Lumbar Spinal Stenosis

Get up and go, keep your patients moving

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Disclosures

Declaration statement: I have relevant relationships with ineligible companies to disclose in the past 24 months

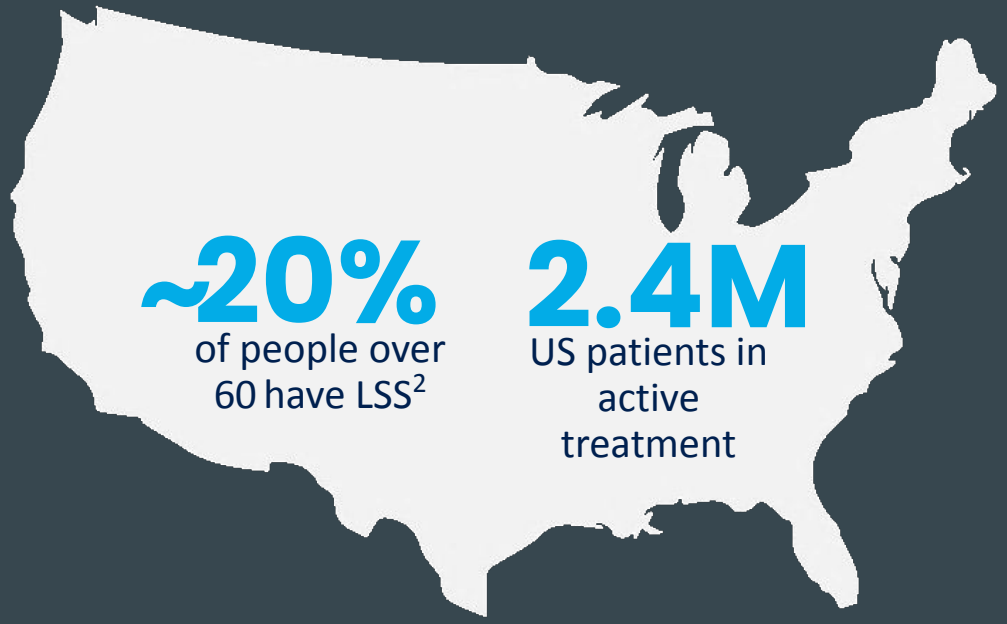
- Consultant for Boston Scientific and Vertos Medical

Educational objectives

- Recognize signs and symptoms of lumbar spinal stenosis
- Learn how to implement fall risk assessment into your practice
- Review ordering appropriate imaging and what to look for when evaluating lumbar spinal stenosis
- Develop an early decompression plan

