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# **Pain Management and the Spine**



# Anatomy of Healthy Spine



# Anatomy

- **The spinal column supports the back it extends from base of skull to the tailbone and its made up of 33 vertebrae. The first 7 are cervical, the next 12 are thoracic. The lumbar region is the lower back, which contains 5 and the lower region beneath the lumbar spine are the sacrum and coccyx which are fused, and do not contain discs between them.**

# Anatomy

- **The vertebrae are separated by soft discs. The discs serve as cushions between the vertebrae, helping to protect them and the nerves that run from the spinal cord to the rest of the body.**
- **You also have the spinous & transverse process, facet joints, foramen, nerve roots, spinal cord, muscles and ligaments.**

# So Where is the Pain Coming From?



# Possible Sources of Pain

- **Discs**
- **Nerve roots**
- **Facet joints**
- **Vertebral bodies**
- **Muscles**

# Common Causes of Back Pain

- **Poor posture**
- **Faulty body mechanics**
- **Stressful living and working positions**
- **Loss of flexibility**
- **Poor physical condition**
- **Accidents**

## Quick Note

- **Your back is always working, 24 hours a day every day of the year. Every time you lift, sit, stand, or even lie down you are using your back.**
- **Over the years, the effects of poor posture, being overweight, not lifting safely, or simple wear and tear accumulate and can lead to a “problem back.”**



# Conditions That Arise From Common Causes

- **Herniated Discs**
- **Spinal Stenosis (narrowing of the canal)**
- **Degenerative Disc Disease**
- **Spondylolisthesis (misalignment)**
- **Spondylosis (Spinal Osteoarthritis)**
- **Hip pain (true hip pain or sciatic pain from lumbar spine)**

# Proper Diagnosis by a Spine Specialist



# Medical History

- **How did your pain first start? Were you injured?**
- **Where is your pain?**
- **How often does it bother you?**
- **Does it stay in one place? Or does it radiate down you thigh and leg?**
- **What makes it better or worse?**
- **What kind of work do you do?**
- **How does your back pain affect your life?**

# Physical Exam

- **Your doctor can learn a lot by looking at your back in various positions. Observing your posture, muscle tone and ROM.**
- **Weakness in the extremities**
- **Sensory changes**
- **Tenderness over the spine and muscle spasms are noted**
- **Gait and reflexes**

# Diagnostic Tools

- **X-Ray** – provides detail of the bone structures in the spine, and are used to check for instability such as spondylolithesis, tumors and fractures.
- **CT Scan** –is a very detailed x-ray taking a cross section image of the body. They provide excellent bony detail and are also capable of imaging for specific conditions such as herniated disc or spinal stenosis, check to see if osteoporosis has caused compression fractures.



# Diagnostic Tools

- **MRI Scan** – Shows the spine in very clear detail, including information about the bones, ligaments, muscles, nerves and discs. They are used to show certain conditions such as DDD, herniated disc and spinal stenosis. Scans are also used for pre-surgical planning.
- There are a number of other imaging and electrical studies that may be done to help diagnose the cause of back pain, such as bone scans, Electromyogram.

# Treatment

- Depends on the cause of pain and the proper diagnosis!

# Conservative Treatment

- **Bed rest (2-3 Days only)**
- **Avoid painful positions use good body mechanics**
- **Avoidance of painful stressors, such as carrying, bending and running**
- **Ice/Heat (short periods of time)**
- **Proper Diet/Good nutrition such as calcium and vitamin D**
- **Stretching/ ROM exercise**



# Medication Treatment

- **Cortisone**
- **NSAIDS**
- **Acetaminophen**
- **Muscle relaxants**
- **Pain Killers (short time use)**

# Therapy Treatment

- **Physical therapy** – is used to strengthen the muscles of the lumbar spine. By better supporting the spine with stronger muscles less burden is placed on the facet joints and the spine itself.
- **Aqua therapy** – is exercise you can do in the water because the water supports your weight and takes pressure off the joints. It will help provide ROM, increase circulation and decrease swelling and provide endurance and balance and coordination.

# Therapy Treatment

- **Traction** – to provide pain relief for compressive and degenerative injuries to the spine by decompressing the spine, stretching the muscles, and helping maintain a healthy lifestyle. May help with H. lumbar discs without complication, DDD, a relapse or failure following surgery and facet syndrome.
- **Braces** – used to help support the external structures of the spine. Offers safe non- invasive way to prevent future problems or to help heal from current condition.

# Spinal Injections

- **Epidurals or transforaminal epidurals** – An epidural injection is an injection of a long lasting steroid or local anesthetic into the epidural space. The medication travels up and down the epidural space to coat the spinal nerves and the facet joints near the injection. Usually done with live x-ray (fluoroscopy) with guidance. The transforaminal is similar to the standard epidural but differs in the approach and targets a specific area. Epidural injections are commonly used to treat radicular pain, pain radiating down an arm or leg, caused by compressed or irritated spinal nerve roots.

# Spinal Injections

- **Spinal/Nerve blocks** – targeting the source of pain near the affected nerve (outside the epidural space). Done with the guidance of an X-Ray and by a properly trained physician in an OR room.
  - Example: H. Disc in the lumbar spine causing low back pain with leg pain (sciatica) is a common condition treated by a selective nerve block.
- **Facet blocks** – injection of steroid medication into the facet joint to reduce pain caused by inflammation of the facet joint. Can also inject around the small nerves that connect with the facet joint to help determine if the joint is the source of pain. Used to treat moderate or severe spinal osteoarthritis.

# Less – Invasive Surgical Treatment

- There are many surgical interventions if they are needed. In most cases, surgery reduces back pain but be aware that an operated back is not a new back.
- **Radiofrequency denervation** – to burn the small nerves which supply the facet joints in the back. Before this procedure is decided upon it is important to actually know the source of the pain usually diagnostic injection is done.
- Percutaneous disc decompression/ Microdiscectomy for herniated discs.
- **Kyphoplasty** – is a MIS procedure used to treat a patient with vertebral body collapse/fracture.

# Surgical Treatments

- **Discectomy** – is the surgical removal of a herniated disc material that presses on a nerve root or the spinal cord.
- **Laminectomy** – is the surgical procedure to remove or trim the lamina of the vertebra to widen and create space in the spinal canal to relieve pressure off the spinal nerves. This procedure is use for treating spinal stenosis or in conjunction with a discectomy.
- **Spinal Fusion** – is a surgical procedure used to eliminate movement between adjoining vertebrae and to stabilize the spine when all other treatments fail.

# Remember

- **Inactivity is the enemy of all health, it will NOT solve the problem.**
- **Despite all the advances in medical care for back pain there's still no “magic bullet.” Taking a Proactive approach in getting a diagnosis can help get you on the road to recovery quicker.**

