



Interventional Approaches to Pain Management

Low back pain

Globally, 619 million people suffer from low back pain (10% of world population)

\$134B spent in US for treatment of LBP

Increased absenteeism, decreased productivity, early retirement

Leading cause of disability worldwide

>50% of patients on COT report LBP



History

SOCRATES

Site

Onset

Character

Radiates

Associated Symptoms

Time/duration

Exacerbating/alleviating factors

Severity



Red Flag Symptoms

- H/O cancer, weight loss, night pain, age >40 or <15 {**TUMOR**}
- H/O trauma {**FRACTURE**}
- Fever, night sweats, immunosuppression, IVDA, other infections {**INFECTION**}
- Urinary retention, urinary and/or fecal incontinence, saddle anesthesia, worsening sensorimotor deficit {**CAUDA EQUINA SYNDROME**}

Physical examination

1. General assessment
2. Include abdominal exam
3. Musculoskeletal
 - a. Gait
 - b. ROM
 - c. Sagittal/coronal alignment
 - d. Nerve root tension signs
 - e. Abnormal palpation
 - f. Strength testing
 - g. DTRs
 - h. Sensory testing

Root	Disc	Muscles	Reflex	Sensation
L4	L3/4	Tibialis anterior	Patellar	Medial leg
L5	L4/5	Extensor hallucis longus		Lateral leg & dorsiflexion of foot
S1	L5/S1	Achilles tendon	Achilles	Lateral foot

Imaging

X-ray

MRI

CT scan



Treatment paradigm: Conservative treatment

First line:

Education

Return to activity

Weight loss

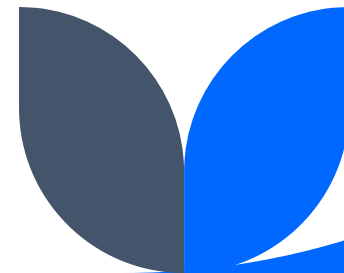
Exercise/PT

NSAIDs

Acetaminophen

Yoga/Pilates

Acupuncture



Treatment paradigm: Conservative treatment

First line:

- Education
- Return to activity
- Weight loss
- Exercise/PT
- NSAIDs
- Acetaminophen
- Yoga/Pilates
- Acupuncture

Second line:

- Rehab
- CBT
- Interventional**



Case #1

- 67 y/o male. Retired carpenter. Longstanding h/o non-radicular low back pain. Worse over the last 3 months. Right greater than left.
- Exacerbating factors: AM, standing, working in his home shop.
- Alleviating factors: rest
- Exam: Mild decreased flexion. Pain with extension and rotation. Positive stork test. Sensorimotor exam WNL.
- Tx: NSAIDs, chiropractic

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- Tx: NSAIDs, chiropractic
- Recommendations:
 - Trial PT – not helpful

