Chronic Low Back Pain

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CLBP
Topics

- Prevalence
- Causes of CLBP
- Presentation/Evaluation of CLBP
- Treatments
  - Conservative Treatments
  - Pharmacologic Treatments
  - Interventional Therapies

Prevalence of LBP

- Annual prevalence US adults 10-30%
- Lifetime prevalence 65-80%

Psychosocial Factors & CLBP

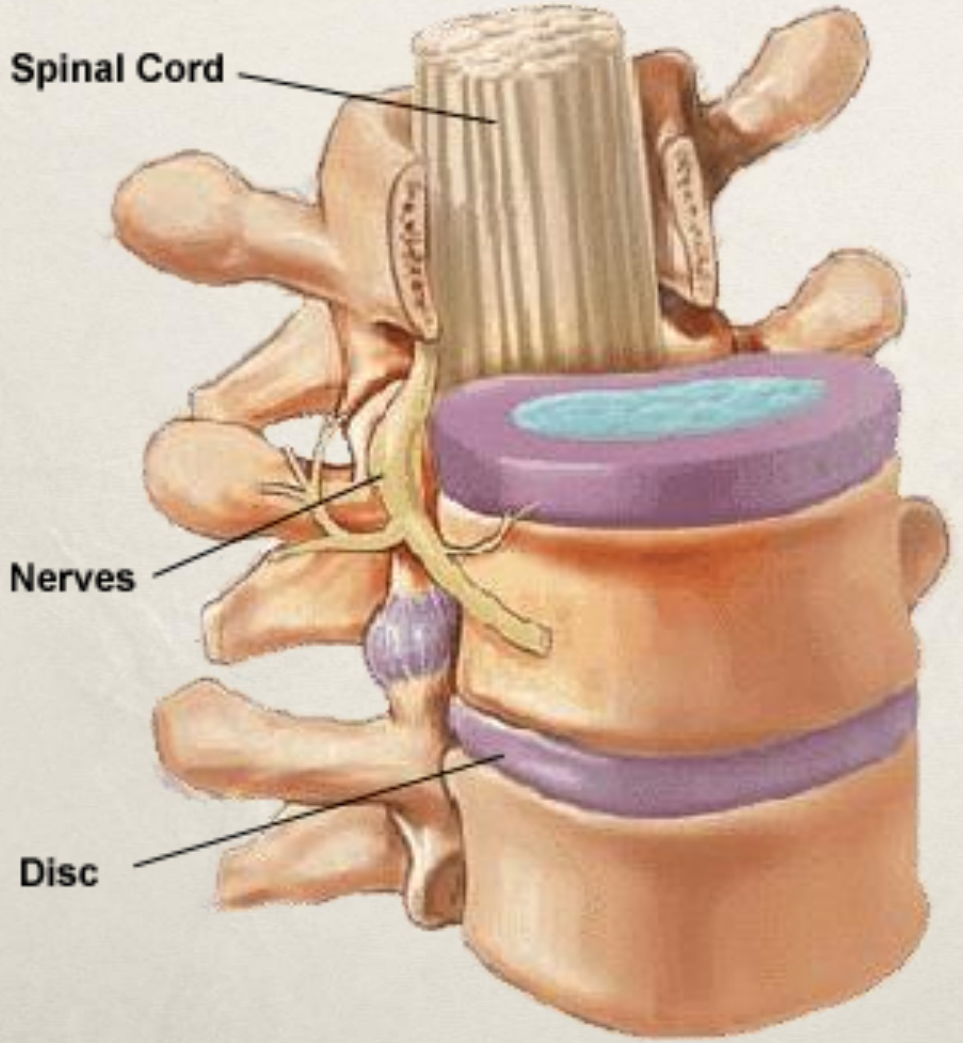
- Factors associated with development of chronic back pain
  - Depression/anxiety
  - Somatization
  - PTSD
  - Job dissatisfaction/loss of ability to work
  - Disability claim/legal claims
  - Substance abuse
  - Financial stress

Imaging/Referral

- Choosing Wisely (AAFP):
  Avoid imaging <6 weeks and no red flags
  - Severe/progressive neurologic deficits
    - Saddle anesthesia, bowel/bladder changes, weakness
  - Fever
  - History of osteoporosis/cancer/steroid use
  - Trauma
  - IVDU/concern for osteomyelitis
- Failed Conservative Therapy (rest, PT, NSAIDS)
  - MRI:
    - Suspected spinal stenosis with neurogenic claudication
    - Significant LE weakness on exam
    - Concern for malignancy/infection
    - Patient wants surgery consult
  - Pain Consult:
    - Axial/radicular pain without urgent need for surgery or red flags
  - Surgery Consult:
    - Severe CC stenosis, instability on flex-ext films, significant/progressive weakness, tumor/infection on imaging, failed multimodal conservative therapy

