

Sciatica

Introduction



The sciatic nerve is the thickest and longest nerve in your body. The sciatic nerve extends from your lower back down to your feet. If the sciatic nerve is compressed or inflamed, a painful condition called Sciatica can result. Symptoms of Sciatica include shooting pain, tingling, weakness, and numbness that may travel from the lower back, through the back of one leg, and into your foot.

Trauma, spinal conditions, or medical conditions that irritate the sciatic nerve cause **Sciatica**. The majority of people with Sciatica experience relief with non-surgical treatments. However, those with spinal conditions can benefit from surgery that eliminates the pressure on the sciatic nerve if other treatments fail.

Anatomy

The sciatic nerve branches off from the spinal cord at the lumbar spine and sacrum. The lumbar spine is located in your lower back. It forms the curve below your waist. Five large vertebrae make up the lumbar area of your spine. The back part of the vertebra arches to form the lamina. The lamina creates a roof-like cover over the back of the opening in each vertebra.

There are six intervertebral discs between the vertebrae in the lumbar 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 lumbar vertebrae.

The opening in the center of each vertebra forms the spinal canal. Your spinal cord and spinal nerves travel through the protective spinal canal. The sciatic nerve is formed by several nerve roots that exit the spinal cord in the lumbar spine and sacral region and travels downward through our buttocks, the back of our thighs, through our legs, and into our feet. The sciatic nerve controls the muscles in the back of our knee and lower leg. It also is responsible for sensation or feeling in the back of our thigh, the calf in our lower leg, and the bottom of our foot.

Causes

Trauma, medical conditions, or spinal conditions that irritate and put pressure on the sciatic nerve are the most frequent causes of Sciatica. Direct trauma can result from a pelvic fracture sustained during an injury, such as from a motor vehicle crash. Some medical conditions can affect the sciatic nerve. Diabetes, tumors or abscesses, pregnancy, and excess weight can cause Sciatica. Spinal Stenosis, Arthritis, Spondylolisthesis, Degenerative Disc Disease, and Herniated Discs can cause changes in the spine that commonly contribute to Sciatica.

Spinal Stenosis is a condition in which one or more areas of the spine are narrowed. The roots of the sciatic nerve may be compressed if the spinal canal or openings in the vertebrae where the nerves branch out from are narrowed. There are many causes of Spinal Stenosis. It is most frequently caused by the gradual degeneration of the spine during the aging process.

Arthritic changes, such as from Osteoarthritis, can cause the vertebral bone cartilage to gradually wear away. Spondylolisthesis is a condition in which a vertebra degenerates so much that it shifts forward and out of alignment. This can result in pressure on the roots of the sciatic nerve, muscle spasms, and changes in the way you walk. Arthritis can also trigger an abnormal overgrowth of bone. Bone spurs, abnormal bone growths, can grow into the spinal canal and vertebral joints, compressing the sciatic nerve.

Changes in the intervertebral discs can also cause Sciatica. Degenerative Disc Disease is a condition that develops most frequently in the lower back. As we age, our discs lose water content. Our discs can become shorter, less flexible, and less effective as cushions between the vertebrae. This decreases the space between the vertebrae, affects the structure of the spine, and can put pressure on the roots of the sciatic nerve.

A Herniated Disc occurs when the outer disc layer ruptures and the inner contents, the nucleus pulposus, come out of the disc. If the inner contents of a herniated disc extend into the spinal canal, it can cause pressure on the nerve roots. When the inner contents come in contact with the nerve, a chemical reaction occurs. It irritates the nerve root and causes it to swell, resulting in pain.

Symptoms

Severe pain is the most common symptom of Sciatica. The pain usually begins deep in the lower back and spreads to one side. The pain may shoot down one buttock and travel down the back of your leg. Sciatic leg pain typically feels worse than the back pain.

