



Evidence-Based Spine Care in Workers' Compensation

Avoiding Delays, Missteps, and
Unnecessary Treatment

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Why Do Spine Claims Become So Difficult?

- MRI findings
- Conflicting opinions
- Surgery
- Delayed recovery
- Chronic pain
- Attorneys
- Return-to-work issues

It's rarely the injury itself.

- Delayed decisions
- Evaluation missteps
- Treatment that doesn't match the condition

Learning Objectives

- Recognize common causes of delayed recovery after work-related spine injuries.
- Apply an evidence-based framework to evaluation and treatment.
- Distinguish injuries requiring urgent intervention from those best managed conservatively.
- Identify opportunities to reduce unnecessary treatment while improving outcomes.

The Problem



Workers' compensation becomes difficult when each participant sees only one piece of the patient.



What Defines Good Spine Care?

- Not the number of MRIs ordered
- Not the number of injections performed
- Not the number of operations performed

Correct diagnosis
Appropriate treatment
Safe return to function

What Do Injured Workers Actually Want?

- Relief
- A path back to normal activity
- A safe return to work
- Answers

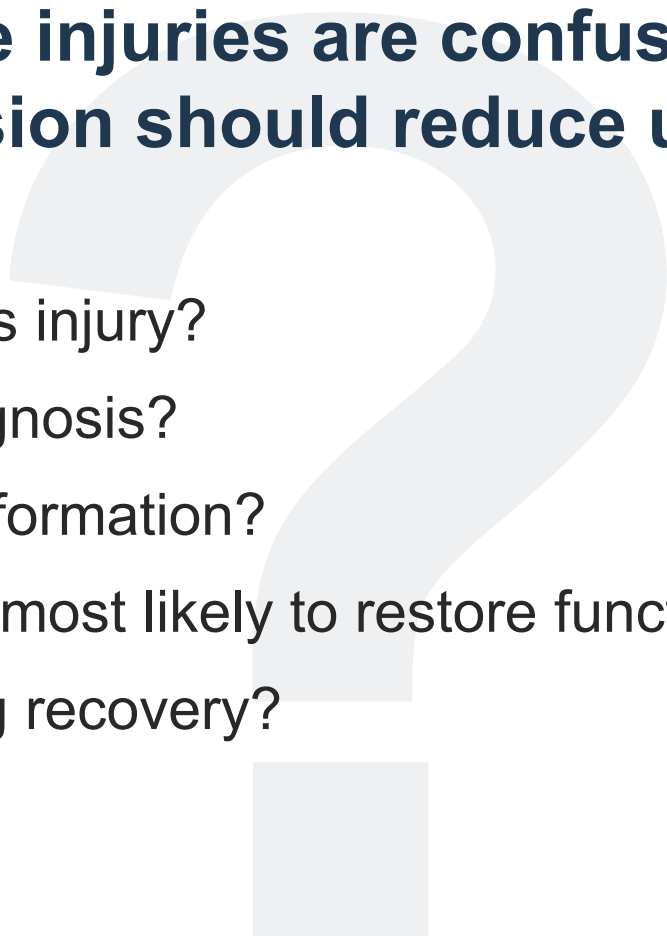


**Evidence-based care isn't about doing more or less.
It's about doing the right thing at the right time.**

**Right diagnosis.
Right treatment.
Right timing.**

A Framework for Clinical Decision -Making

These injuries are confusing...
Every decision should reduce uncertainty.

- 
1. Is this a dangerous injury?
 2. Do I know the diagnosis?
 3. Do I need more information?
 4. What treatment is most likely to restore function?
 5. What is preventing recovery?

Is This a Dangerous Injury?

Identify the patients who cannot wait.

- Major or progressive neurologic deficit
- Cauda equina syndrome
- Spinal instability / high-energy trauma
- Suspected fracture
- Infection
- Tumor



Red Flags: The Test Depends on the Threat

A red flag changes urgency. It does not make MRI the universal first test.

CLINICAL CONCERN	BEST NEXT STUDY / ACTION	WHY
Progressive neurologic deficit / cauda equina	URGENT MRI	Neural compression is the immediate threat.
High-energy trauma / suspected instability	CT ± radiographs	Define fracture morphology and bony stability first; MRI if neural/ligamentous injury remains a concern.
Suspected fracture without neurologic deficit	Radiographs and/or CT	The primary question is bone—not the disc.
Infection / malignancy	MRI + directed workup	MRI is usually the key imaging study, but labs, history, and systemic evaluation remain part of the answer.

Red flags tell you to act promptly. The suspected pathology tells you what test to order.

X-ray – CT– MRI: Different Questions, Not Competing Tests

X-RAY



Alignment
Gross bony injury
Dynamic instability

What is the overall
bony/alignment picture?

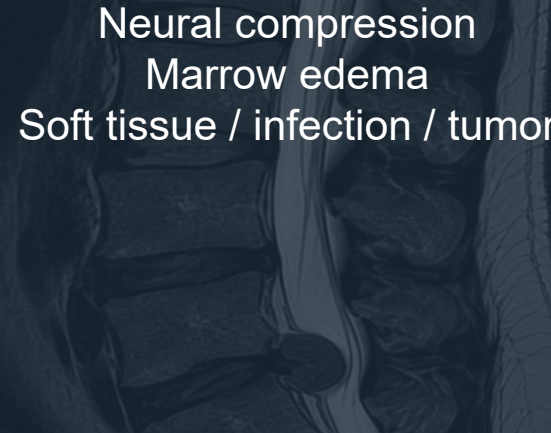
CT



Fracture morphology
Cortical detail
Complex osseous anatomy

What exactly happened to the
bone?

MRI

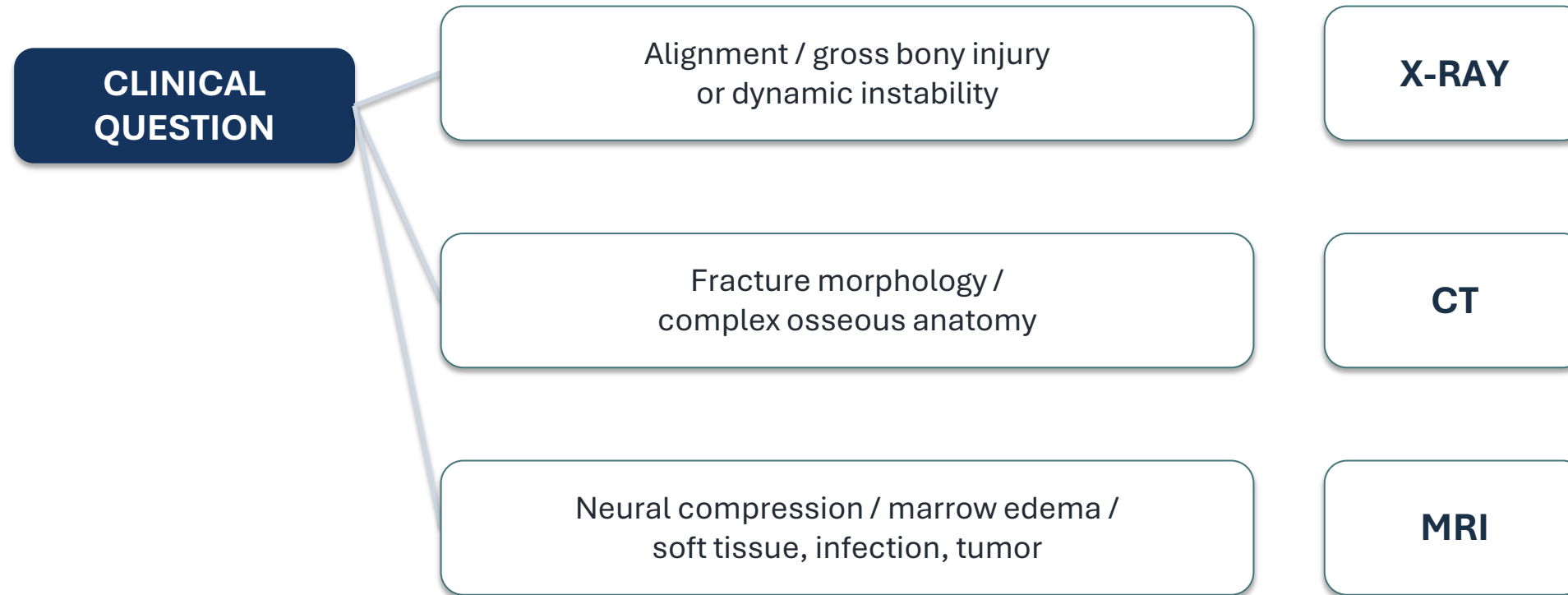


Neural compression
Marrow edema
Soft tissue / infection / tumor

What is happening to the neural
and soft-tissue structures?