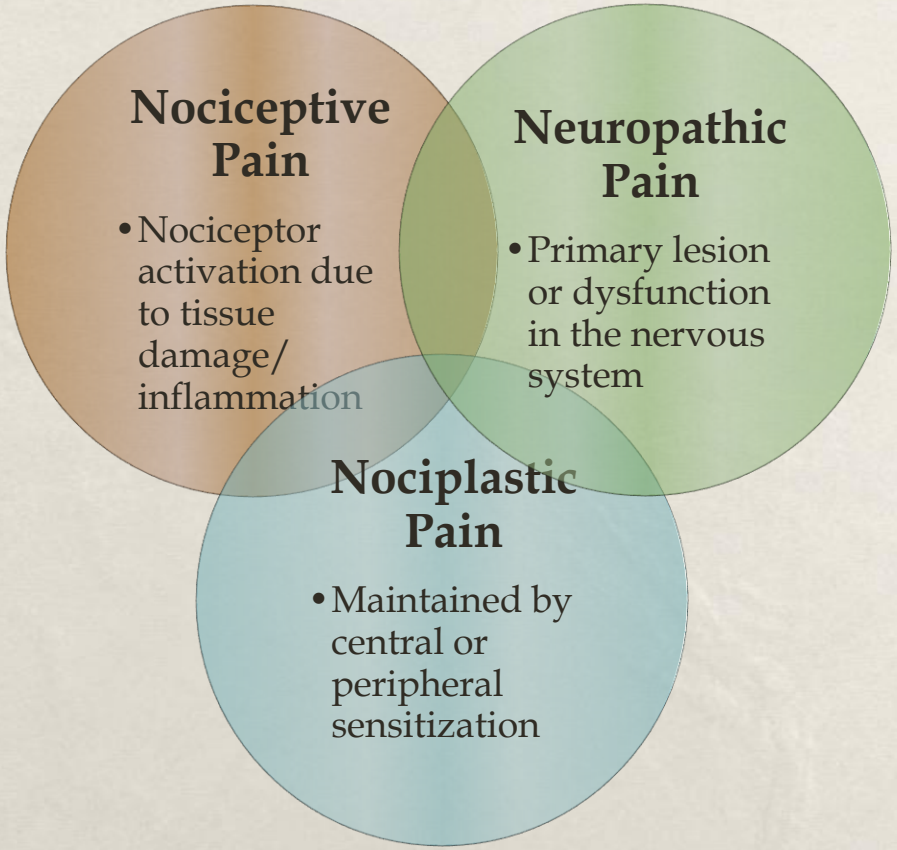
Sources of Low Back Pain

- Multiple structures in the low back
  - Vertebral body
  - Nerve roots
  - Thoracolumbar fascia/ligaments
  - Joints
    - Facet and sacroiliac joint
  - Discs
  - Muscle



CLBP Types

- Nociceptive:
  - Vertebral compression fx
  - Ankylosing spondylitis
  - Facet arthropathy
- Nociplastic:
  - Fibromyalgia
  - Non-specific chronic low back pain



- Neuropathic:
  - Radiculopathy
  - Spinal stenosis with claudication
  - Spinal cord injury
  - MS
- Mixed:
  - Post-op pain
  - Failed Back Surgery Pain
  - DDD
  - Chronic low back pain with known pathology

Treatment Options

Pharmacotherapy

- NSAIDS; SNRIs; anticonvulsants

Physical Therapies

- PT; exercise; OMM

Interventional Treatments

- ESIs; facet nerve RFA; other

Psychosocial Therapies

- Psychotherapy; meditation

Surgery

- Laminectomy; microdiscectomy; fusion

Evidence/Effect Size

Pain Rep. 2022 Sep 30;7(5):e1019. doi: 10.1097/PR9.0000000000001019

Evidence-based interventions to treat chronic low back pain: treatment selection for a personalized medicine approach

Type	Intervention	Evidence	Effect Size	>/= Mod/Mod
Psychological/ Behavioral	Acceptance & Commitment (ACT)	High	Small	
	Mindfulness	Low-Mod	Small-Mod	
	CBT	Mod	Mod	
Manual/ Movement	Spinal Manipulation	Low-Mod	Small function & pain	
	Walking/Gen Exercise Program	Mod	Mod	
	PT led, condition dependent exercise	Mod	Large	
Complementary	Acupuncture	Low-Mod	Small-Mod	
	Acupressure	Low	Mod	

Mauck MC, et al. Evidence-based interventions to treat chronic low back pain: treatment selection for a personalized medicine approach. Pain Rep. 2022

Evidence/Effect Size

Type	Intervention	Evidence	Effect Size	>/= Mod/Mod
Interventional	Epidural CSI	Mod	Mod	
	Lumbar RFA	Mod	Mod	
	Basivertebral Nerve Ablation	Mod	Mod	
Medications	SNRIs	High	Mod	
	NSAIDS	Low-Mod	Mod	
	Muscle Relaxants	Low	None	
	SSRIs/TCA	Mod	None	
	Anticonvulsants	Low	Small-Mod	

Mauck MC, et al. Evidence-based interventions to treat chronic low back pain: treatment selection for a personalized medicine approach. Pain Rep. 2022

Mechanism of Exercise

* Strengthens back muscles and increase flexibility
* Increase blood supply to the spine muscles and joints and intervertebral discs thus minimizing injury and improving repair
* Improve mood and alter the perception of pain
* No clear evidence for “core strengthening” and variable evidence for specific types of exercise

Chronic LBP Systematic Review

-2017 Ann Intern Med

Table 3. Pharmacologic Therapies Versus Placebo for Chronic Low Back Pain

Drug	Pain		
	Magnitude of Effect	Evidence	SOE
Acetaminophen	No evidence	-	-
NSAIDs	Small to moderate	1 SR (4 RCTs), 2 RCTs	Moderate
Opioids (strong opioids)	Small	1 SR (6 RCTs), 4 RCTs	Moderate
Opioids (buprenorphine patch or sublingual)	Small	3 RCTs	Low
Tramadol	Moderate	1 SR (5 RCTs), 2 RCTs	Moderate
Skeletal muscle relaxants	Unable to estimate	3 RCTs	Insufficient
Benzodiazepines: tetrazepam	Failure to improve at 10–14 d: relative risk, 0.71 (95% CI, 0.54–0.93)	1 SR (2 RCTs)	Low
Tricyclic antidepressants	No effect	1 SR (4 RCTs)	Moderate
Antidepressants: selective serotonin reuptake inhibitors	No effect	1 SR (3 RCTs)	Moderate
Antidepressants: duloxetine	Small	3 RCTs	Moderate
Gabapentin/pregabalin	Unable to estimate	2 RCTs	Insufficient

Roger Chou, Richard Deyo, Janna Friedly, et al. Systemic Pharmacologic Therapies for Low Back Pain: A Systematic Review for an American College of Physicians Clinical Practice Guideline. Ann Intern Med.2017;166:480-492.