Lumbosacral x-ray series including obliques

Low back pain

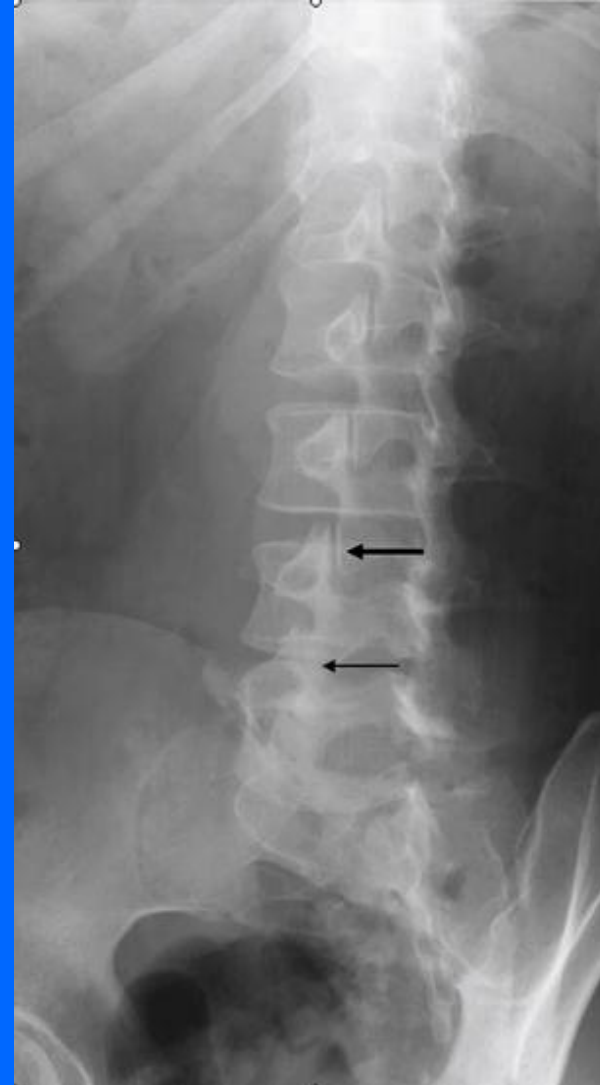
Most often lateral to midline

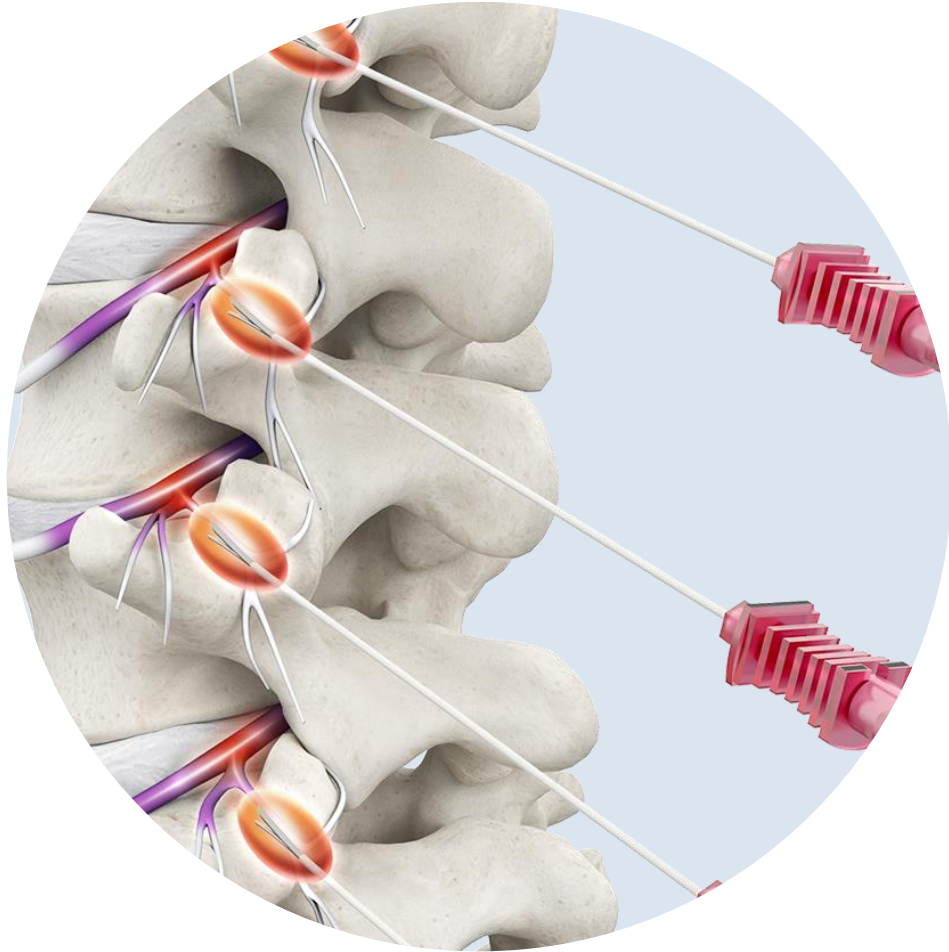
Most commonly associated with DDD

Non-surgical treatment

Joints innervated by the medial branches of lumbar dorsal ramus nerve

Blockade of these branches with local anesthetic can be predictive of outcome with RFA





