

Connect to Healthy Living Seminar: Shoulder and Neck Pain

June 21, 2023

Connect to    
HEALTHY LIVING

Shoulder & Elbow

Shahryar Ahmadi, M.D., FRCSC

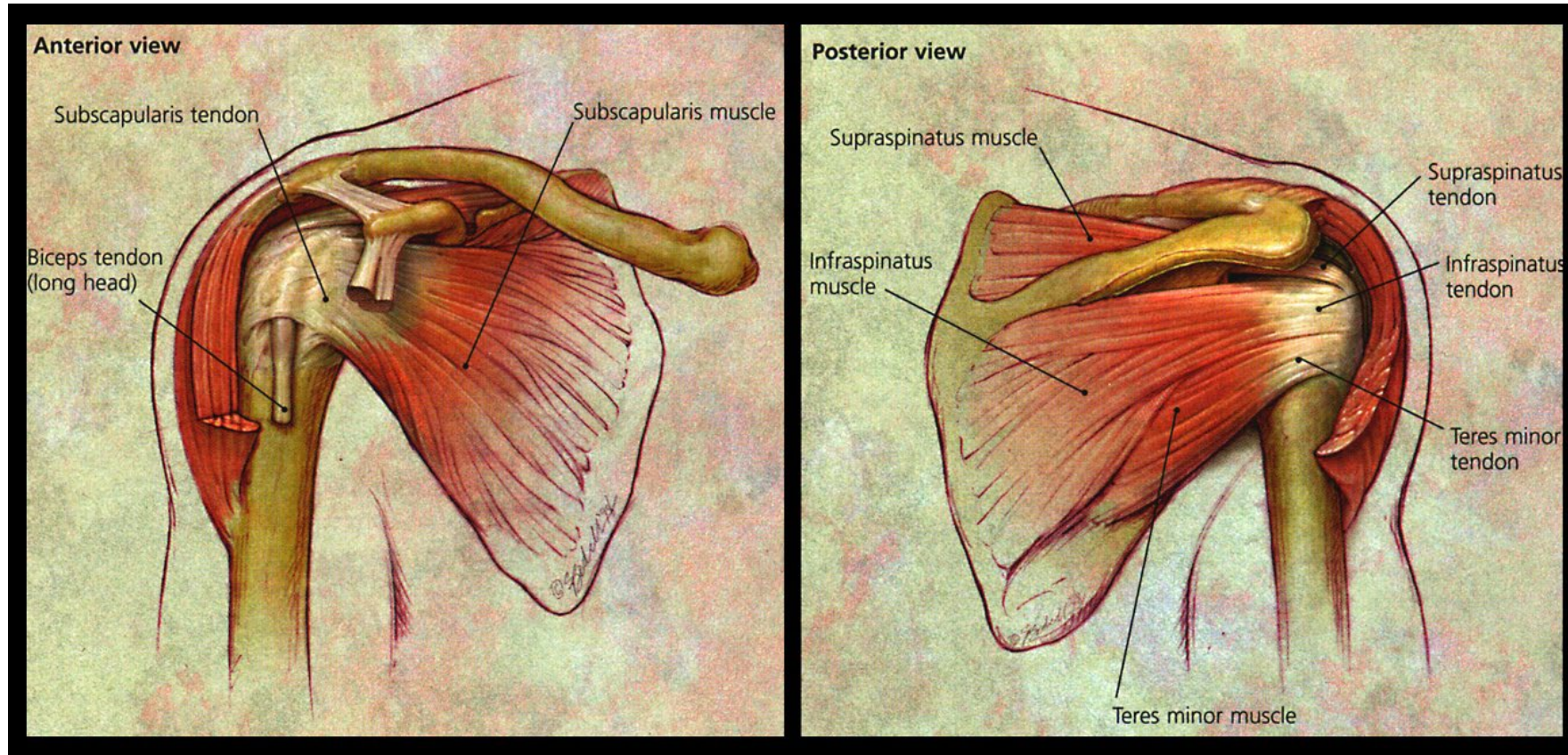
Shoulder, Elbow and Trauma Surgeon



Objective

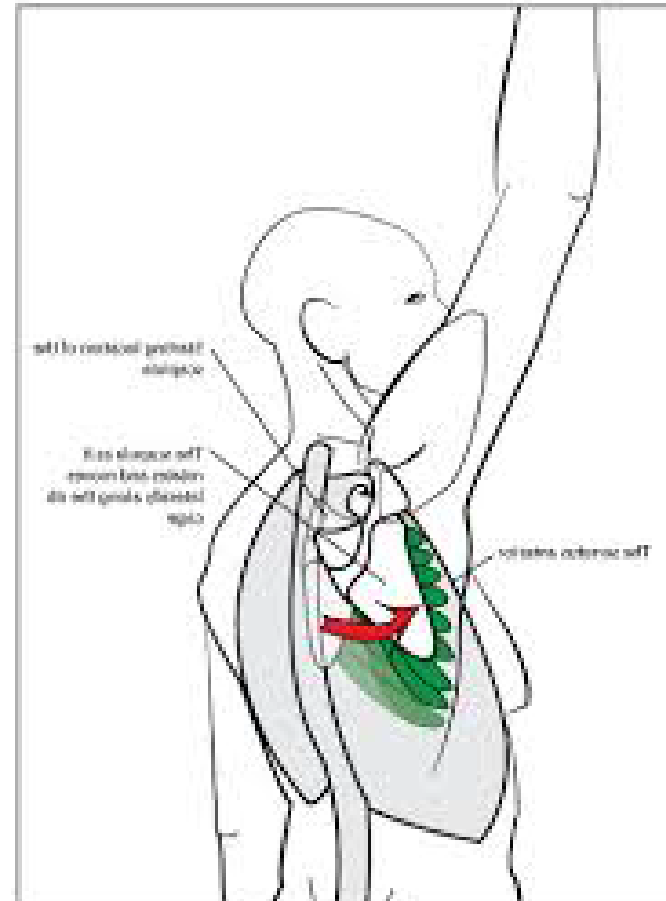
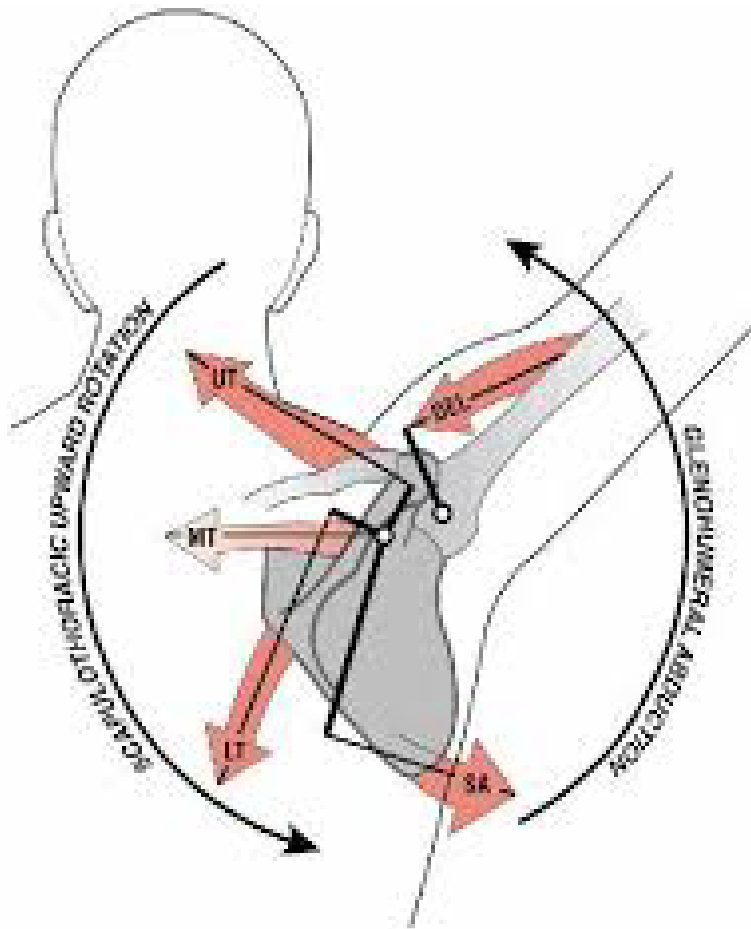
- Shoulder anatomy
- How shoulder works
- Painful shoulder
- How to assess
- What are the options
- What to expect

Shoulder Anatomy



Scapulohumeral Rhythm

- **During 180° of abduction**
 - Humerus/Scapula movement: 2/1



Spine Deformity



The Shoulder

- Shoulder pain is common in the primary care setting, responsible for 16% of all musculoskeletal complaints.
- Rotator cuff tears are the most common atraumatic upper-extremity disorder in people aged > 50 years
- Why?



MSK Shoulder Pain Differential

- **From the joint**

- Arthritis
- Ligamentous and labral lesions
- Joint instability
- Bone: fracture, osteonecrosis, neoplasm, infection
- Frozen shoulder

- **Outside of the joint**

- Chronic impingement and rotator cuff tendinitis
- Bicep tendinitis
- Rotator cuff and long biceps tendon tears
- Subacromial bursitis

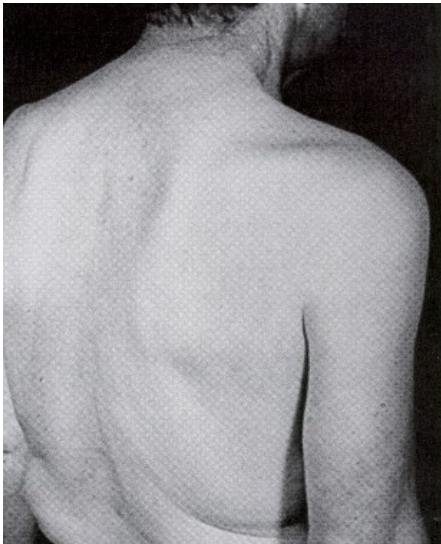
Taking Your History

- Age
- Hand dominance
- Occupation
- Sports/physical activities
- Trauma
- Onset
- Location
- Character
- Duration
- Radiation
- Aggravating/relieving factors
- Night pain
- Effect on shoulder function
- Stiffness/restriction of movement
- Grinding or clicking
- Weakness
- Numbness/tingling
- Pain

Inspection

- Both shoulders fully exposed
- Age, body habitus, “attitude” of the UE, skin

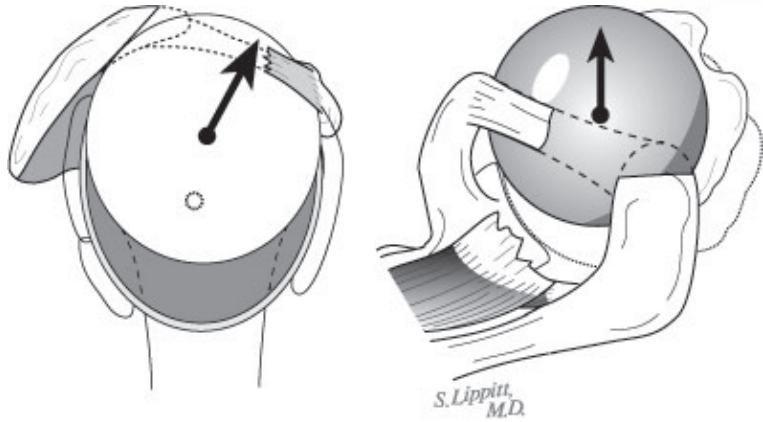
SS, IS atrophy



Biceps deformity

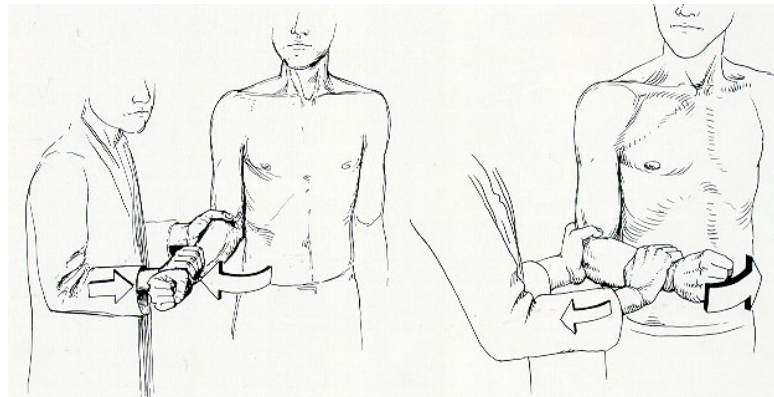
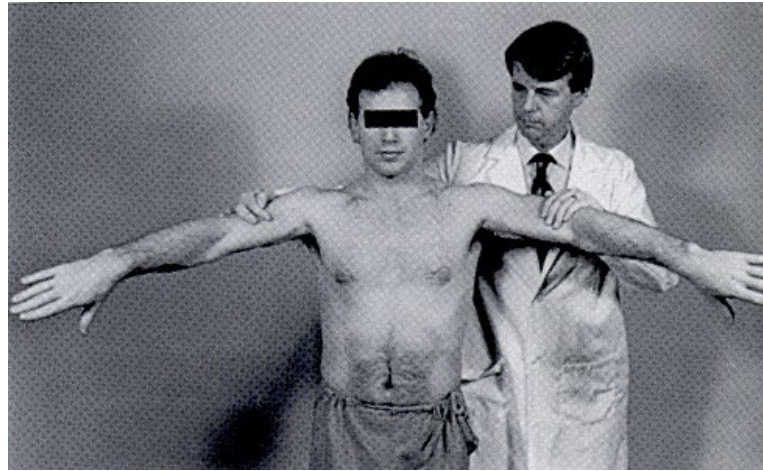


