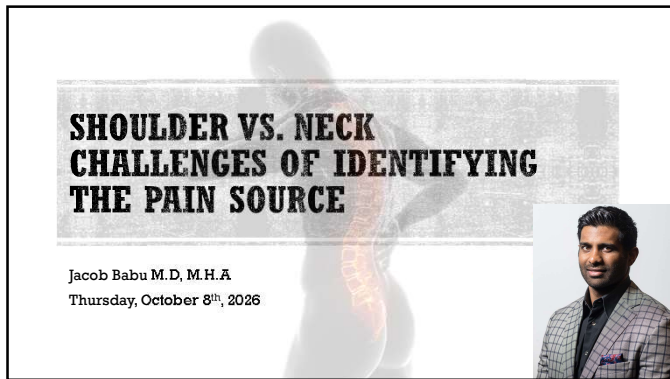


SHOULDER VS. NECK CHALLENGES OF IDENTIFYING THE PAIN SOURCE

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Thursday, October 8th, 2026



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DISCLOSURES:

- No relevant financial or additional disclosures pertaining to this talk



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BACKGROUND



- IBJl – Spine Surgery + Trauma Surgery
• jacobbabumd.com
- Assistant Professor in Orthopedic
Surgery @ Chicago Medical School

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OBJECTIVES

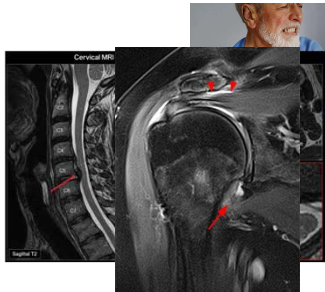
- Is this actually coming from the neck or the shoulder?
- Does the MRI abnormality explain the worker's symptoms?
- Could both conditions be contributing?
- What objective findings should support the diagnosis?
- When is additional testing or a diagnostic injection appropriate before escalating treatment?



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CASE EXAMPLE:

- 52-year-old warehouse worker
- Develops neck and right shoulder pain after lifting a heavy box.
- **Cervical MRI:** C4-5 and C5-6 foraminal stenosis.
- **Shoulder MRI:** partial-thickness supraspinatus tear, AC arthritis and subacromial bursitis.
- He reports pain from his neck into his shoulder and upper arm.



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WHY DOES THIS MATTER?

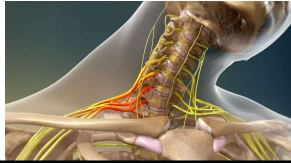
- **Incorrect localization can lead to:**
 - unnecessary imaging
 - ineffective injections
 - prolonged physical therapy
 - inappropriate surgical referrals
 - surgery directed at non-causative abnormality
 - delayed recovery
 - prolonged work restrictions
 - disputes regarding causation and treatment



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ANATOMY AND MECHANISM

- The C5-T1 nerves in the neck provide motor and sensory function in the upper extremity
- **The Sensory innervation to the shoulder joint is primarily the C5 and C6 nerves**
- Some distinguishing factors:
 - 89% of patients with rotator cuff issues experience **nocturnal pain that was relieved by surgical repair in 50% of patients**
 - **Arm pain beyond the elbow** is the most specific symptom that can differentiate it from a shoulder etiology.
- **Examination of the shoulder is paramount as imaging studies may have false positives in both the cervical and shoulder patient populations**

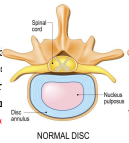


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WHAT IS CERVICAL RADICULOPATHY:

Spinal disc herniation

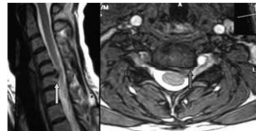
- Symptoms:
 - Neck pain
 - Radiating trapezius
 - Even sometimes
 - Weakness in cor
 - Numbness in cor
 - **Hand – often cor**
- **Nerve Root Compression – Causes:**
 - Disc Herniation
 - Arthritis of joints in the neck
 - Abnormal translation between vertebrae



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WHAT IS CERVICAL RADICULOPATHY:

- Epidemiology:
 - 107/100,000 men
 - 63/100,000 women
 - Most often presents in 5th decade
- Evaluation:
 - Thorough physical/neurologic exam
 - Xrays and MRI (If symptoms persist)
 - Additional diagnostic tests/procedures



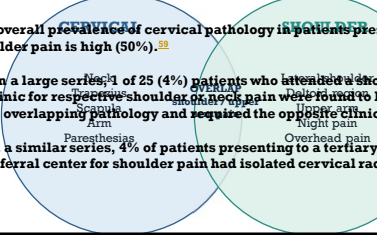
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WHY THE CONFUSION IS PREDICTABLE

Neck and shoulder pain maps overlap—and the conditions often coexist.

