CHI St. Alexius Health

Imagine better health.℠

Patrick D. Grace, MD

Interventional Pain Medicine

Interventional Pain Medicine

Services includes

- Epidural Steroid Injections in the Neck and Back to Treat Pain that Radiates Down the Extremities
- Radiofrequency Ablation (RFA) of Nerves to Treat Arthritis of the Neck, Back, & Painful Joints
- Spinal Cord Stimulation (SCS) to Treat Persistent Pain after Back or Neck Surgery and Complicated Neuropathic Pain
- Minimally Invasive Sacroiliac Joint Fusion to Treat Chronic SIJ Dysfunction
- Minimally Invasive Therapies such as Vertiflex and MILD to Treat Lumbar Spinal Stenosis with Neurogenic Claudication
- Kyphoplasty to Treat Painful Thoracic & Lumbar Vertebral Compression Fractures
- Joint and Bursa Injections for Painful Joints and Bursitis of the Shoulders, Hips, Knees, and Ankles/Feet
- Cryoanalgesia for Knee Pain after Knee Surgery

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Epidural Steroid Injections (ESI)

- **Most Common Interventional Pain Procedure (>1000/year)**
- **Established in 1950s**
- **Treats Radiculopathy, Post-Laminectomy Syndrome & Spinal Stenosis with Neurogenic Claudication**
- **Performed under Fluoroscopy**
- **Mechanism of Action**
  - suppresses unmyelinated C fibers
  - direct membrane stabilizer
  - anti-inflammatory
  - decreases intra-neural edema
  - decreases venous congestion
  - reduces ischemia/increased blood flow

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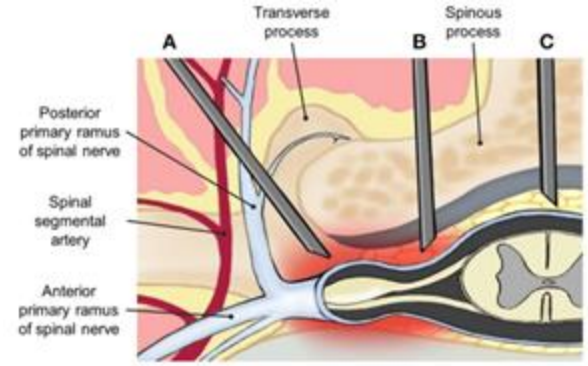
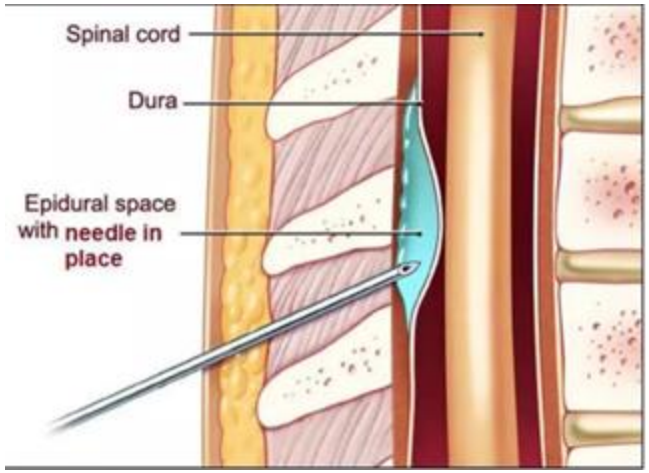
Epidural Steroid Injections (ESI)

- **Injecting Primarily:**
  - normal saline (volume)
  - local anesthetic (immediate analgesia, vasodilation)
  - steroid (non-particulate vs particulate, anti-inflammatory)
- **Duration**
  - Days/Weeks/Years
  - Research Limited/Debatable Topic
  - Most effective in the short to moderate term (6-12 months)
  - May repeat with 50% relief for 3 months (4/Year)
- **Risks/Side Effects**
  - Serious adverse events like (infection, hematoma, paralysis, etc) extremely rare
  - Side effects experienced from steroids and contrast medium used are short-lived and self-limiting
  - Ultimately becomes low risk/high potential reward procedure

Epidural Steroid Injections (ESI)





3 Main Approaches

- **Caudal (easy)**
  - only for lumbar pathology
- **Interlaminar (moderate)**
  - cervical, thoracic, lumbar
- **Transforaminal (hard)**
  - cervical*, thoracic*, lumbar, sacral

