



NECK PAIN

Anatomy

Conditions: Facet Joint Syndrome • Muscular Spasm • Pinched Nerve • Spinal Stenosis • Whiplash

Procedures: Epidural & Steroid Injection • SNRB • Facet Block • EMG/NCS • Nonprocedural Treatments

Surgery



ANATOMY

The normal anatomy of the spine is usually described by dividing up the spine into 3 major sections: the **cervical**, the **thoracic**, and the **lumbar** spine. (Below the lumbar spine is a bone called the **sacrum**, which is part of the pelvis).

The cervical spine is in the neck region. Though the cervical spine is very flexible, it is also very much at risk for injury from strong, sudden movements, such as whiplash-type injuries. This high risk of harm is due to: the limited muscle support that exists in the cervical area, and because this part of the spine has to support the weight of the head. This is a lot of weight for a small, thin set of bones and soft tissues to bear. Therefore, sudden, strong head movement can cause damage. Each section of the spine is made up of individual bones called vertebrae.

There are 7 cervical vertebrae, 12 thoracic vertebrae, and 5 lumbar vertebrae. An individual **vertebra** is made up of several parts. The body of the vertebra is the primary area of weight bearing and provides a resting place for the fibrous discs which separate each of the vertebrae.

The **lamina** covers the spinal canal, the large hole in the center of the vertebra through which the **spinal nerves** pass. The **spinous process** is the bone you can feel when running your hands down your back. The paired **transverse processes** are oriented 90 degrees to the spinous process and provide attachment for back muscles. There are four **facet joints** associated with each vertebra. A pair that face upward and another pair that face downward. These interlock with the adjacent vertebrae and provide stability to the spine. The vertebrae are separated by **intervertebral discs** which act as cushions between the bones.

Each disc is made up of two parts. The hard, tough outer layer called the **annulus** surrounds a soft gelatinous center termed the **nucleus**. When a disc herniates or ruptures, the soft nucleus spurts out through a tear in the annulus, and can compress a nerve root. The nucleus can squirt out on either side of the disc or in some cases both sides. The amount of pain associated with a disc rupture often depends upon the amount of nucleus that breaks through the annulus, and whether it compresses a nerve.

To help alleviate the pain, PHYSICAL THERAPY, MODALITIES, INJECTIONS, MEDICATIONS OR SURGERY may be necessary.



CONDITIONS

Facet Joint Syndrome

The vertebral bodies are stacked one on top of another to form the entire structure we call the spine. In between vertebral bodies are tiny joints called **facet joints**. As arthritic change and inflammation of the joints occur, the nerves to the facet joints can convey severe and diffuse pain. The pain does not follow a nerve root pattern. It is



actually called 'referred pain', as the brain has trouble localizing these internal structures. Patients often complain of pain in a generalized poorly defined region of the neck or back. There may be some tenderness overlying the involved joints as well.

It is usually caused by trauma (auto accidents, whiplash, a bad fall) or a degenerated or herniated disc. These all cause the spine to sub-lux (move out of joint) and the joint capsule is irritated. It is usually worsened by sudden movements or prolonged episodes of poor posture, (e.g. kneeling in the garden, bending over to lift or straining to read a book or a computer terminal). Many patients find the worst time is at night, when all the muscles relax and the joints grind together. It can be mistaken for a condition called fibromyalgia or for myo-fascial syndrome. Oftentimes there is an associated SPASM of the muscles in the paraspinal region [on either side of the spine] which can further confuse diagnosis.

Muscular Spasm

The muscles around the neck can tighten up as the result of trauma or underlying disease and result in a painful spasm. This is usually the component of pain which responds to massage and heat the best. Often there are several things going on at the same time which necessitate treatment. When the underlying condition causing the spasm is improved and treated, the spasm often resolves.

Spasm usually responds to MODALITIES, THERAPY, AND MEDICATIONS

Cervical Radiculopathy ('Pinched Nerve')

Degeneration of the cervical spine can result in several different conditions that cause problems. These are usually divided between problems that come from mechanical problems in the neck and problems which come from nerves being irritated or pinched. A cervical radiculopathy is a problem that results when a nerve in the neck is irritated as it leaves the spinal canal. This condition usually occurs when a nerve root is being pinched by a herniated disc or a bone spur.

Symptoms: Weakness, Tingling sensations in the neck and arm, numbness and loss of reflexes may all occur. These symptoms may worsen when the neck is in different positions such as flexion and extension.