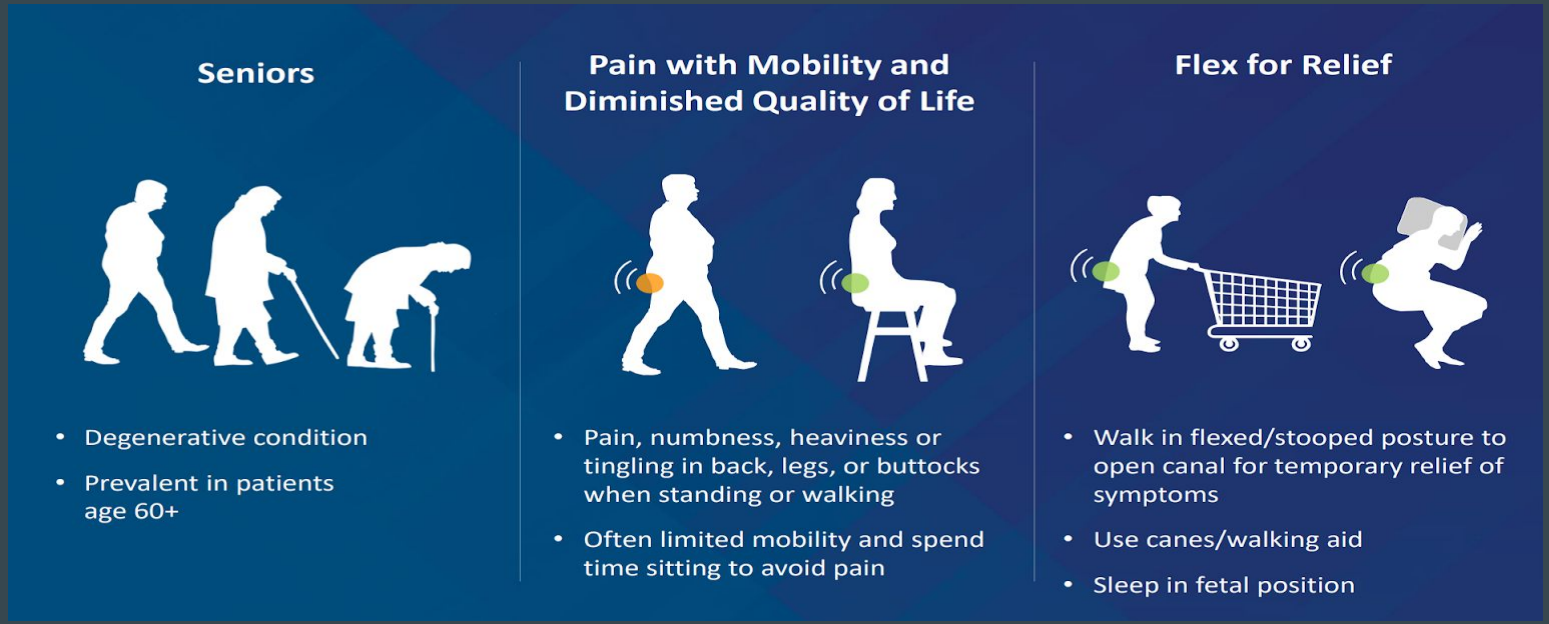
Lumbar Spinal Stenosis

- Meta-analysis data shows 11-39% of the population over 60 are symptomatic from LSS[1]
- ~ 8-30M patients suffer from LSS
- Most common diagnosis for spine surgery age 65 and over[3]
- LSS is associated with 1.6 fold increase in severe disability, and 1.5 fold increase in mortality[4]



Lumbar Spinal Stenosis

Definition: degenerative condition causing narrowing of the spinal canal



Lumbar Spinal Stenosis

Challenges of diagnosing LSS

- Wide variety of presenting symptoms / subtleties
- Common comorbidities or overlapping symptoms
  - Peripheral vascular disease / claudication
  - Peripheral neuropathy
- Progressive condition that may not show any symptoms for decades
- LSS often missed or misdiagnosed
- Patients can have a normal physical exam

Keep your patients moving

- CDC STEADI initiative[5] - Stopping Elderly Accidents, Deaths and Injuries
  - Fall prevention program, helps healthcare providers develop standardized process for screening, assessing and intervening to reduce fall risk in elderly population.

- Sit to Stand test[5]
  - Poor outcomes correlate with poorer health and higher mortality
  - Low scores indicate increase in fall risk

- Timed up and go test (TUG)[6]
  - Times were significantly and independently associated with future falls

STEADI Algorithm for Fall Risk Screening, Assessment, and Intervention among Community-Dwelling Adults 65 years and older

START HERE

1 SCREEN for fall risk yearly, or any time patient presents with an acute fall.

Available Fall Risk Screening Tools:

- **Stay Independent: a 12-question tool** [at risk if score ≥ 4]
  - **Important:** If score < 4, ask if patient fell in the past year (If **YES** → patient is at risk)
- **Three key questions** for patients [at risk if **YES** to any question]
  - Feels unsteady when standing or walking?
  - Worries about falling?
  - Has fallen in past year?
    - » If **YES** ask, "How many times?" "Were you injured?"

SCREENED NOT AT RISK

PREVENT future risk by recommending effective prevention strategies.