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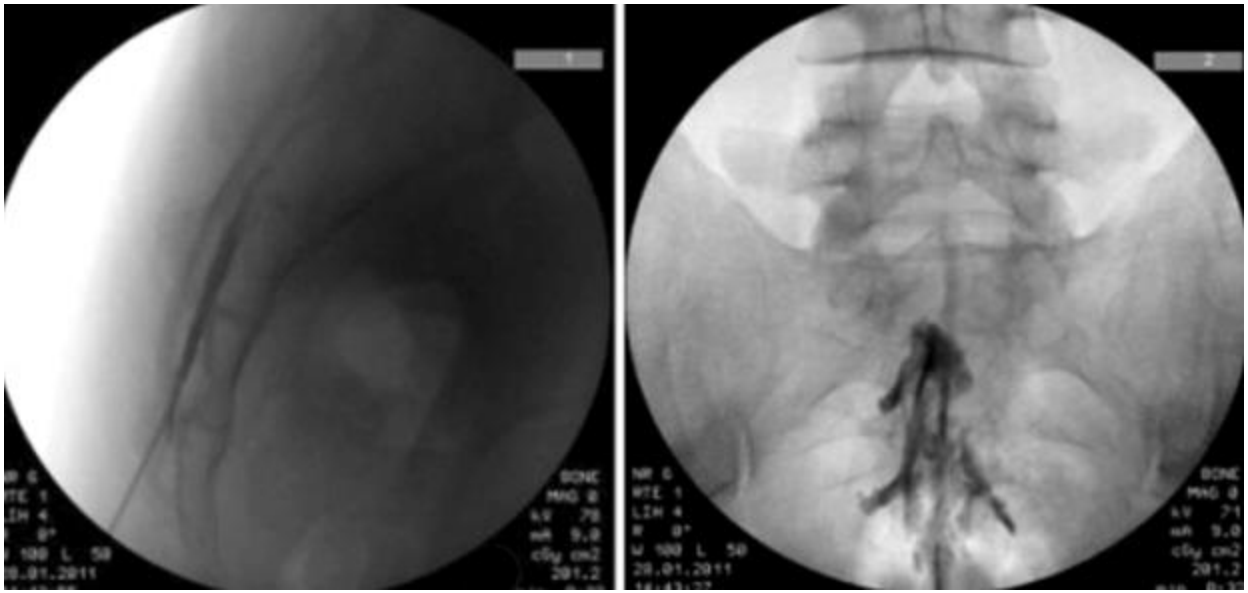
Epidural Steroid Injections (ESI)

Caudal ESI



advantages

- easy to perform
- avoid obstacles from prior back surgery
- consistently quick (<5 minutes)
- typically comfortable for patient

disadvantages

- typically away from the pathology of interest
- one size fits all approach
- predominantly not effective for pathology above L3/L4

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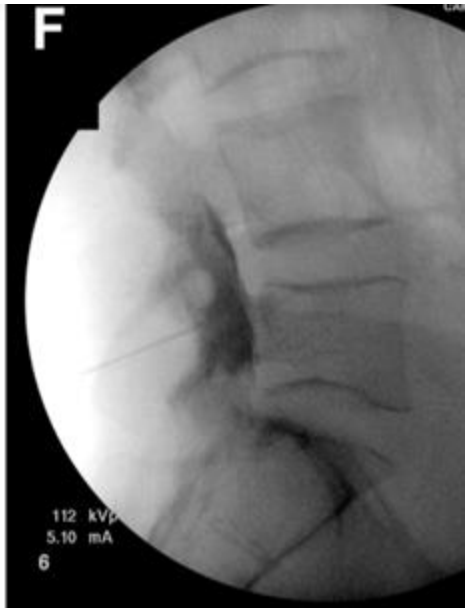
Epidural Steroid Injections (ESI)

Interlaminar ESI



advantages

- easy to perform
- very quick (<3 minutes)
- typically very comfortable for patient
- more targeted than a caudal ESI

disadvantages

- only one level allowed so difficult to address multiple levels of pathology
- risk of subarachnoid spread (wet tap) causing PDPH and temporary spinal block
- utilizes special needle (touhy) and LOR syringe

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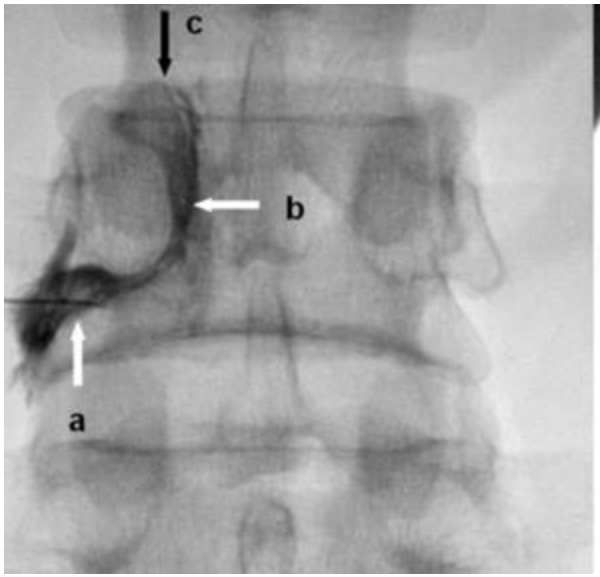
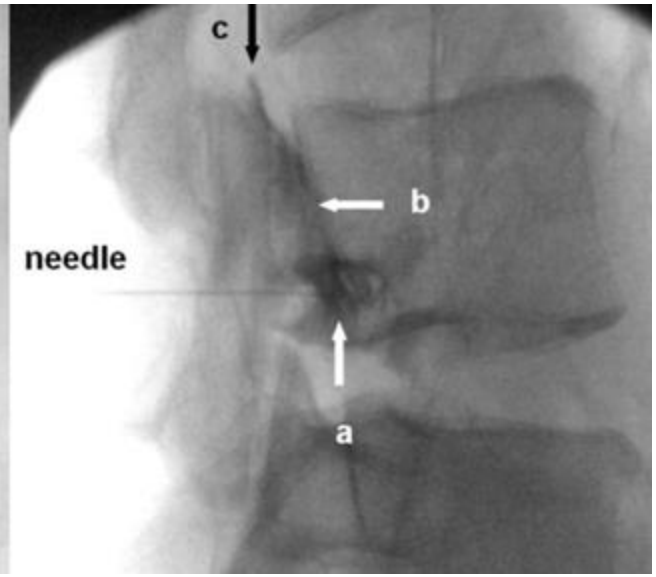
Epidural Steroid Injections (ESI)