The overall prevalence of cervical pathology in patients presenting with shoulder pain is high (50%).²²

- In a large series, 1 of 25 (4%) patients who attended a shoulder or spine clinic for respective shoulder or neck pain were found to have mistaken or overlapping pathology and required the opposite clinic's service.²³
- In a similar series, 4% of patients presenting to a tertiary shoulder referral center for shoulder pain had isolated cervical radiculitis.



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OBJECTIVE FINDINGS

- Objective findings matter

• Cervical radiculopathy

• Motor deficit

- C5 → deltoid
- C6 → biceps/wrist extension
- C7 → triceps
- C8 → finger flexion
- T1 → hand intrinsics

• Sensory deficit

- Dermatomal distribution

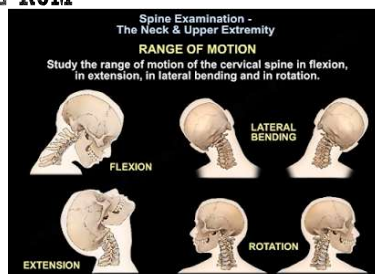
• Reflex changes

- Biceps
- Brachioradialis
- Triceps

- An isolated shoulder disorder should not produce a dermatomal sensory deficit or a nerve-root reflex abnormality.

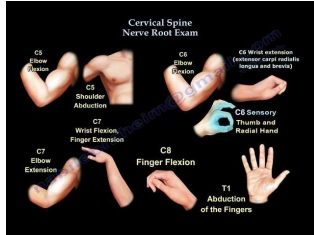
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CERVICAL ROM



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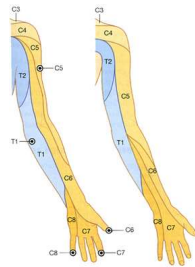
CERVICAL SPINE NEUROLOGICAL EXAMINATION:



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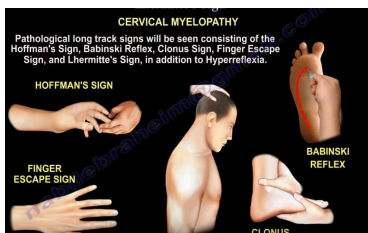
CERVICAL SPINE NEUROLOGICAL EXAMINATION:

Sensory Distributions



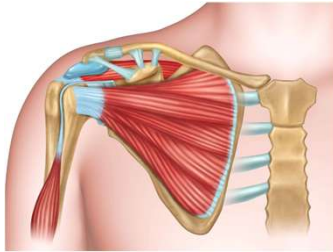
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CERVICAL SPINE NEUROLOGICAL EXAMINATION (SPINAL CORD INVOLVEMENT):



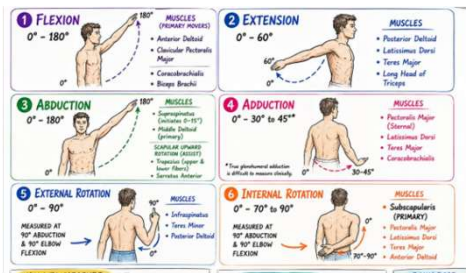
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WHAT ABOUT THE SHOULDER?



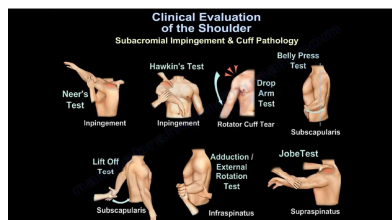
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SHOULDER EXAMINATION

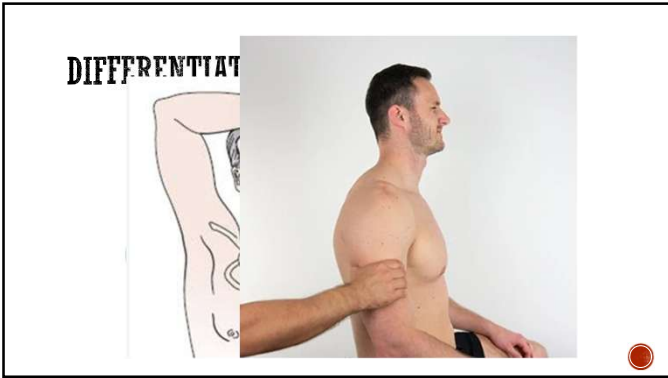


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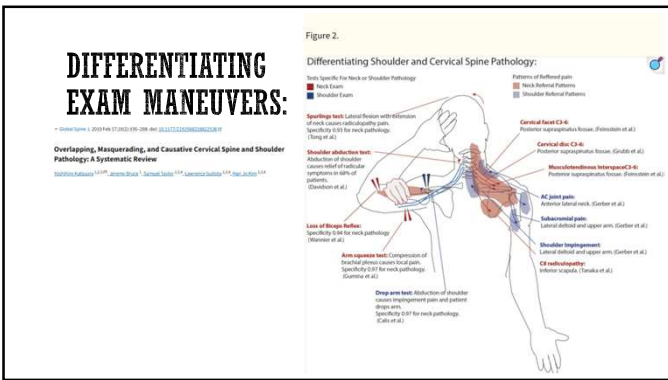
SHOULDER EXAMINATION