**Good imaging answers a clinical question.
Poor imaging creates new questions.**

Which Test Answers the Question I Have?



Start with the clinical question → choose the test most likely to reduce uncertainty.

Your MRI Is Probably Abnormal

Disc degeneration in asymptomatic individuals

Age 20
37%

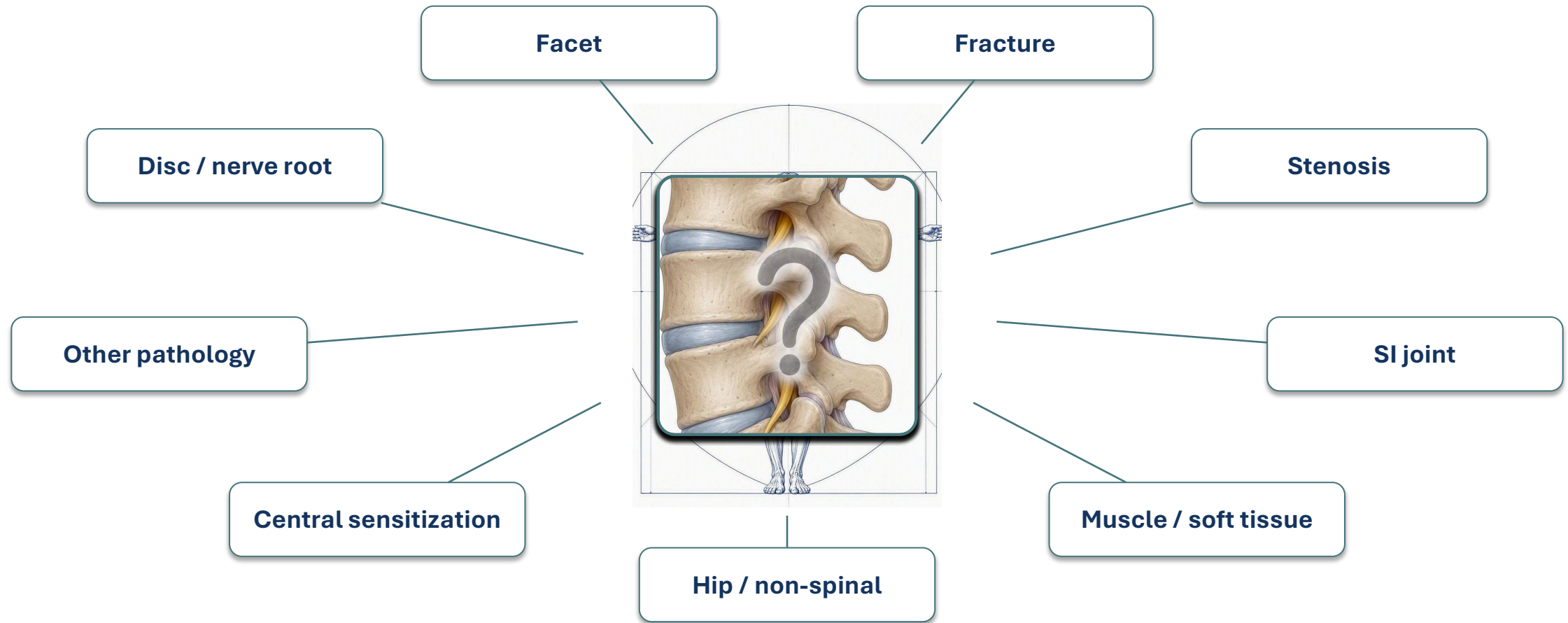
Age 40
68%

Age 60
88%

An imaging abnormality ≠ automatically a pain generator.

Brinjikji W et al. AJNR. 2015. Classic context: Boden SD et al. JBJS Am. 1990.

What Is Actually Causing the Pain?



MRI finding $\neq$ diagnosis. Clinical concordance identifies the likely pain generator.

What Should I Expect to Happen?

Condition	Typical expectation	Initial approach
Lumbar / cervical strain	Generally favorable natural history	Activity, symptom control, progressive function
Disc herniation + radiculopathy	Many improve nonsurgically	Conservative care unless neurologic/other indications
Isolated transverse-process fracture	Stable; generally favorable	Symptomatic care and mobilization
Compression fracture	Variable; assess acuity/stability	Appropriate imaging + pain/function management
Progressive neurologic deficit	Not routine recovery	Expedited evaluation / intervention

What Treatment Is Most Likely to Restore Function?

There is rarely only one possible treatment.

- Many spine conditions have several reasonable treatment options.
- Starting with the least invasive appropriate option is often correct.
- The right choice?
 - Diagnosis
 - Severity
 - Trajectory
 - Patient-specific factors

Treatment should match the problem—not simply the pain score or the MRI.



What Are We Actually Trying to Accomplish?

- Restore function
- Maintain appropriate activity
- Facilitate safe return to work
- Prevent chronic disability
- Treat actionable pathology when necessary

The goal is not simply pain relief.

ACOEEM. Initial Approaches to Treatment. 2026.

Is Rest a Treatment?

**Usually not...
at least not for very long.**

- **Encourage:** appropriate activity.
- **Avoid:** prolonged bed rest.
- **Modify** activity rather than eliminating it when possible.
- **Progress activity** as symptoms permit.
- Work restrictions:
 - ✓ Maintain safe function
 - ✗ Not simply remove patient from work.

“Can’t perform the regular job” ≠ “Can’t work.”

ACOEM Low Back Disorders guidance; VA/DoD Clinical Practice Guideline for Low Back Pain; Vroomen et al., N Engl J Med. 1999.

Conservative Care Is Not Inactivity

PASSIVE / PROLONGED REST



“Wait until it stops hurting.”

ACTIVE CONSERVATIVE CARE

Walking / safe activity

Goal-directed PT / exercise

Modified duty when appropriate

Progressive return to function

Conservative treatment should have a goal, an active component, a timeline, and a reassessment point.

Conservative Care Is Active Treatment

This is not a comprehensive review of every treatment.
It is a framework for where each treatment fits.

A GOAL

What function are we trying to restore?

AN ACTIVE COMPONENT

Activity / exercise / rehabilitation



A TIMELINE

What recovery trajectory do we expect?

A REASSESSMENT POINT

What will make us change course?

Conservative treatment needs a goal and a timeline.

Framework supported by ACOEM and VA/DoD guidance on activity, structured exercise, functional recovery, and reassessment.

Physical Therapy: What Are We Trying to Achieve?