Inspection



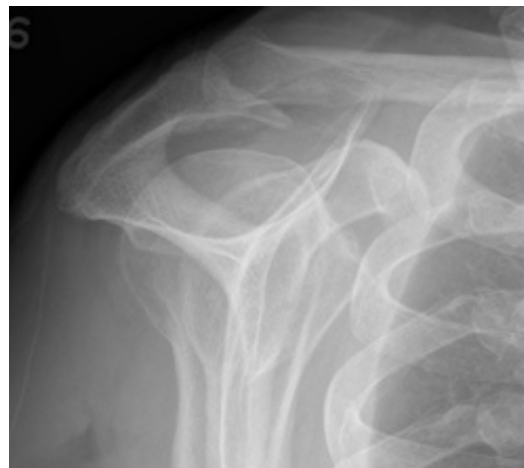
RC Strength Testing

- **Jobe's Test**
 - Supraspinatus
- **Int. Rotation**
 - Subscapularis
- **Ext. Rotation**
 - Infraspinatus



Radiographic Findings

- **Spurs**
- **Acromion Shape**
 - Types 1, 2 & 3
- **Acromiohumeral Interval**
 - <6mm
- **Joint Space Narrowing**



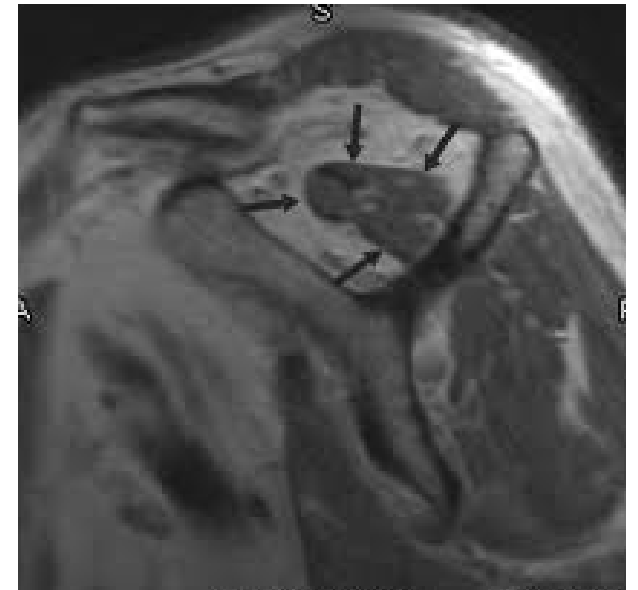
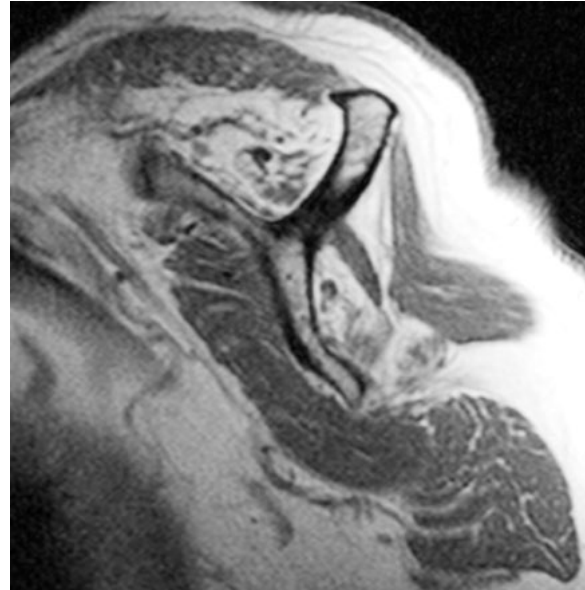
MRI

- **MRI – Full thickness tears**
 - 100% sensitivity
 - 95% specific
 - Predicts size of tear
- **Asymptomatic Patients**
 - 15% full thickness tears
 - 54% pts > 60 year old have partial tears

Fatty Degeneration

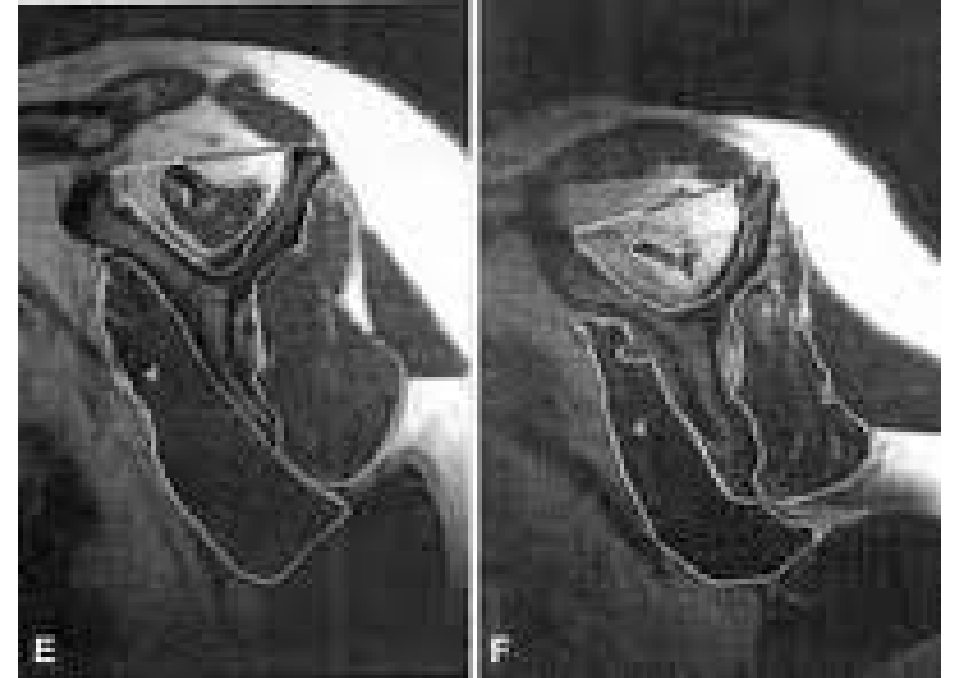
- **Goutallier Classification**

- Grade 0: No fatty deposits
- Grade 1: Some fatty streaks
- Grade 2: More muscle than fat
- Grade 3: Muscle=fat
- Grade 4: Less muscle than fat



Muscle Atrophy

- **Atrophy (Zanetti, Invest Radiol 1998):**
 - Grade 1: Muscle superior to tangent
 - Grade 2: Muscle touches tangent
 - Grade 3: Muscle clearly below tangent