Diagnosis: It may be diagnosed by imaging, such as X-RAYS, MRI or CT. Testing such as EMG/NCS may also be performed to examine the 'electrical system' of the body and determine the severity of nerve compression.

Treatment may consist of THERAPY, MODALITIES, INJECTIONS, MEDICATIONS or SURGERY

Spinal Stenosis

Most neck pain is due to degenerative changes that occur in the intervertebral discs of the cervical spine and the joints between each vertebra. Perhaps the most serious of the problems caused by degeneration of the spinal segment in the cervical spine is the condition of spinal stenosis. In the late stages of spinal degeneration, bone spurs from the degenerative process can cause a condition known as spinal stenosis. As the bone spurs form, the size of the spinal canal becomes smaller. The bone spurs begin to press on the spinal cord or the nerve roots. Pressure on the nerves in the spinal cord can cause numbness, tingling, or pain in the arms, hands, and legs. This condition is sometimes called cervical myelopathy. It is from the simpler problem where only one nerve root is being pinched by a herniated disc or a bone spur.

Symptoms: When there is narrowing of the spinal canal, the bony tube through which the spinal cord runs, the whole spinal cord may be affected. This is different than when the bone spurs only narrow one of the foramen - the openings where the nerve roots exit. The symptoms are much different. A pinched nerve from either a herniated disc or a bone spur rarely affects the legs. Cervical myelopathy can affect both the arms and the legs. Pressure on the spinal cord, as it runs through the cervical spine, can cause many symptoms. Cervical stenosis can cause weakness and spasticity in the legs. Spasticity means you to lose control over your legs and you may have a great deal of difficulty walking due to loss of control of where you place your feet. You may have numbness in both the upper extremities and the lower extremities. Your reflexes may be increased in the legs. You may lose the strength in your legs. You may lose your "position sense". This is the sensation that allows you to "know" where your arms and legs



are when you have your eyes closed. For example, you may not be able to tell whether your arm is up in the air or down by your side, unless you can see it.

Diagnosis: It may be diagnosed by imaging, such as X-RAYS, MRI or CT. Testing such as EMG/NCS may also be performed to examine the 'electrical system' of the body and determine the severity of nerve compression.

Treatment may consist of THERAPY, MODALITIES, INJECTIONS, MEDICATIONS or SURGERY

Whiplash

Whiplash is most commonly associated with rear-end car collisions in which the heads of those in the front car are suddenly snapped back and forth by the impact. It is more accurately called cervical acceleration/ deceleration (CAD) trauma or syndrome, which describes the rapid movements that can injure the vertebrae of the neck and the muscles and ligaments that support them.

Anyone can be subjected to whiplash, even in a low-force car crash at speeds as low as 5 mph. But injuries associated with whiplash can also result from other mishaps in which the head is pushed or jerked beyond its normal range of motion. Whiplash most commonly causes serious and lingering neck pain, but there may also be back pain, headaches and dizziness.

Since bruising of the brain can also occur in auto accidents and similar severe causes of whiplash, some victims experience blurred vision, ringing in the ears, nausea and numbness. The sudden accident that caused the whiplash may fade into memory, but the physical and psychological damage can become chronic, eroding a victim's quality of life.

Pain management techniques may be particularly well-suited to relieving the neck pain and debilitating effects of whiplash. In many cases, they can:

- Restore movement lost after the accident
- Overcome muscle weakness and enhance muscle tone
- Speed recovery, and
- Diminish chronic symptoms that can persist or recur over many years.

Treatment can reduce many of the aspects of the distress that results from whiplash, allowing patients to return to their normal activities rather than seeing themselves as invalids -- as is otherwise true of many whiplash patients long after an accident.

Above all, however, we continue to stress the importance of seeking treatment as soon as possible.

Once you contact us, we will perform a complete exam and will develop a treatment approach tailored to your particular injury -- including traditional medicine, acupuncture, massage, physical therapy, or other appropriate alternatives and techniques -- and we will explain our approach in detail. If necessary, we will help you begin to cope with the legal and insurance aspects of your case as well.



PROCEDURES

Epidural Anesthetic Block and Steroid Injection



WHAT IS IT?

A block that is performed under fluoroscopy to confirm a specific diagnosis and/or decrease pain and inflammation.

HOW IS IT DONE?

A local skin anesthetic is given. A special needle is then inserted into the epidural space of the Cervical, Thoracic, lumbar or caudal spine. Fluoroscopy is used to guide the needle and prevent complications from the needle. Contrast medium is injected into the space to confirm proper placement and outline the effect of the herniation on the spine and nerve roots, films are taken for review with the patient. An anesthetic and then a steroid (usually a long acting-slow release type of cortisone) are injected into the epidural space.