Transforaminal ESI





advantages

- most targeted ESI approach
- best anterior epidural spread (*most effective)
- allowed to treat more than one level (typically two levels)

disadvantages

- most technically challenging to perform
- most uncomfortable for the patient
- most likely to cause temporary neurological deficit (numbness/weakness)

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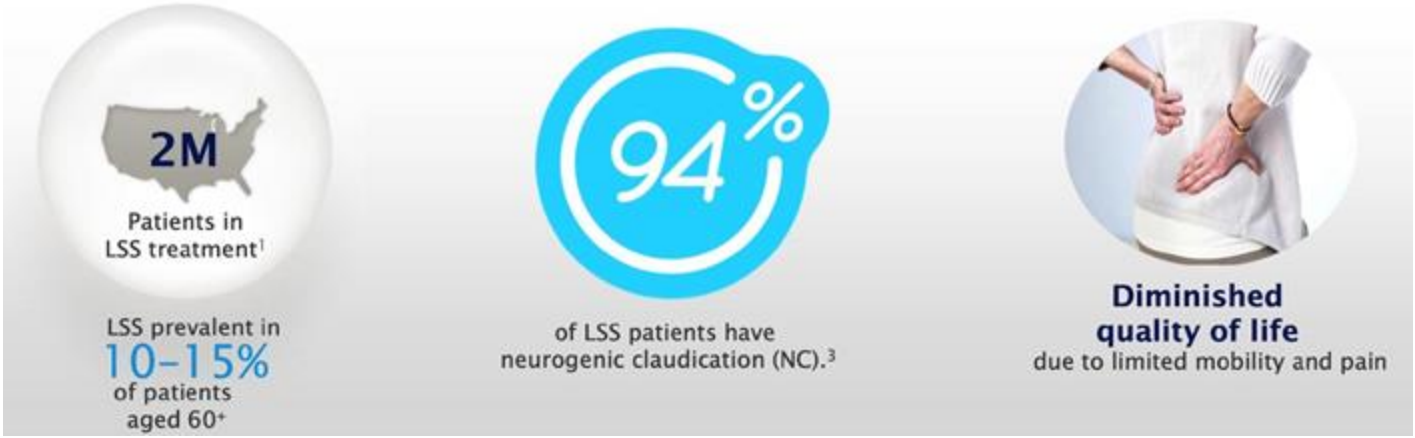
Lumbar Spinal Stenosis



- 1.8 million diagnoses in 2018; 2.5 million by 2020
- #1 reason for spine surgery in elderly
- Fastest growing type of lumbar surgery in US