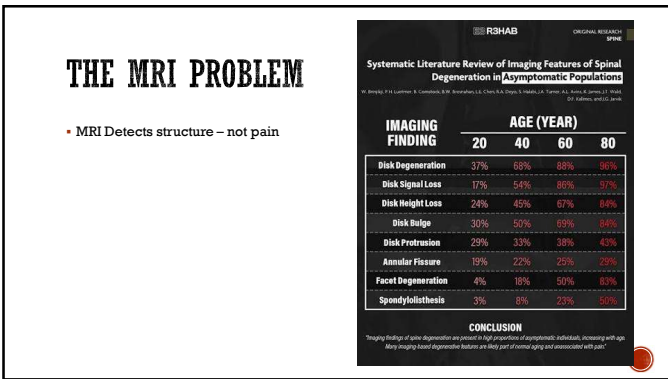
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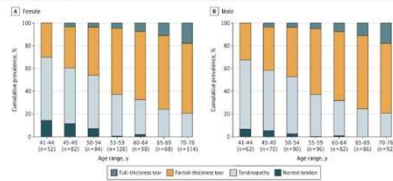
THE MRI PROBLEM

- MRI Detects structure – not pain

JAMA Internal Medicine

JAMA Internal Medicine | Original Investigation | LESS IS MORE
Incidental Rotator Cuff Abnormalities on Magnetic Resonance Imaging

Figure 2. Bar Graph Showing the Prevalence of Rotator Cuff Abnormalities by Age and Sex



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NERVE TESTING/EMG

- Tests such as electromyography and nerve conduction studies (EMG-NCS) can help differentiate cervical radiculopathy, peripheral neuropathy, Extremity issues



Patients undergoing EMG for Cervical radiculopathy: 29% of those who underwent an EMG-NCS for cervical radiculopathy were also positive for a musculoskeletal disorder with shoulder impingement occurring at a rate of 10%.⁴⁴

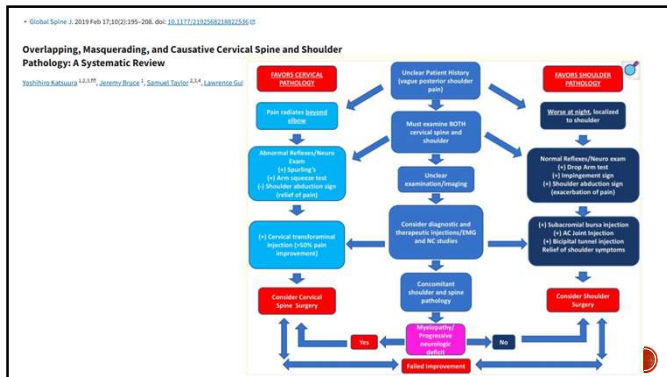
Patients with shoulder impingement syndrome: 24% had evidence of a possible cervical radiculopathy and 5.3% had evidence of a C5/6 radiculopathy

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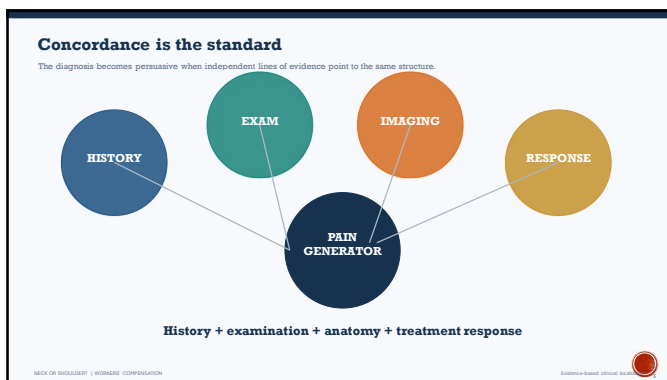
DIAGNOSTIC INJECTIONS

- 92% of patients with cervical radiculopathy who experienced pain improvement of >50% with a cervical transforaminal epidural injection had successful outcomes with cervical decompression surgery.²
- 18 of 22 patients with a positive selective transforaminal cervical nerve block (0.5 mL of 1% mepivacaine) had successful treatment at that level with either ACDF
- Lim et al noted that patients who experienced relief with subacromial local anesthetic had better improvement following subacromial decompression compared with those who did not have relief.^{2,21}
 - pain relief with subacromial injection with 8 mL of 1% lidocaine significantly correlated with good outcomes from repair of full-thickness rotator cuff tears.²⁰
 - Finally, AC joint and bicipital tunnel injections may also be used to confirm pain originating from these areas