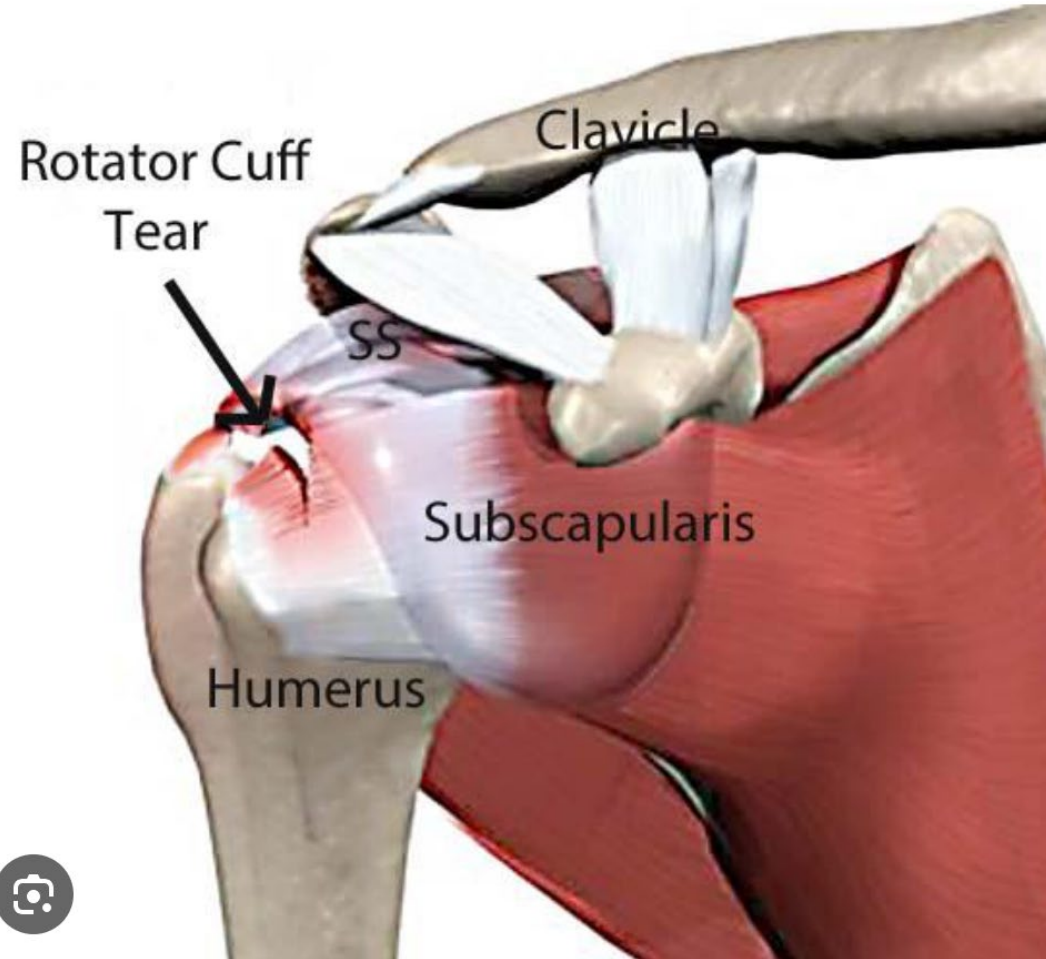
Referred Pain



Selection Injections



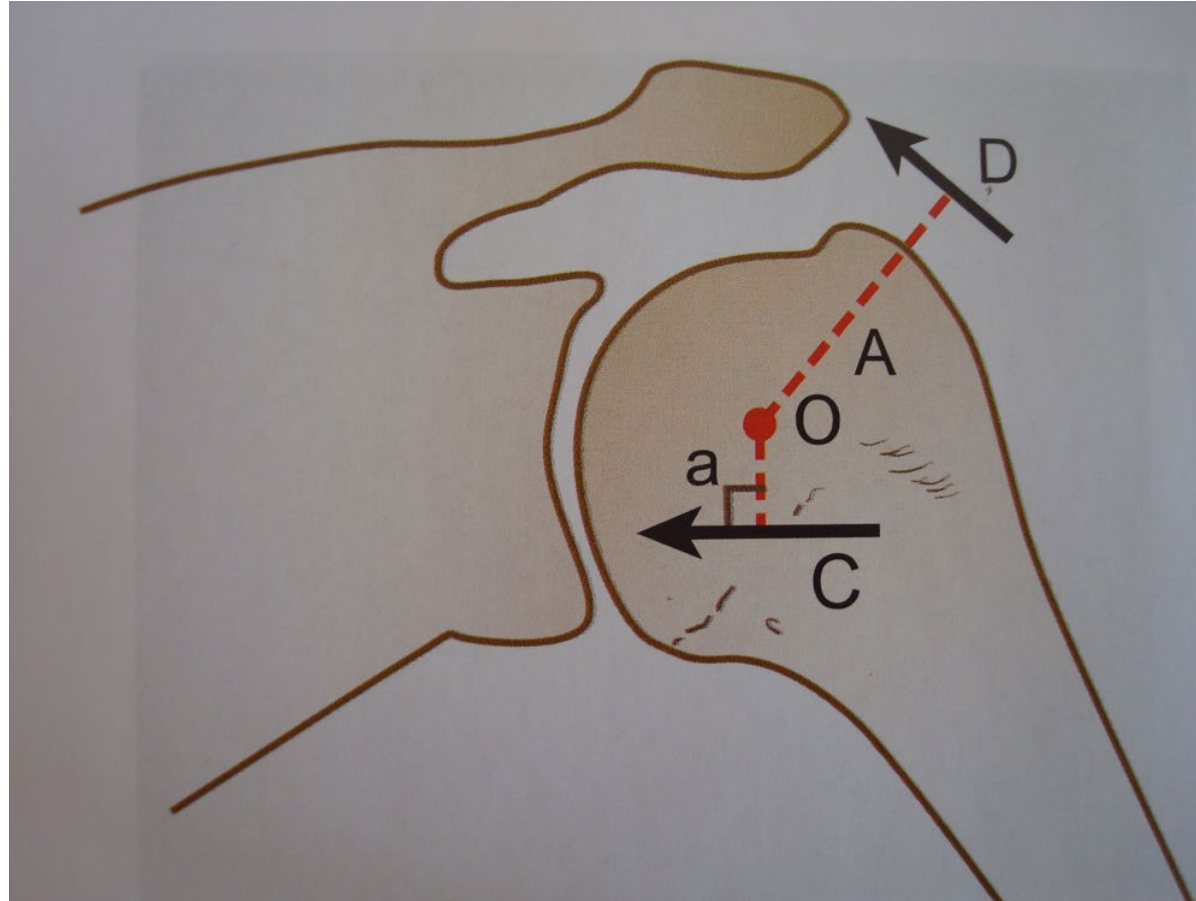
Rotator Cuff Tear



Rotator Cuff Disorders

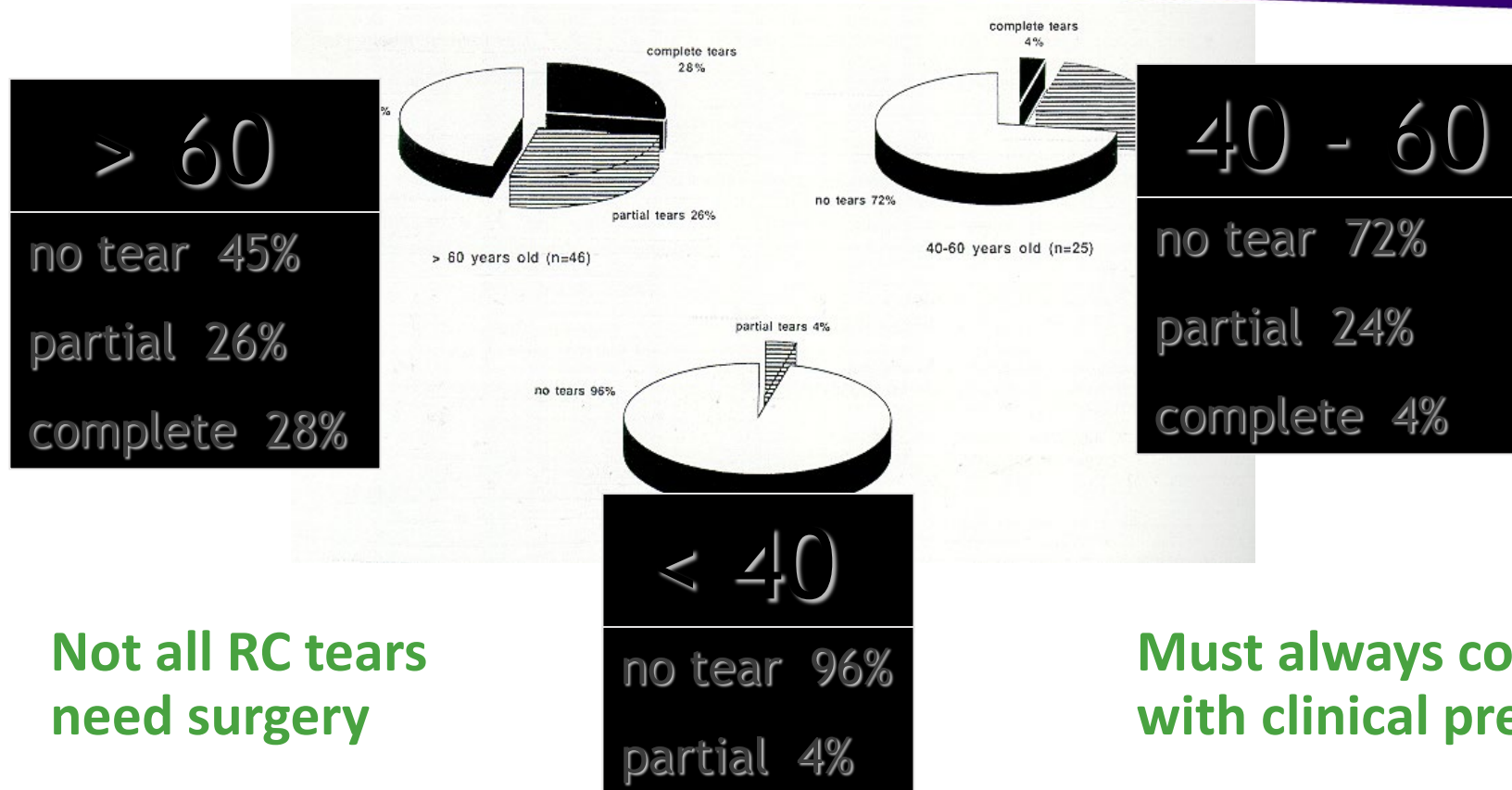
- **Findings Consistent with Rotator Cuff Disorders:**
 - Age usually > 40
 - Upper arm pain, overhead pain, night pain
 - Weakness (pain induced?)
 - Atrophy
 - Painful arc of motion/crepitation
 - Loss of motion
 - Impingement sign
- **Findings Inconsistent with Rotator Cuff Disorders:**
 - Age < 30
 - No upper arm pain, no weakness, No impingement sign

NEED TITLE



Burkhart

RC Tears On MRI In Asymptomatics



Non-operative Management

- **Activity Modification**

- Simple Analgesics/NSAIDs

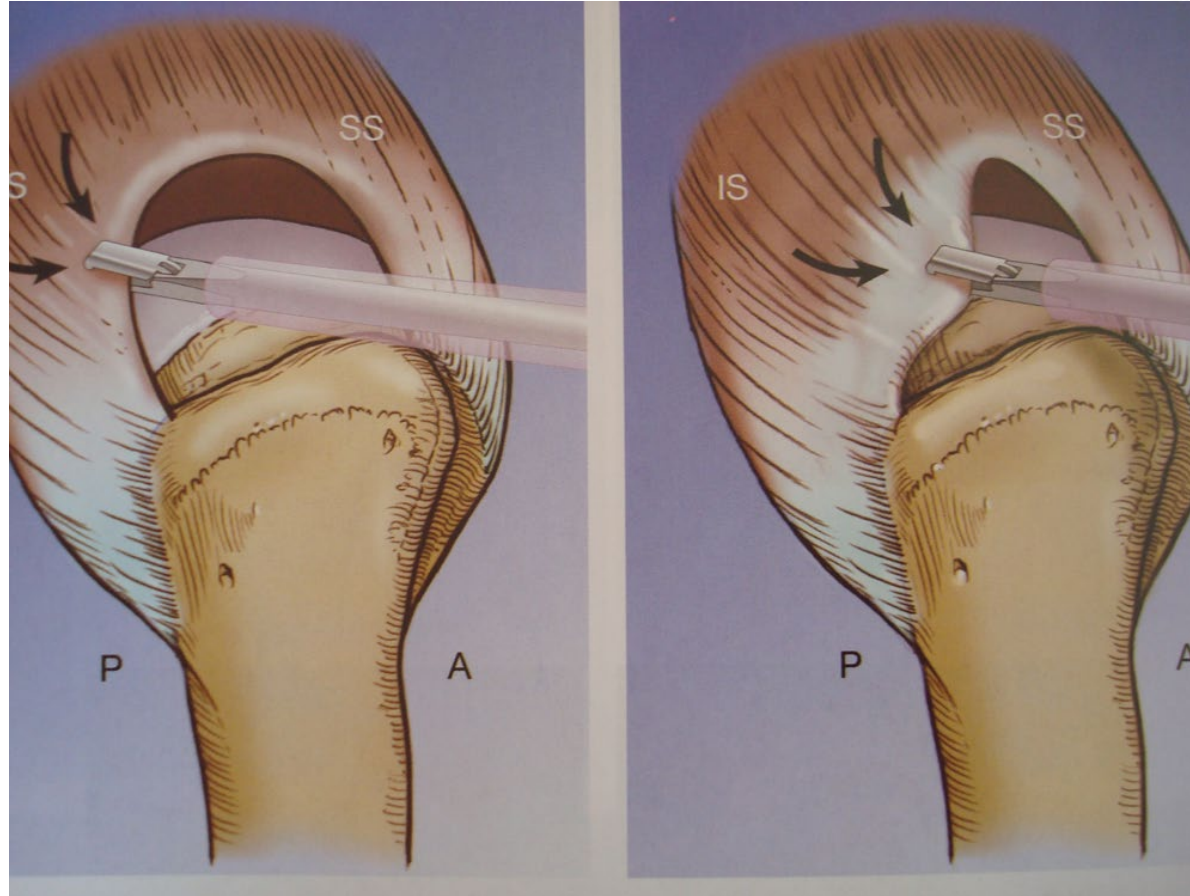
- **Physical Therapy:**

- Modalities to lower acute inflammation
- Stretching to restore full elevation/rotation
- Strengthening of RC and scapular stabilizers *after* ROM is restored