Radiofrequency ablation

Mechanism of action

Indications

Outcomes

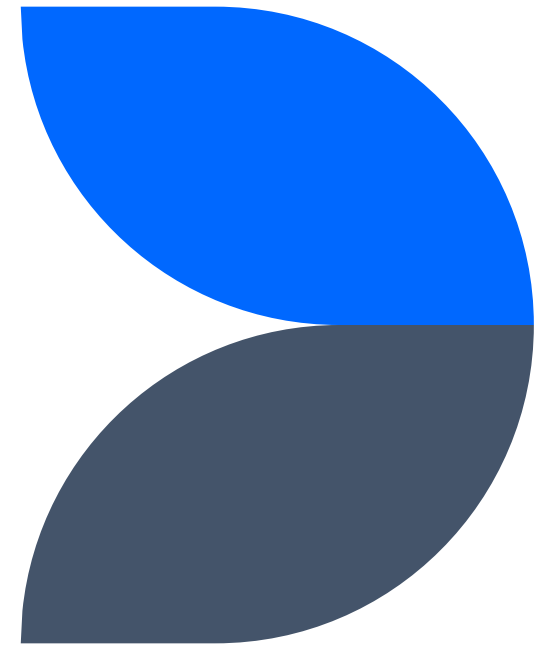


Case #2

- 42 y/o female, s/p MVA 18 months ago. She was the driver in a car that was rear-ended. Left low back pain radiating into buttocks and posterior left thigh, occasionally into left groin.
- Exacerbating factors: Sitting, sleeping, driving.
- Alleviating factors: Changing positions, NSAIDs
- Exam: Leaning to right side while sitting. Exquisite TTP below L5. Positive provocative signs for SIJ pain.

SIJ exam

1. FABER test (Patrick's test)
2. Thigh Thrust test
3. Gaenslen test
4. Compression test
5. Distraction test



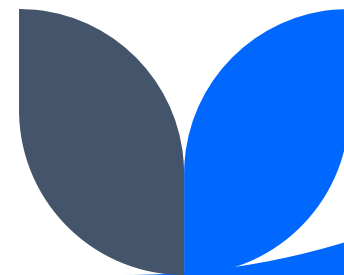


FABER test





Thigh thrust test



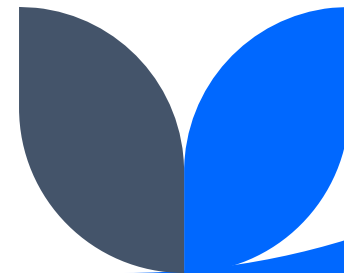


Gaenslen test



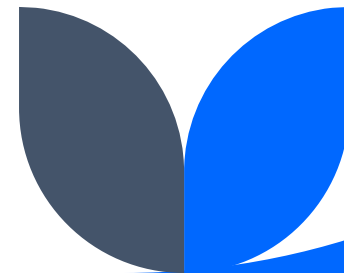


Compression test





Distraction test



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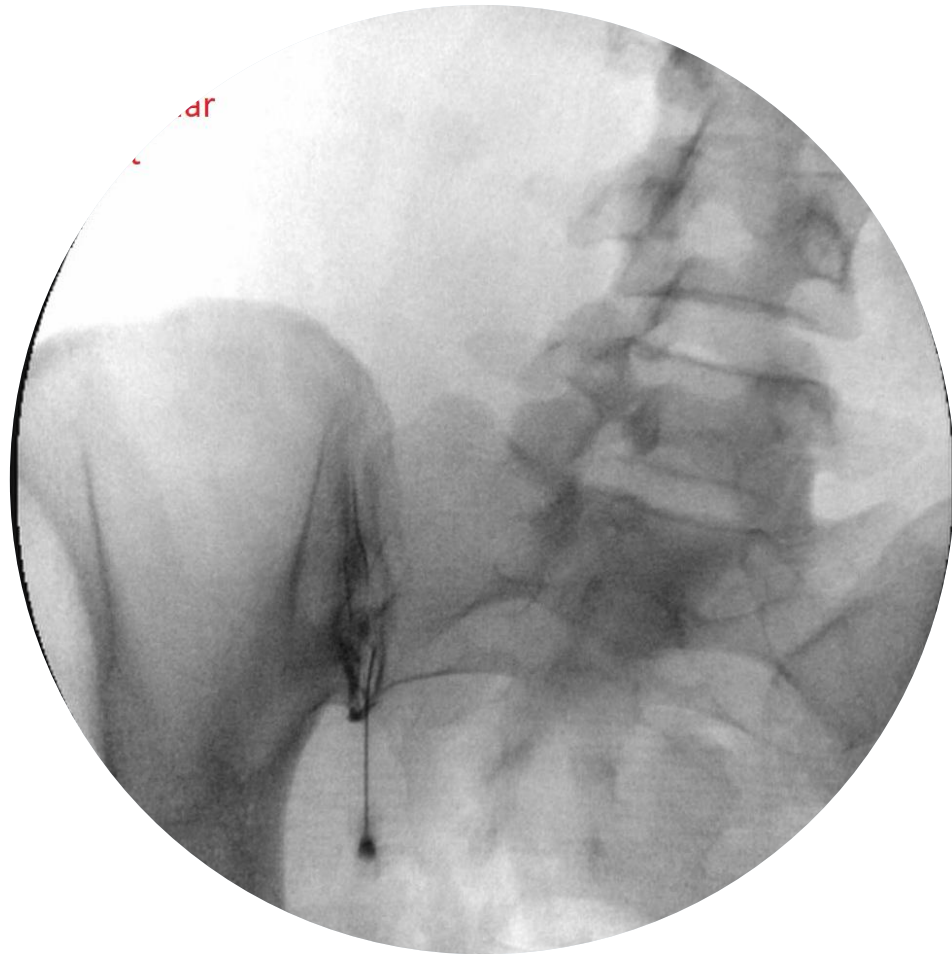
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- Tx: NSAIDs. Unable to tolerate PT.