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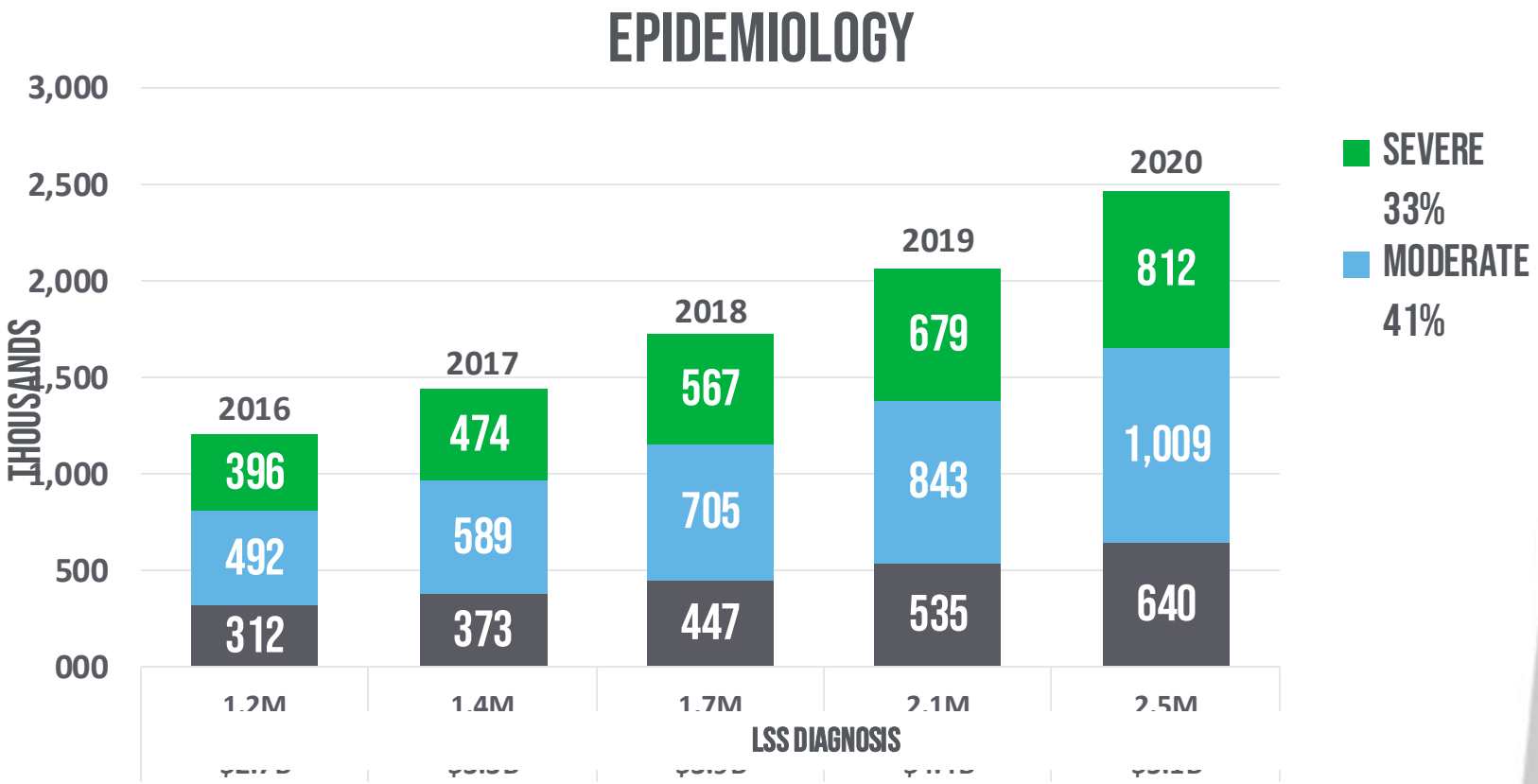
Lumbar Spinal Stenosis



Sources: Qessential Medical Market Research 2015, The Wall Street Journal (Business), Feb 15, 2011, American Association of Neurological Surgeons, Vertiflex ASP business plan

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Lumbar Spinal Stenosis with Neurogenic Claudication

EXTENSION

Extension provokes symptoms
Pain / weakness in legs
Pain in back

"SHOPPING CART" SIGN

Leaning forward while walking to ambulate more comfortably

FLEXION

Sitting improves symptoms*

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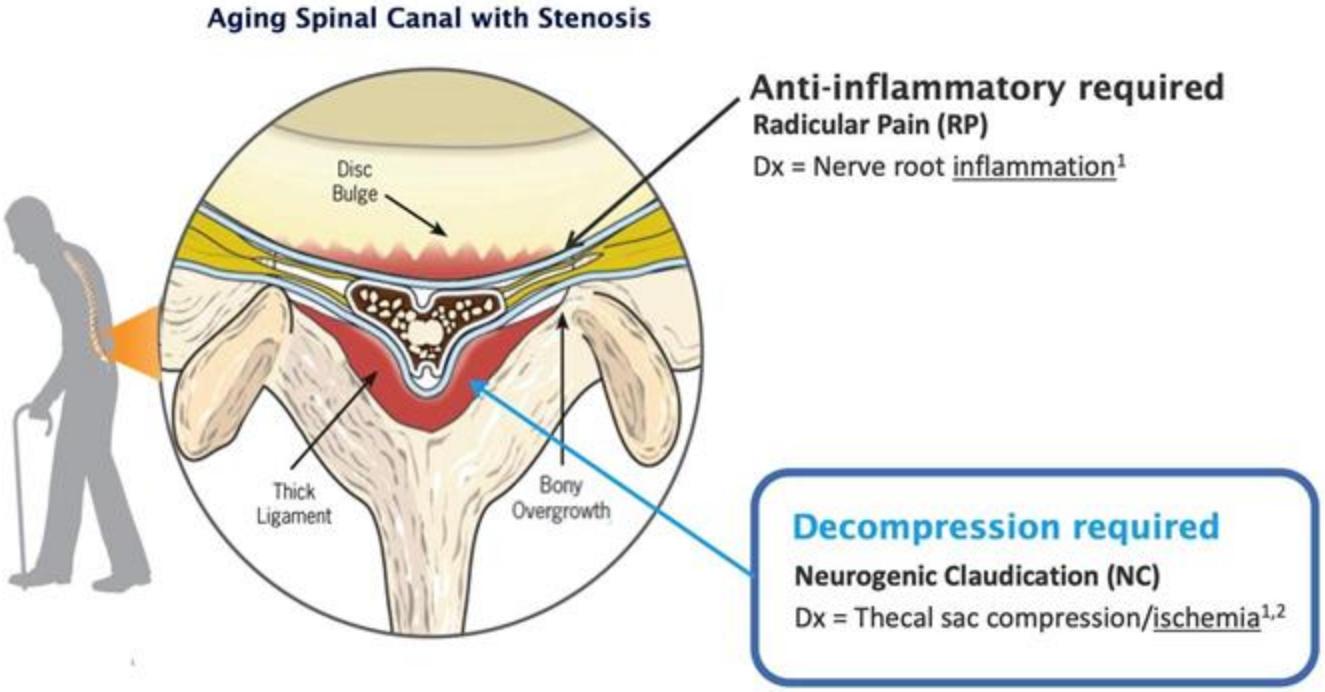
Lumbar Spinal Stenosis with Neurogenic Claudication