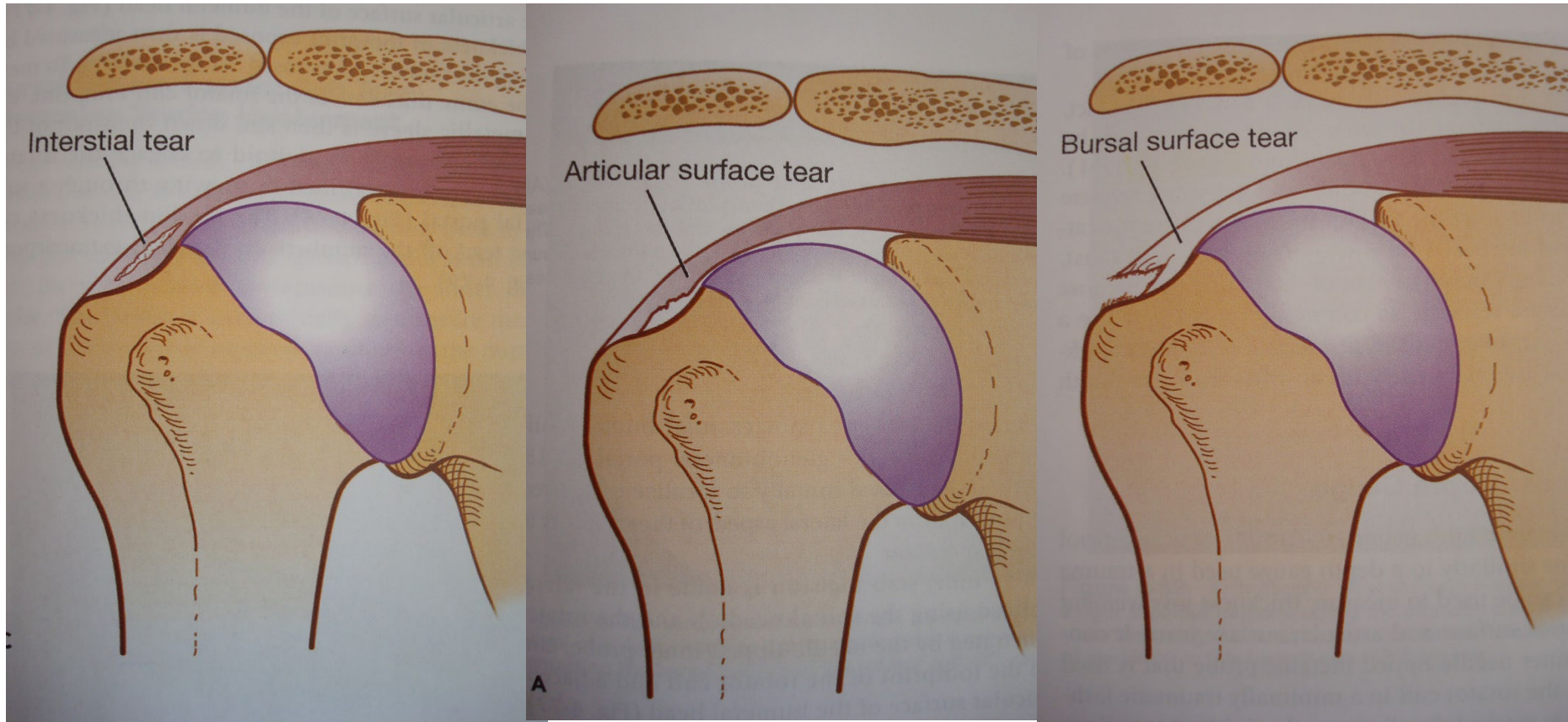


- **Steroid injection**

Tear Pattern

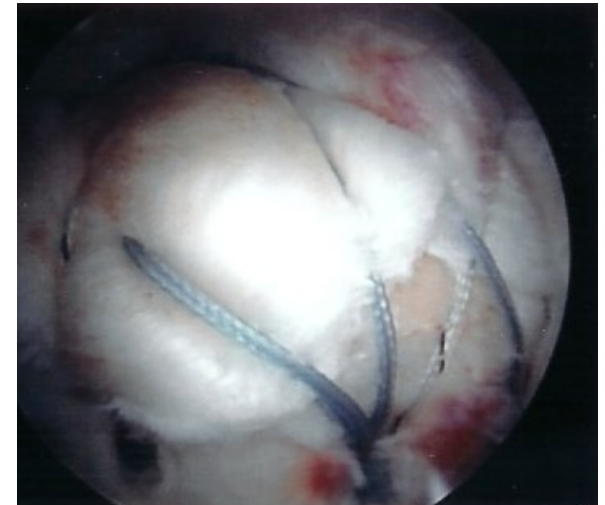
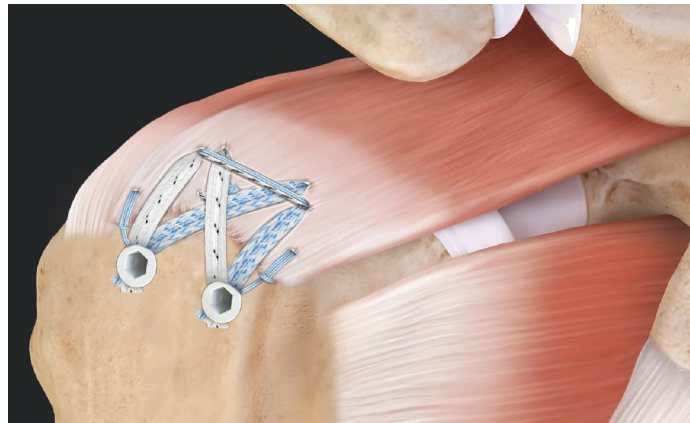
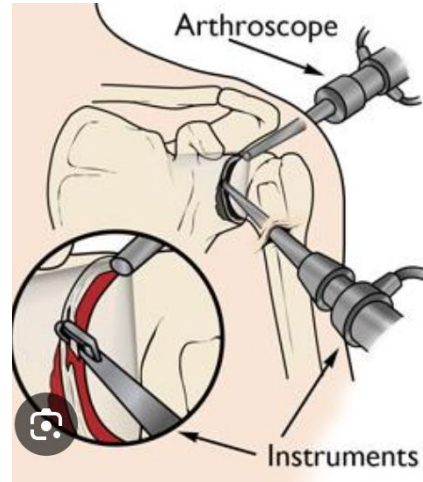


Partial Thickness Tear



RC Repair

- **Options:**
 - Open
 - Arthroscopic



Post-operative Rehab – 3 Phases of Recovery

- **Healing Phase (surgery to 4-6 weeks)**
 - Sling or Immobilizer
 - Passive range of motion (Elevation: 120 / Ext. rotation: 20) ???
- **Recovery of Motion (6-12 weeks)**
 - Pulley and wand exercises / active assisted range of motion
 - Continue passive range of motion
 - No lifting > 5 lbs
- **Strengthening Phase (>12 weeks)**
 - Isometric strengthening
 - Gradually increase activity
 - Unrestricted activity at 4-6 months

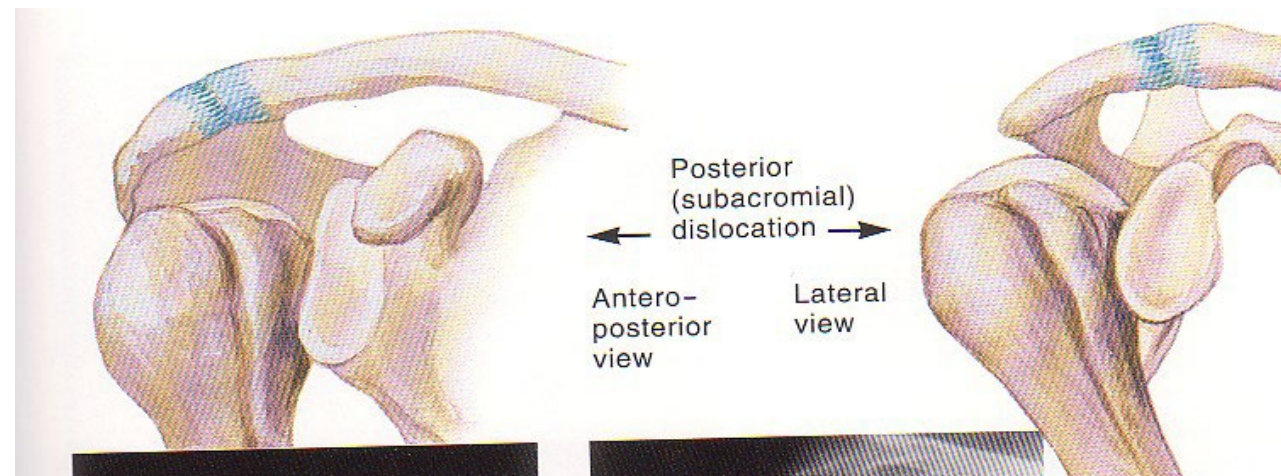
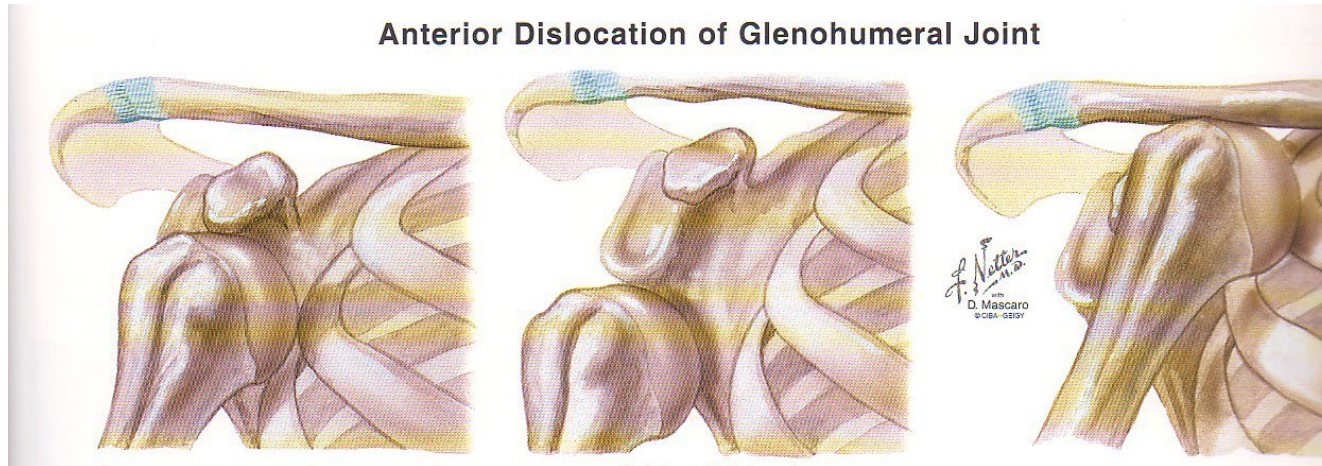
Massive RC Tear

- Non-operative treatment
- Repair (partial)
- Debridement
- Allograft
- Balloon
- Tendon transfer
- Shoulder fusion
- Reverse shoulder arthroplasty

Shoulder Instability

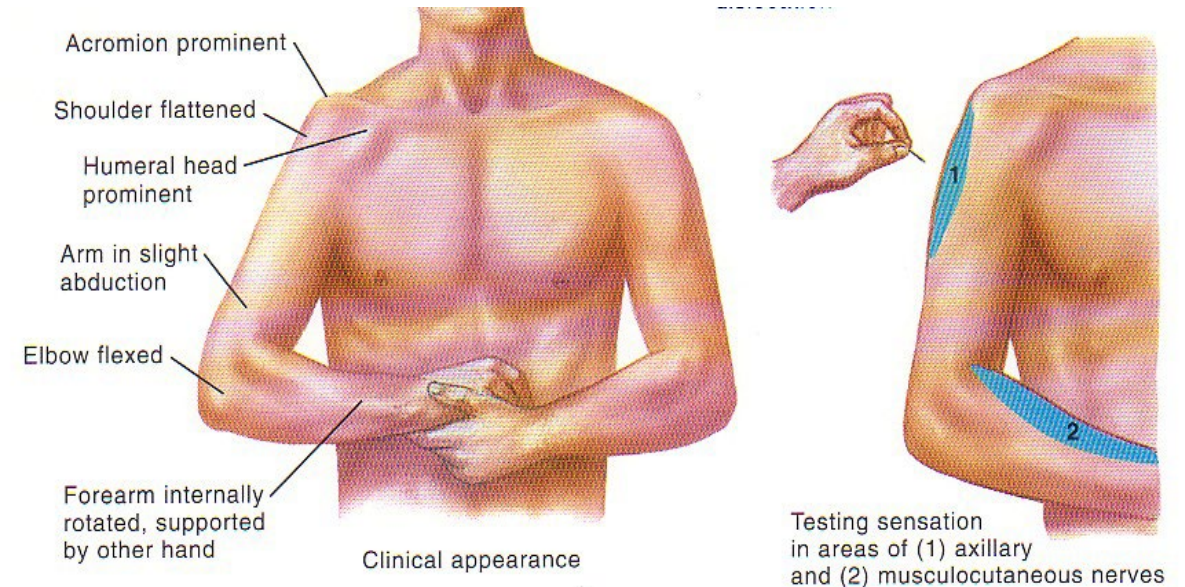


Shoulder Dislocation



Associated Injuries

- Rotator cuff (age dependent): 30% in patients over age of 40 years, 65% of patients <50
- Axillary nerve injuries: 25%



Non-operative Management

- Immobilization



Shoulder Arthritis



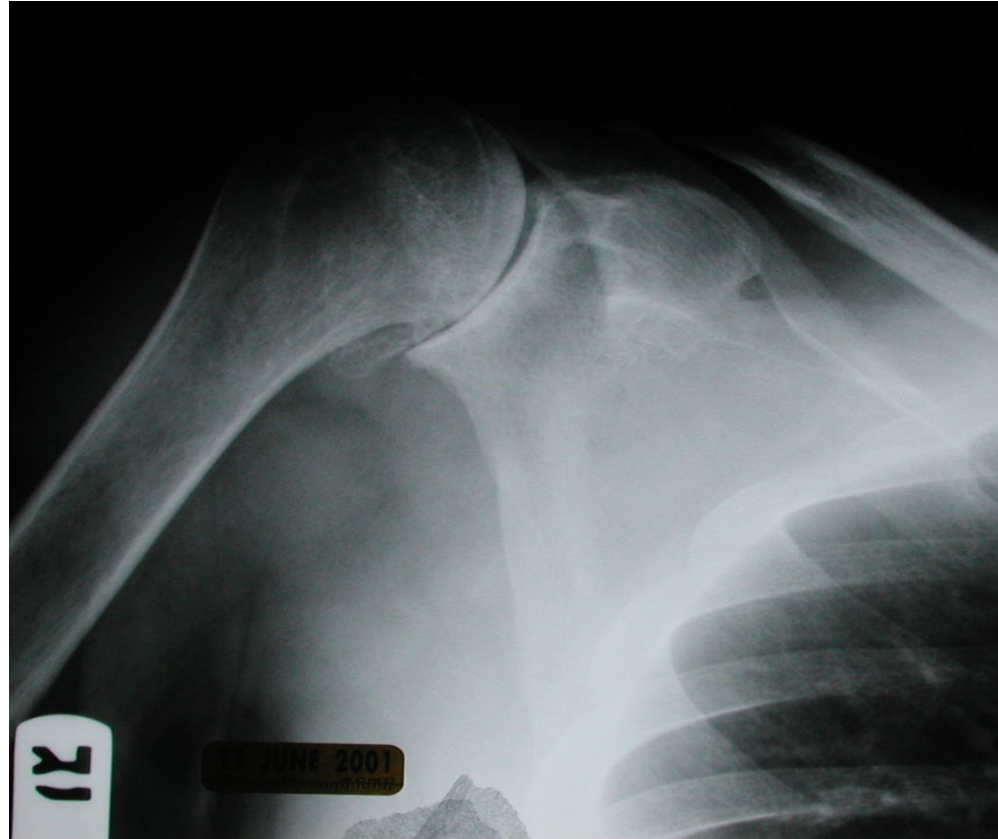
MemorialCare[™]
Long Beach Medical Center