EXPECTED RESULTS?

Relief of pain if the medication reaches the inflamed area or source of pain.

HOW LONG DOES IT TAKE?

Fifteen minutes plus approximately fifteen to forty-five minutes recovery time depending on whether sedation is given. What is the Epidural Space? The epidural space is a fatty space outside the fibrous sheath [called the dural sac] surrounding the spinal cord. It tracks up and down the spinal cord, covering it and its exiting nerve roots like a blanket. Because of its location, medications injected into it can gradually diffuse out and bathe the irritated nervous tissue and help decrease inflammation and pain.

Selective Nerve Root Block (SNRB)

WHAT IS IT?

A block that is performed to determine if a specific spinal nerve root is the source of pain and reduce inflammation around the nerve root (usually from a herniated disc at this level) thus decreasing or relieving the pain.

HOW IS IT DONE?

The patient is given a local anesthetic - the physician then locates, under fluoroscopy, a specific spinal nerve root. A needle is introduced through the skin into the area adjacent to the nerve root. Dye is injected to confirm proper placement. Medication (anesthetic then steroid) is then injected into the area bathing the nerve root.

EXPECTED RESULTS:

Relief of neck and arm pain.

HOW LONG DOES IT TAKE?

Fifteen to twenty minutes. Plus recovery time.

Facet Block

A block (or local anesthetic injection) that is performed to confirm that a facet joint is the source of pain and decrease pain and inflammation in a facet joint or joints. Actually this is the only true way to diagnose Facet Joint Syndrome, as an abnormal looking joint on X-ray or CT scan, may be painless, and vice versa a normal looking joint may be the pain generator.



HOW IS IT DONE?

The patient is given the option of light, (or deep in rare cases) IV sedation under monitoring of the EKG, pulse oximeter by a pain physician. A tiny needle (smaller than the size of a paper clip) is then inserted into the area of the facet joint where the nerve reaches it (or directly inside the facet capsule, in some cases) and the physician injects an anesthetic and steroid. The entire procedure is done under x-ray [fluoroscopic] guidance.

EXPECTED RESULTS:

Decrease in or relief of neck pain. More importantly confirmation of the diagnosis, with the allowance of rational treatment.

HOW LONG DOES IT TAKE?

Fifteen to Thirty minutes, depending on the number of levels performed.

EMG/NCS

An electromyogram/nerve conduction study (EMG/NCS) is a diagnostic test that looks at the function of the nerve roots leaving the spine as well as their terminal branches in the arms and legs. The test is done by inserting tiny electrodes into the muscles of the lower extremity and by surface electrodes to check the speed and magnitude of signal transmission. By looking for abnormal electrical signals in the muscles, the EMG/NCS can show if a nerve is being irritated, or pinched as it leaves the spine. The test is similar to checking the electrical system in a car to find out where the wiring is not functioning properly. Based on the EMG/NCS, a physician can better formulate a treatment plan.

Nonprocedural Treatments

PHYSICAL AND OCCUPATIONAL THERAPY

This type of therapy may consist of exercises to improve range of motion, strength and conditioning. A good therapist will examine you, assess your deficits and disease and formulate a plan based on optimizing function and minimizing pain. These exercises are specific for the nature of your injury and should be executed under the supervision of a physician who understands your case.

MODALITIES

Modalities include simple age-old treatments such as heat, cold and massage as well as newer treatment methods such as acupuncture, manipulation, and electrical stimulation. Your physician and therapists should formulate an optimal treatment protocol to maximize your healing potential. These modalities are often used in conjunction with Physical and Occupational therapy.

MEDICATIONS

Depending on the nature of your problem, Non-steroidal antiinflammatory drugs ['NSAIDS'], corticosteroids, and opioids [narcotic] medications may be used. If there is a muscular spasm, a muscle-relaxant may help alleviate that aspect of your pain. Narcotics should be minimized and used only for short periods if at all possible due to rapid tolerance and all the attendant risks associated with abuse of a controlled substance.





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SURGERY

Dr. Sandhu performs minimally invasive surgeries which result in a rapid recovery and minimal risk to the patient. Although we do not perform large-scale open surgeries in our clinics, there are occasions where a problem requires surgical intervention.

We can help screen potential surgical candidates and send them for evaluation by the appropriate specialist. These surgeons are usually orthopedic surgeons or neurosurgeons with specialized training for the particular disease process involved.