- Educate patient on fall prevention
- Assess vitamin D intake
  - If deficient, recommend daily vitamin D supplement
- Refer to community exercise or fall prevention program
- Reassess yearly, or any time patient presents with an acute fall

SCREENED AT RISK

2 ASSESS patient's modifiable risk factors and fall history.

Common ways to assess fall risk factors are listed below:

Evaluate gait, strength, & balance
Common assessments:
- Timed Up & Go
- 4-Stage Balance Test
- 30-Second Chair Stand

Identify medications that increase fall risk
(e.g., Beers Criteria)

Ask about potential home hazards
(e.g., throw rugs, slippery tub floor)

Measure orthostatic blood pressure
(Lying and standing positions)

Check visual acuity
Common assessment tool:
- Snellen eye test

Assess feet/footwear

Assess vitamin D intake

Identify comorbidities
(e.g., depression, osteoporosis)

3 INTERVENE to reduce identified risk factors using effective strategies.

Reduce identified fall risk
- Discuss patient and provider health goals
- Develop an individualized patient care plan (see below)

Below are common interventions used to reduce fall risk:

Poor gait, strength, & balance observed
- Refer for physical therapy
- Refer to evidence-based exercise or fall prevention program (e.g., Tai Chi)

Medication(s) likely to increase fall risk
- Optimize medications by stopping, switching, or reducing dosage of medications that increase fall risk

Home hazards likely
- Refer to occupational therapist to evaluate home safety

Orthostatic hypotension observed
- Stop, switch, or reduce the dose of medications that increase fall risk
- Educate about importance of exercises (e.g., foot pumps)
- Establish appropriate blood pressure goal
- Encourage adequate hydration
- Consider compression stockings

Visual impairment observed
- Refer to ophthalmologist/optometrist
- Stop, switch, or reduce the dose of medication affecting vision (e.g., anticholinergics)
- Consider benefits of cataract surgery
- Provide education on depth perception and single vs. multifocal lenses

Feet/footwear issues identified
- Provide education on shoe fit, traction, insoles, and heel height
- Refer to podiatrist

Vitamin D deficiency observed or likely
- Recommend daily vitamin D supplement

Comorbidities documented
- Optimize treatment of conditions identified
- Be mindful of medications that increase fall risk

FOLLOW UP with patient in 30-90 days.

Discuss ways to improve patient receptiveness to the care plan and address barrier(s)

Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

Imaging

- **Lumbar X-rays**: checks alignment, possible spondylolisthesis/stability, assess for disc height loss, osteophyte formation
- **Lumbar MRI:** best evaluation of spinal stenosis, highly sensitive for visualizing discs, neural structures, bone marrow abnormalities
- **Lumbar CT**: good for bony anatomy, degenerative discs
- **CT Myelogram**: contrast injected into spinal canal to allow visibility of neural structures, comparable imaging to MRI but patient has exposure to radiation and contrast

Imaging

Treatment

Lifestyle modifications:

- Exercise, core strength, maintaining ideal body weight are all recommendations for spinal health but there is no clinical data supporting this[7]
- However once LSS symptoms have begun these modifications are typically not seen to be significantly effective[7]
- Conflicting data regarding physical therapy - most studies show insufficient evidence to support PT, exercise or spinal manipulation.
  - However the SPORT trial did show positive association with PT and long term outcomes of LSS as well as reducing likelihood of surgery at 1 year. [7]
  - 2022 study of supervised PT compared to surgery - showed better improvement with severity of symptoms and functioning with surgery, however in mild to moderate LSS therapy can be effective[9]

Treatment

Medications :

- NSAIDs: no significant difference between NSAIDs and placebo for chronic back pain[7]
- Few trials showed small improvements in pain with use of gabapentin and topiramate[7]
- Currently insufficient evidence to support medication management for chronic back pain

