



# Cervical Disc Herniation

## Introduction

A herniated or “ruptured” disc is a common source of neck pain and arm pain. Discs are the shock-absorbing pads that are between vertebrae, the series of small bones that make up your spine. A herniated disc can cause shoulder, neck or arm tingling, pain, numbness and/or weakness.

## Anatomy

The cervical spine is located in your neck. The cervical spine supports your head and connects it to your trunk. The cervical spine supports less weight than any other portion of the spine. It also has the greatest amount of mobility and flexibility. Your neck can bend forward and backward or tilt from side to side. Your neck can also turn or rotate to the right and left.

Seven small vertebrae make up the cervical area of your spine. Vertebrae are the series of small bones that align to form the spine. The back part of the vertebra arches to form the lamina. The lamina creates a roof-like cover over the back opening in each vertebra. The opening in the center of each vertebra forms the spinal canal.

Intervertebral discs are located between the vertebrae in your cervical spine. The discs are made up of strong connective tissue. Their tough outer layer is called the annulus fibrosus. Their gel-like center is called the nucleus pulposus. The discs and two small spinal facet joints connect one vertebra to the next. The discs and joints allow movement and provide stability. The discs also act as a shock-absorbing cushion to protect the cervical vertebrae.

Traveling through the protective cervical spinal canal is your spinal cord, spinal nerves that travel to your arms and hands, and arteries that supply blood. The top section of the cervical spinal canal is very spacious. It allows more room for the spinal cord than any other part of the vertebral column. The extra space helps to prevent pressure on the spinal cord when you move your neck.

## Causes

As we age, our discs can become shorter, less flexible, and less effective as cushions between the vertebrae. When a disc deteriorates, the outer layer can tear. A herniated disc occurs when the outer layer ruptures and the inner contents, the nucleus pulposus, come out of the disc.

If the inner contents of a herniated disc extends into the spinal canal, it can cause pressure and irritation of the spinal nerves. This mechanical pressure and irritation may result in pain. A herniated disc can also cause pressure on the spinal cord.

Herniated discs are more common among people that are middle aged. Other risk factors include being overweight and smoking. Using poor body posture when lifting or performing repetitive strenuous activities can also cause discs to rupture.

Additionally, a disc can rupture after sudden pressure, even if it is slight. This can occur from trauma during violence, motor-vehicle crashes, or from a sports-related injury, such as football or surfing.

## Symptoms

Neck pain is a common symptom of a herniated cervical disc. You may feel shooting pain in your arms. You may experience pain or burning pain in your shoulders, neck, and arms. Your arm may feel weak, numb, or have a tingling sensation. You may also get a headache. In rare cases, the loss of bowel and bladder control accompanied by significant arm and leg weakness indicates a serious problem. In this rare case, you should seek immediate medical attention.

## Diagnosis

Your doctor can diagnose a herniated disc by performing a physical examination and viewing medical images. Your doctor will ask you about your symptoms and medical history. You will be asked to perform simple movements to help your doctor assess your muscle strength, joint motion, and stability. Since some of the nerves from the cervical spine travel to the arms, your doctor will perform a neurological physical exam to see how the nerves are functioning.

Your doctor will order X-rays to see the condition of the vertebrae in your cervical spine.

Your doctor may also order Computed Tomography (CT) scans or Magnetic Resonance Imaging (MRI) scans to get a better view of your spinal structures. CT scans provide a view in layers, like the slices that make up a loaf of bread. The CT scan shows the shape and size of your spinal canal and the structures in and around it. The MRI scan is very sensitive. It provides the most detailed images of the discs, ligaments, spinal cord, nerve roots, or tumors. X-rays, myelograms, CT scans, and MRI scans are painless procedures.

In some cases, doctors use nerve conduction studies to measure how well the cervical spinal nerves work and to help specify the site of compression. Doctors commonly use a test called a Nerve Conduction Velocity (NCV) test. During the study, a nerve is stimulated in one place and the amount of time it takes for the message or impulse to travel to a second place is measured.

An Electromyography (EMG) test is often done at the same time as the NCV test. An EMG measures the impulses in the muscles to identify nerve problems. Healthy muscles need impulses to perform movements. Your doctor will place fine needles through your skin and into the muscles that the spinal nerve controls. The doctor will be able to determine the amount of impulses conducted when you contract your muscles. The EMG and NCV may be uncomfortable, and your muscles may remain a bit sore following the test.

### Treatment Therapy

Many people with herniated discs can be treated with non-surgical methods. Over-the-counter medication or prescription medication may be used to reduce pain. These may include steroids or nonsteroidal anti-inflammatories. Occupational or physical therapists can provide treatments to reduce your pain and muscle spasms. The therapists will also show you exercises to strengthen your neck muscles.

### Surgery

Surgery is recommended when non-surgical methods have provided minimal or no improvement of your symptoms. Surgery may also be required in cases where a herniated disc is pressing directly on a nerve or the spinal cord and causing loss of function. An Anterior Cervical Discectomy and Fusion is the type of surgery most frequently used for a herniated cervical disc.

An Anterior Cervical Discectomy and Fusion involves removing all or part of a herniated disc or discs. The surgeon also fuses or secures two or more vertebrae together to stop movement and relieve pain caused by the disc herniation. This procedure attempts to permanently lock two or more spinal vertebrae together so they cannot move except as a single unit. This may alleviate pain in a motion segment.

Spinal fusion, however, has well known potential disadvantages, including:

- Loss of motion and flexibility
- Permanently altered motion characteristics and biomechanics
- Potential for accelerated degeneration of the discs above and below the fused level that can lead to more pain and the need for more surgery

Artificial disc replacement offers a reversible, viable alternative to fusion that possibly avoids the accepted shortcomings of fusion. By inserting an artificial disc instead of performing spinal fusion, there is the possibility of reducing damage to nearby discs and joints. This is because artificial disc replacement allows for motion preservation, near normal distribution of stress along the spine and restoration of pre-degenerative disc height.

Although revolutionary in material and design, the technique to install an artificial disc (whether in the neck or low back) is routine and safe.

Recovery from artificial disc replacement and care afterwards are much like that for other anterior approaches to spine surgery. In some cases, recovery is faster than for a traditional fusion surgery. There is less pain from the procedure and fewer complications in general. The materials used in artificial disc replacements are similar the materials used in routine hip and knee replacement surgery. The materials are designed not to cause sensitivities once in the body.

### Recovery

You should expect to stay overnight in the hospital. You may need a little help from another person during the first few days or weeks at home. If you do not have family members or a friend nearby, talk to your doctor about possible alternative arrangements.

Your doctor will initially restrict your activity level and body positioning. You should avoid lifting, housework, and yard-work until your doctor gives you the okay to do so. You will wear a neck brace for support. You will gradually increase your activity level. Once your neck has healed, physical therapists will teach you strengthening exercises. You will also learn body mechanics, proper postures for your spine to use when you stand, sit, sleep, and lift objects.

The recovery process is different for everyone. It depends on the type of surgery that you had and the extent of your condition. Your surgeon will let you know what to expect. Generally, the recovery time for an Anterior Cervical Discectomy and Fusion is several weeks. Your arm pain should go away fairly quickly; however, it may take weeks to months for your arm weakness and numbness to resolve. It is important that you adhere to your restrictions and exercise program when you return home. You should use proper body mechanics during all activities. Do not smoke. Smoking increases the risk of surgical complications and hinders the bone from fusing.

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