Shoulder Arthritis

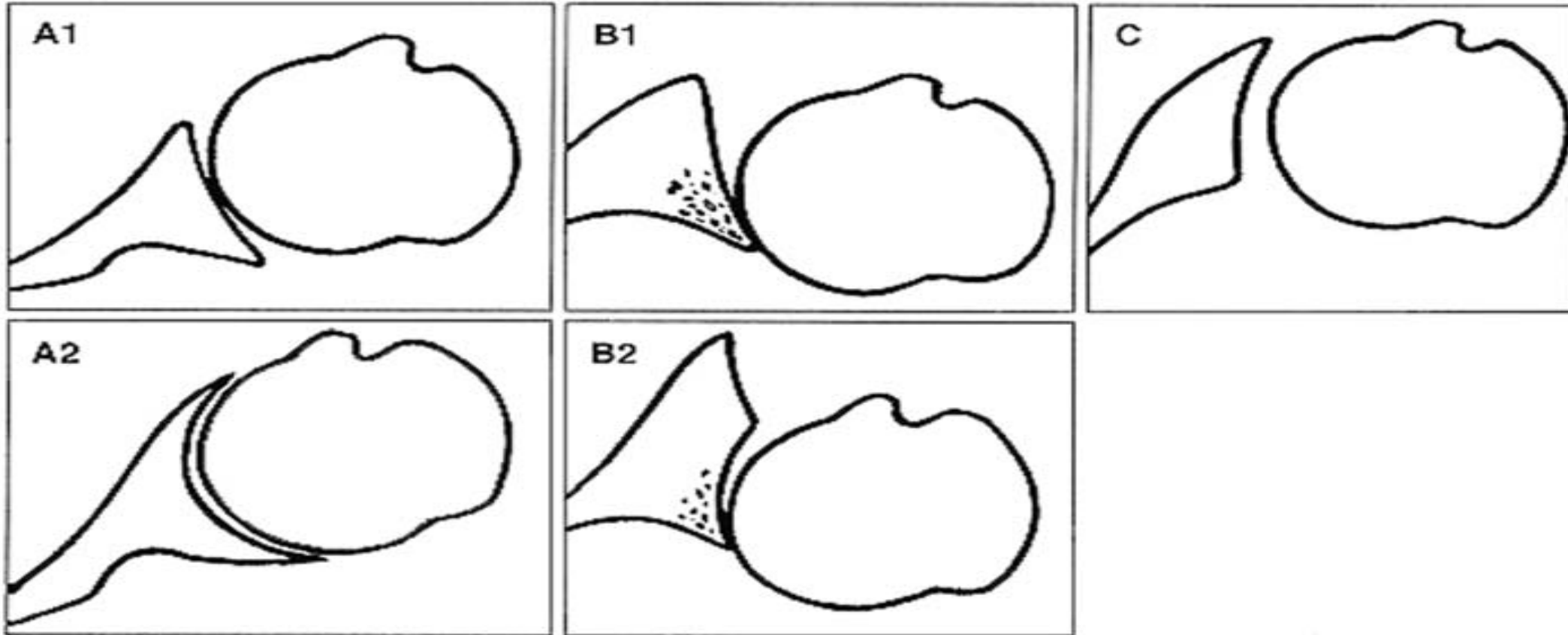
- ✓ Osteoarthritis
- ✓ Rheumatoid arthritis
- ✓ Osteonecrosis
- ✓ Instability arthropathy
- ✓ Rotator cuff arthropathy
- ✓ Rotator cuff arthropathy
- ✓ Post-traumatic arthritis
- ✓ Crystalline arthropathy
- ✓ Hemophiliac arthropathy
- ✓ Other

Osteoarthritis

- Age: >65
- Male > Female



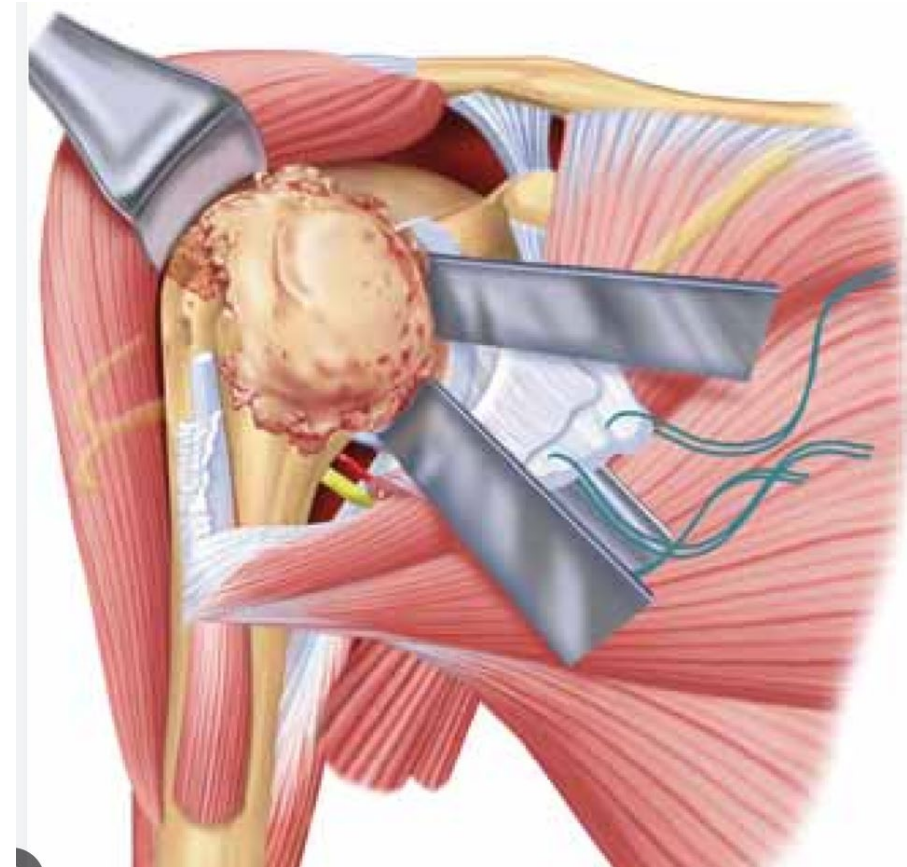
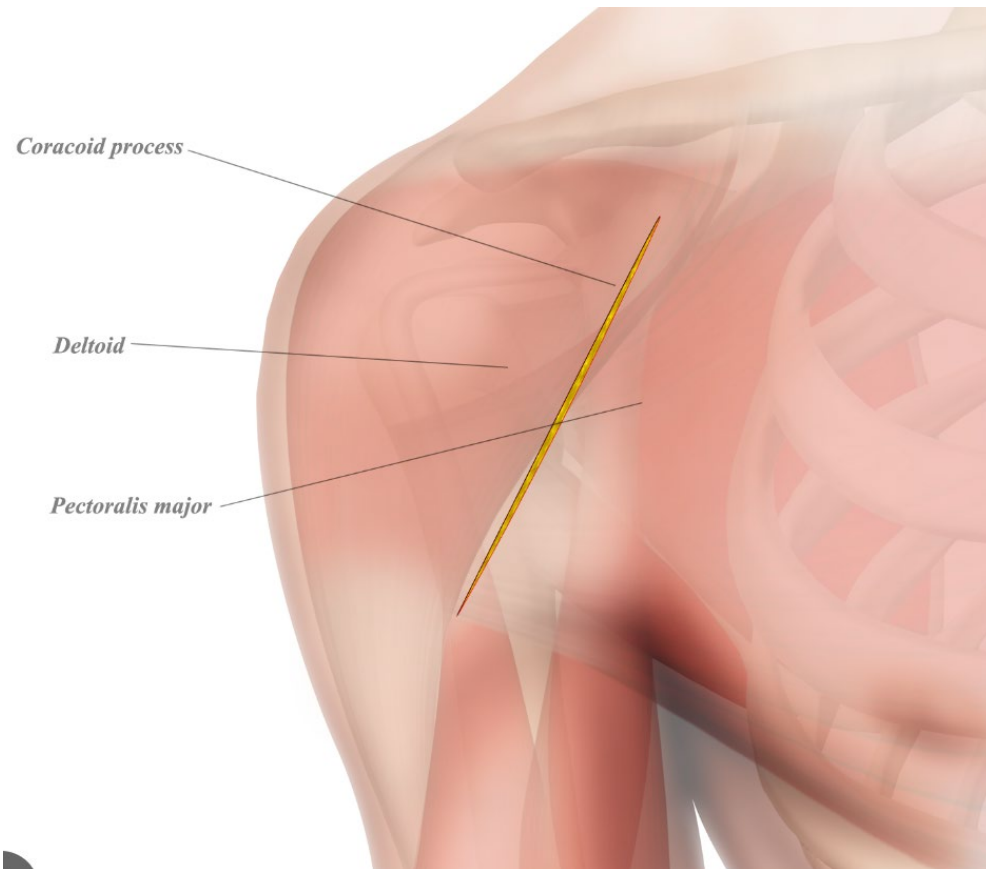
Watch et al:



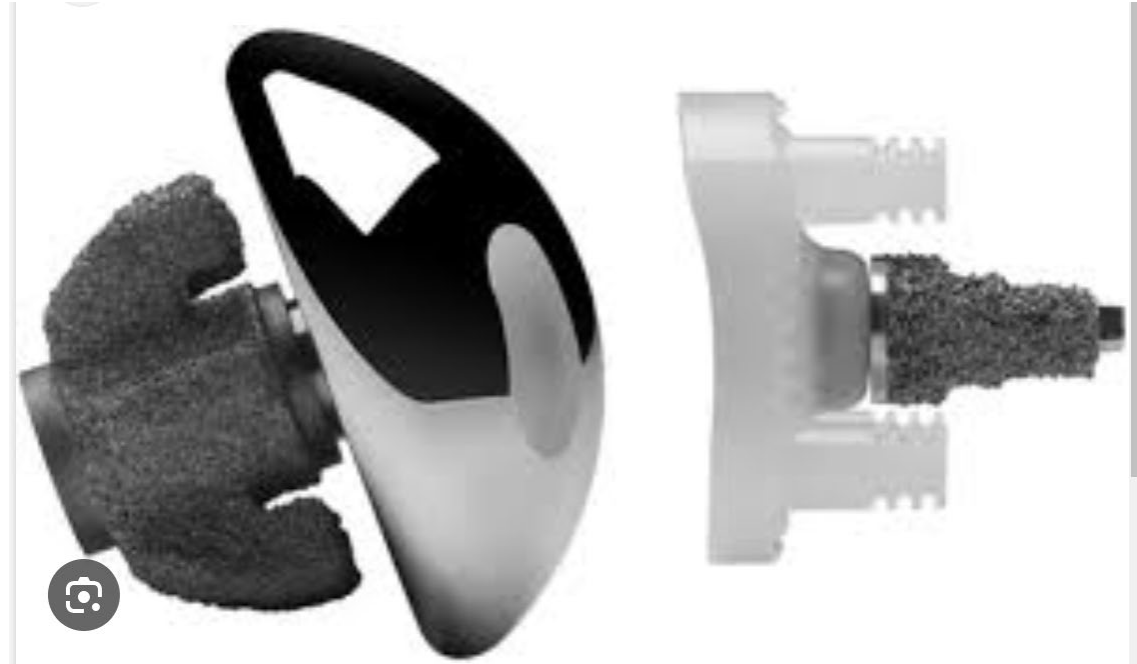
Treatment

- **Non-Operative:**
 - Activity modification, NSAID, Physical therapy, Steroid injection
- **Surgery:**
 - Shoulder arthroscopy and debridement
 - Hemiarthroplasty
 - Anatomic shoulder arthroplasty
 - Reverse shoulder arthroplasty