Guidelines for CLBP

Table 5 Evidence table—chronic low back pain recommendations by guideline

	ACP [67]	DHA [72]	GSCI [61]	ICSI [69]	KCE [70]	NASS [27]	NICE [71]	TOP [73]	VA/DoD [68]
Acetaminophen									
Antibiotics									
Anticonvulsants									
Antidepressants									
Benzodiazepines									
NSAIDs									
Opioids									
Oral Steroids									
Skeletal Muscle Relaxants									
Atypical Opioids (Tramadol)									

Green = Recommended for, Yellow = inconclusive, Red= Recommended against, Gray = not reviwed

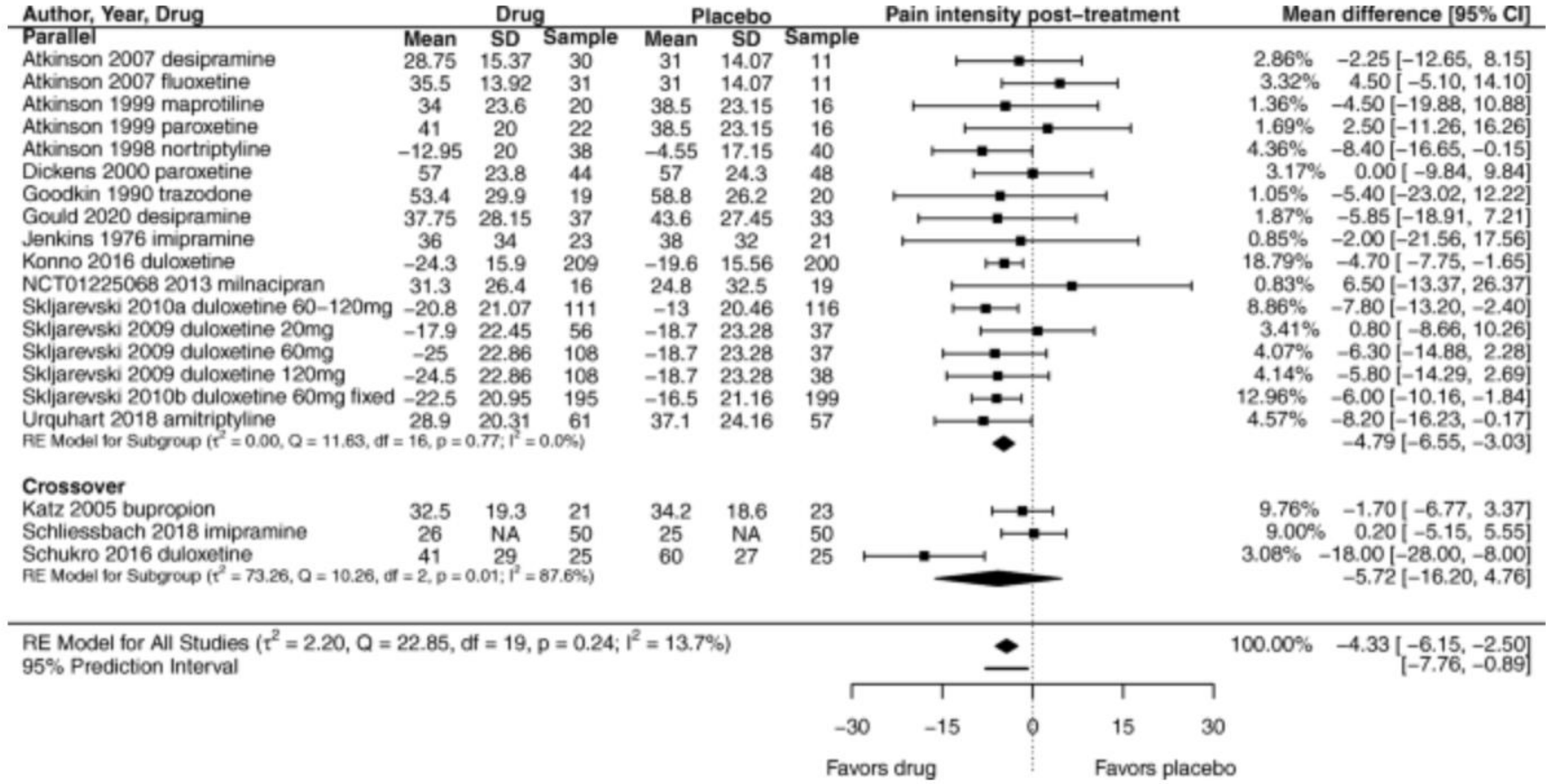
ACP, American College of Physicians; DHA, Danish Health Authority; GSCI, Global Spine Care Initiative; ICSI, Institute of Clinical Systems Improvement; KCE, Belgian Health Care Knowledge Centre; NASS, North American Spine Society; NGC, National Guideline Centre; NICE, National Institute for Health and Care Excellence; NSAIDs, Non-steroidal anti-inflammatory drugs; TOP, Toward Optimized Practice; VA/DoD, Veterans Affairs/Department of Defense

Price, M.R., Cupler, Z., Hawk, C. *et al.* Systematic review of guideline-recommended medications prescribed for treatment of low back pain. *Chiropr Man Therap* **30,** 26 (2022)

Antidepressants for Back Pain

- Pain reduction 4.33 pts on 100 pt scale
- Duloxetine & Nortriptyline Best Evidence

Fig. 2



Effect of antidepressants compared to placebo on pain intensity (0–100 scale) for patients with LBP. Negative values for mean outcomes indicate change from baseline. Negative values for mean difference indicate effect favors drug compared to placebo. NA= group SD data not available; between-group summary statistics used in meta-analysis

