PainWeek®

Who Should Own Back Pain? A Physical Therapist and an Interventional Pain Physician Debate

Johnathan Goree, MD

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Disclosures

- Johnathan Goree
  - Consultant: Abbott Neuromodulation
  - Consultant: Stratus Medical
  - Research Support: SPR Therapeutics

- Leah Tobey
  - No Conflicts to Report

Learning Objectives

- Review the approach, technique, and evidence behind physical therapy for the treatment of lumbar spine pain including mobilization, manipulation, dry needling, neuromuscular re-education, and medical and therapeutic exercise
- Discuss the interventionalists approach to low back pain and the evidence behind novel treatments including ablative, restorative, and neuromodulative treatments for axial lumbar pathologies
- Determine if referral to a physical therapist or interventionalists most appropriate for specific lumbar spine pathologies and if collaboration leads to the best outcomes

Case

- Clarence
  - 55 y/o Male

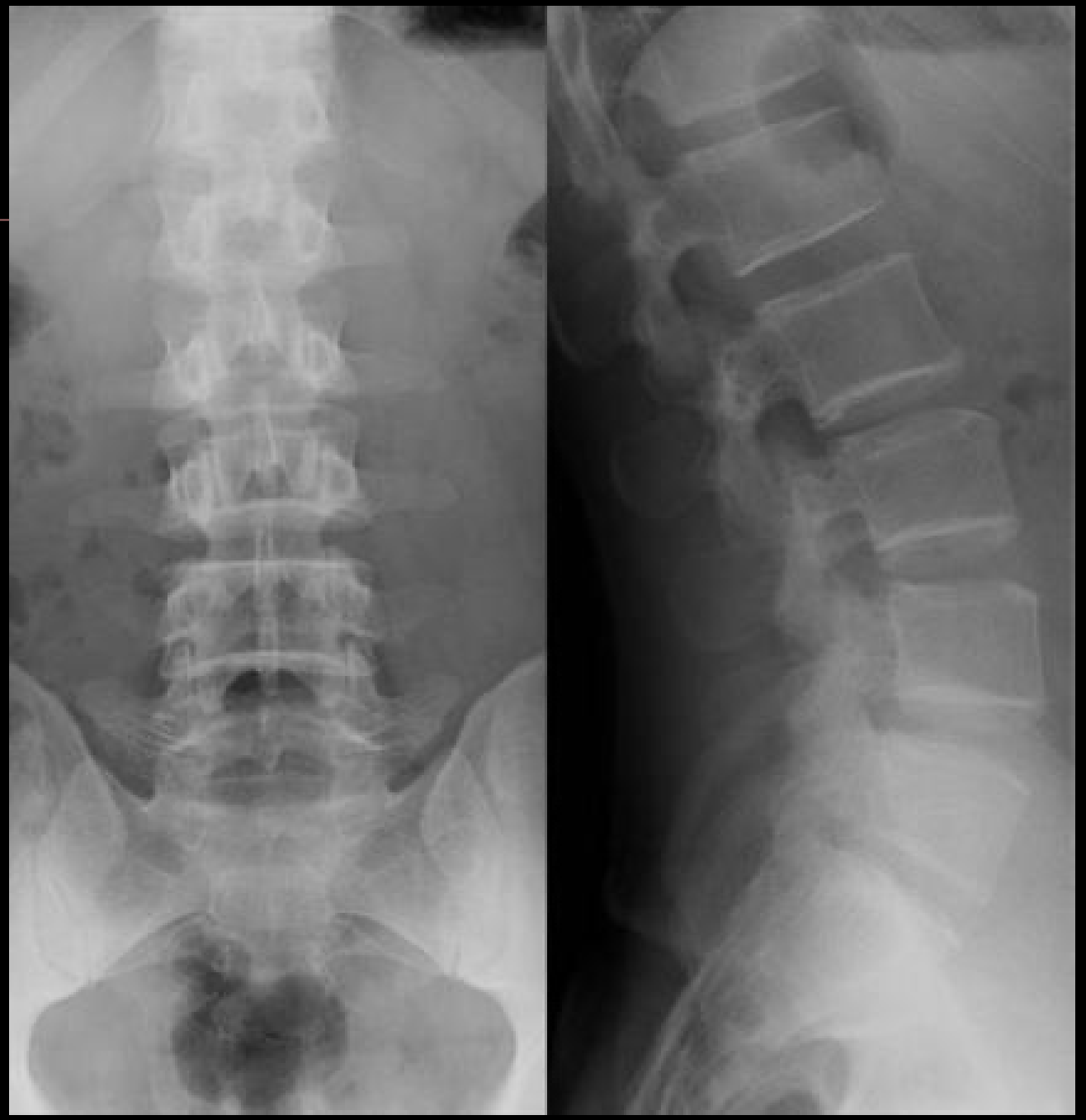
Case

- Clarence – 55 y/o male.

- 3 year history of lumbar back pain.
- Construction Worker.
- Progressed, severe for past 6 weeks.
- Limits activities. Co-workers help modulate activities.
- Has taken Tylenol, Aleve, Aspirin, OTC creams, Flexeril (borrowed), Hydrocodone (borrowed)
- Severe pain with lifting. Afraid that he will lose his job.

X-Ray

- Clarence 55 y/o male
  - Spondylosis/osteophytes
    L4-5, L5-S1



Question

What do we do now?

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Questions?