You may feel burning pain, tingling, weakness, or numbness in your calf, foot, or toes. The pain or weakness may be so bad that you cannot move your foot, bend your knee, or walk. You may have difficulty moving from a seated position to standing up because of shooting pain. Additionally, your pain may become worse when you sneeze, laugh, cough, bend backwards, or have a bowel movement.

In rare cases, the loss of bowel and bladder control accompanied by significant arm or leg weakness indicates a possible serious problem. If you experience these symptoms, you should seek immediate medical attention.

Diagnosis

Your doctor can determine the cause of your sciatic nerve dysfunction. The cause must be identified in order to treat your symptoms of Sciatica appropriately. Your doctor will perform a physical examination. 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 joint stability. Your doctor will test your reflexes and sensation. Your doctor may order lab studies to rule out disease.

Your doctor may order imaging studies to identify the location, source, and extent of your sciatic nerve compression. Your doctor will order X-rays to see the condition of the vertebrae in your spine and to identify narrowed discs or thickened facet joints. Sometimes doctors inject dye into the spinal column to enhance the X-ray images in a procedure called a myelogram. A myelogram can indicate if there is pressure on your nerve roots from herniated discs, bone spurs, or tumors.

A bone scan may be used to show fractures, tumors, infections, or arthritis. A bone scan requires that you receive a small harmless injection of a radioactive substance several hours before your test. The substance collects in your bones in areas where the vertebrae is breaking down bone or repairing it.

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, bone scans, CT scans, and MRI scans are painless procedures and simply require that you remain motionless while a camera takes the pictures.

Nerve conduction studies may reveal how the sciatic nerve is working. Doctors commonly use a Nerve Conduction Velocity (NCV) test. During the study, your sciatic 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. Your doctor will place sticky patches with electrodes on your skin that covers the sciatic nerve. The NCV test may feel uncomfortable, but only during the time that the test is conducted.

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 and muscle problems. Healthy muscles need impulses to perform movements. Your doctor will place fine needles through your skin and into the muscles that the sciatic nerve controls. Your doctor will be able to determine the amount of impulses conducted when you contract your muscles. The EMG may be uncomfortable and your muscles may remain a bit sore following the test.

Surgery

Surgery is recommended when non-surgical methods have provided minimal or no improvement of your symptoms. In this case, the true diagnosis is not sciatica, but a problem causing compression of the nerve roots that form the nerve. Surgery may also be required in cases where the sciatic nerve is directly compressed, causing considerable loss of function and disabling pain. This is less common. The type of surgery that you have will depend on the diagnosis. Your surgeon will discuss the most appropriate surgical option for your condition with you.

Treatment

Most people with **Sciatica** are successfully treated with non-surgical methods aimed at relieving pain and pressure on the sciatic nerve or its roots. Initially, your doctor may advise you to rest to help relieve the pain. Over-the-counter medication or prescription medication may be used. If your symptoms do not improve significantly with these medications, your doctor may inject your sciatic nerve roots with steroid medication.

Your doctor may recommend that you participate in physical therapy. Your therapists can provide treatments to reduce pain, muscle spasms, and loss of motion. The therapists will show you exercises to stretch and strengthen your muscles. Aquatic therapy may be helpful because the warm water environment may ease discomfort and allow exercises to be done with less stress on your body.

Recovery

Recovery from surgery depends on the type of surgery that you received. Your physician will let you know what to expect. Individuals typically participate in physical therapy following surgery. Physical therapy exercises will help strengthen your back and leg muscles. Overall, most individuals achieve good results with surgery and are able to resume their regular lifestyles.

Prevention

Your prevention recommendations will depend on the cause of your sciatic nerve compression and the type of surgery that you had. Ask your doctor and therapists for suggestions specific to you. In general, it may be helpful to avoid prolonged sitting or lying that causes pressure on the buttocks. It may also be helpful to exercise to keep your back muscles strong and to use proper posture during back movements.

This information is intended for educational and informational purposes only. It should not be used in place of an individual consultation or examination or replace the advice of your health care professional and should not be relied upon to determine diagnosis or course of treatment.