

# SpineFAQs

## Cervical Radiculopathy

Neck pain has many causes. Mechanical neck pain comes from injury or inflammation in the soft tissues of the neck. This is much different and less concerning than symptoms that come from pressure on the nerve roots as they exit the spinal column. People sometimes refer to this problem as a *pinched nerve*. Health care providers call it *cervical radiculopathy*. Cervical radiculopathy is caused by any condition that puts pressure on the nerves where they leave the spinal column. This is much different than mechanical neck pain. Mechanical neck pain is caused by injury or inflammation in the soft tissues of the neck, such as the discs, facet joints, ligaments, or muscles.

The main causes of cervical radiculopathy include degeneration, disc herniation, and spinal instability.

**Degeneration** - As the spine ages, several changes occur in the bones and soft tissues. The disc loses its water content and begins to collapse, causing the space between the vertebrae to narrow. The added pressure may irritate and inflame the facet joints, causing them to become enlarged. When this happens, the enlarged joints can press against the nerves going to the arm as they try to squeeze through the neural foramina. Degeneration can also cause bone spurs to develop. Bone spurs may put pressure on nerves and produce symptoms of cervical radiculopathy.

**Herniated Disc** - Heavy, repetitive bending, twisting, and lifting can place extra pressure on the shock-absorbing nucleus of the disc. A blow to the head and neck can also cause extra pressure on the nucleus. If great enough, this increased pressure can injure the annulus (the tough, outer ring of the disc). If the annulus ruptures, or tears, the material in the nucleus can squeeze out of the disc. This is called a herniation. Although daily activities may cause the nucleus to press against the annulus, the body is normally able to withstand these pressures. However, as the annulus ages, it tends to crack and tear. It is repaired with scar tissue. Over time, the annulus becomes weakened, and the disc can more easily herniate through the damaged annulus. If the herniated disc material presses against a nerve root it

can cause pain, numbness, and weakness in the area the nerve supplies.

**Spinal Instability** - Spinal instability means there is extra movement among the bones of the spine. Instability in the *cervical spine* (the neck) can develop if the supporting ligaments have been stretched or torn from a severe injury to the head or neck. People with diseases that loosen their connective tissue may also have spinal instability. Spinal instability also includes conditions in which a vertebral body slips over the one just below it. When the vertebral body slips too far forward, the condition is called *spondylolisthesis*. Whatever the cause, extra movement in the bones of the spine can irritate or put pressure on the nerves of the neck, causing symptoms of cervical radiculopathy.

### **What does the condition feel like?**

The symptoms from cervical radiculopathy are from *pressure* on an irritated nerve. These symptoms are not the same as those that come from mechanical neck pain. Mechanical neck pain usually starts in the neck and may spread to include the upper back or shoulder. It rarely extends below the shoulder. Headaches are also a common complaint of both radiculopathy and mechanical neck pain. The pain from cervical radiculopathy usually spreads further down the arm than mechanical neck pain. And unlike mechanical pain, radiculopathy also usually involves other changes in how the nerves work such as numbness, tingling, and weakness in the muscles of the shoulder, arm, or hand. With cervical radiculopathy, the reflexes in the muscles of the upper arm are usually affected. This is why we check reflexes when people have symptoms of cervical radiculopathy.

### **How do doctors diagnose the problem?**

Doctors gather the information about your symptoms as a way to determine which nerve is having problems. Diagnosis begins with a complete history of the problem. I will ask questions about your symptoms and how your problem is affecting your daily activities. Your answers can help me determine which nerve is causing problems. Next, I'll examine you to see which neck movements cause pain or other symptoms. Your skin sensation, muscle strength, and reflexes are tested in order to tell where the nerve problem is coming from.

X-rays of the cervical spine can show the cause of pressure on the nerve. The images show whether degeneration has caused the space between the vertebrae to collapse. They may also show if a bone spur is pressing against a nerve.