- Who? (Who should we refer this person to?)
- When? (When should we make this referral?)
- What? (What are the goals that this practitioner will try to accomplish)
- How? (How do they plan on doing this?)
- Why? (Why one over the other)

Debate

Physical Therapy

- Leah Tobey PT, DPT, MBA
  - GWEP Clinical Coordinator Arkansas Geriatric Education Collaborative
  - Instructor – College of Medicine, Psychiatric Research Institute, Center for Health Services Research
  - University of Arkansas for Medical Sciences

Interventional Pain

- Johnathan Goree MD
  - Director of Chronic Pain Division
  - Program Director – Chronic Pain Medicine Fellowship
  - Associate Professor of Anesthesiology
  - 2020 Arkansas Physician of the Year
  - University of Arkansas for Medical Sciences

Food for thought:

Doctor’s rule is the golden rule. Or is it?

TBD

- Start with indictment of physicians for causing the opioid epidemic.
- Further opioid education
  - –Pain medication has been shown to only reduce 20-30% of pain. –VA pharmd (source)

- FINISH--Another intended outcome of adopting the movement system is to transition the profession away from a focus on the use of medical diagnoses towards the development and classification of movement system related diagnoses. Most therapists would agree that a medical diagnosis does not guide physical therapy interventions. The APTA has adopted criteria for the development of movement system diagnoses and will be supporting the scientific validation and promotion of these.[2]

Barriers

- Technique
  - Different strokes for different folks
  - Variability of PT's background & approach to EBP, personal biases, manual therapy techniques
  - Success in PT often includes management of multiple other co-morbid conditions
- Insurance Coverage
  - Copay expense/visit
  - Requirement for MRI/CT
- Duration for long-term improvement
  - 6-8 weeks for therapy
  - Time off work
  - Intolerance

Physical Therapy

- Who? Provider to establish compassionate & caring rapport →Leading to pt learning new motor programs to change their behaviors & movements
- When? Within 2 weeks; especially with HVLA manual therapy
- What? Hands-on exam, including STs to r/o hip and pelvic involvement, early manual therapy & neuro re-ed interventions & early modalities for pain control (DN when appropriate)
- How? Implementation of evidenced-based therapies
- Why? Can reduce 2* comorbidities (disability), atrophic changes, improper mechanics (habits), reduce stress to MSK system but most of all early PT can help improve pain, QOL and retrain behaviors

Facts

- MSK pain: multi-factorial condition
  - Structural
  - Physical
  - Psychological
  - Social
  - Lifestyle
  - Comorbid health factors
- Biopsychosocial vs Standard Model
- Integration Logic Model
  - https://www.scie.org.uk/integrated-care/workforce/role-multidisciplinary-team

Movement is Medicine although…..

PT Is More Than Exercise

EBP Is a Customized & Integrated PT POC

- GOAL-DIRECTED OUTCOMES
- Retraining the brain-motor control: Educate, Promote Wellness
- Movement-based therapy: IPA, McKenzie, Maintland, Paris, BFR
- Manual: soft tissue mobilization, massage, joint mobilization, manipulation
- Instrument-assisted therapy: cupping, foam rolling, dry needling (+stim)
- Modalities: TENS, IFC, NMES, U/S, Cryo/Heat