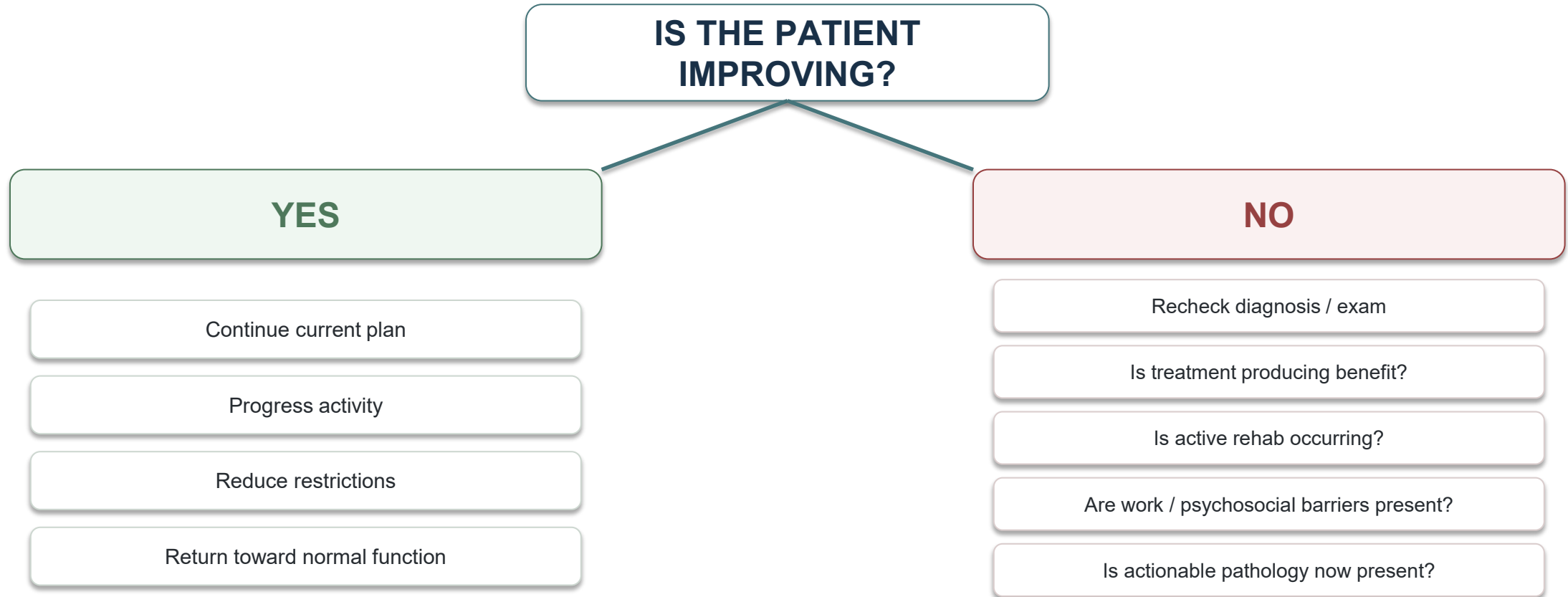
- Restore mobility
- Improve strength and endurance
- Restore functional capacity
- Reduce fear of movement
- Progress toward independent exercise
- Prepare for work demands

Therapy should produce functional progress—not simply treatment visits.

ACOE Low Back Disorders guidance; VA/DoD Clinical Practice Guideline for Low Back Pain.



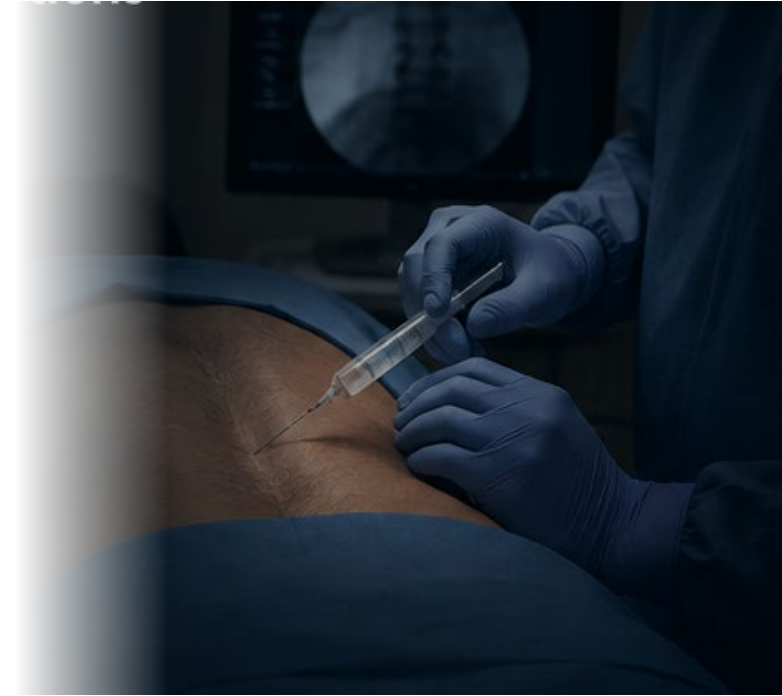
When Should We Escalate?



4–8 weeks is a reassessment point—not an automatic authorization threshold.

What Is the Purpose of an Injection?

- Provide short-term relief of radicular pain
- Facilitate activity and rehabilitation
- Provide time for natural recovery
- Clarify whether a targeted nerve root is clinically relevant in selected equivocal cases
- Help determine whether further intervention is necessary



An injection is a tool—not a treatment pathway.

NASS LDH guideline: TFESI short-term relief for LDH radiculopathy; diagnostic SNRB evidence limited/mixed, with low PPV and better NPV in reviews.

When Is Surgery Appropriate?



Diagnosis

Surgically treatable
pathology



Symptoms / Exam

Clinical findings
are concordant



Imaging

Structural finding
matches the patient



Trajectory

Expected benefit
justifies intervention

When the stars align → surgery becomes a rational treatment decision.

An abnormal MRI alone is not a surgical indication.

Conservative Care Is Appropriate —Until It Isn't

Early radiculopathy
Many improve without surgery

**Persistent concordant
symptoms**
Reassess trajectory

**Surgery may be appropriate
for the right patient**

The goal isn't to operate early.

The goal is not to operate unnecessarily late.

- Peul: early surgery can produce faster relief, but many patients improve without immediate surgery.
- SPORT: surgery can improve symptoms in LDH, but WC status complicates disability and work outcomes.

Peul et al., N Engl J Med. 2007; SPORT workers' compensation analysis, Spine. 2010.

Sometimes Waiting Is Overtreatment

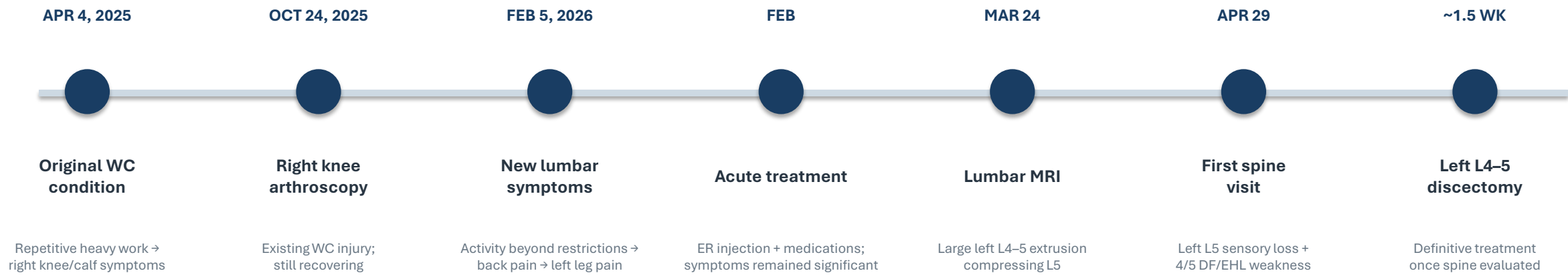
Overtreatment isn't always doing too much.

- Repeating ineffective treatment
- Continuing restrictions without reassessment
- Repeating injections without meaningful benefit
- Failing to act on progressive neurologic findings
- Continuing nonsurgical treatment indefinitely despite persistent, concordant, surgically treatable pathology

Avoiding unnecessary intervention should not become avoidance of necessary intervention.