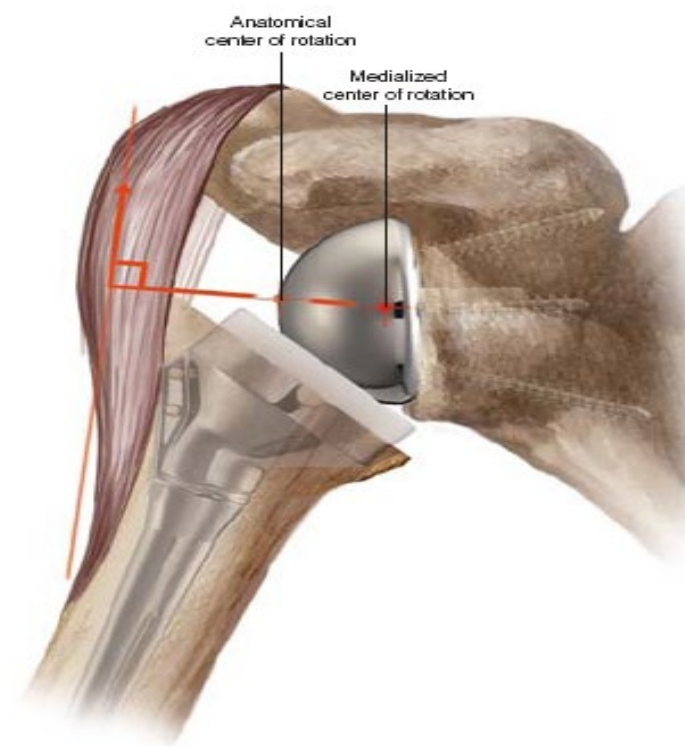
Treatment



Treatment







Fracture





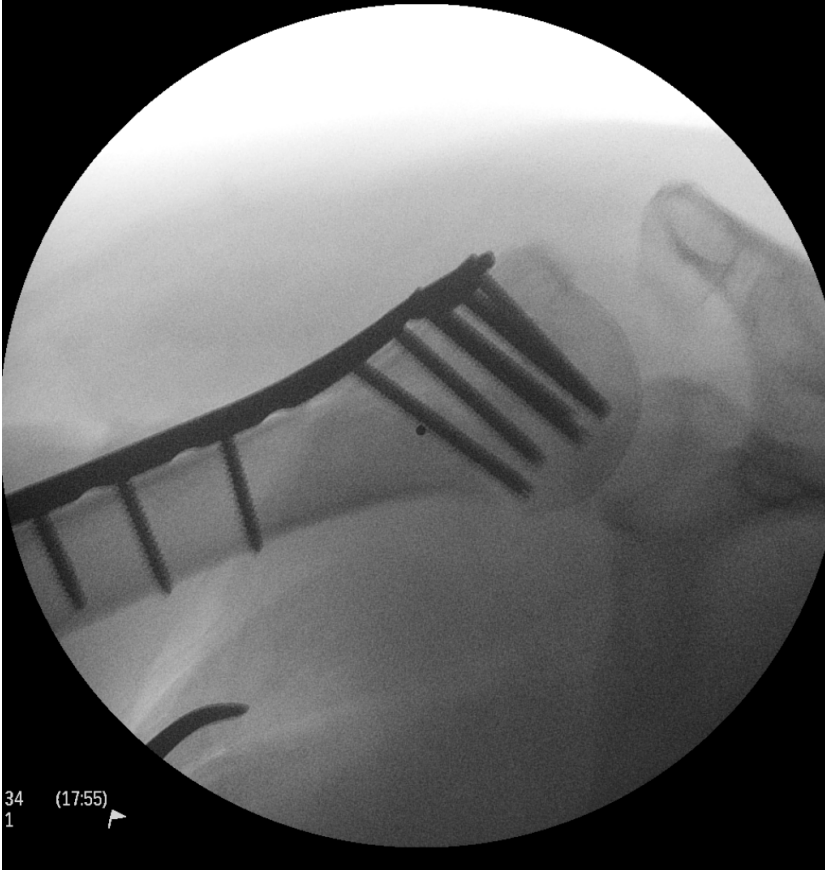
Treatment

- **Goal:**
 - Minimize pain
 - Maximize function
- **Treatment must be individualized**

Treatment

- **Non-Operative**
- **Operative Management**

Treatment



Frozen Shoulder



Definition

- A condition of uncertain etiology characterized by significant restriction of both active and passive shoulder motion that occurs in the absence of a known intrinsic shoulder disorder.

Clinical Phases

- Initial inflammatory “painful” phase, movements slightly restricted (2-9 months)
- The proliferative or “freezing” phase occurs next and is characterized by progressive and global loss of motion (3-12 months)
- The third and final “thawing” phase is characterized by resolution of the painful contracture. The process is often slow and may be punctuated by periods where recovery seems to plateau before resuming its course of progress. Improvement may extend over a period of time, ranging from 3 months to 3 years, but it can be prolonged up to 6 or 7 years

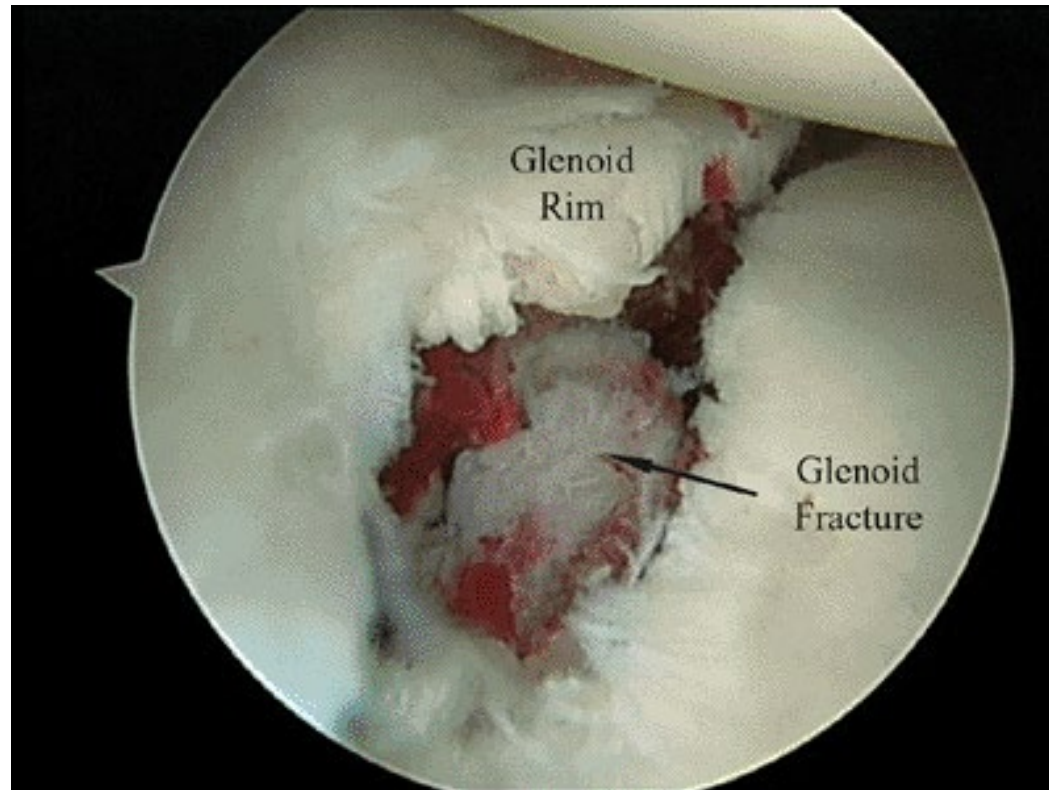
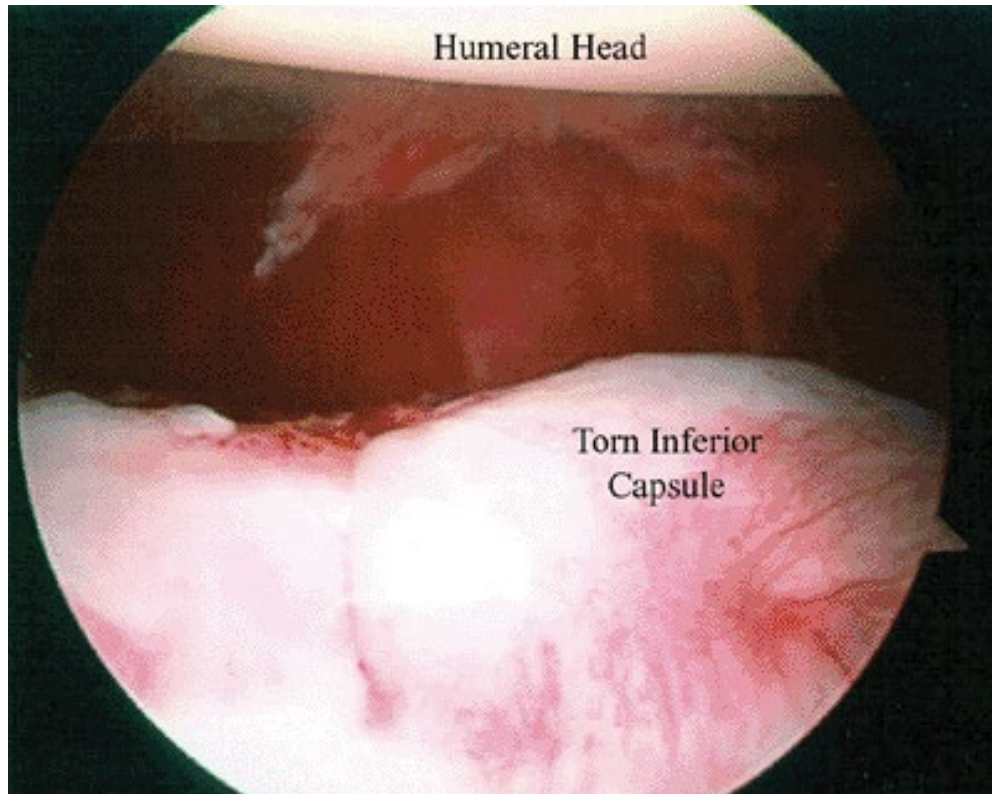
Demographics

- 5th and 6th decade
- 2-5%
- Female, parkinsonism, neoplasms, breast cancer, cerebrovascular accident, myocardial infarction, and diabetes
- More common in persons in sedentary vocations
- Diabetes is associated with a significantly worse prognosis, greater need for surgery, and suboptimal results

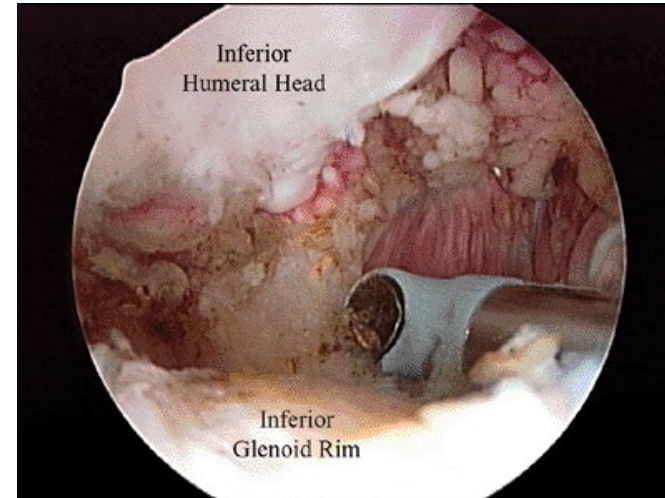
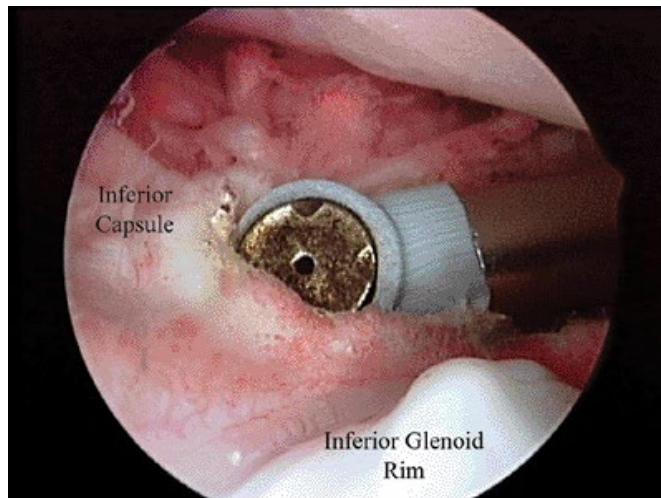
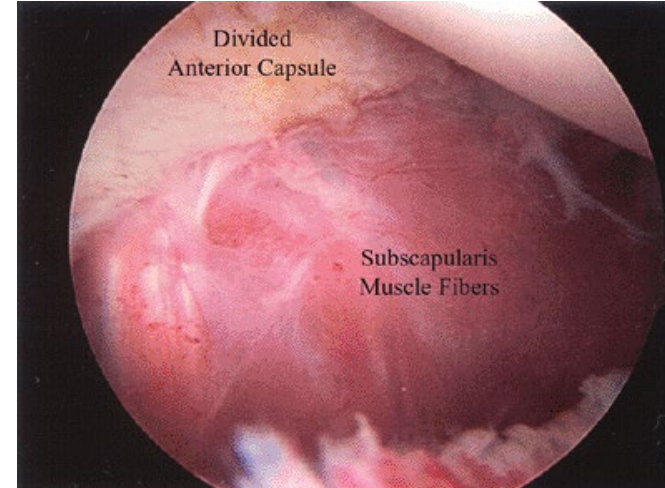
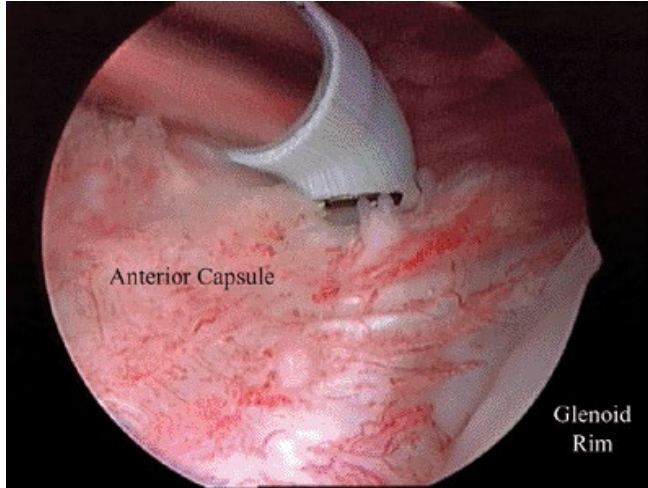
Non-Operative Management