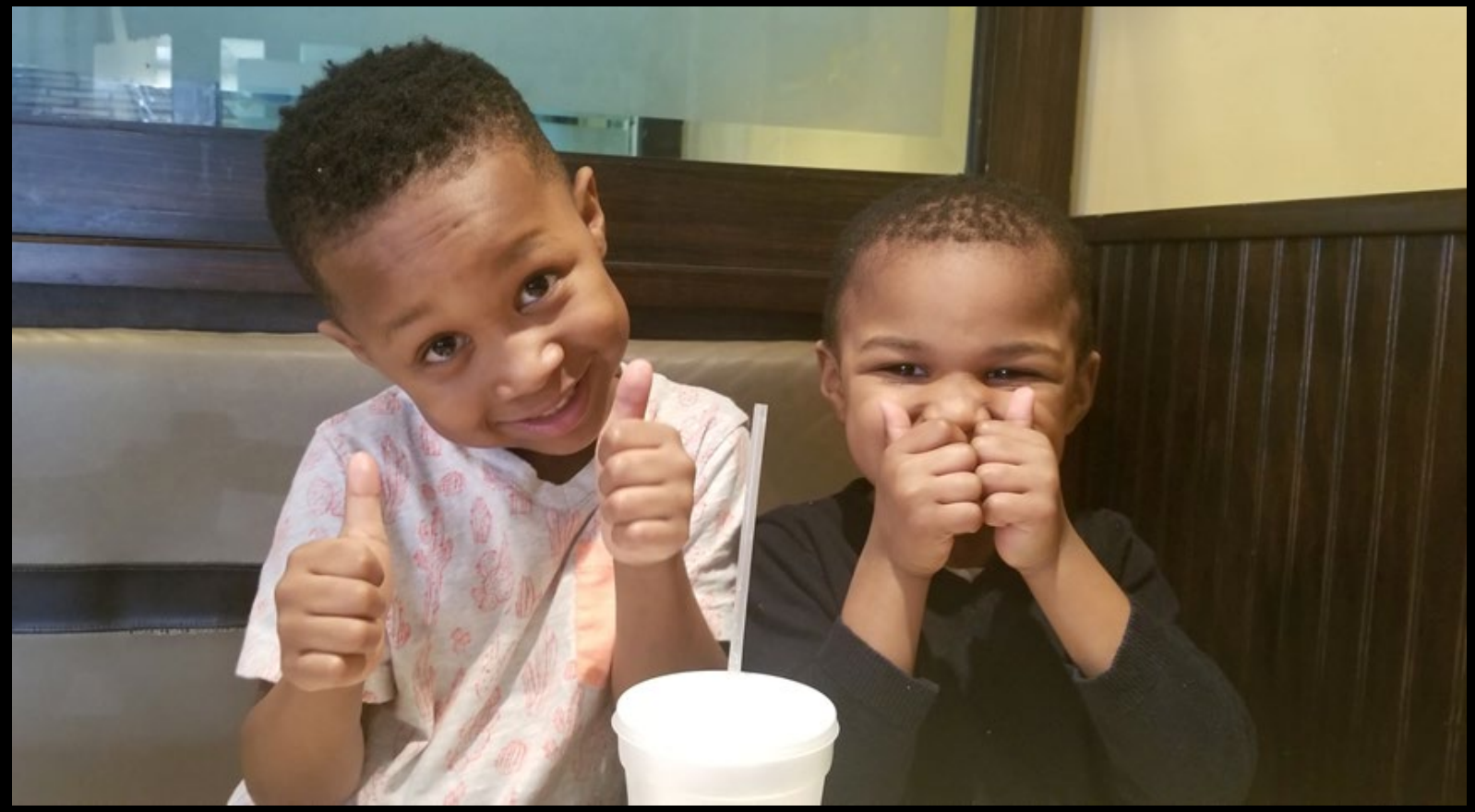
Interventional Pain

- Who? Fellowship Trained Interventional Pain Physician with expertise in radiofrequency ablation, minimally invasive procedures, and neuromodulation.
- When? As soon as possible
- What? Diagnose source of pain generator through examination and imaging then create a holistic treatment plan that includes focal treatment to generator and rehabilitation
- How? Exam, Xray, MRI, procedural intervention, referral to PT
- Why? Diagnosis should come before treatment

How Do We Fix Problems?

How Do We Fix Problems?

- Jeremiah
  - 4 y/o
  - Shortness of Breath
  - H/O Asthma



How Do We Fix Problems?

- Choice A
  - Assume Asthma, give breathing treatments.

- Choice B
  - Work up all causes of breathing issues. Labs, Chest XR, Peak Flow.

How Do We Fix Problems?

- Choice A
  - Assume Asthma, give breathing treatments.

- **Choice B**
  - **Work up all causes of breathing issues. Labs, Chest XR, Peak Flow.**
  - **High WBC, CXR: Infiltrates.**

- **Diagnosis: Pneumonia – treated with Admission and IV Antibiotics.**

Common Causes of Back Pain

- **Myofascial injury (quadratus lumborum, multifidis)** – rest, rehabilitation, strengthening
- **Sacroiliac joint disease** – functional modification, strengthening, SI joint compression device, SI joint injection, SI joint ablation, SI joint fusion
- **Facet disease/lumbar spondylosis** – flexion based therapy program, facet injections, radiofrequency ablation of the medial branches
- **Disc disease/modic changes** – extension based therapy program, epidural steroid injections, basivertebral nerve ablation
- **Lumbar spine stenosis** – flexion based therapy?, epidural steroid injections? minimally invasive spacer, decompression

Acute vs Chronic Pain

Acute vs Chronic Pain

Can J Anesth/J Can Anesth (2014) 61:112–122
DOI 10.1007/s12630-013-0087-4

REVIEW ARTICLE/BRIEF REVIEW

The transition from acute to chronic pain: understanding how different biological systems interact

La transition d'une douleur aiguë vers une douleur chronique – comprendre l'interaction entre différents systèmes biologiques

Katherine A. Mifflin, BSc · Bradley J. Kerr, PhD

Acute vs Chronic Pain

Key points

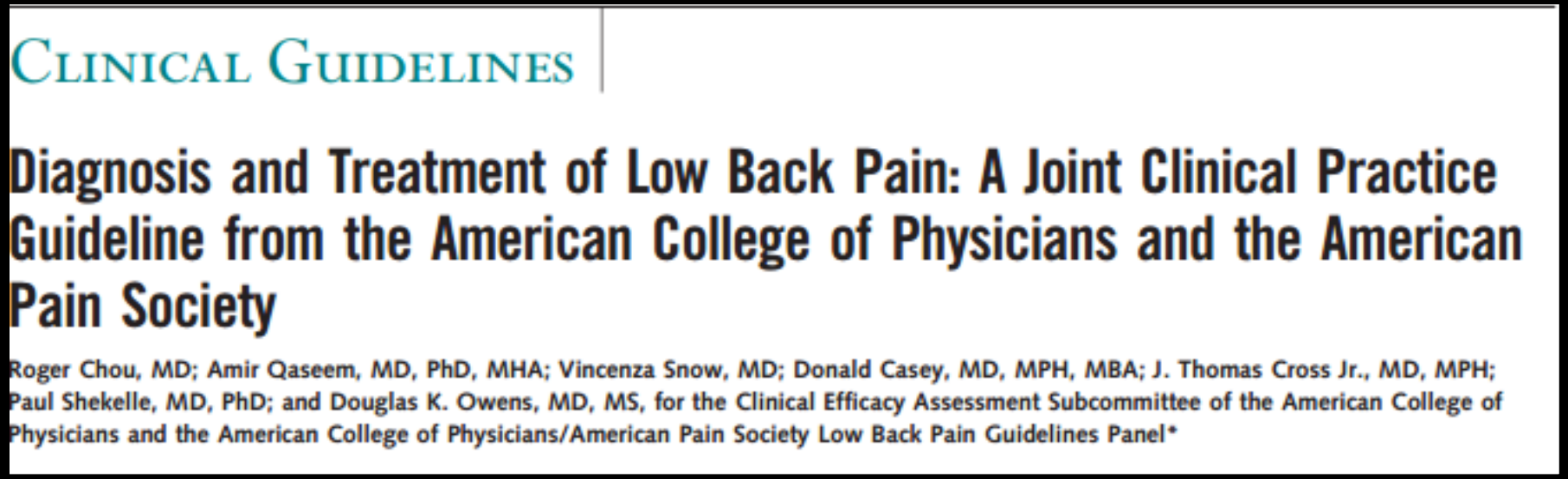
- The transition from acute to chronic pain is complicated and involves more than just neurons.
- Changes in neuronal plasticity result in the development of different types of sensitization, such as peripheral and central sensitization, which lead to chronic pain states.
- Infiltration of immune cells into the dorsal horn of the spinal cord contributes to the development of chronic pain and is mediated by different chemoattractants.
- Glial cells play an important role in the development of pain, and their response is mediated by the release of different chemokines and cytokines.
- Other factors, such as sex differences and bacterial infection, can contribute to chronic pain in unique ways.