Case: When Multiple Injuries Complicate the Timeline

45-year-old male • existing right-knee WC claim • later development of new left L5 radiculopathy



WHY THIS CASE BECAME COMPLICATED

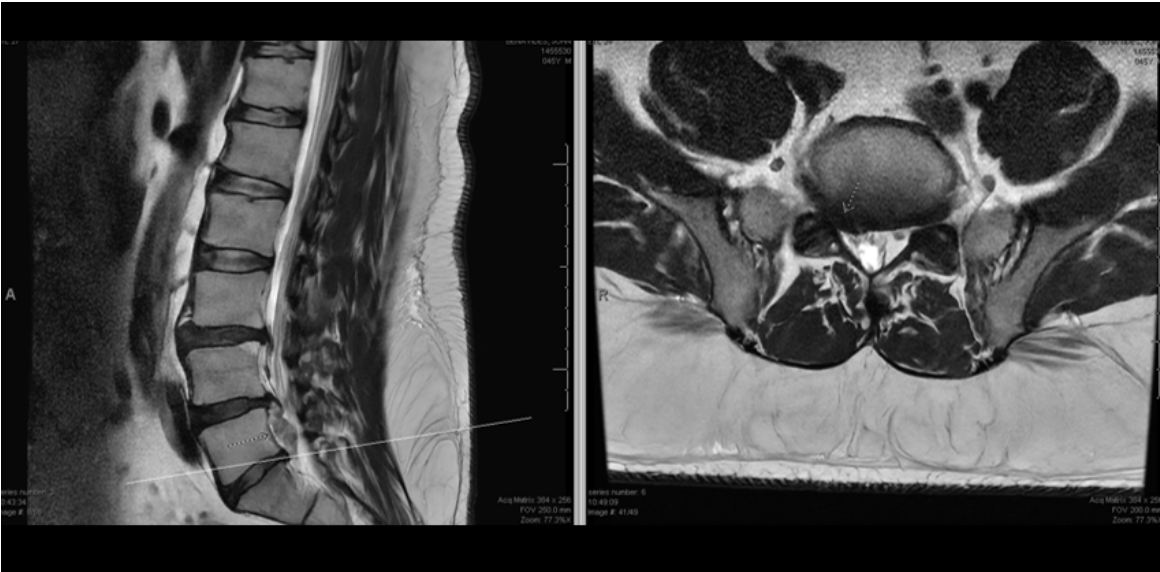
A new body region and new neurologic symptoms emerged mid-claim. Causation, treatment ownership, imaging, and referral all had to change course during active care.

Multiple injuries can create multiple care pathways — and no single participant may see the whole trajectory.

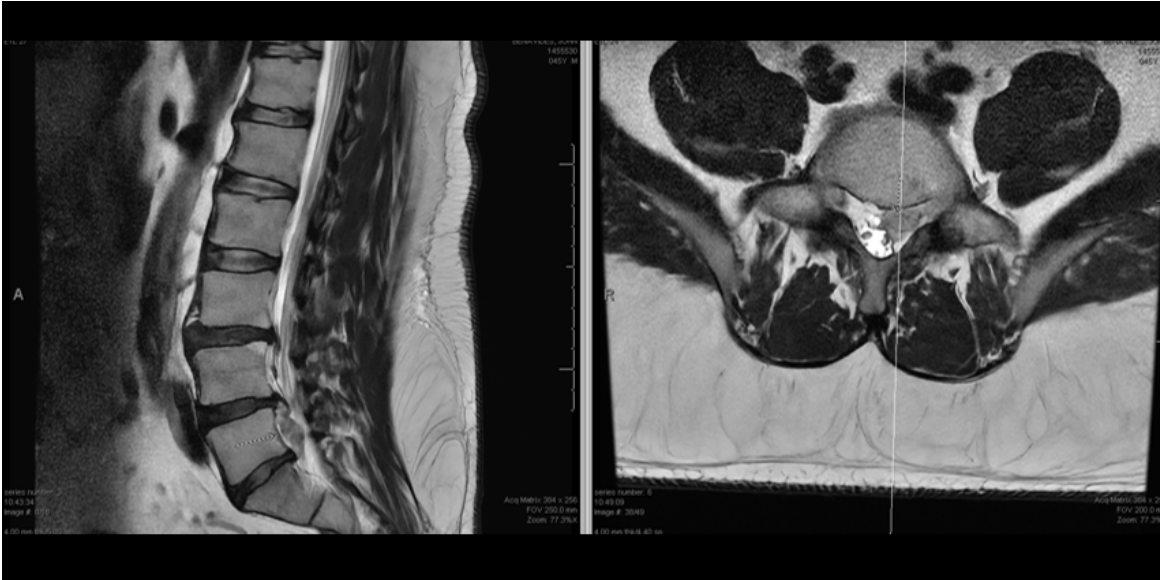


By the Time He Reached Spine...

The symptoms, examination and MRI all localized to the left L5 nerve root



L4-5 extrusion with caudal migration



Left lateral recess / L5 root compression

L5 sensory loss

LEFT

4/5 DF + EHL

LEFT

+ SLR

LEFT

Once the Problem Was Defined, the Timeline Changed

Left L4–5 discectomy approximately 1½ weeks after initial spine presentation



The lesson: ❌ “Operate sooner.” ✅ “Recognize when the trajectory has changed.”

**Right diagnosis.
Right treatment.
Right timing.**

Neither undertreatment nor overtreatment is evidence-based care.

Why Isn't This Patient Getting Better?

Diagnostic failure

- Wrong or incomplete diagnosis
- Delayed diagnosis

Treatment failure

- Ineffective treatment
- Delayed appropriate treatment
- Deconditioning

Psychosocial & system barriers

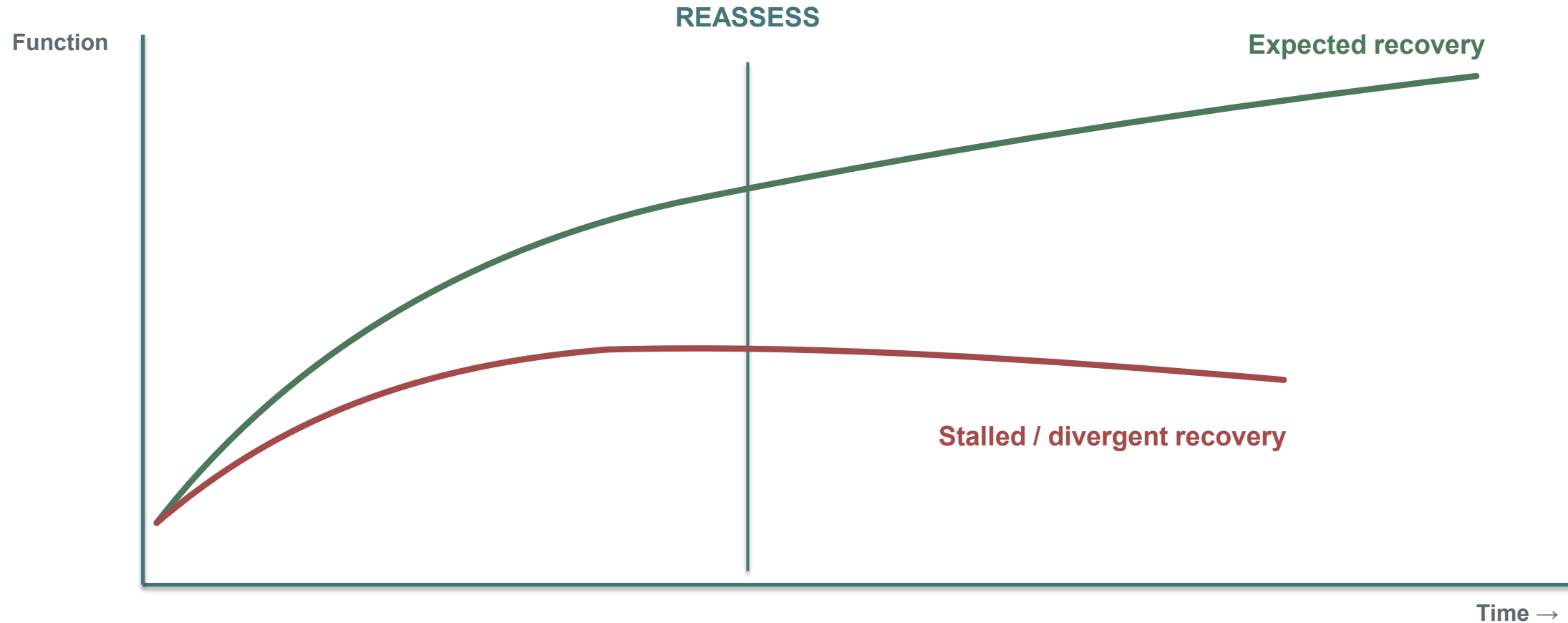
- Negative recovery expectations / fear avoidance
- Workplace barriers
- Conflicting messages
- Prolonged work absence

Treatment stalled?