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- Imaging: Lumbar spine X-ray reveals minimal lumbar DDD. Mild facet arthropathy.

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- Recommendations
 - Left SIJ injections



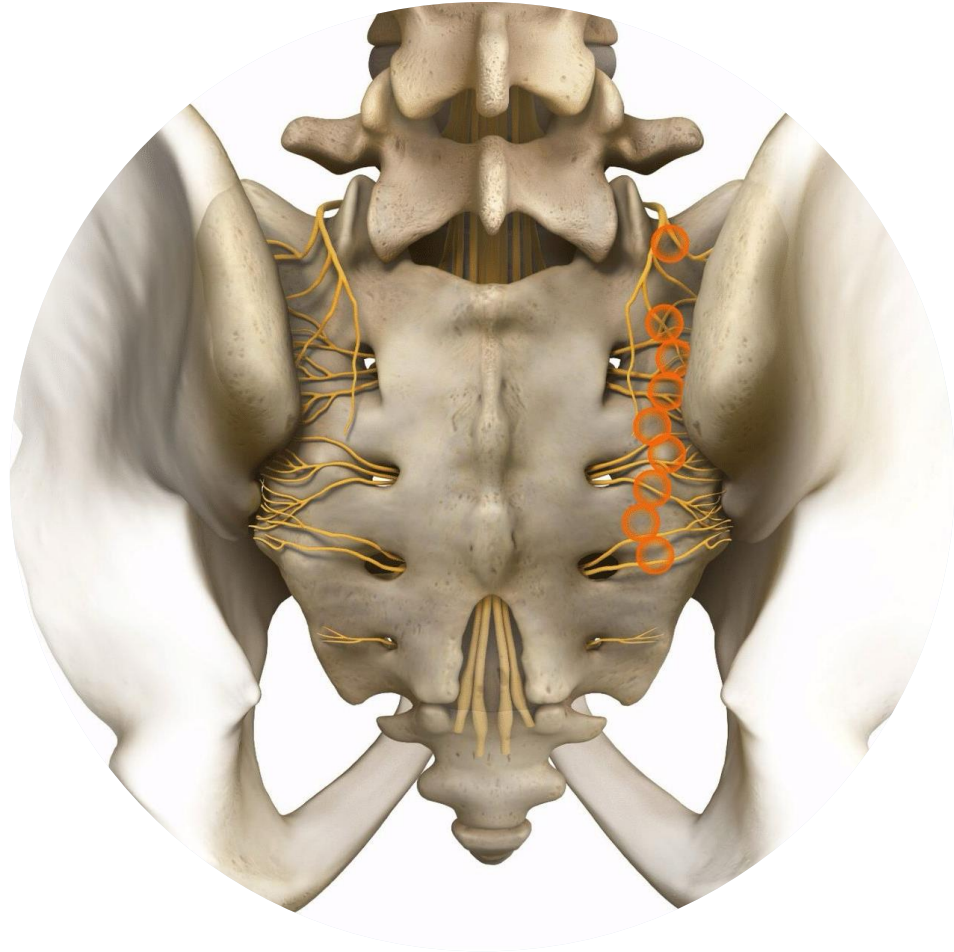
SIJ injection

- Diagnostic
- Therapeutic



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 - Left SIJ injections
 - RFA