Ferraro MC *et al.* Efficacy, acceptability, and safety of antidepressants for low back pain: a systematic review and meta-analysis. *Syst Rev* **10,** 62 (2021)

Interventional Pain Therapies

* Interventional
  - Epidural Steroid Injections
  - Radiofrequency Ablation
  - Minimally Invasive Lumbar Decompression
  - Basivertebral Nerve Ablation
  - Sacroiliac Joint Injections

* Implants
  - Spinal Cord Stimulator

Back Pain: Axial vs Radicular

Radicular Pain

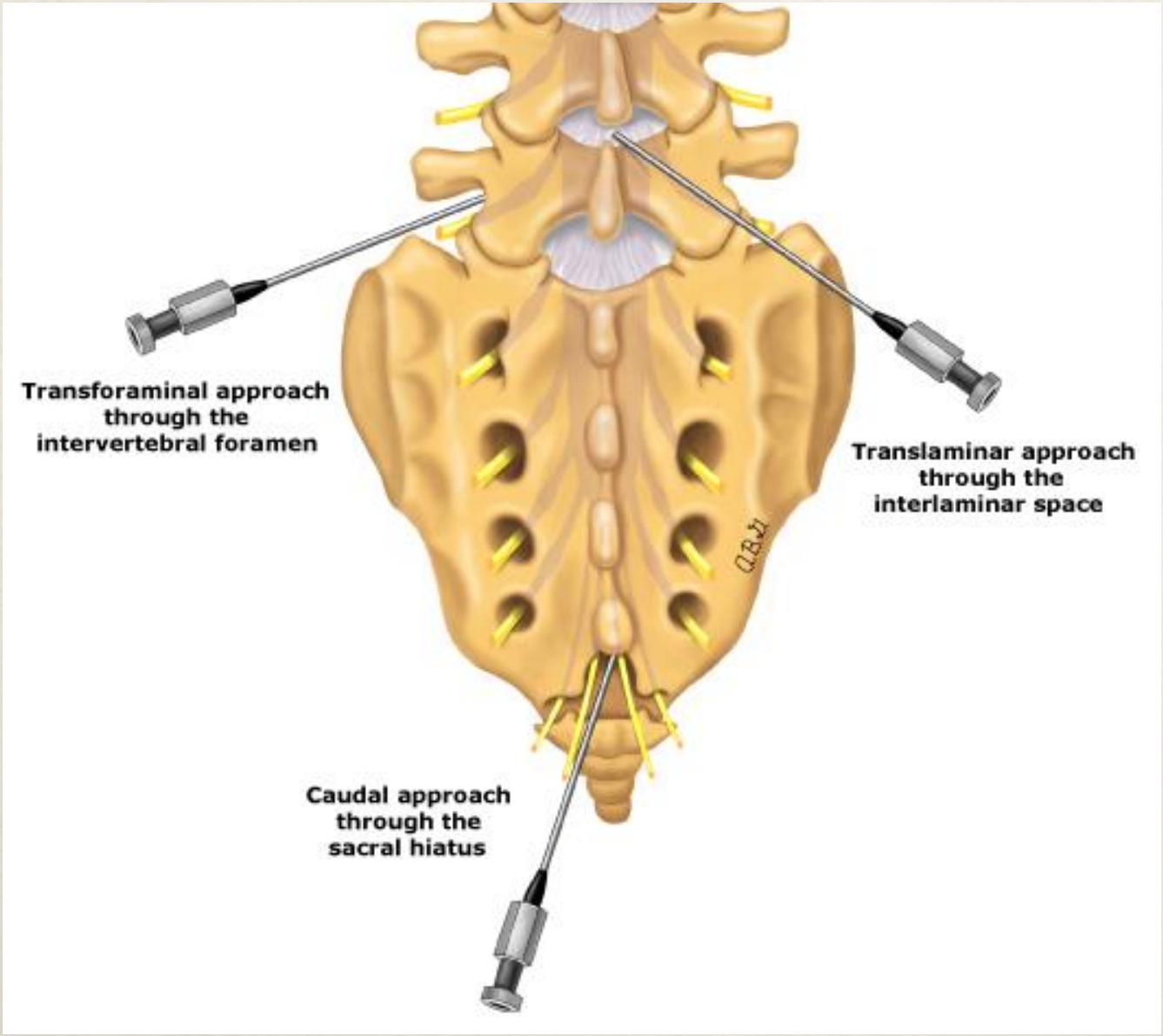
- Radiculopathy: nerve root impingement
- Lumbar spinal stenosis: neurogenic claudication
- Mimics of radiculopathy: piriformis syndrome, SI joint dysfunction, peripheral neuropathy

Spinal Pain

- Facet joint arthropathy
- Degenerative Disc Disease/Discogenic/Vertebrogenic pain
- Muscle Spasm/myofascial pain
- Vertebral compression fracture
- Sacroiliac joint dysfunction
- Lumbar spinal stenosis

Epidural Steroid Injections

* Targeted injection of steroids
* Radicular Pain
* Lumbar Spinal Stenosis
* Variable duration of relief



Epidural Steroid Injections: Risks & Benefits

Risks

- Rare:
  - Epidural Hematoma
  - Epidural Abscess
  - Nerve damage
- Uncommon
  - Headache
  - Steroid Risks with excessive/frequent dosing
- Common
  - Insomnia
  - Elevated blood sugar

Benefits

- Short-term pain relief
- Better relief when combined with PT/HEP
- Avoid surgery