That is a reason for the care team to reconnect—not just continue the same plan.

ACOEM Initial Approaches to Treatment (2026): functional progress, expected recovery, reassessment, and discontinuation of ineffective care.

Is Recovery Following the Expected Trajectory?



You cannot identify delayed recovery unless you know the expected recovery trajectory.

What Does the Patient Expect Will Happen?



~2×

Acute/subacute nonspecific low-back pain patients with negative recovery expectations have approximately twice the odds of prolonged work absence.

Expectations are not just attitudes. They are prognostic information.

Hallegraeff JM et al. J Physiother. 2012;58:165–172. OR 2.17 (95% CI 1.61–2.91).

What Does the Provider Think Will Happen?

The message from the clinician can change the trajectory.

- Provider fear-avoidance / biomedical beliefs have been associated with advice to restrict activity or delay return to work.
- Clinical language can reinforce either confidence or fragility.
- A realistic, consistent recovery message is part of treatment.



“Your back is damaged.” vs. “Your back is painful, but movement is safe.”

Darlow B et al. Systematic review of health-care-provider attitudes/beliefs and patient outcomes/management in low back pain; related provider fear-avoidance literature.

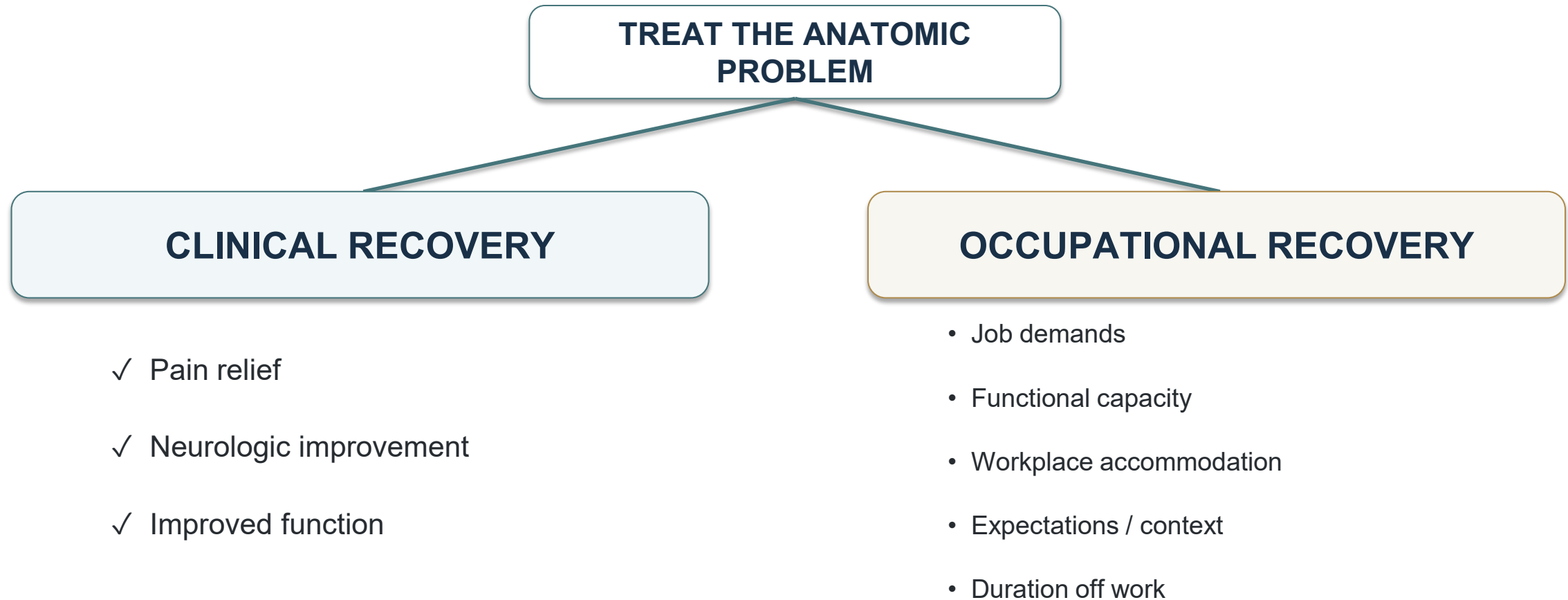


Everyone Influences Recovery



Doctor: "Your MRI looks terrible." Therapist: "Don't bend." Employer: "Come back when you're 100%."
The patient hears: "My back is damaged and activity is dangerous."

Clinical Recovery $\neq$ Occupational Recovery



A successful operation and a successful return to work are not the same outcome.

Early Decisions Can Shape the Claim Trajectory

Time away from work —and the treatments chosen early —are not clinically neutral.

- **WORK ABSENCE**

- Longer preoperative sick leave is associated with lower likelihood of timely return to work after discectomy.
- Maintain safe work connection when possible.

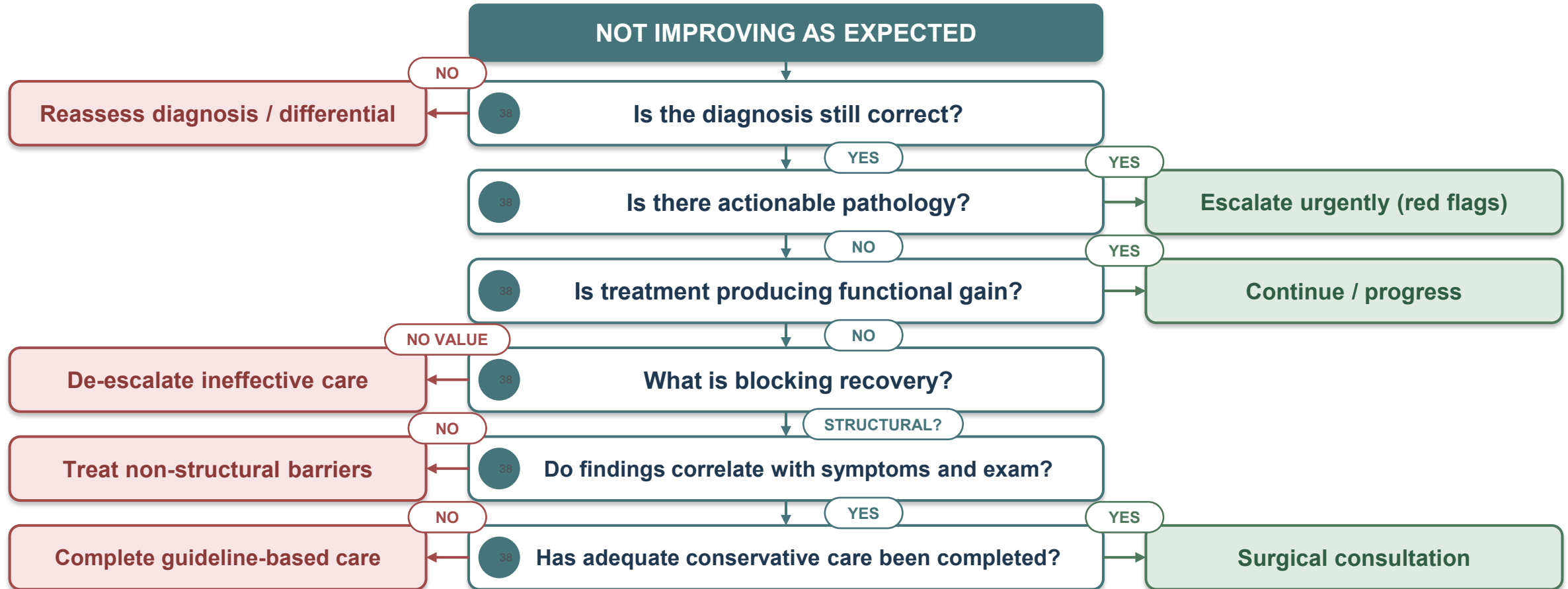
- **ANALGESIA**

- In WC cohorts, greater early opioid exposure has been associated with longer disability, higher costs, later opioid use, and more surgery.
- Use multimodal, function-oriented analgesia when appropriate.

Pain control should facilitate recovery—not become the recovery plan.