TABLE Comparison of the components in peripheral and central sensitization that contribute to the development of chronic pain

Peripheral Sensitization	Central Sensitization
-primary hyperalgesia	-secondary hyperalgesia
-transient	-long-term
-confined to site of injury	-spreads to outside site of injury
-altered thermal sensitivity	-allodynia and hyperalgesia
Neuronal Changes:	***Neuronal Changes:***
-changes occur in peripheral nociceptors	-changes occur in dorsal spinal cord neurons
-release of inflammatory mediators leads to signalling pathway activation and phosphorylation of receptors: results in altered nociceptor thresholds and kinetics	-recruitment and phosphorylation of AMPA and NMDA receptors lead to classic central sensitization development
	-Late-onset central sensitization requires transcriptional changes mediated by increases in pERK and activation of the MAPK pathway. This can result in phenotypic switches, such as in Aβ neurons
Immune Involvement:	***Glial Involvement:***
-neutrophil granulocytes are initially attracted to the injury site	-microglial and astrocyte recruitment and activation in the spinal cord via TLRs
-recruitment and activation of macrophages via chemokines	-decrease in KCC2 in dorsal lamina I neurons after BDNF release from activated microglia. Leads to a depolarizing shift and loss of inhibition
-Schwann cell proliferation	
-infiltration of macrophages into the DRG	

AMPA = α-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid; BDNF = Brain-derived neurotrophic factor; DRG = dorsal root ganglia; KCC2 = Potassium-chloride exchanger 2; MAPK = Mitogen-activated protein kinase; NMDA = N-methyl-D-aspartate; pERK = phosphorylated extracellular signal-regulated kinase; TLRs = Toll-like receptors