- Physical therapy combined with a home exercise program is the mainstay of treatment, regardless of stage
- Patients should be counseled that they face a prolonged recovery period
- NSAID may be helpful

Manipulation Under Anesthesia



Operative Treatment



Elbow Arthritis



Etiology

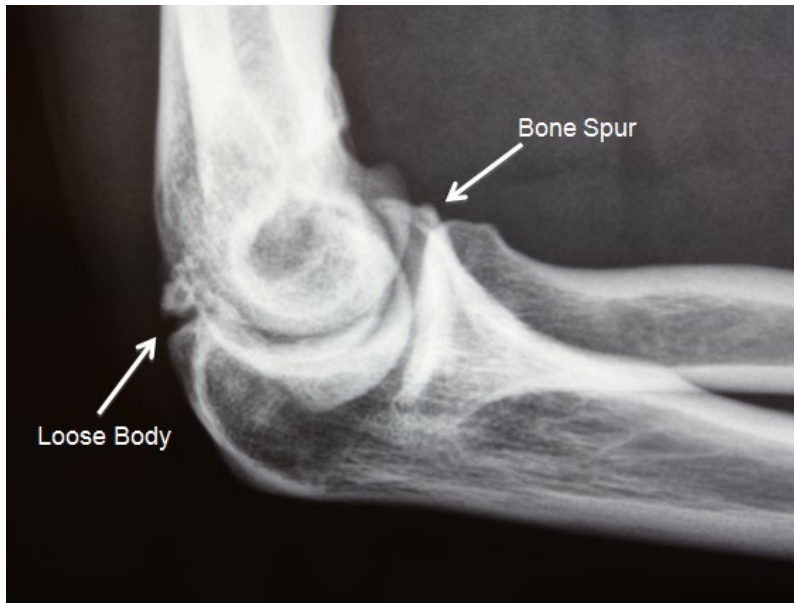
- Elbow arthritis: Less common than shoulder
- RA is the most common form of elbow OA
- Post-traumatic OA
- Primary OA (spares joint space early, dominant arm, male, younger, heavy labor or sport activity)
- Other

Symptoms

- Pain: end, mid-arc
- Stiffness
- Locking and clicking
- Neurologic deficit

Treatment

- Non-op: NSAID, steroid injection, activity modification, PT, Bracing
- Operative: open/arthroscopic osteocapsular arthroplasty, TEA



Frequently Asked Questions

1. Am I too old for surgery?
2. How long can I wait?
3. What can I do for pain?
4. Is surgery very painful?
5. Can I have both shoulders done at the same time?
6. My friend had the same surgery and
7. Do I need help after surgery?
8. I need knee surgery. Should I have my shoulder fixed first?
9. Can I have my vaccine before surgery
10. Does PRP work?
11. Does stem cell work?

Thank You



Treating The Neck Pain Patient

Vu H. Le, M.D.

Orthopaedic and Spine Surgery



Background

Grew up in Orange County

Undergraduate

- UCLA



Medical School

- Ohio State University



UNIVERSITY
OF MIAMI

Orthopaedic Residency

- UCI Medical Center



Spine Surgery Fellowship

- University of Miami/Jackson Memorial Hospital (Adult)
- Miami Children's Hospital (Pediatric)

Introduction

- Up to 80% of population will have neck pain at some me time in their life
- Females > males
- High income countries>low/middle income countries
- Urban > rural areas
- Risk of neck pain increases up 50 years of age then decreases
- Source for neck pain can be difficult to diagnose due to multiple segments and anatomical structures
- Fortunately, most neck pain resolves within 3 months with conservative care

Multifactorial causes

Psychological factors

- Stress, anxiety, depression

Sleep problems

- Insufficient quantity and quality

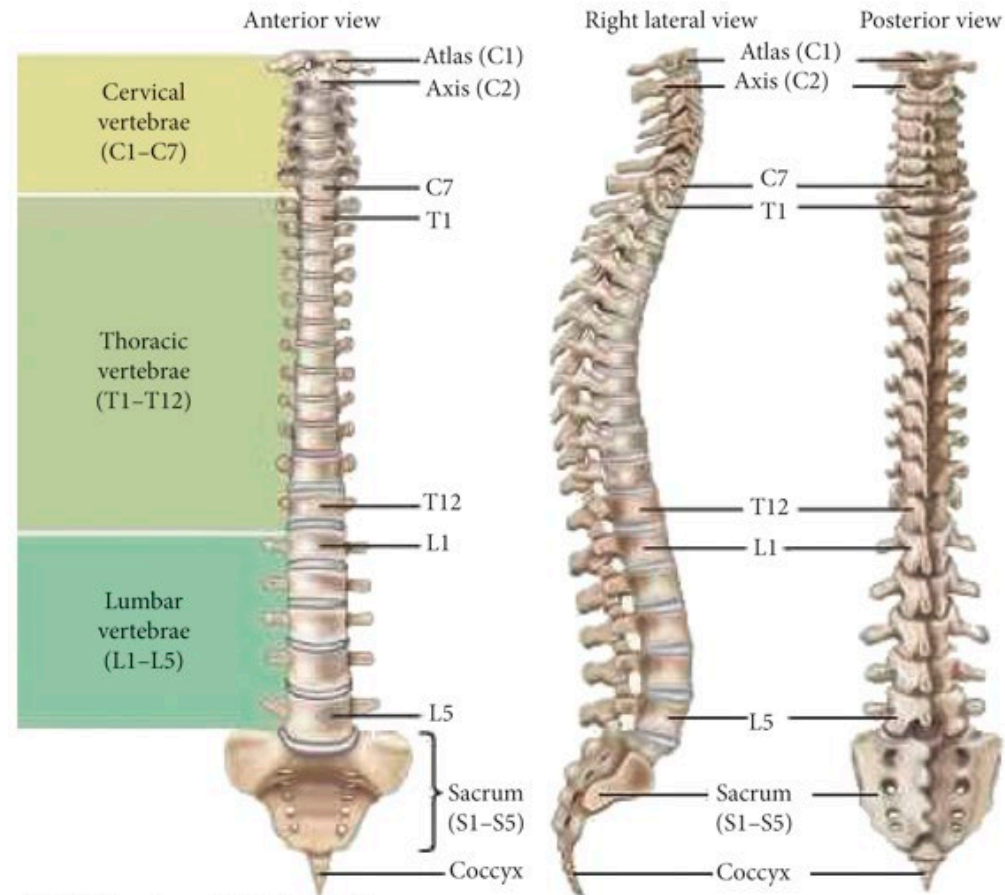
Work related factors

- Prolonged sitting, computer work

Musculoskeletal disorders

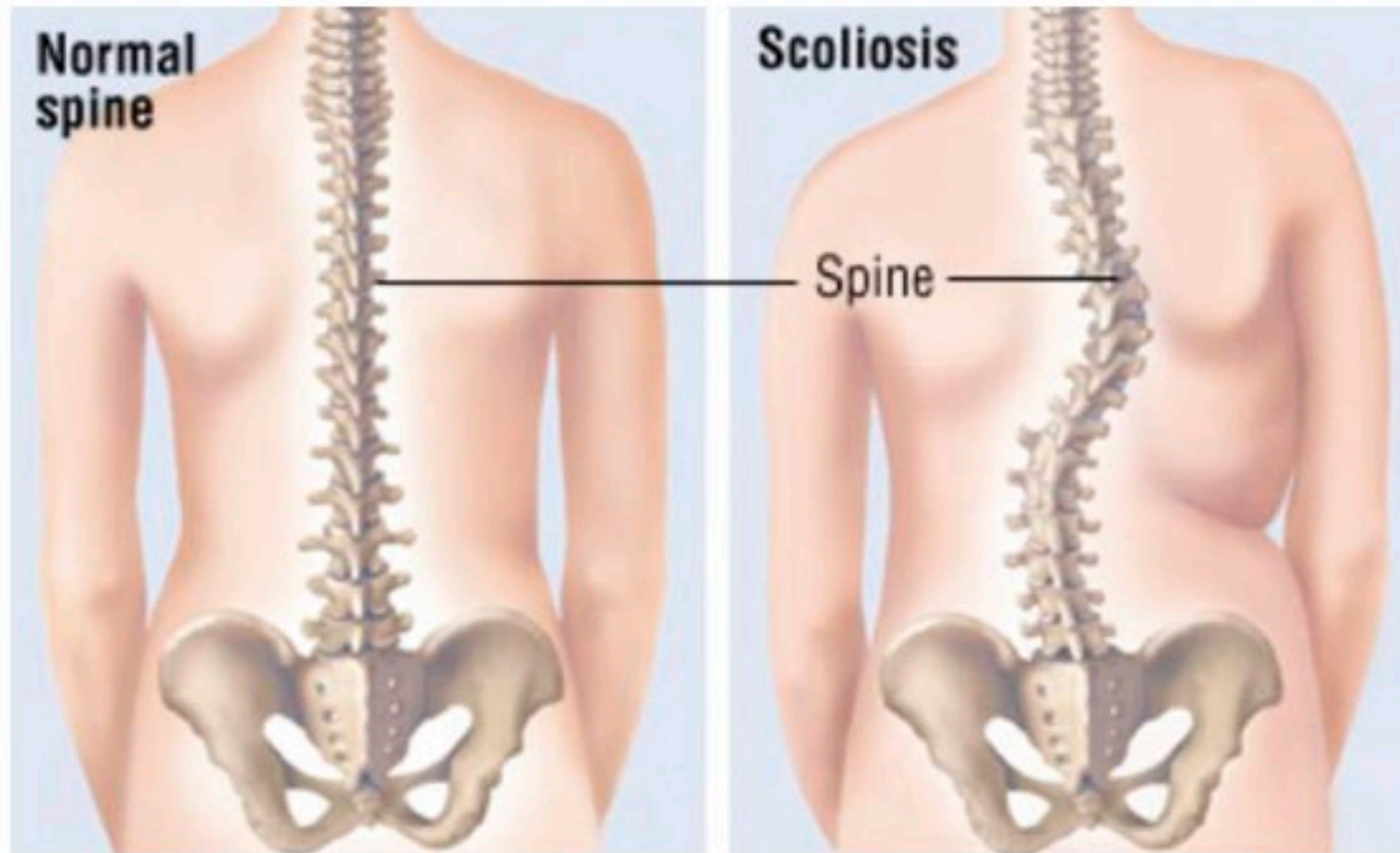
- Osteoarthritis – spondylosis, degenerative disc disease
- Inflammatory arthritis – rheumatoid arthritis, lupus
- Fibromyalgia

