catered to each individual given their symptoms. These include using minimally invasive techniques wherever possible to minimize tissue damage and promote faster healing.

## What surgery might I need for my neck pain?

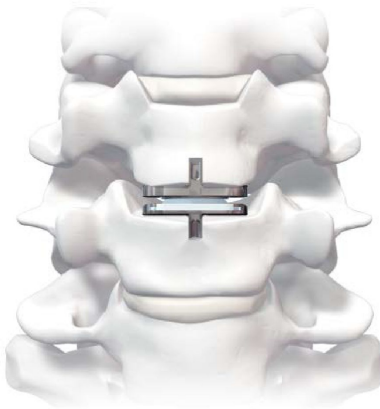
There are several types of surgery you might need for your neck pain. One of these procedures is an anterior cervical discectomy and fusion (ACDF).

An ACDF is performed through a minimally invasive technique by making a small incision either on the right or left side of the neck. The neck muscles are then moved bluntly to the side and the esophagus (food pipe) and trachea (windpipe) are retracted away to access the cervical spine. The damaged disc and any bone spurs are then removed. In the place of the removed disc a wedge-shaped interbody (see image below) is placed that is filled with a synthetic bone material that induces bone growth to enable the fusion between the two cervical vertebrae.



*Before and After: Image to the left shows collapse of disc height, pressure on the exiting nerves due to collapsed neuroforamina, loss of normal cervical spine curvature. Image to the right showing after placement of interbody devices restoring normal disc height, opening of neuroforamina relieving pressure on the nerves and spinal canal along with restoration of normal cervical spine curvature.*

Another procedure that does not involve a fusion yet decompresses the cervical spine alleviating the symptoms of neck pain is a cervical disc replacement. The approach to the cervical spine is the same as in an ACDF. However, the goal of disc replacement surgery is to remove a diseased, often dehydrated disc and replace it with a device that enables motion within the diseased segment of the spine. The goals of total disc replacement surgery are to maintain spinal balance and motion, reduce adjacent level degeneration and allow patients to get back to activities of daily living. For more information regarding disc replacement surgery, please view that section.



Other surgical options for neck pain include:

- Endoscopic microdiscectomy
- Posterior discectomy
- Posterior cervical fusion
- Laminoplasty

If you have a problem with neck pain, please call our office today or book an appointment online.