Joint Guidelines for Back Pain



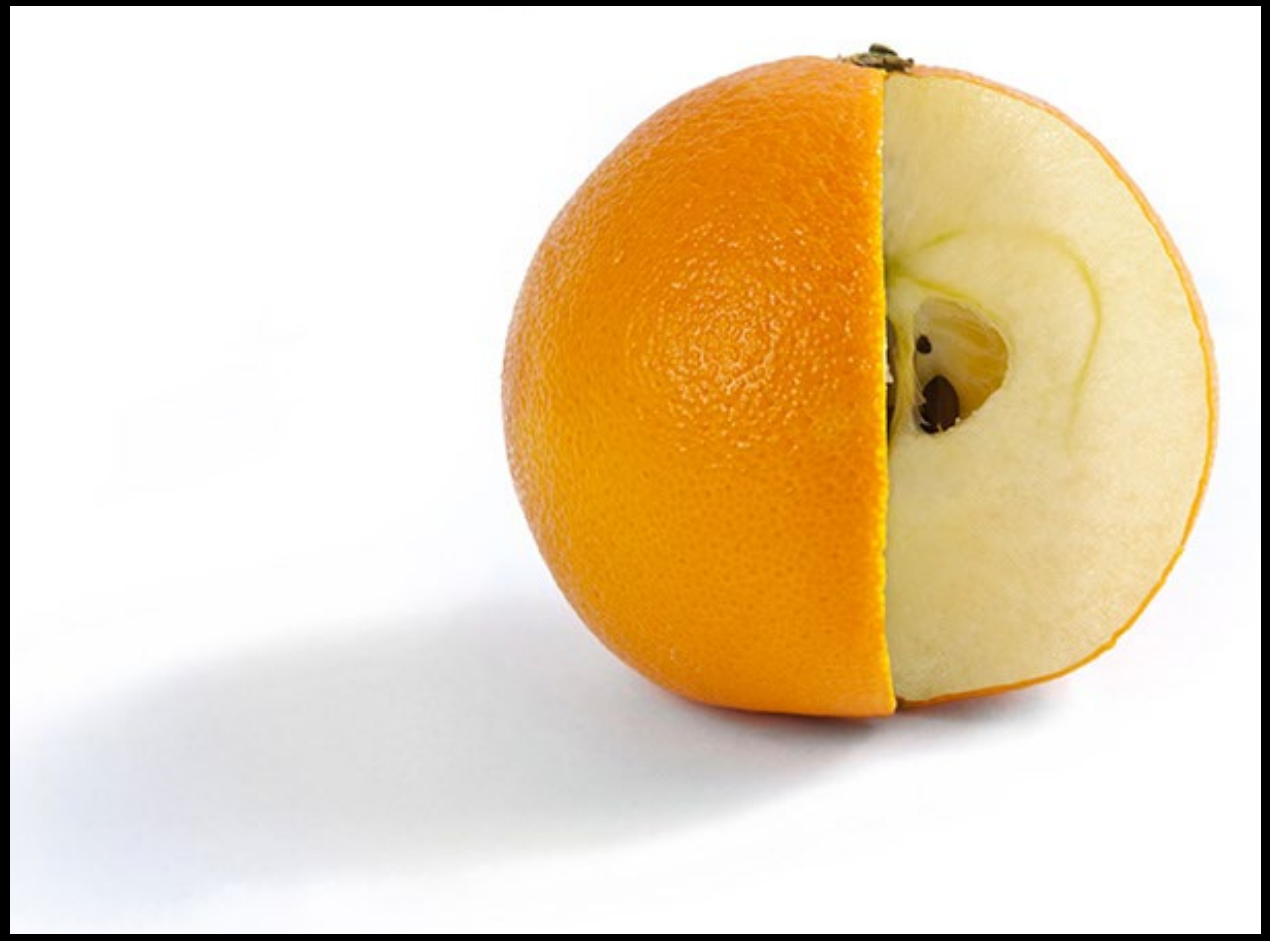
CLINICAL GUIDELINES

Diagnosis and Treatment of Low Back Pain: A Joint Clinical Practice Guideline from the American College of Physicians and the American Pain Society

Roger Chou, MD; Amir Qaseem, MD, PhD, MHA; Vincenza Snow, MD; Donald Casey, MD, MPH, MBA; J. Thomas Cross Jr., MD, MPH; Paul Shekelle, MD, PhD; and Douglas K. Owens, MD, MS, for the Clinical Efficacy Assessment Subcommittee of the American College of Physicians and the American College of Physicians/American Pain Society Low Back Pain Guidelines Panel*

- Back Pain Should Improve in 1-8 weeks
- Only Image if Severe or Progressive Neurological Deficits
- Consider medications with proven benefit in conjunction with back care information and self care
- Consider assisted non-pharmacologic therapy when self care options don't work

How Long Does it Take?



How Long Does it Take?