Spinal Facet Joint Arthritis

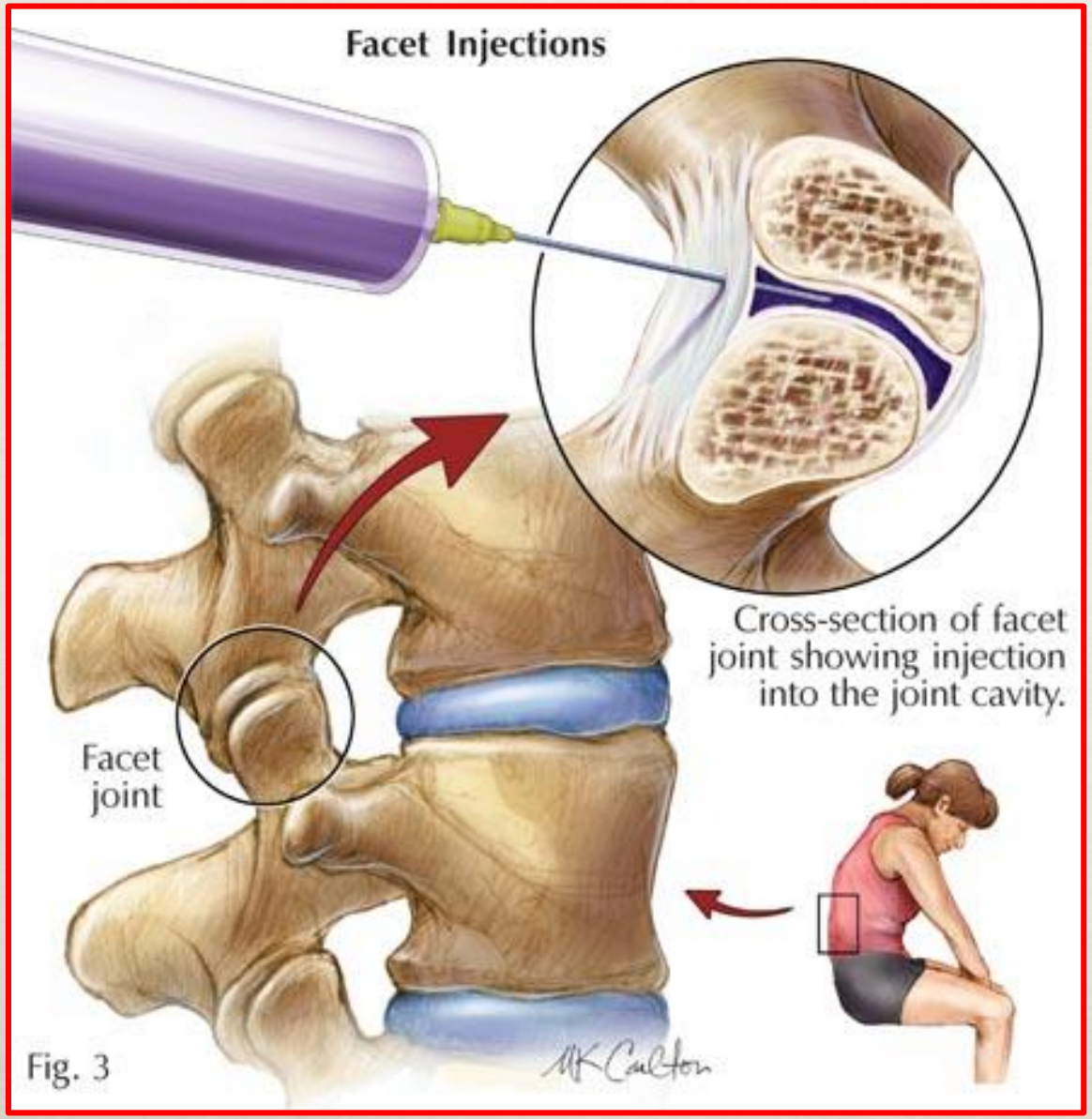
Facets as Source of Chronic Spine Pain

- 15-45% low back
- 48% thoracic
- 54-67% neck

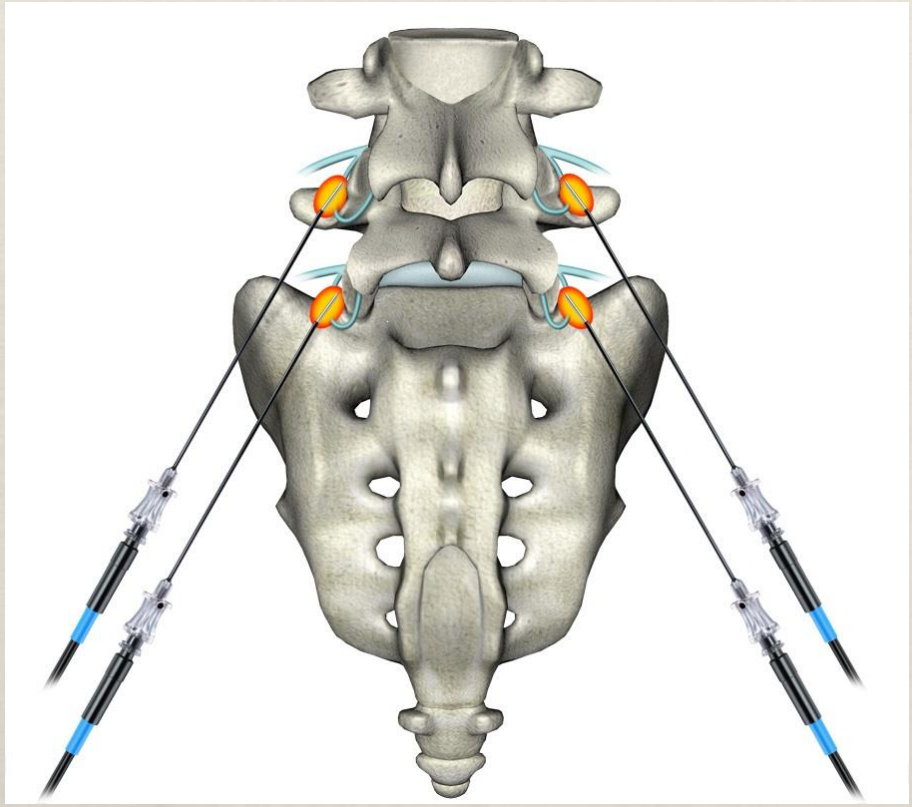
Diagnostic Nerve Blocks/ Radiofrequency Ablation