Webster BS et al. Spine. 2007; 8,443 acute occupational LBP claims (observational). Related WC cohort evidence links early opioid use with prolonged claim duration. Associations do not prove causation.

Treatment Has Stalled. What Do We Do Next?



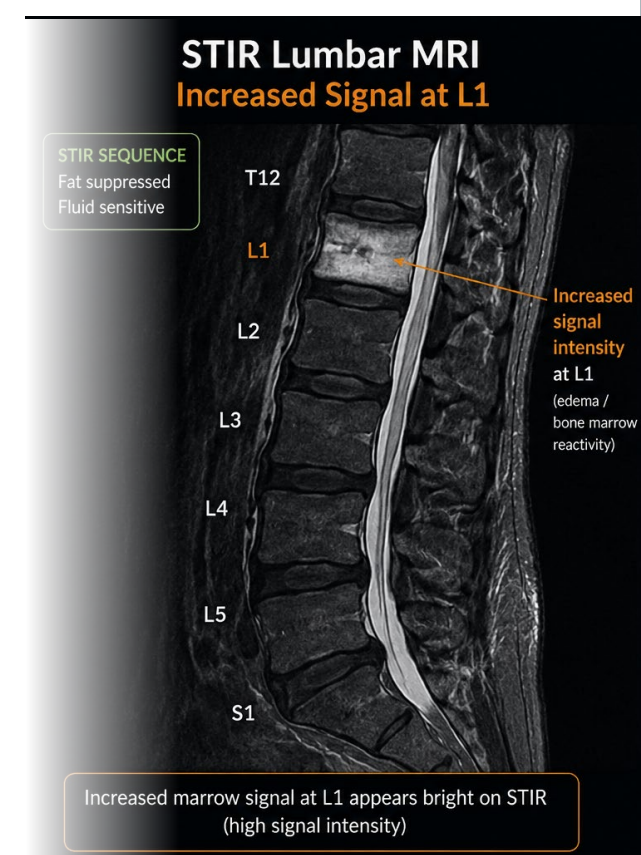
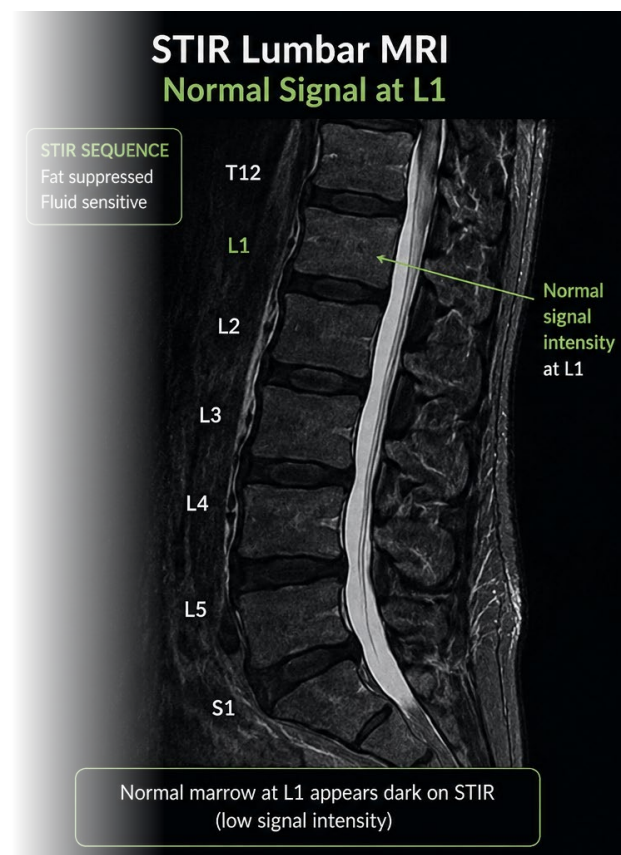
Provider + worker + claims/case team: reassess together.

A Compression Deformity Is Not the Diagnosis

**A compression deformity is an imaging finding.
A painful acute compression fracture is a clinical diagnosis.**

- Is the fracture acute or chronic?
- Does imaging support ongoing fracture activity?
- Is the fracture stable?
- Does the pain localize to the fracture?
- Is there another explanation for the patient's pain?

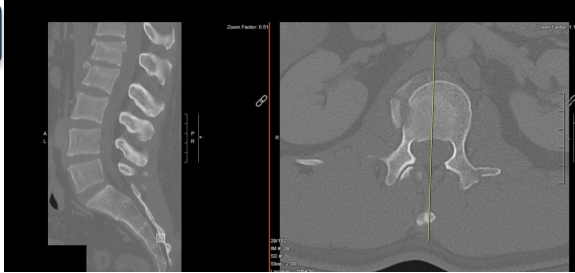
NASS Clinical Guideline: Diagnosis and Treatment of Adults with Osteoporotic Vertebral Compression Fractures.



Case: When Timing Matters

30-year-old male agricultural worker — struck by irrigation pivot equipment → L1–L2 compression fractures

L1

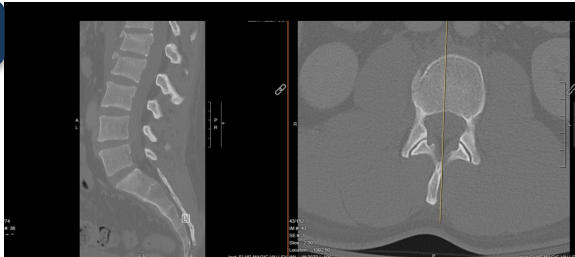


Continue conservative care

TLSO + no bending/twisting
+ no lifting >10 lb

OR

L2



Kyphoplasty

Chosen to shorten the brace/
restriction period before return to
Mexico



13 DAYS POSTOP

0/10 pain • No restrictions • Full-duty release

The fracture could have healed without kyphoplasty. The procedure changed the recovery trajectory.

When Does Kyphoplasty Fit?



Acute / active fracture

Acuity supported by history, exam and imaging



Concordant pain

The fracture is the likely pain generator



Appropriate morphology

Stable pattern suitable for kyphoplasty



Right timing

Meaningful limitation / failure to progress

When the stars align → kyphoplasty becomes a rational option.

NASS: Grade A support for kyphoplasty in appropriately selected acute osteoporotic VCFs.

Conservative Care vs. Selected Kyphoplasty

Acute painful VCF

CONSERVATIVE PATHWAY

Acute stable painful VCF

Multimodal analgesia

Many surgeons use an orthosis when helpful

Early safe mobility + temporary limits on heavy lifting / loaded flexion

Progressive recovery over ~6–12 weeks

SELECTED KYPHOPLASTY PATHWAY

Acute painful concordant VCF

Vertebroplasty / kyphoplasty

Mechanical stabilization + often rapid pain improvement

Often less reliance on brace; earlier functional progression when appropriate

Progress activity / return toward work

What Changes After Successful Kyphoplasty?

The goal is not cement. The goal is restored function.

Mechanically stabilized

The painful fracture is stabilized.

Rapid pain relief

Pain often improves rapidly in appropriately selected patients.

Earlier activity

Activity can often progress sooner as symptoms permit.

Less bracing

Continued bracing is not supported as a well-established universal requirement.

Timing and patient selection are functional decisions—not radiographic ones.

Acknowledge the Controversy

2009

Sham-controlled trials

Two influential sham-controlled vertebroplasty trials found no significant benefit over sham procedures.

Since then

A more nuanced picture

Subsequent trials, meta-analyses, and modern guidelines have produced a more nuanced picture.

Today

Guideline support

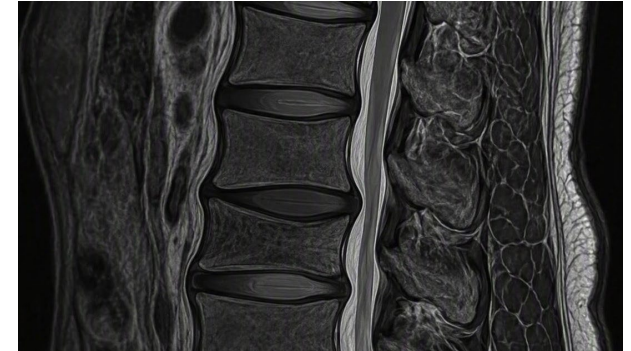
Current NASS guidance supports kyphoplasty in appropriately selected acute osteoporotic compression fractures.