- 8 weeks - waiting period
- 8 weeks - home PT
- 8 weeks - assisted PT or chiropractic therapy
- 24 weeks
  - Is this enough time for the apple to turn into an orange

Counter Point 1

Proper Diagnosis Is KEY to Expedited Treatment

Treatment Choice

Counter Point 2

We Should Always Ensure the Right Treatment for the Right Patient

What Causes PT to Fail?

Table 4

Predictors of failure to maintain treatment gains (N = 185).

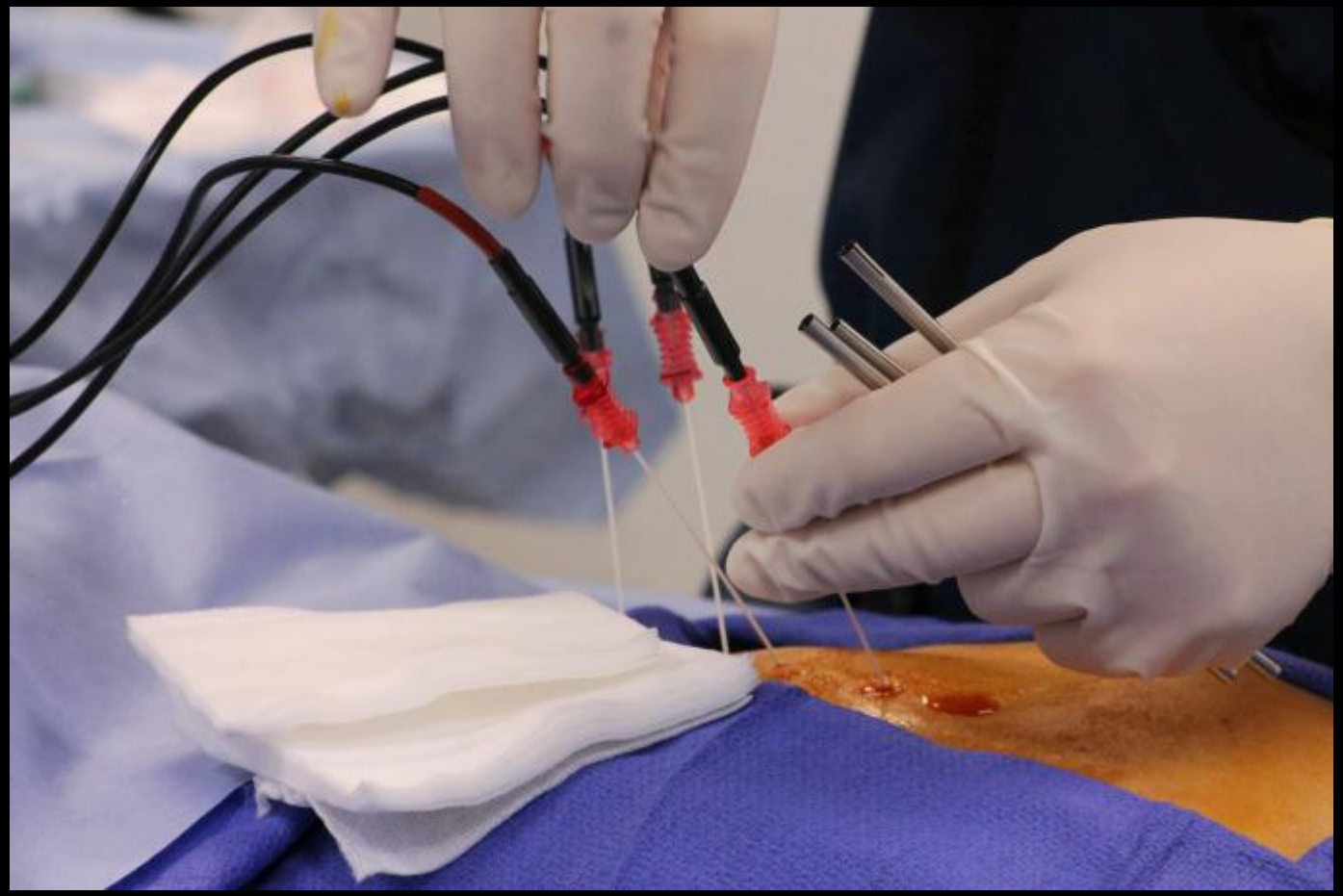
Step	Variables added at each step	Statistical summary						
		$\Delta\chi^2$	Δdf	R^2	−2LL	OR	95% CI	*P*
1	Initial pain	25.3	2	0.17	221.8			0.001
	Pretreatment pain severity (0–10)					1.4	1.2–1.9	0.01
	Number of pain sites					1.5	0.92–2.50	0.10
2	Pretreatment questionnaire scores	7.9	2	0.22	212.4			0.15
	PCS					0.95	0.90–1.0	0.08
	TSK					1.0	0.93–1.0	0.79
3	Posttreatment questionnaire scores	43.2	2	0.46	169.1			0.001
	PCS					1.14	1.0–1.2	0.001
	TSK					1.08	1.0–1.2	0.05