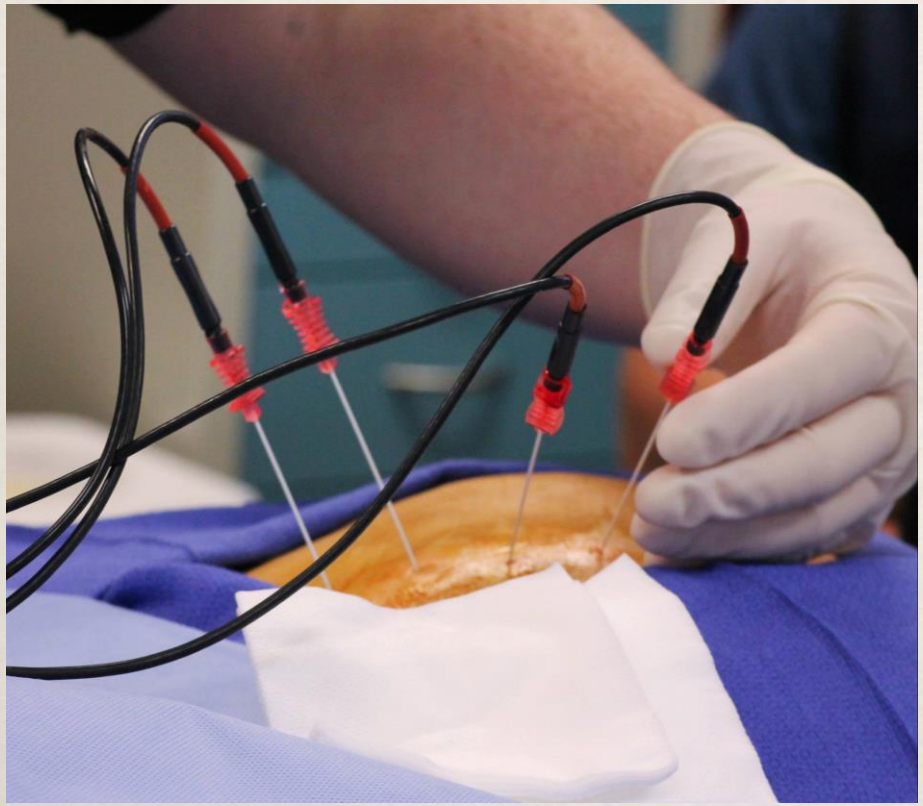
Facet Joint Intervention

* Interventional Options
  * Steroid Injection
    * Uncommon, short-term relief
  * Medial branch nerve block
    * Diagnostic prior to RFA
  * Radiofrequency nerve ablation (RFA)
    * Duration 6-12 months