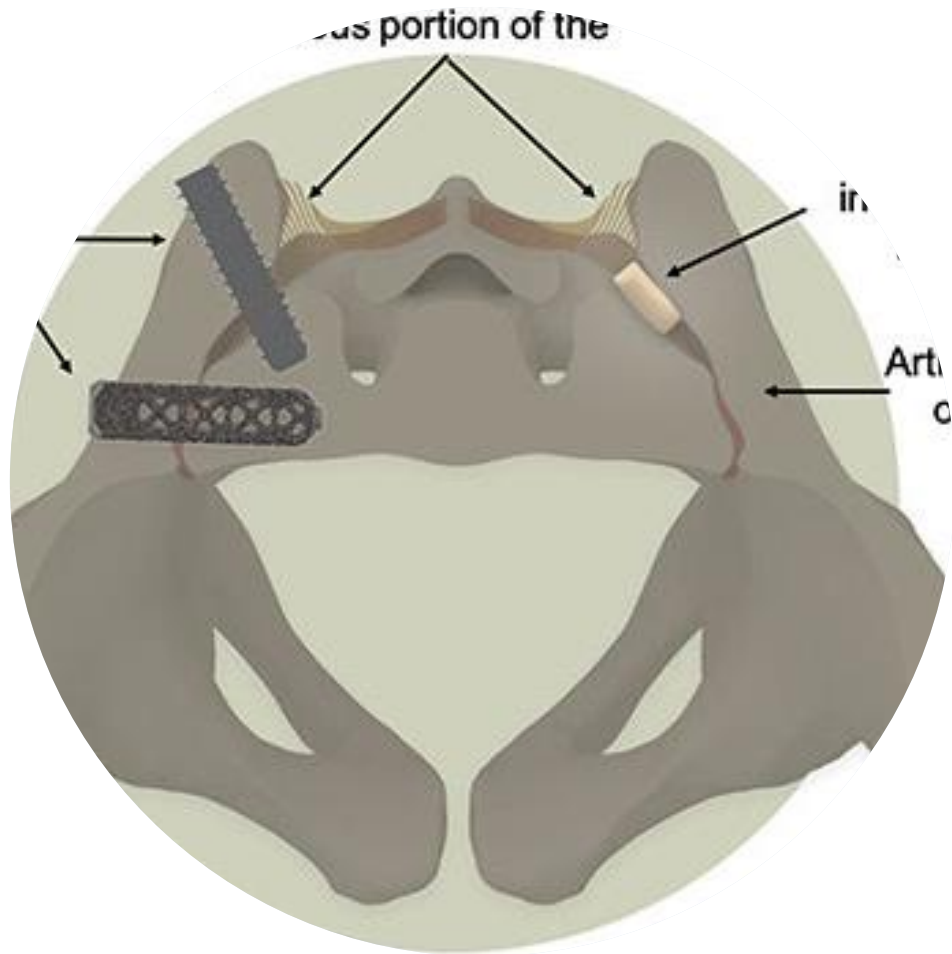


RFA



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- Recommendations
 - Left SIJ injections
 - RFA
 - Fusion



SIJ Fusion

- Revision of Failed Sacroiliac Joint Posterior Interpositional Structural Allograft Stabilization with Lateral Porous Titanium Implants: A Multicenter Case Series. Medical Devices: Evidence and Research. 15. 229-239.



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- Tx: NSAIDs. Unable to tolerate PT.
- Imaging: Lumbar spine X-ray reveals minimal lumbar DDD. Mild facet arthropathy.
- Recommendations
 - Left SIJ injections
 - RFA
 - Fusion
 - Cluneal neuralgia?

Case #3

- 65y/o male. Shoveling snow. New onset back and LLE pain.
- Exacerbating factors: Standing, walking, activity.
- Alleviating factors: Rest
- Exam: Transition pain. Limited lumbar ROM. Light touch sensation okay. 4+/5 left dorsiflexion. Left SLR test positive. No red flag signs/symptoms