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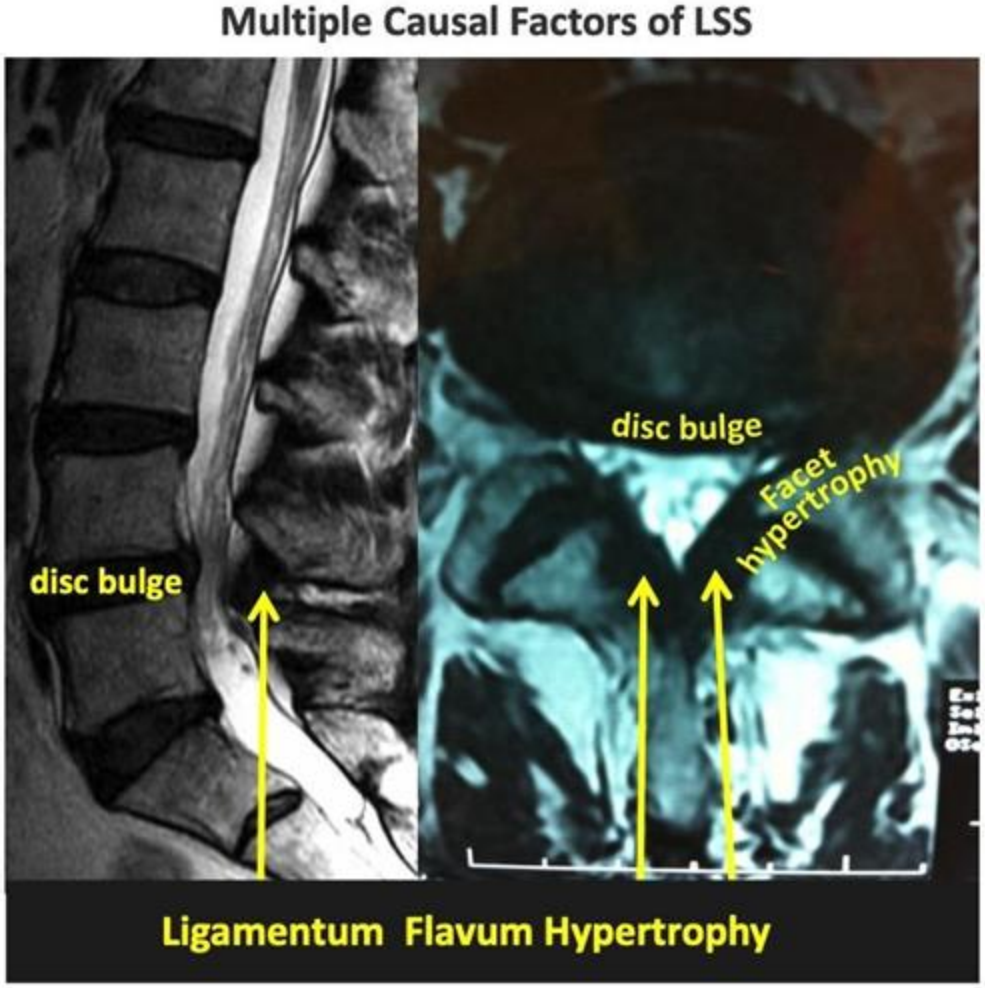
Lumbar Spinal Stenosis

What causes LSS?