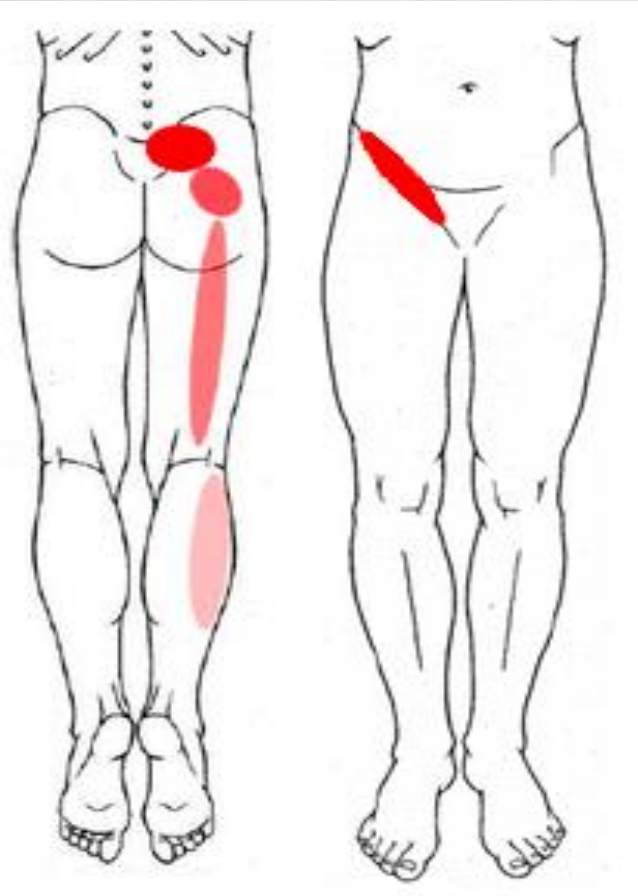


Facet Joint Radiofrequency Ablation





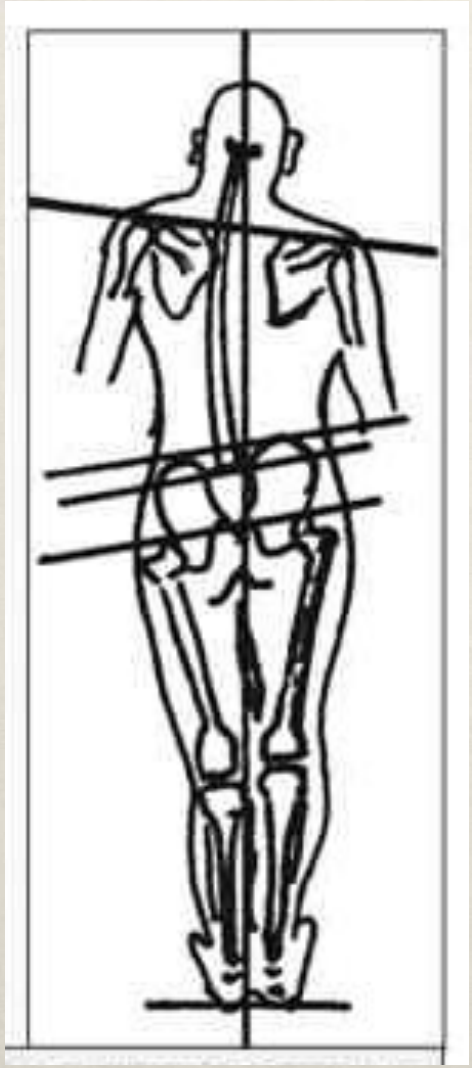
Sacroiliac Joint: Presentation



* Unilateral/bilateral, low back/buttock/hip pain, worst spot near the posterior superior iliac spine (PSIS)
* May radiate to low lumbar, hip, groin, posterior thigh
* Worse with prolonged sitting, standing or walking
* “Mostly below the belt line”

Causes & Treatments

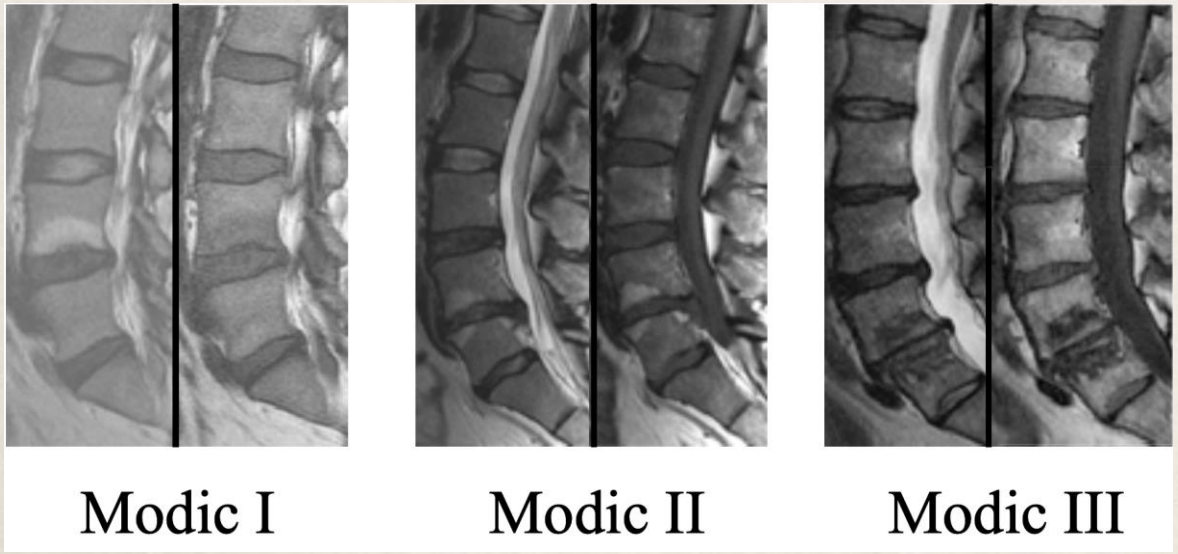
* Leg length discrepancy
* Scoliosis
* History of spine surgery/fusion
* Altered gait (s/p hip/knee injury/surgery)
* Pregnancy
* Inflammation: ankylosing spondylitis
* Degenerative disease: osteoarthritis of the joint



* Intraarticular steroid injections
* Nerve ablation
* Joint fusion

Basivertebral Nerve Ablation

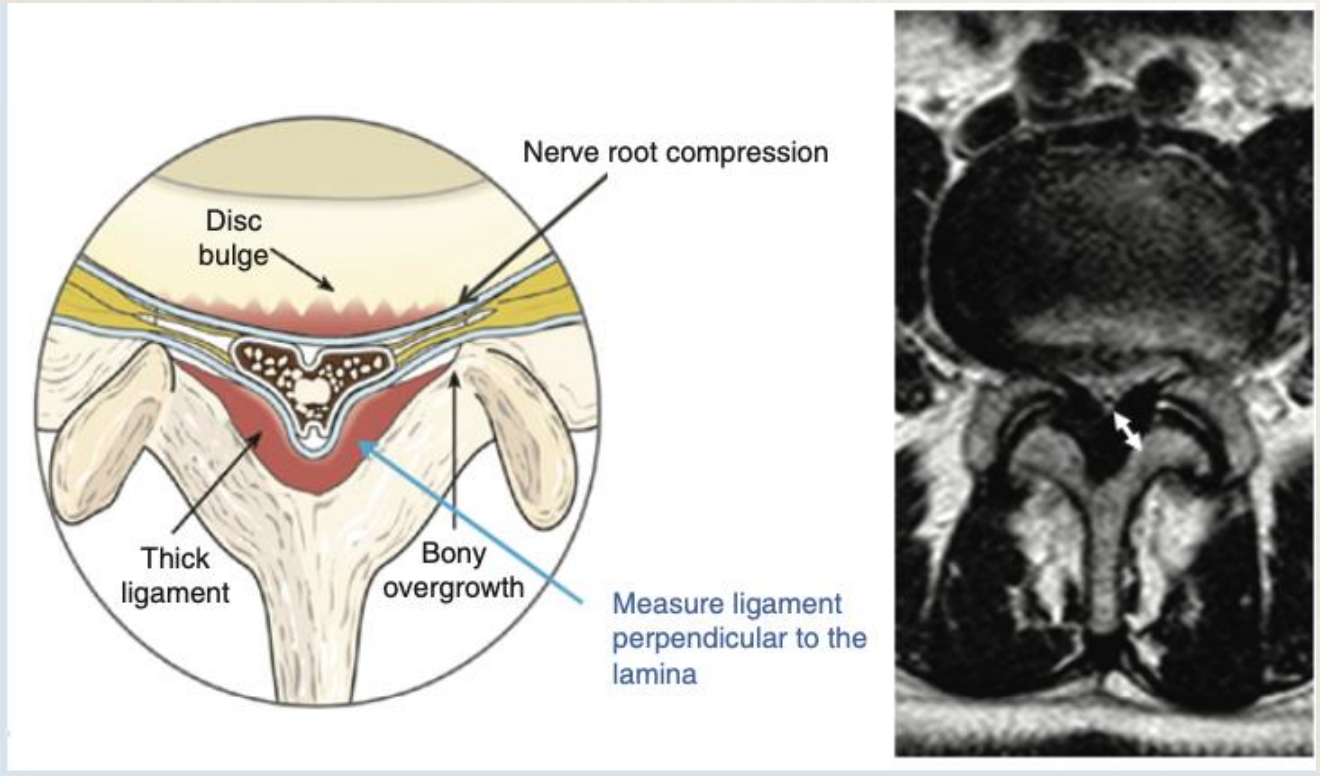
* Percutaneous intravertebral body radiofrequency ablation
  * Treatment resistant axial lower back pain with evidence of vertebral body end plate degeneration (Modic changes)
    * The basivertebral nerve is inside the vertebral body
    * Treatment for “vertebrogenic pain”