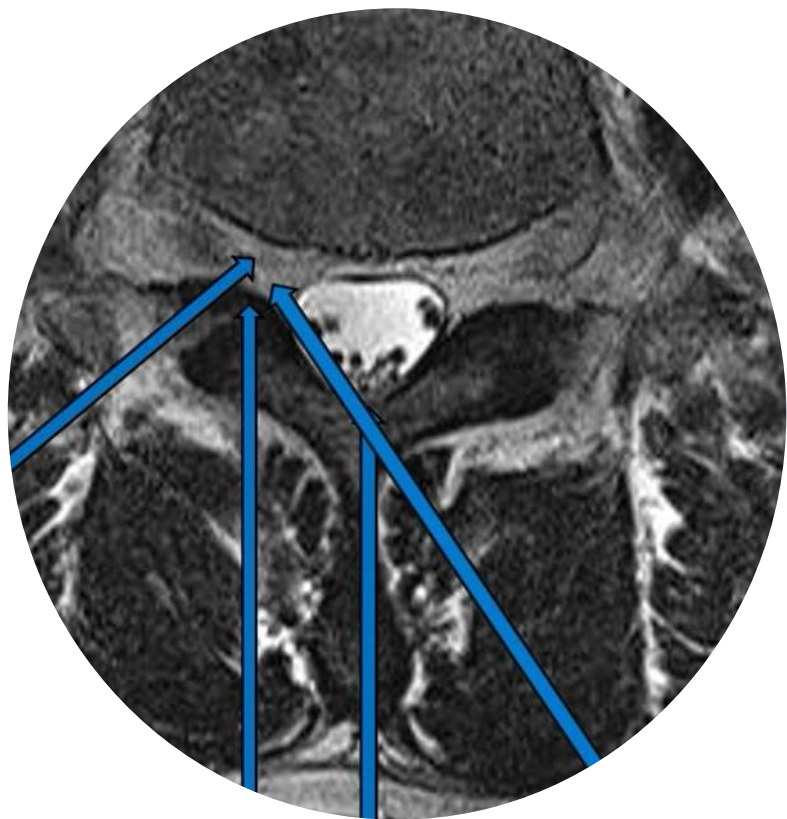
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- Tx: PT.
- Imaging: Lumbar MRI ordered after 6 weeks PT. Herniated discs noted at L2/3 and L5/S1. No clear impingement. Disc tear at L5/S1.



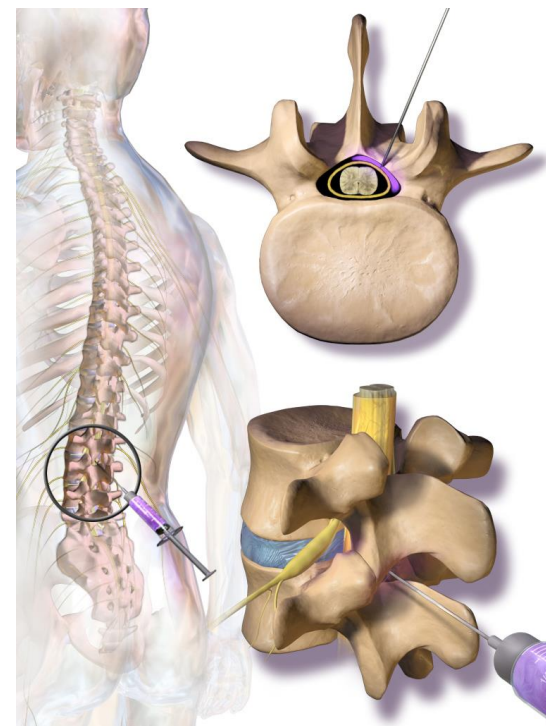
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- Recommendations
 - Left L5/S1 TFESI vs interlaminar vs parasagittal interlaminar L5/S1 approach