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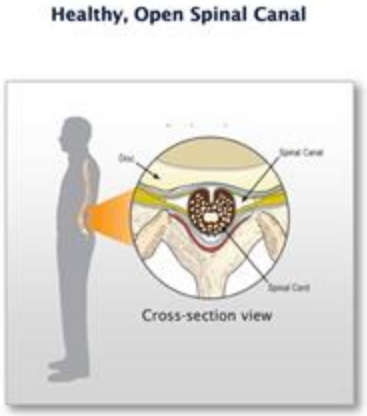
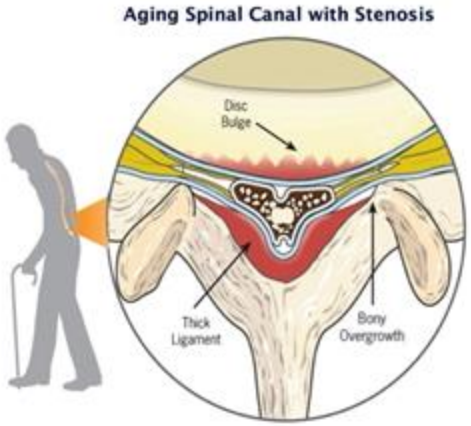
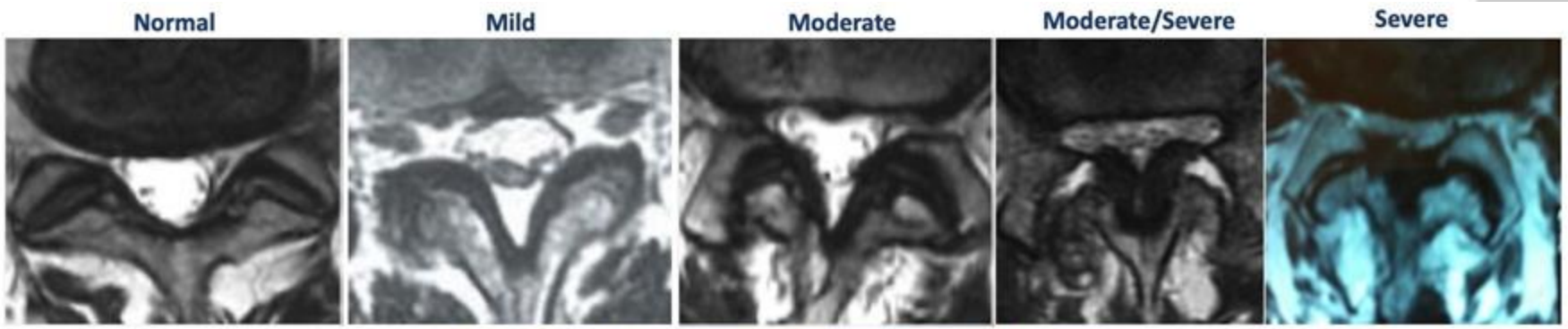
Lumbar Spinal Stenosis

Severity of LSS







Radiological Quantitative Assessment of Stenosis

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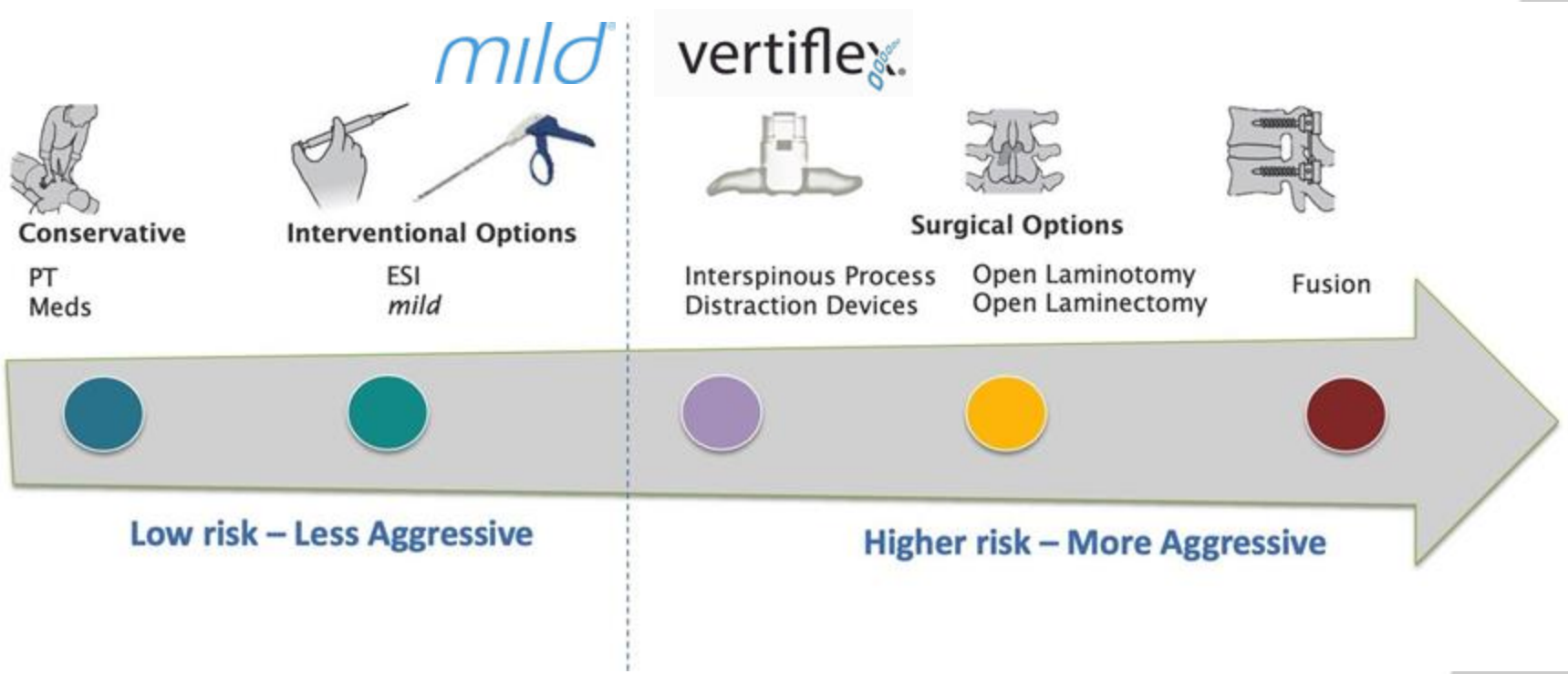
Lumbar Spinal Stenosis