ORs and 95% CIs are adjusted for other variables. −2LL = −2 times the log likelihood. $\Delta\chi^2$ and Δdf are the change in χ^2 and associated degrees of freedom resulting from the addition of predictor variables, and *P* is the statistical significance of the change of the OR for a variable. R^2 is the Nagelkerke (56) R^2. ORs, 95% CIs, and *P* values are from the final regression equation.
OR, odds ratio; CI, confidence interval.

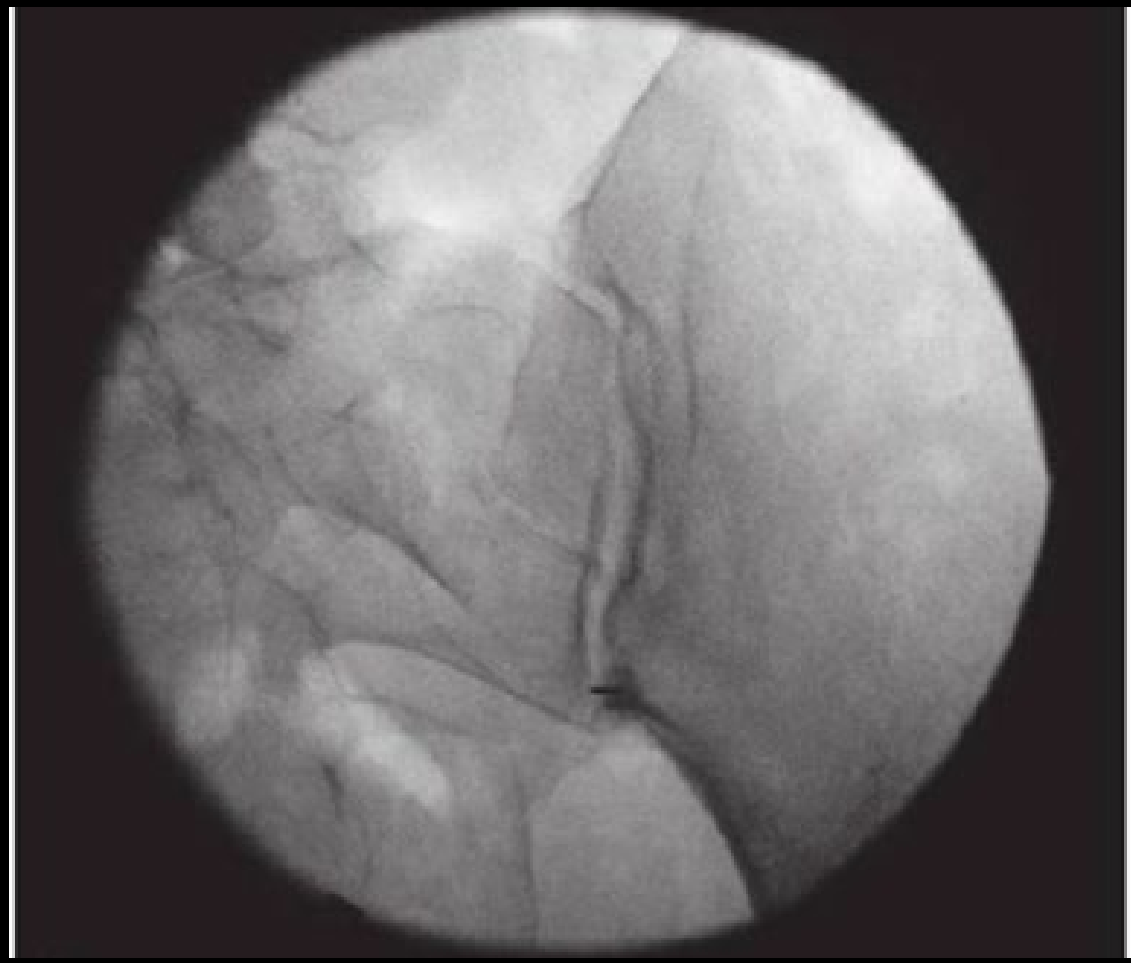
Counter Point 2

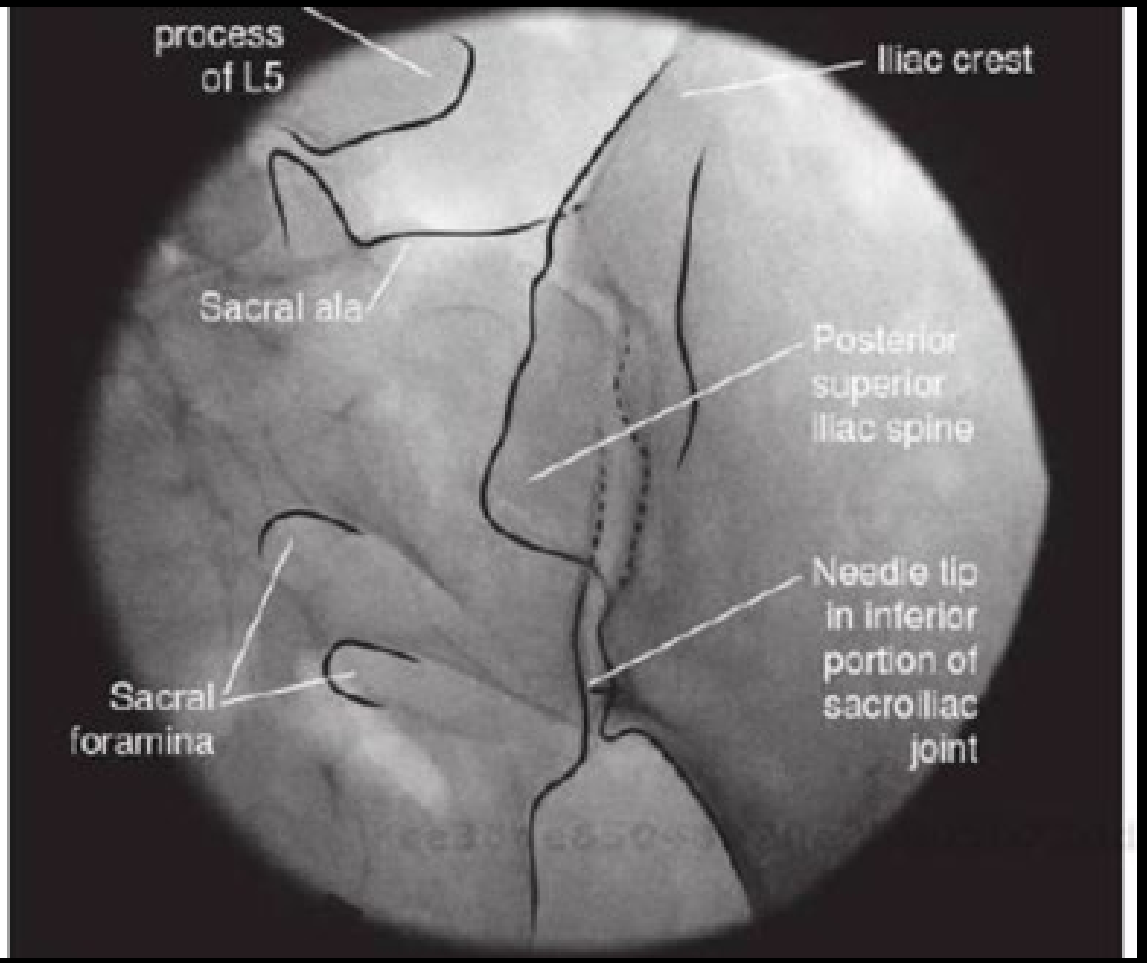
Treating Pain FIRST Can Improve Rehabilitation Outcomes