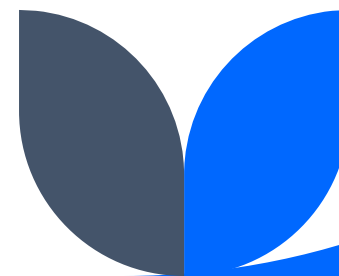


ESIs

Mechanism of action
Approaches
Efficacy



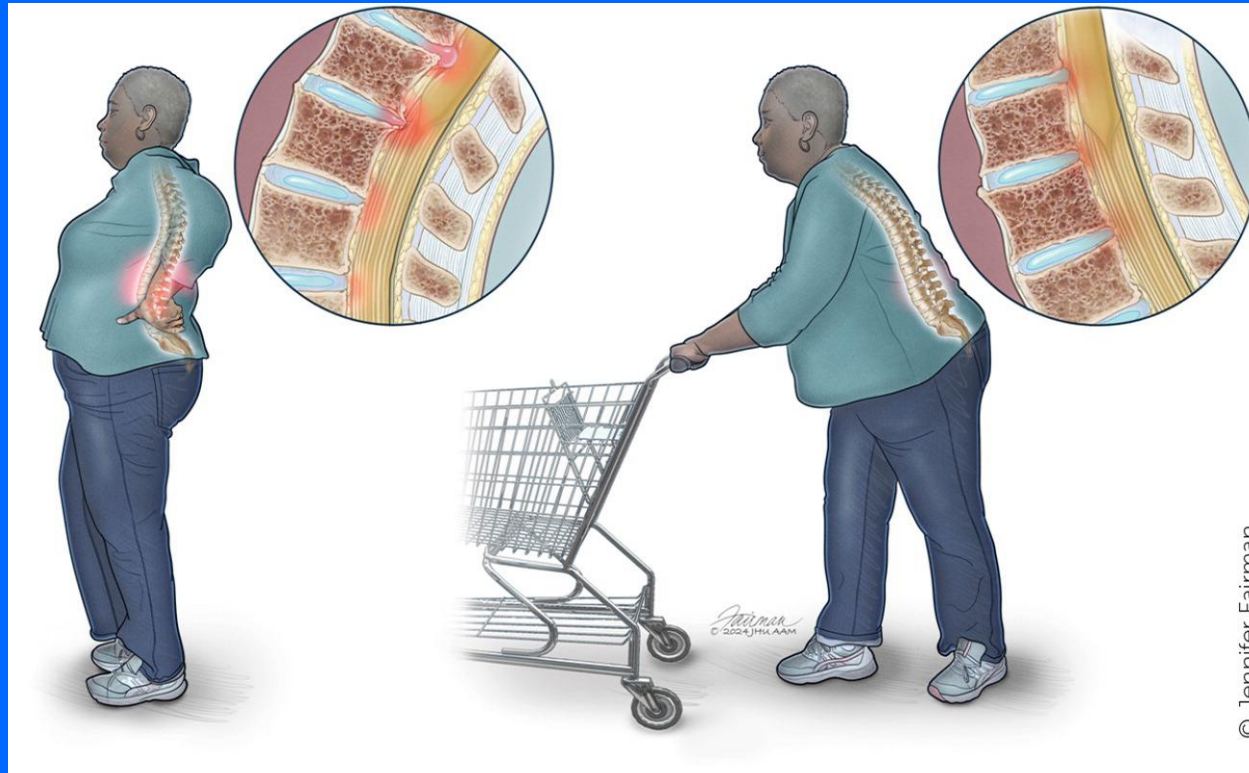
- Comparison of the Oblique Interlaminar and Transforaminal Lumbar Epidural Steroid Injections for Treatment of Low Back and Lumbosacral Radicular Pain, Journal of Pain Research, February 2021



Case #4

- 74 y/o female with longstanding history of low back pain, getting progressively worse. Patient adamant about not wanting surgery.
- Exacerbating factors: Standing >15 min., walking ¼ mile. Sleep also affected.
- Alleviating factors: Sitting, rest, bending forward.
- Exam: No sensorimotor deficit. Neg SLR. Mild SIJ TTP. Limited lumbar extension. TTP over lumbosacral paraspinal muscles.
- Tx: Has been to PT and chiropractor multiple times over the years.
- Imaging: Lumbar MRI shows moderate-severe central stenosis due to facet arthropathy and ligamentum flavum hypertrophy. Moderate foraminal stenosis is also seen.