Treatment Options



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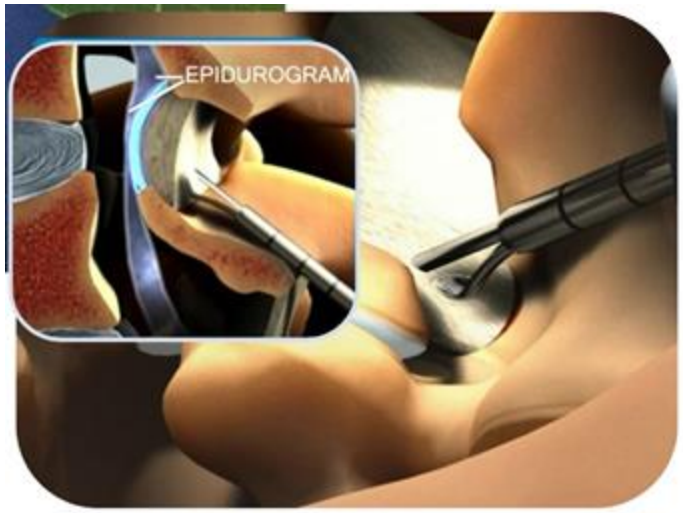
Lumbar Spinal Stenosis

MILD Procedure – Minimally Invasive Lumbar Decompression

mild®



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Lumbar Spinal Stenosis

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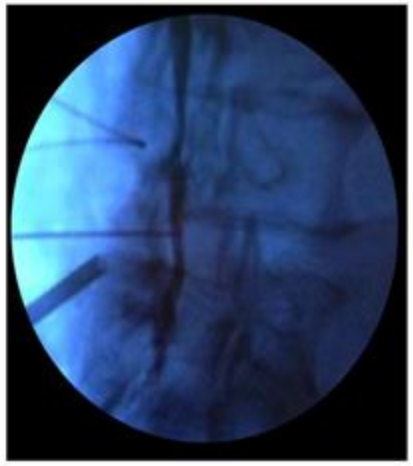

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Lumbar Spinal Stenosis

Vertiflex

VERTIFLEX® PROCEDURE* FOR LUMBAR SPINAL STENOSIS

- A minimally-invasive out patient procedure uses a small implant that is placed in the lower back designed to minimize impact to the nearby bone or tissue.
- The implant is designed to preserve space in the spine and to prevent crushing of the lower back nerves resulting in the reduction or elimination of leg and back pain.
- This procedure is performed in under one hour without general anesthesia.
- About 10,000 procedures have been performed since receiving FDA approval in 2016. The procedure is completely reversible with a low risk of infection or complications.*

90%	85%	81%	75%
Patient satisfaction	Drop in opioid usage	Improvement in physical function	Reduction in symptoms

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Lumbar Spinal Stenosis

Vertiflex

vertiflex®

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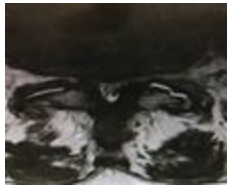
Lumbar Spinal Stenosis

Vertiflex

PRE TREATMENT



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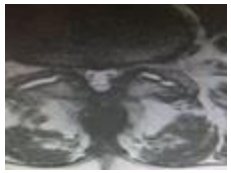

POST TREATMENT

POST TREATMENT

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Lumbar Spinal Stenosis

Vertiflex & MILD Candidates

- Your Moderate to Severe LSS Symptoms
- High Risks for Open Spine Surgery
- Failed Conservative Treatments
- Over the Age of 65 for Medicare

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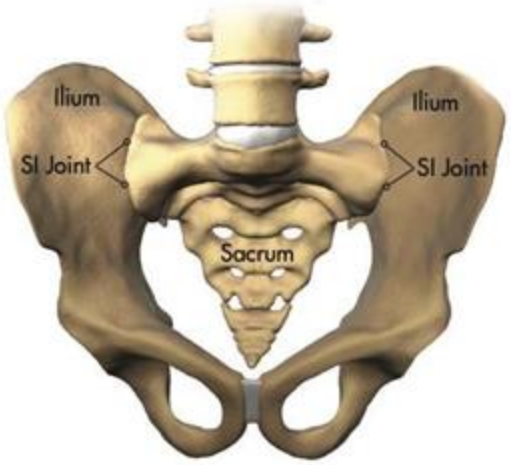
Sacroiliac Dysfunction

About the Sacroiliac Joint

The Sacroiliac (SI) Joint is located in the lower portion of the body, between the Sacrum and the Pelvis. The Sacroiliac Joint is designed to act as a shock absorber for the upper extremities. This joint, like any other joint, may become injured or degenerative over time. If these changes should occur, they may cause SI Joint pain.