Evidence-based care means acknowledging both the controversy and the current evidence.

Buchbinder et al. and Kallmes et al., N Engl J Med. 2009; FREE trial (balloon kyphoplasty); NASS OVCF guideline.

What Kyphoplasty Cannot Fix

- An old or healed fracture that is no longer the pain generator
- A fracture pattern requiring a different stabilization strategy
- Poorly localized nonspecific back pain
- An unrelated degenerative imaging abnormality
- The underlying osteoporosis / bone fragility



Healed deformity — no acute STIR signal



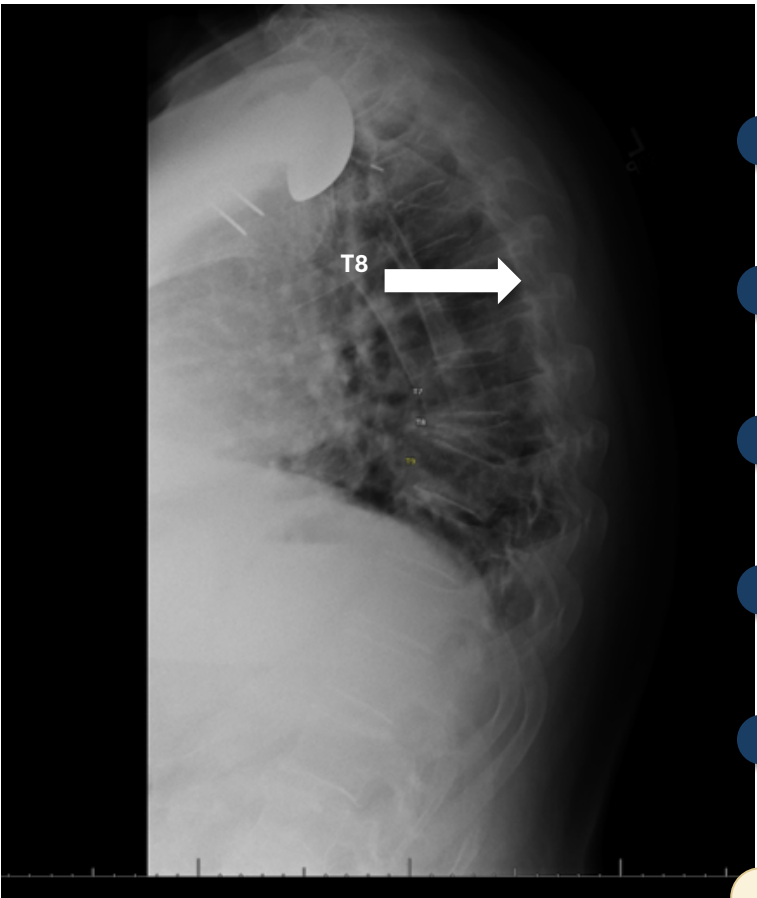
Unstable pattern — posterior element involvement

The presence of a procedure does not eliminate the need for a diagnosis.

Treating the fracture without addressing bone health treats today's problem—but not tomorrow's fracture.

Case: When the Diagnosis Doesn't Fit the Trajectory

Older injured worker • thoracic pain after relatively modest lifting event • neurologically intact



Preoperative lateral thoracic X-ray

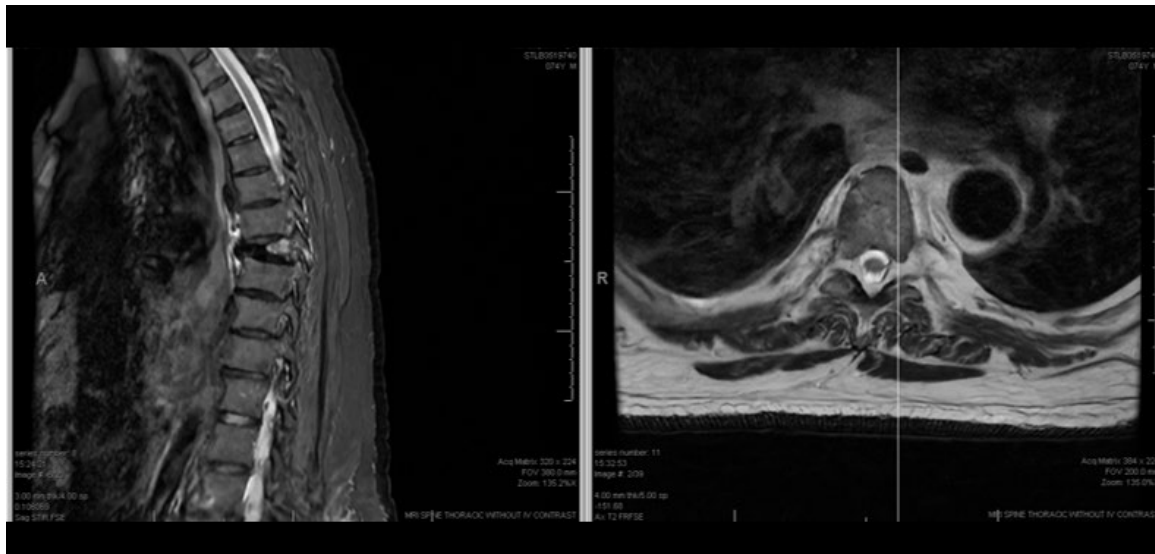
THE CLINICAL COURSE

Late Oct	Lifting pipe	No major high-energy trauma
Following weeks	Persistent severe thoracic pain	ER • PCP • chiropractic • massage
Initial working diagnosis	Rib / musculoskeletal source	Pain persisted despite treatment
Late Nov	Plain X-ray finally obtained	T8 compression fracture recognized
Dec 1	Spine evaluation	Severe collapse / ~31° kyphosis → further imaging

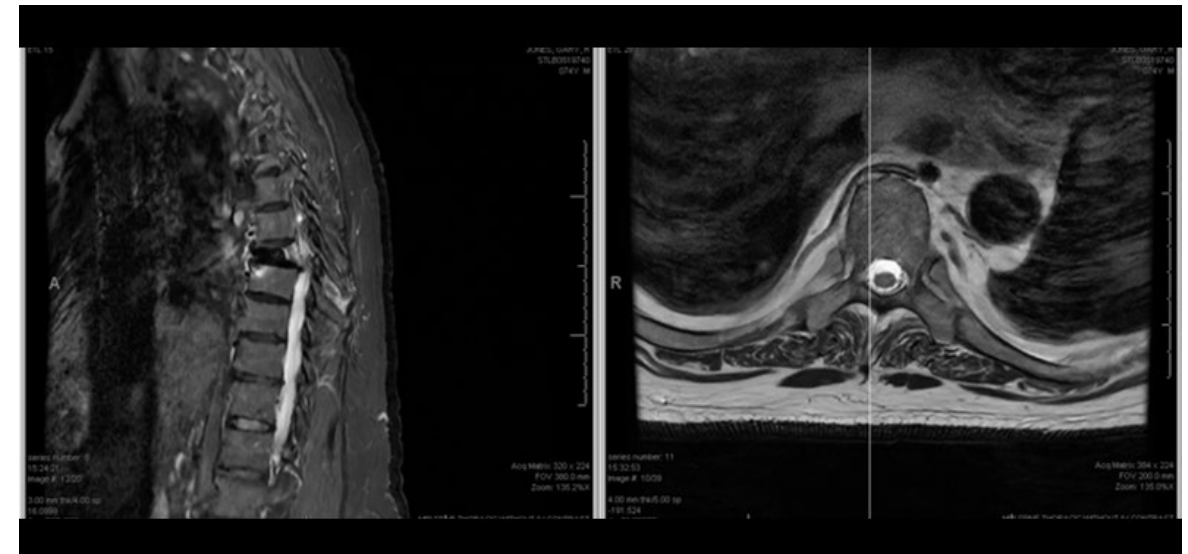
Persistent pain outside the expected trajectory should trigger reassessment — not simply more treatment.