Positive shopping cart sign



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Case #4 continued

- Treatment options
 - Surgical referral



Case #4 continued

- Treatment options
 - Surgical referral
 - ESI



Case #4 continued

- Treatment options
 - Surgical referral
 - ESI
 - MBNB



Case #4 continued

- Treatment options
 - Surgical referral
 - ESI
 - MBNB
 - MILD





MILD

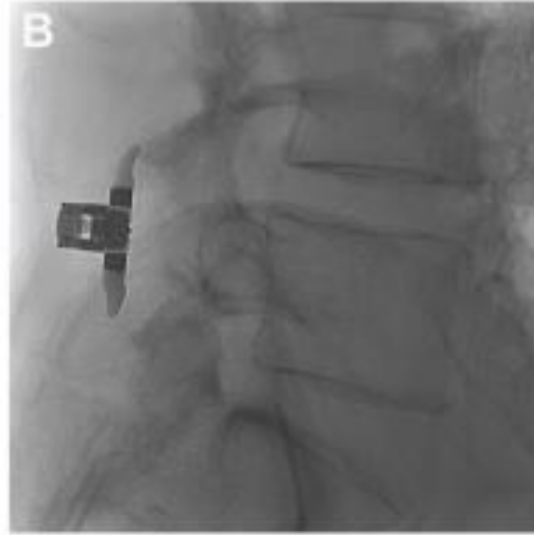
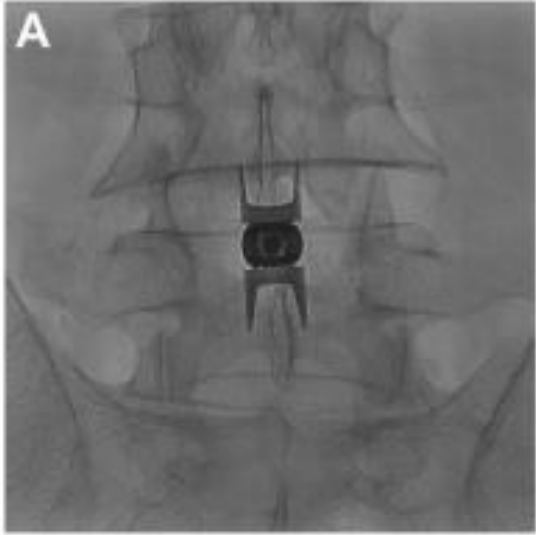
- Removes excess ligamentum flavum in attempt to reduce compression of spinal nerves.
- Minimally invasive.
- Outpatient.
- Conscious sedation.
- Patients reported 85% satisfaction rate at 2 years (MIDAS ENCORE 2-Year study)
- 86% of patients avoided back surgery at 5 years (Cleveland Clinic study)



Case #4 continued

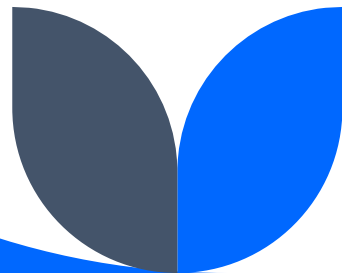
- Treatment options
 - Surgical referral
 - ESI
 - MBNB
 - MILD
 - Interspinous spacer device





Interspinous spacer device

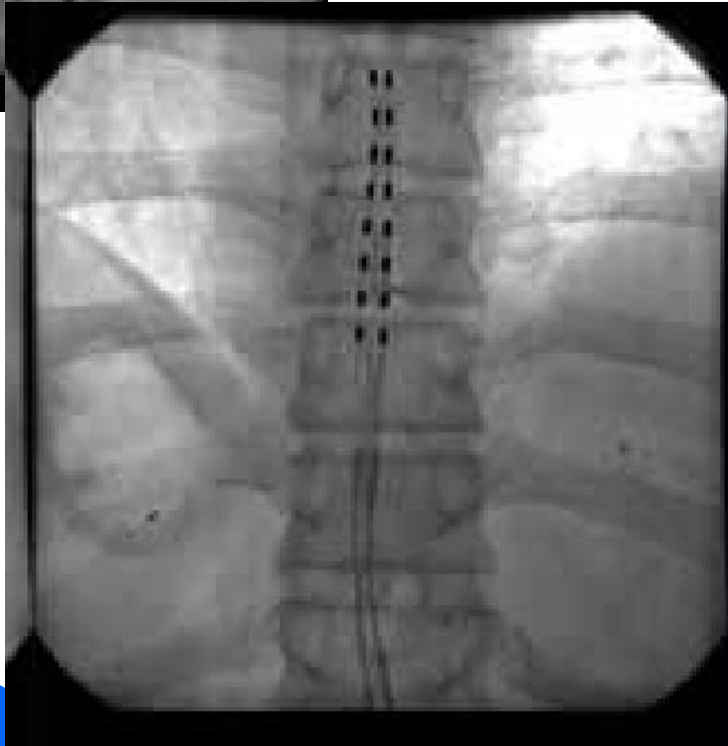
- Inserted in-between the spinous processes at the affected level to create space and prevent symptomatic narrowing of the central and foraminal spaces during extension.
- Minimally invasive.
- Outpatient.
- Conscious sedation.
- 5 year data: 66% improvement in LBP, 75% improvement in leg pain, 90% patient satisfaction (Nunley et al, 2017)



Case #4 continued

- Treatment options
 - Surgical referral
 - ESI
 - MBNB
 - MILD
 - Interspinous spacer device
 - SCS





Spinal cord stimulation

- Implanted device that sends low levels of electricity in varying waveforms to the spinal cord to relieve pain.
- Trial period
- Common Indications
 - Radicular nerve pain
 - Non-surgical low back pain
 - FBSS
 - Painful peripheral neuropathy or plexopathy
 - CRPS



Thank you

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