Lumbar Spondylosis

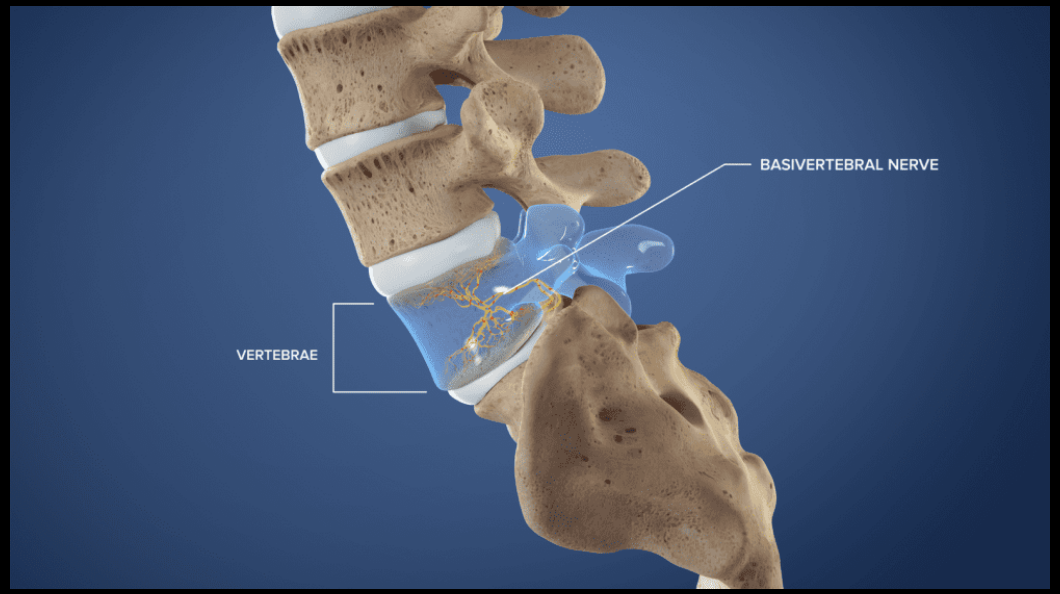


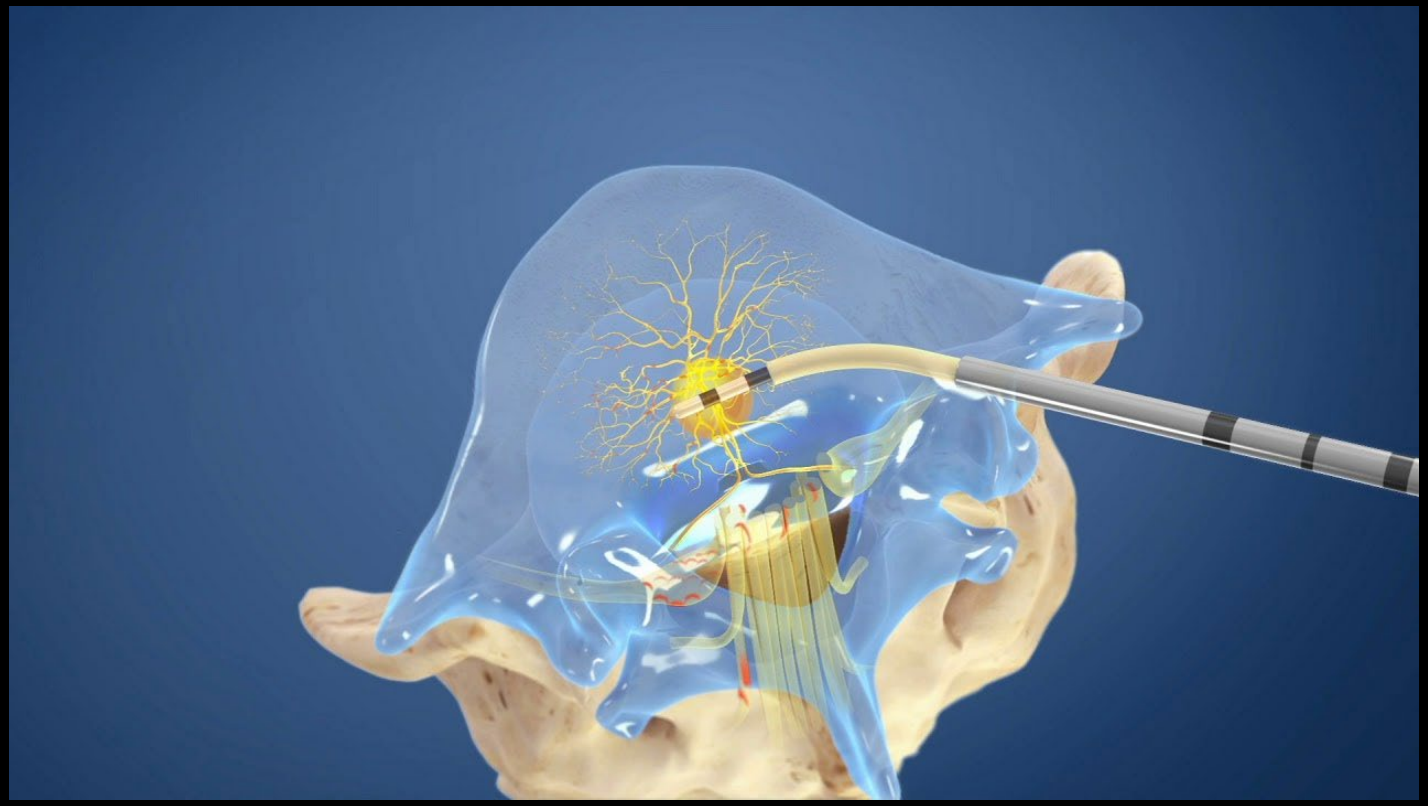
Sacroiliac Joint Pain





Discogenic Nerve Pain





Epidural Steroid Injections

- Provide Short to Medium Term Relief

Who Won?

Winning Point

Collaboration Is Key.
Holistic Pain Plans Are MOST Effective.

Case

- Clarence
  - 55 y/o Male

Why can’t we BOTH see him and maximize the efficiency and effectiveness of his care?

Interventional Pain Specialist

- Evaluate to decide which lumbar spine pathology which is MOST likely to be pain generator
- Evaluation of level of pain to determine if interventional treatment will improve pain outcome
- Consider advanced imaging based on evaluation

Physical Therapist Plan

- Exam:
  - Worse with extension, improvement with flexion, pain to palpation of facets and paraspinal tissues
- Diagnosis:
  - Lumbar spondylosis with myofascial pain syndrome
- Treatment:
  - Begin formal flexion based program. Begin work up for facet procedure/radiofrequency ablation. If no improvement, proceed with RFA. After RFA, continue PT to ensure proper muscle rehabilitation and return to function

Thank You!

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Questions?