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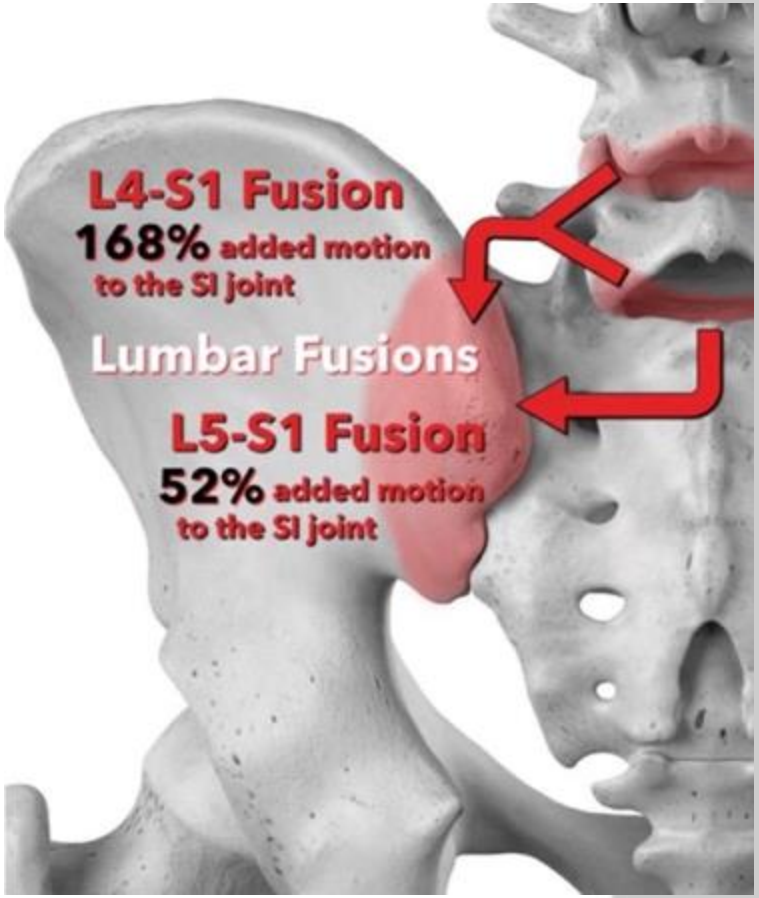
- Prevalence has been reported range from 19-29% and this number may be rising
- Symptoms include:
  - Pain radiating in the buttocks, low back, and groin
  - Referred pain into the lower limbs (mistaken for sciatica)
  - Difficulty turning over in bed, struggling to put on shoes or socks, and leg pain while getting in and out of a car
  - Stiffness in the low back when getting up after sitting for long periods and getting up from bed
  - Aching in the low back when driving long distances

Sacroiliac Dysfunction

Causes

- **A traumatic event or impact**: either a combination of vertical compression and rapid rotation (i.e. carrying a heavy object and twisting), or an impact, such as car accident or a fall. Pain can occur suddenly or can develop over time (degeneration).
- **Pregnancy**: Hormones are released to loosen ligaments and joints to prepare for childbirth, which changes the way the SI joint moves and makes it less stable. Extra weight also puts more stress on the SI joints, leading to additional wear.
- **Abnormal walking pattern**: If one leg is shorter than the other, or you favor one leg when you walk because of pain, it can lead to SI joint pain.
- **Spine surgeries**: Fusing vertebrae reduces flexibility in the spine, which can increase stress on the SI joint.
- **Arthritis**. Wear-and-tear arthritis (osteoarthritis) can occur in sacroiliac joints, as can ankylosing spondylitis — a type of inflammatory arthritis that affects the spine.



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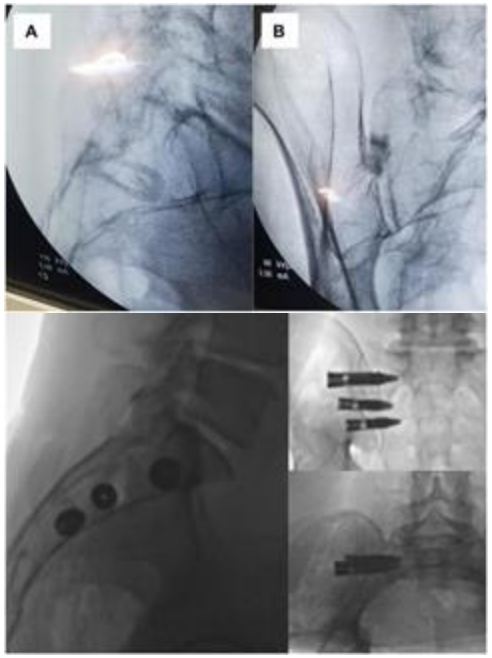
Sacroiliac Dysfunction

SIJ Treatment

SIJ Injections

- Diagnostic (LA only) vs Therapeutic (LA + steroid)
- 2ml of local anesthetic (LA) or steroid



SIJ Radiofrequency Ablation (RFA)

- no longer covered by medicare/considered "experimental"

SIJ Fusion

- >40 different SIJ fusion products in the US market
- posterior (27278) approach: typically allograft cadaver bone
- lateral approach (27279*): typically titanium screws

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Thank You

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