

## Pinched Nerves (also called Radiculopathy)

### Overview

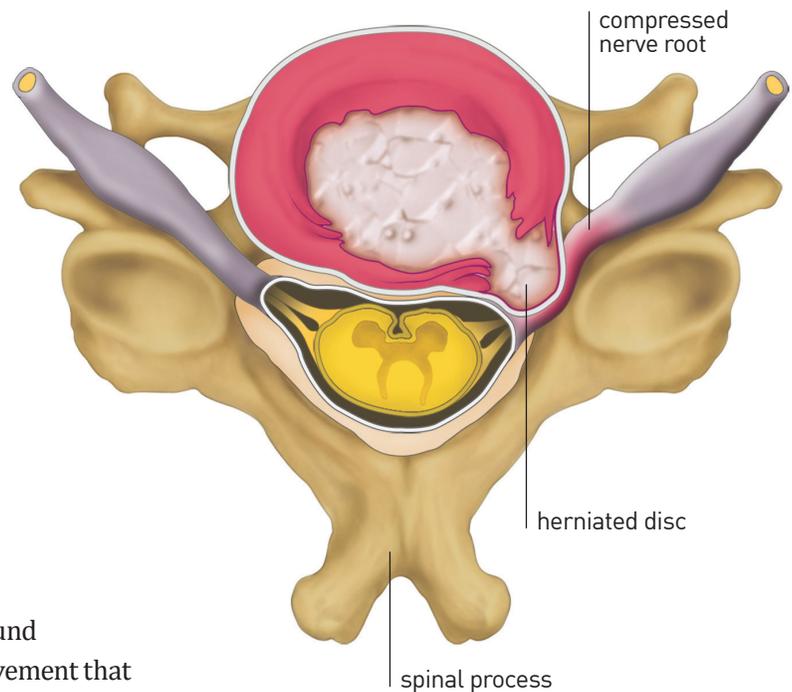
The spinal column, or the vertebrae, consists of 24 separate bones along with the fused bones of the *sacrum* and *coccyx*. The *vertebral column* is a strong, flexible rod that protects the spinal cord, supports the head and provides an attachment for the ribs. There are four major components of the spine: the vertebrae, joints, discs and nerves.

**Vertebrae** – The separate bones of the vertebrae link together to form a “tunnel” that protects the nerves and spinal cord. The lumbar vertebrae are under constant pressure from the weight of the upper body. The “wear and tear” of this pressure over a period of time can contribute to the development of low back pain.

**Joints** – The spaces between two or more bones are found throughout the body. Joints allow different degrees of movement that change the position of bones, since bones are too rigid to bend without damage. Joints are located at each vertebrae and provide flexibility and stability within the vertebral column.

**Discs** – Discs are made up of a fibrous outer ring (*annulus*) and a gelatinous inner core (*nucleus*). Discs located in between the vertebrae act as “shock absorbers,” preventing the vertebrae from rubbing together. Discs function as the “glue” that holds the vertebrae together and they also provide flexibility within the vertebral column. Discs often show the first signs of “wear and tear” associated with the aging process, since they are constantly “squeezed” and “stretched” under the forces of the vertebrae.

**Nerves and Dermatomes** – At each disc level, a pair of spinal nerves exits and passes into arms and legs. The spinal cord (which runs through the middle of the vertebrae) and the spinal nerves act as a “telephone” to allow messages, or impulses, to travel to the brain and then to the arms and legs to control sensation and movements. The spinal nerves *innervate* (“wire”) the body in a very precise way. These precise innervations are called *dermatomes*. The fibers of one spinal nerve root affect a specific area of the body. Therefore, a nerve that is compressed (“pinched”) causes symptoms in a specific region of the body. For example, a nerve pinched at the fifth lumbar vertebrae typically produces pain at the outer part of the lower leg and foot.



### Causes & Symptoms

A disc herniation occurs when the outer rim (*annulus*) of the disc weakens or tears, causing the nucleus to push outward. When the disc herniates backward, to the right, or to the left, it may impinge or “pinch” on a spinal nerve and/or the spinal cord, causing symptoms in the corresponding dermatome area. This is called a *radiculopathy*. A radiculopathy may occur spontaneously or with trauma.

Not all disc herniations cause impingement. As many as 30 percent of all adults have symptom-free bulges or minor herniations in the cervical (neck) area. Also, as many as 30–60 percent of all adults have disc bulges in their lower back that are entirely symptom free. Disc extrusions most commonly affect people between the ages of 30 and 50. When radiculopathy appear in older patients it is often due to a combination of factors.

#### What are the symptoms of a radiculopathy?

When a disc herniates and impinges a spinal nerve, it may cause pain, changes in sensation (numbness) and loss of muscle strength in the affected area. Numbness and muscle weakness are often felt in the corresponding dermatomes area.

*Cervical* (neck) *radiculopathy* causes more pain in the lower arm than in the neck area. *Lumbar* (lower spine) *radiculopathy* usually causes more pain in the leg (below the knee) than in the back area.

### Diagnosis

In most cases, disc herniation and radiculopathy can be diagnosed on the basis of the history and physical examination. Therefore, an MRI or CT scan may not be required on the initial physician visit. If a non-surgical treatment fails, or if surgery is contemplated, a diagnostic study is required.

### Treatment

Generally, medical management is recommended before surgery is considered. Medical management includes one or more of the following:

Active physical therapy, simple analgesics (pain-relieving medications), muscle relaxants, non-steroidal anti-inflammatory medication (NSAIDs) such as ibuprofen or naproxyn, epidural blocks (“nerve blocks”) or a short course of steroids. Time is also important as the disc fragment may shrink over 2–8, weeks removing pressure on the nerve. When major neurological changes are present upon the clinical examination, an urgent surgical consultation may be suggested. This situation is rare and usually includes loss of bowel and bladder control.

Most patients with disc herniations and radiculopathy improve with non-surgical treatment. When surgery is needed it is quite effective. However with continued improper activity, poor posture, excess body weight and genetic factors, recurrences do occur.