If more information is needed, I will order *magnetic resonance imaging* (MRI). The MRI machine uses magnetic waves rather than X-rays to show the soft tissues of the body. This test gives a clear picture of the discs, nerves, and other soft tissues in the neck. The machine creates pictures that look like slices of the area your doctor is interested in. The test does not require any special dye or needles and is painless.

Sometimes it isn't clear where the nerve pressure is coming from. Symptoms of numbness or weakness can also happen when the nerve is being pinched or injured at other points along its path. (An example of this is pressure on the median nerve in the wrist, known as *carpal tunnel syndrome*.) Electrical studies of the nerves going from the neck to the arm may be requested by your doctor to see whether the nerve problem is in the neck or further down the arm (such as with carpal tunnel syndrome). However, most doctors take X-rays and try other forms of treatment before ordering electrical tests. These tests are usually only needed when the diagnosis is not clear.

### **What treatment options are available?**

Unless the nerve problem is getting worse rapidly, most doctors will begin with nonsurgical treatments. At first, I may prescribe immobilization of the neck. Keeping the neck still for a short time can calm inflammation and pain. This might include one to two days of bed rest and the use of a soft neck collar. This collar is a padded ring that wraps around the neck and is held in place by a Velcro strap. Normally, a patient need only wear a collar for one to two weeks. Wearing it longer tends to weaken the neck muscles.

I prescribe certain types of medication for patients with cervical radiculopathy. Severe symptoms may be treated with narcotic drugs, such as hydrocodone. These drugs should only be used for the first few days or weeks after problems with radiculopathy start because they are addictive when used too much or improperly. Muscle relaxants may be prescribed to calm neck muscles that are in spasm. You may be prescribed anti-inflammatory medications such as ibuprofen.

I often have my patients work with a physical therapist. At first, treatments are used to ease pain and inflammation. Electrical stimulation treatments can help calm muscle spasm and pain. Traction is a way to gently stretch the joints and muscles of the neck. It can be done using a machine with a special head halter, or the therapist can apply the traction pull by hand or by a pneumatic device.

Some patients are given an *epidural steroid injection* (ESI). The spinal cord travels in a tube within the bones of the spinal canal. The cord is covered by a material called *dura*. The space between the dura and the spinal column is the *epidural space*. It is thought that injecting steroid medication into this space fights inflammation around the nerves, the discs, and the facet joints. In many cases, the steroid injection is given around one specific nerve. This is called a *selective nerve block*. The response to this treatment helps confirm which nerve root is causing the symptoms.

I usually have my patients try nonoperative treatments for at least 6 to 12 weeks before considering surgery. But when patients simply aren't getting better, or if the problem is becoming more severe, surgery may be suggested.

### **What about surgery options?**

Most people with cervical radiculopathy get better without surgery. In rare cases, people don't get relief with non-surgical treatments. They may require surgery. There are several types of surgery for cervical radiculopathy. These include:

**Cervical Foraminotomy** - A *foraminotomy* is done to open the neural foramen and relieve pressure on the spinal nerve root. A foraminotomy may be done because of bone spurs or inflammation. Commonly this is done through the back of the spine, unless there are significant degenerative problems with the disc and joints. In that circumstance I usually recommend discectomy and fusion.

**Anterior Cervical Discectomy and Fusion** - In a *discectomy*, the surgeon removes the disc where it is pressing against a nerve. Surgeons usually perform this surgery from the front (*anterior*) of the neck. This procedure is called anterior cervical discectomy. In most patients, discectomy is done together with a procedure called *cervical fusion*, which is described next. A fusion surgery joins two or more

bones into one solid bone. The purpose for treating cervical radiculopathy with fusion is to increase the space between the vertebrae, taking pressure off the nerve. The surgery is most often done through the front of the neck. After taking out the disc (discectomy), the disc space is filled in with a small block of bone graft. The bone is allowed to heal, fusing the two vertebrae into one solid bone. The space between the vertebrae is propped and held open by the bone graft, which enlarges the neural foramina, taking pressure off the nerve roots.