Jain S, Deer T, Sayed D, Chopra P, Wahezi S, Jassal N, Weisbein J, Jameson J, Malinowski M, Golovac S. Minimally invasive lumbar decompression: a review of indications, techniques, efficacy and safety. Pain Manag. 2020 Sep;10(5):331-348.

Minimally Invasive Lumbar Decompression (M ILD)

- For neurogenic claudication and mild-mod spinal stenosis from ligamentous hypertrophy
  - Pros:
    - Moderate - no sedation
    - Outpatient procedure
  - Cons:
    - Perhaps less efficacious than laminectomy
    - Not for severe stenosis or >2 levels
  - Evidence:
    - 1 RCT demonstrated improvement in pain and mobility in MILD pts vs. ESI; clinical improvement out to 2 years



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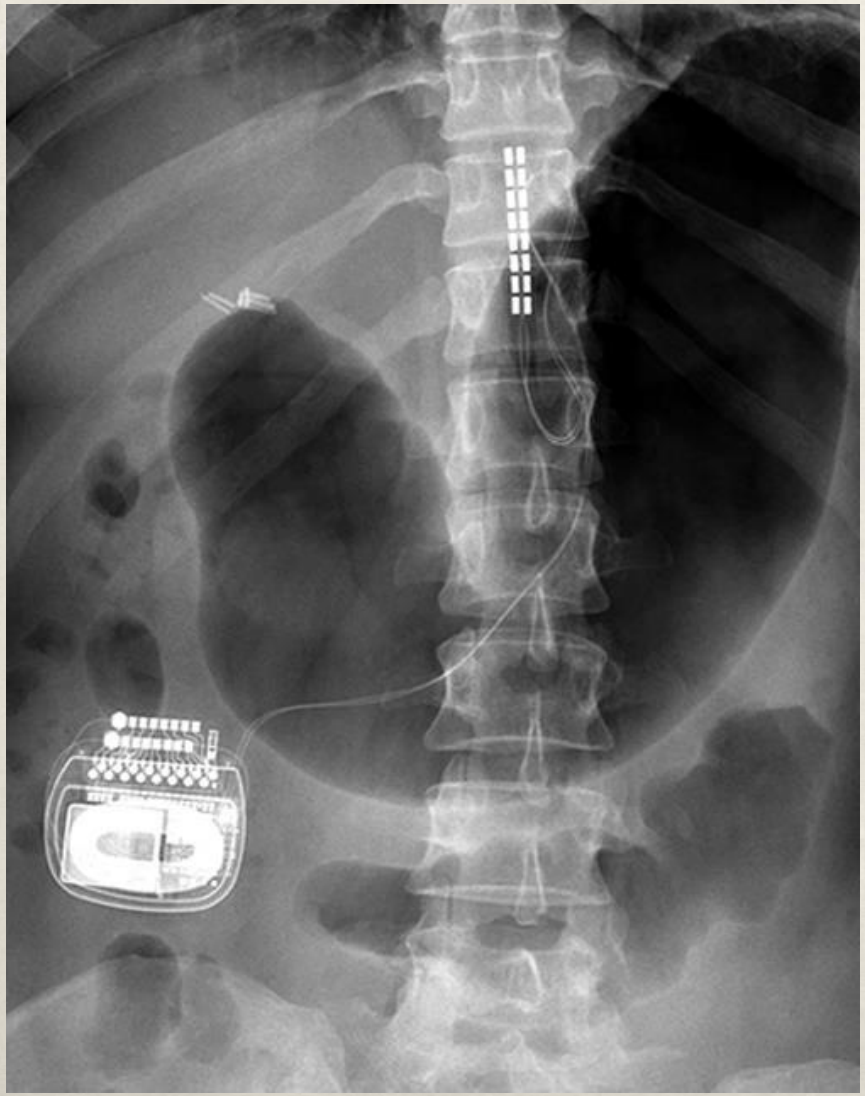
Spinal Cord Stimulation

What is it?

* Neuromodulation of spinal cord
* Modulates dorsal column transmission of pain signaling
* Mostly MRI conditional (varies by model/company)



Who?

* Failed spine surgery: back and/or leg pain?
* Appropriate Patient
  * Reasonable Expectations
  * Not on high dose opioids
  * No major psychopathology
  * Clear pain etiology

Thank You

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