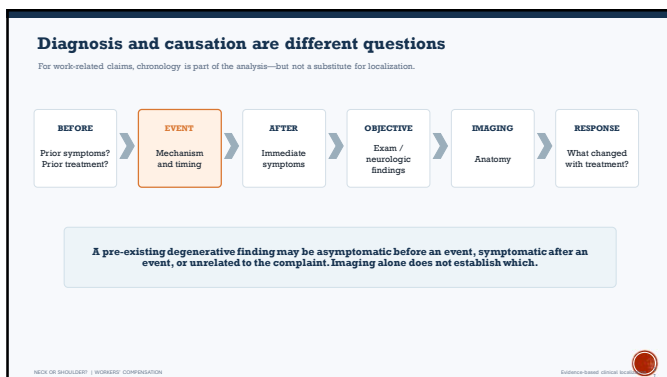
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Mechanism helps set the prior probability—it does not prove the diagnosis

- | | | |
|--------------------------|---|-----------------------------------|
| Direct shoulder impact | ➤ | Shoulder pathology rises |
| Traction through arm | ➤ | Shoulder • plexus • cervical |
| Neck trauma / axial load | ➤ | Cervical pathology rises |
| Repetitive overhead work | ➤ | Shoulder symptoms may be provoked |

Plausible mechanism + concordant symptoms + objective findings is stronger than mechanism alone.

NECK OR SHOULDER? | WORKING | CONFIRMATION

Evidence-based clinical reasoning



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THE MOST DIFFICULT PATIENT

- Both MRIs are abnormal.
- **Cervical MRI**
 - C5-6 foraminal stenosis
- AND
- **Shoulder MRI**
 - Rotator cuff tear
 - Now what?

EMG, diagnostic injections – acute injuries vs. preexisting?



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ACTIVE VS. PASSIVE SHOULDER MOTION

Active motion poor
Passive motion relatively normal
 Think:
 Rotator cuff dysfunction
 or
 Neurologic weakness

Active AND passive motion poor
 Think:
 Shoulder joint pathology
 particularly:
 Adhesive capsulitis / arthritis



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CASE EXAMPLES

CASE 1

Neck pain
 shoulder pain into thumb
 Thumb paresthesia
 ↓ brachioradialis reflex
 • + Spurling
 MRI C5-6 foraminal stenosis

• **Neck or shoulder?**



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CASE EXAMPLES

CASE 2

Lateral shoulder pain
 Pain sleeping on shoulder
 Painful overhead activity
 Normal sensation
 Normal reflexes
 Weak external rotation of shoulder

Neck or shoulder?



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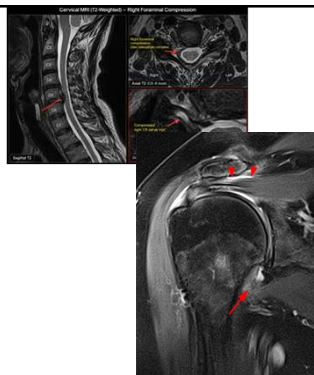
CASE EXAMPLES

CASE 3

Neck + shoulder pain
 Normal neurologic exam
 MRI cervical: C4-7 degenerative changes
 MRI Shoulder: Partial supraspinatus tear
 Multiple positive nonspecific tests

Neck or shoulder: What next?

Don't guess. Localize.



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Five takeaways for workers' compensation cases

1

Pain geography matters—but objective neurologic findings matter more.

2

A shoulder disorder should not create a root-level reflex or dermatomal sensory deficit.

3

Abnormal imaging is common and may be incidental.

4

When both regions are abnormal, seek clinical-radiographic concordance and use targeted diagnostics when appropriate.

5

Separate diagnosis, work causation, and treatment necessity.

"Do not ask which MRI looks worse. Ask which pathology best explains the patient."

NECK OR SHOULDER? | WORKERS' COMPENSATION

CONFERENCE BOARD | OFFICIAL SOURCE

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CERVICAL SPINE SURGICAL OPTIONS:
ANTERIOR CERVICAL DISCECTOMY AND FUSION (ACDF)

Spinal disc herniation



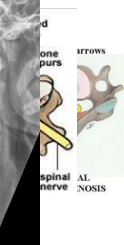


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CERVICAL SPINE SURGICAL OPTIONS:
CERVICAL DISC REPLACEMENT/ARTHROPLASTY (CDR)







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