Treatment

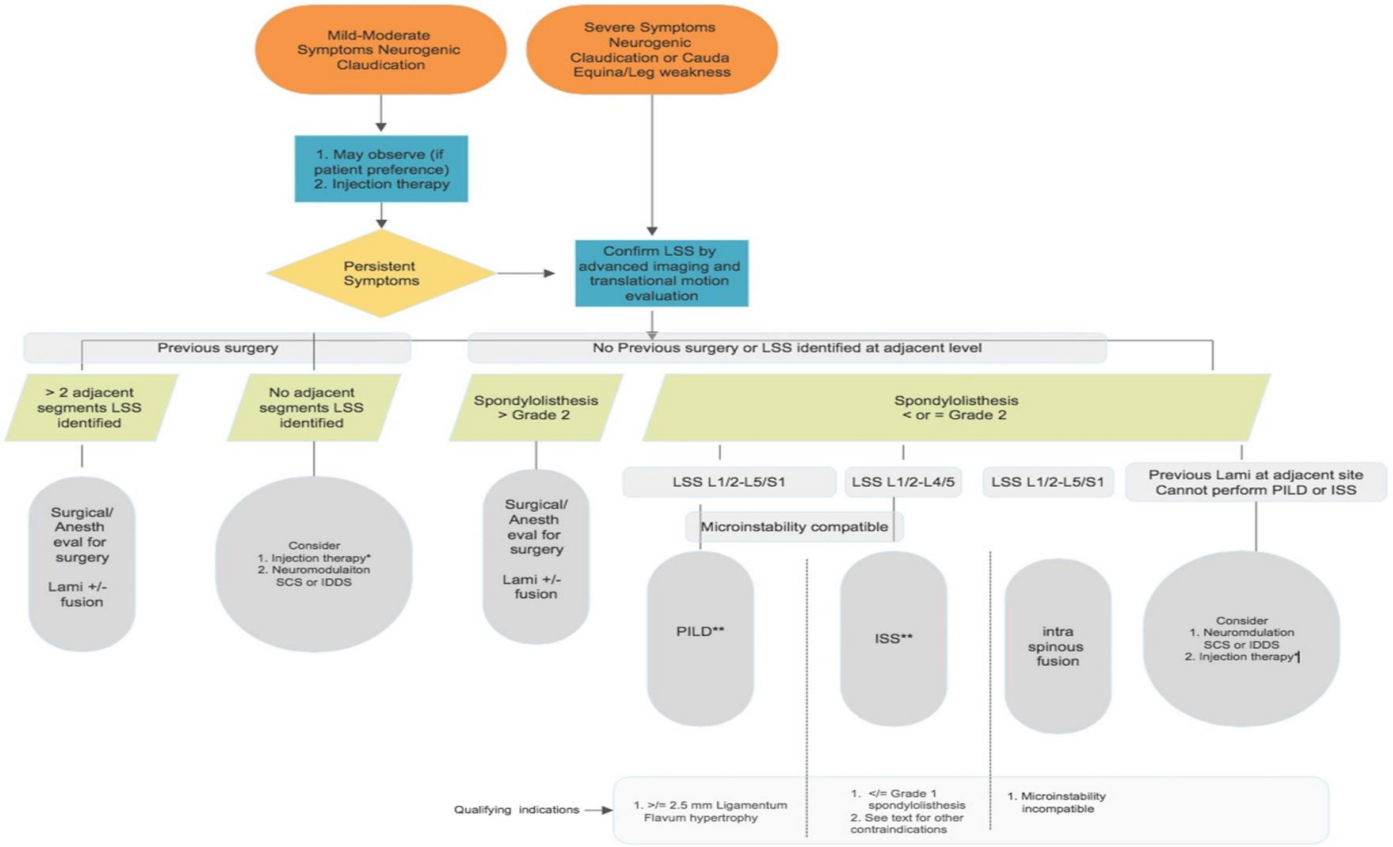
Medicare guidelines for ESIs updated 12/2021[8]