A Compression Fracture — But Not Just a Compression Fracture

The radiograph identified the deformity. MRI changed the understanding of the injury.



Severe T8 collapse with acute fracture signal



MRI demonstrated a more extensive injury pattern

Severe collapse

Marked vertebral-body height loss
/ kyphotic deformity

Posterior injury

Ligamentous disruption
described on surgical review

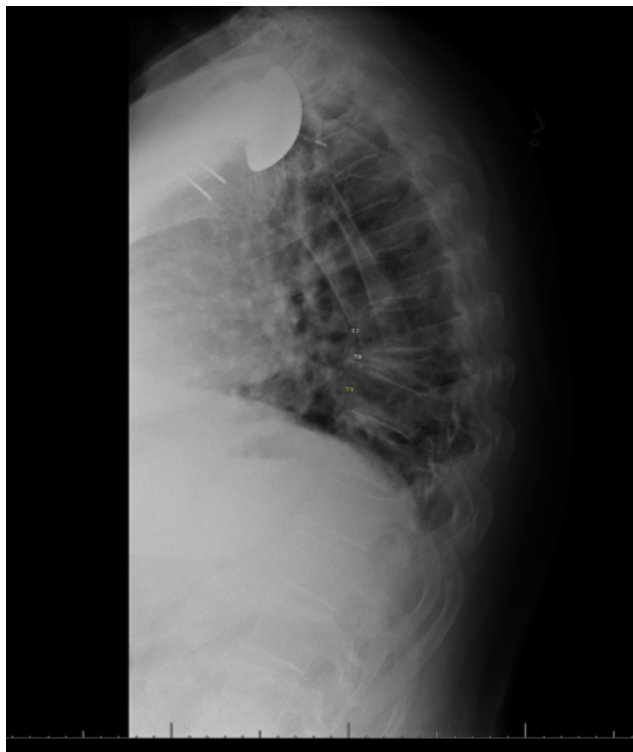
Canal compromise

Disc / bone projecting posteriorly
toward the cord

The key question changed from “How do we treat the pain?” to “Is this fracture mechanically stable?”

The Cost of Delayed Recognition

This was no longer a routine compression-fracture pathway



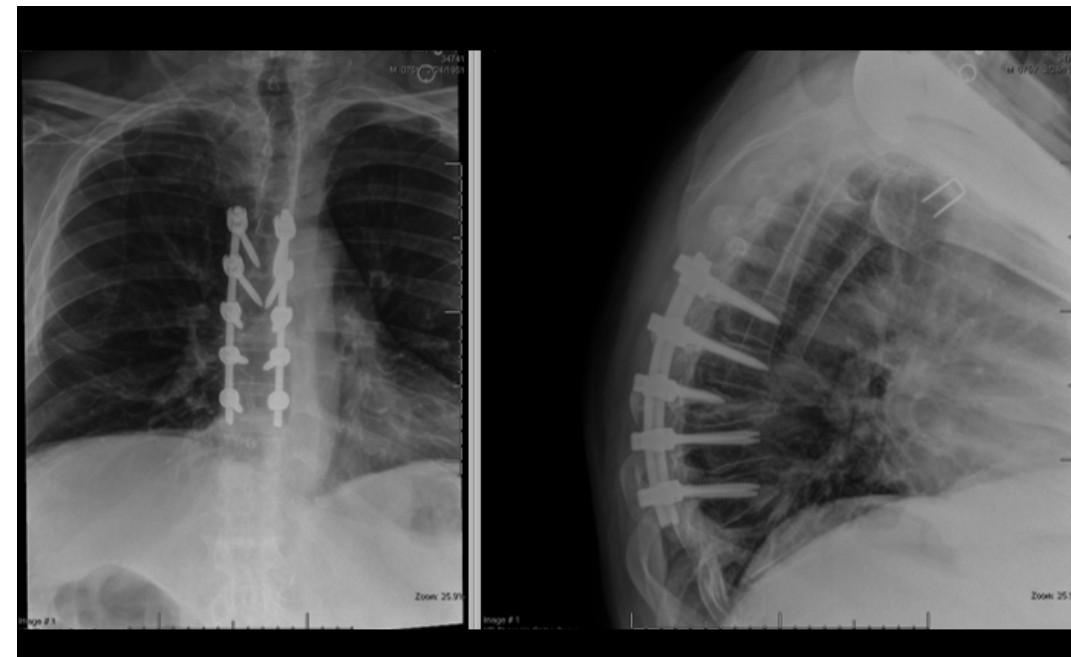
PREOP

UNSTABLE T8 FRACTURE

Neurologically intact

But structural failure
and cord-risk features
changed management

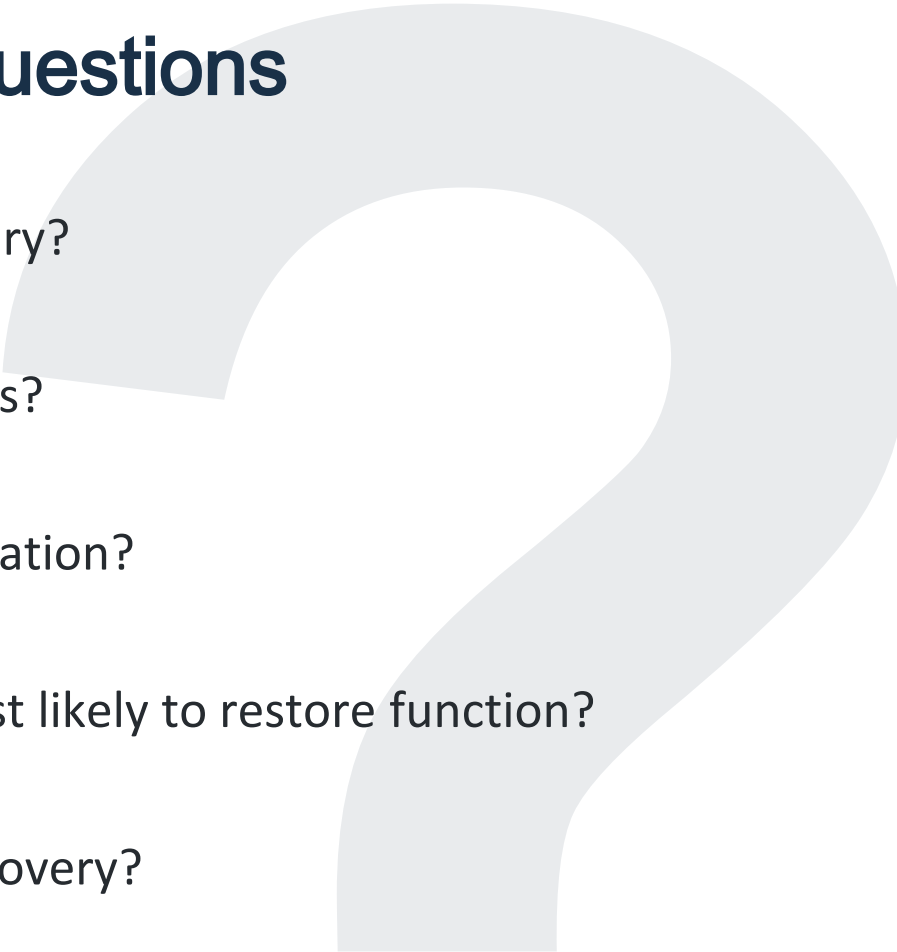
**T6–T10 posterior
spinal fusion**



POSTOP

When the clinical trajectory doesn't fit the diagnosis, reconsider the diagnosis.

Back to the Five Questions

- 
- 49 Is this a dangerous injury?
 - 49 Do I know the diagnosis?
 - 49 Do I need more information?
 - 49 What treatment is most likely to restore function?
 - 49 What is preventing recovery?

Every decision should reduce uncertainty.



**Evidence-based care isn't about doing
more or less—
it's about doing the right thing at the
right time.**

Right diagnosis.

Right treatment.

Right timing.

When treatment is working, help it continue.

When treatment has stalled, ask why.

When the diagnosis or trajectory changes, reassess...

Together!

QUESTIONS / DISCUSSION