- Epidurals cannot be done as a predetermined series
- Repeat ESIs can be considered only if they provide at least 50% pain relief for 3 months and/or improved function
- If patient fails to respond well to initial ESI a repeat ESI can be completed after 14 days using a different approach, level or medication
- ESIs limited to 4 sessions per spinal region per year
- Treating with ESIs for longer than 12 months must meet the CMS criteria to be considered medically necessary

Evidence for effectiveness:[7]

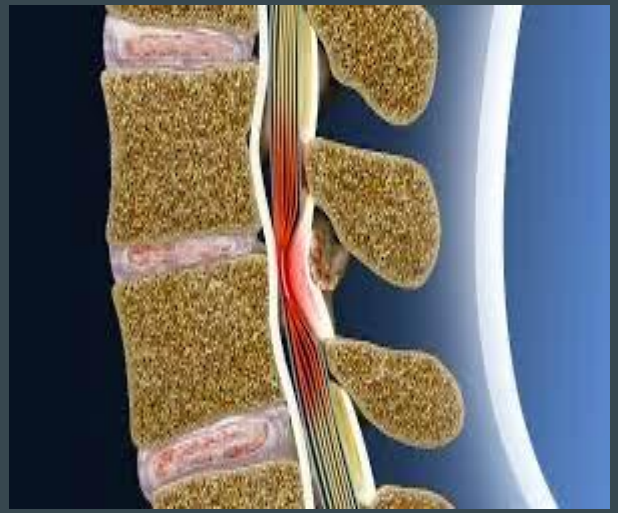
- For chronic back pain without radiculopathy not effective long term
- Intralaminar epidurals - grade B recommendations, level 1 data provides short term relief
- Transforaminal and caudal epidurals - grade C recommendation showing moderate pain relief
- No significant difference between epidural steroid injection and local anesthetic

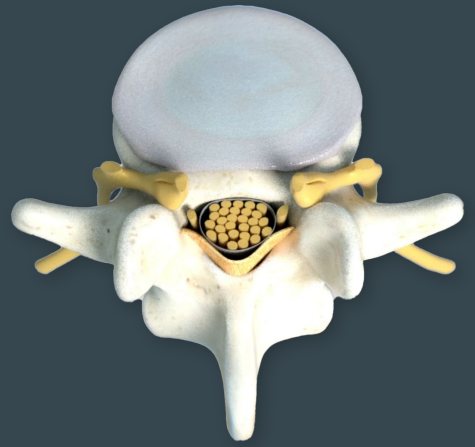
MIST 2.0 Guidelines 2022



Treatment

PILD/ MILD



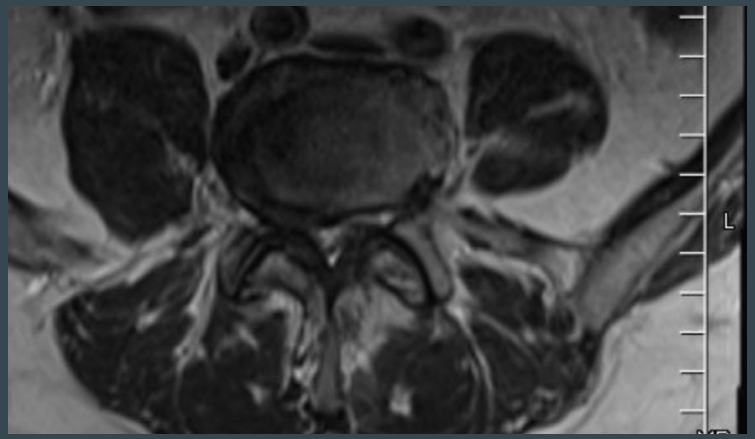


- Grade A/ Level 1A evidence, 2 multicenter RCTs, 16 clinical studies
- Significant functional and symptomatic improvement, 5 year durability, safety profile equivalent to ESI[10]

Case study patient SH

76 yo male with left LBP / radiculopathy

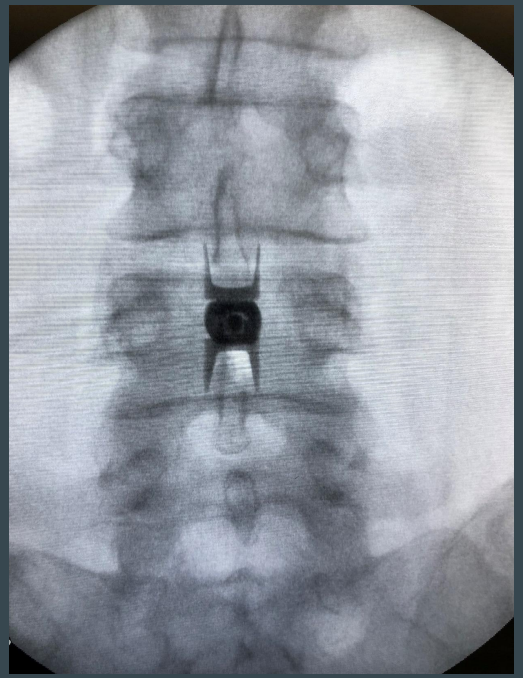
- Vietnam vet with hx of GSW to the neck, SCI with chronic left hemiparesis
- Hx DM, CAD
- MRI shows severe stenosis L3-5
- Procedures:
- Left L3-4, L4-5 TFESI - 100% relief leg pain
- Left L4-S1 RFA - 80% relief LBP
- Left L3-4, L4-5 TFESI - 60% relief
- MILD L3-5 - 75-80% relief
- Prior to MILD couldn't stand / walk more than 10 minutes
- Post MILD no limitations



Treatment

Interspinous spacer device

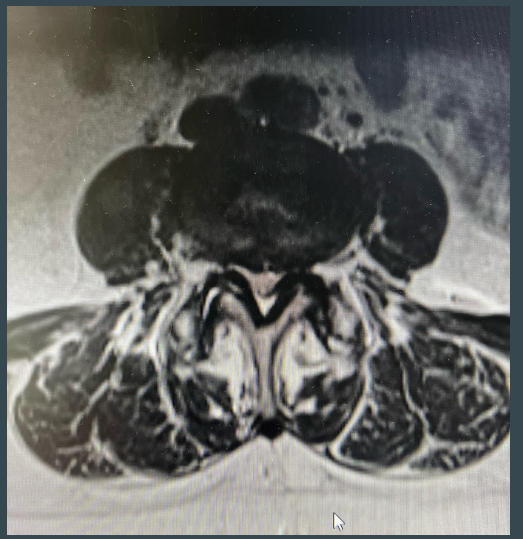
- Superion / vertiflex
- Grade A, level 1A[10]
- IDE study results[11]
- 90% pt satisfaction
- 85% reduction in opioids
- 81% improved function
- 75% reduction in symptoms



Case study

56 y/o female with chronic back and BLE radicular pain

- Failed: PT, ESIs, home inversion table, medications
- MRI shows moderate stenosis L2-4
- Vertiflex implanted with 75% relief
- Pt now able to stand, cook, complete ADLs without limitations



Treatment

Neurosurgery lami vs fusion

- Decompression alone is preferred method of surgery for LSS[11]
- New stenosis operated at or adjacent level occurred more frequently after decompression and fusion than decompression alone[11]
- Considerations prior to surgery: negative predictive factors including depression, comorbidities, scoliosis, smoking, concomitant disorders affecting walking[7]
- Patients with significant neurological decline should proceed with surgery rather than MIS options

Conclusion

- Focus on function / maintaining function should be goal in treatment plan
- Early intervention allows patients to best maintain functioning
- Lots of varying data with insufficient evidence for conservative care, indicating if patients are symptomatic from LSS they need decompression
- MIS options provide an important intermediate option for patients wanting to avoid or are not yet ready for surgery but are symptomatic from LSS

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Questions?