Anatomy

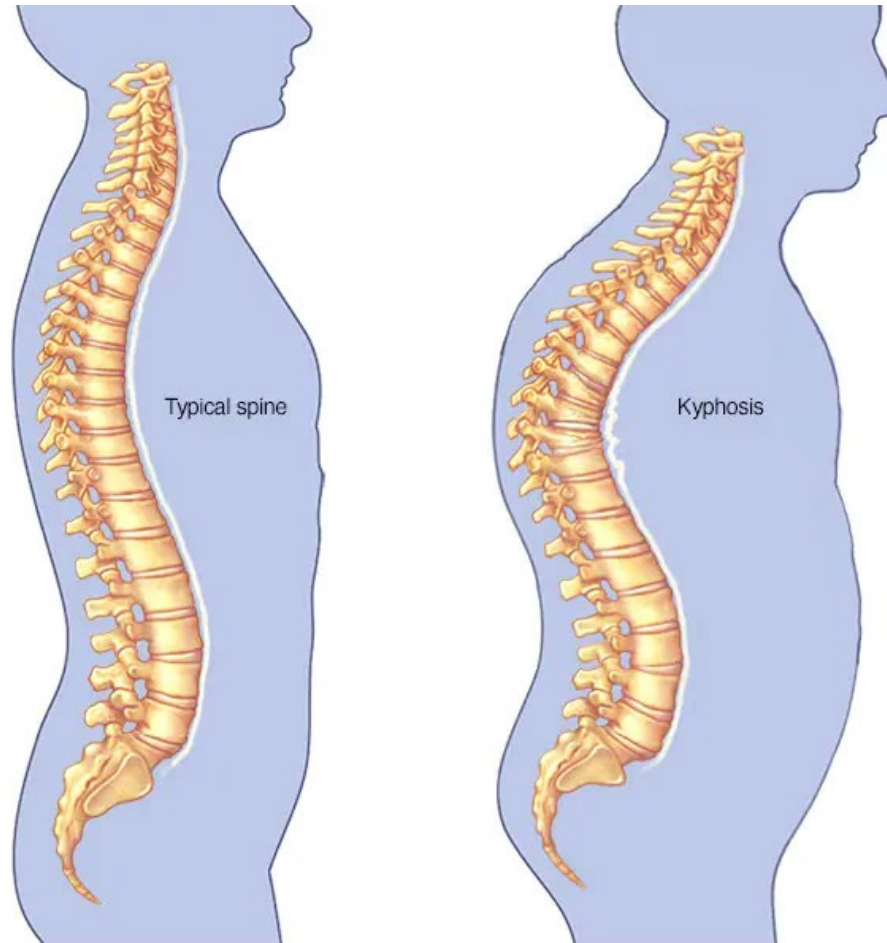


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Anatomy

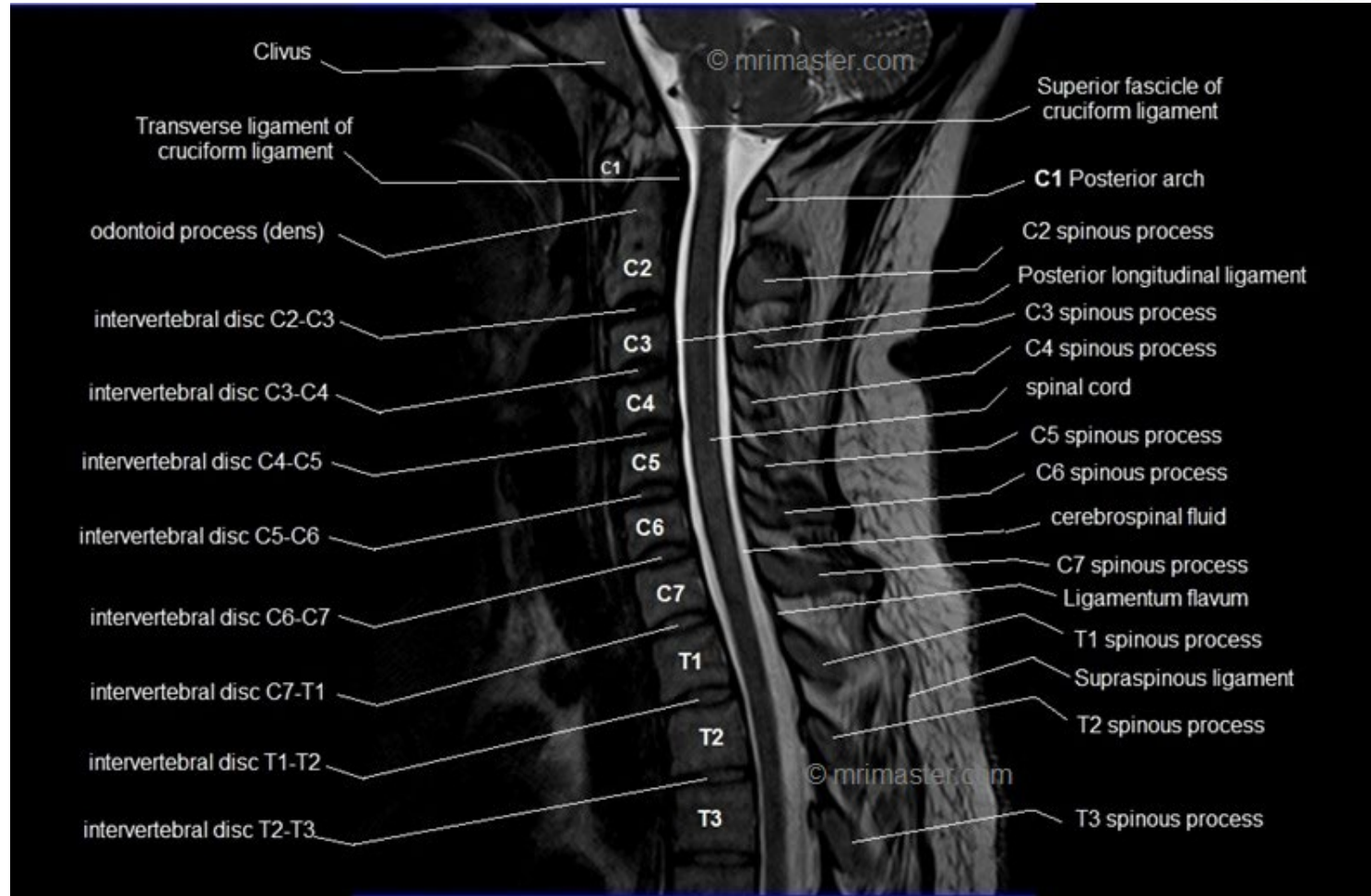


Anatomy

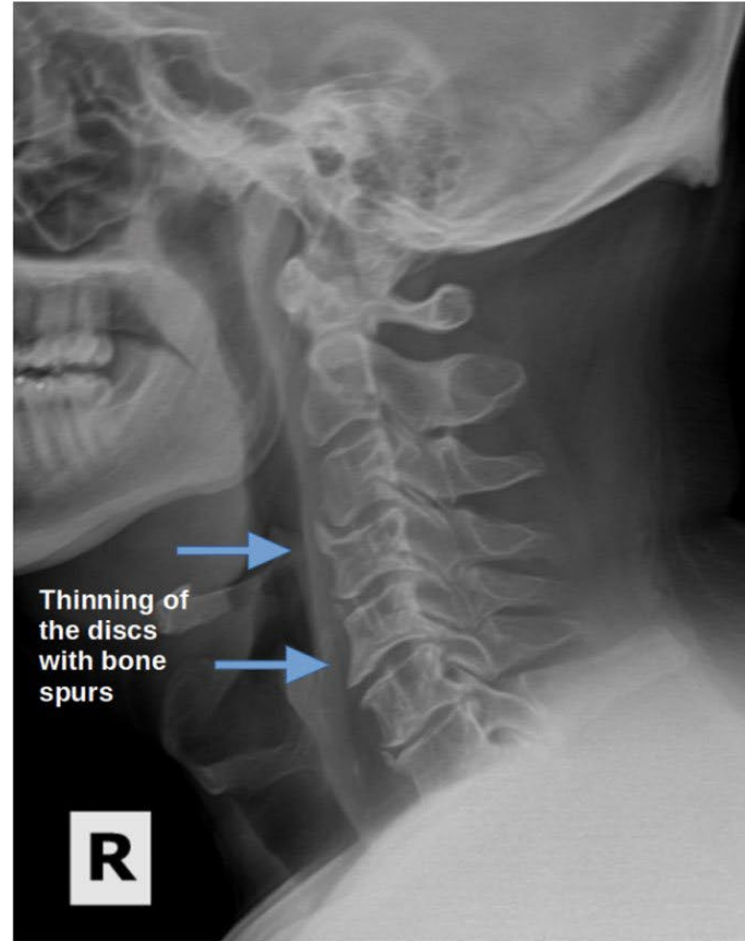
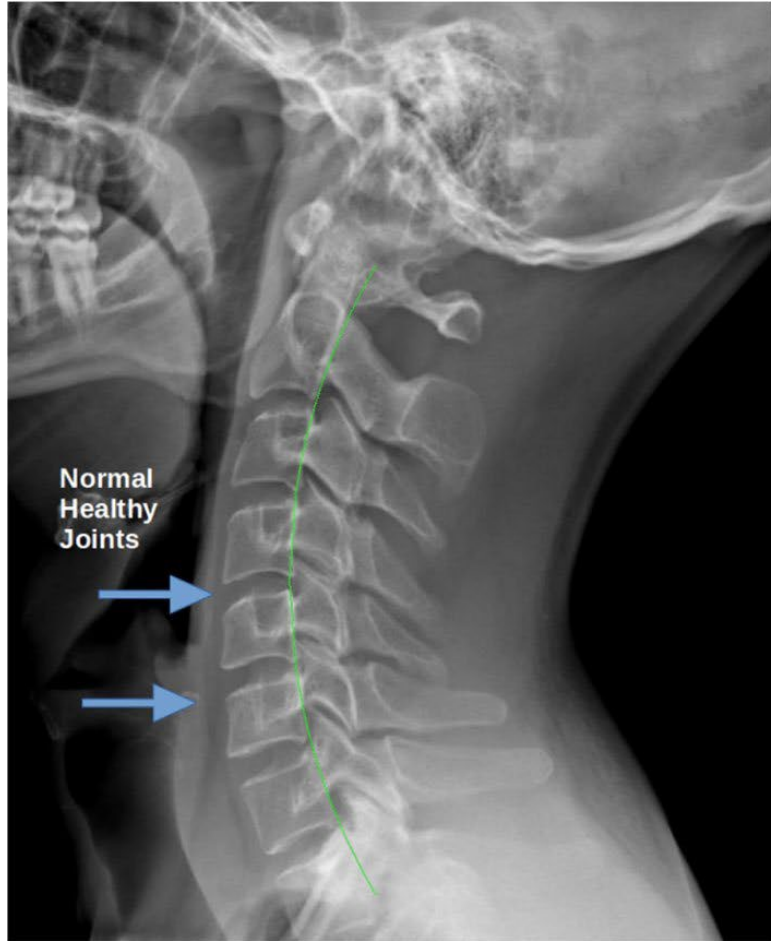


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Anatomy



Anatomy



Anatomy

Normal



Degenerative Disc Disease



Causes

Cervical “strain” or “sprain”

- Overloading or stretching of muscles/ligaments

Degenerative Changes

- Osteoarthritis causing degenerative disc disease and facet arthritis
- Disc herniation

Fractures

Spinal Stenosis

Inflammatory Arthritis

- Rheumatoid arthritis, etc.

Infections

Examination

History

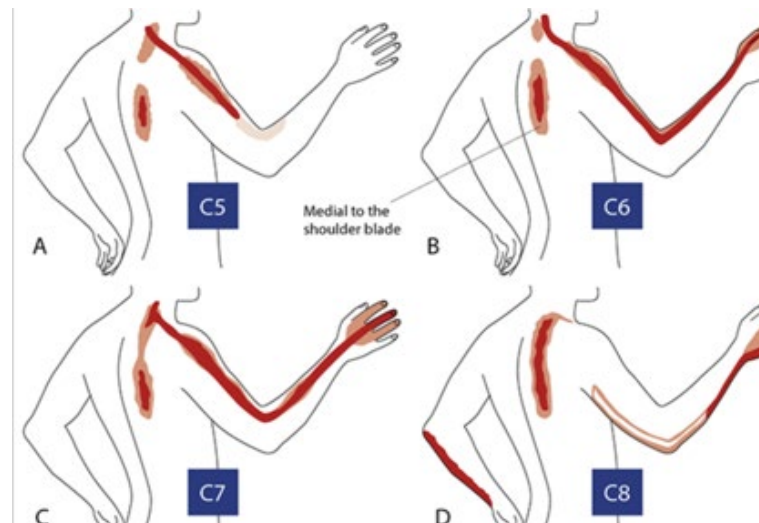
- Neck pain
- Shoulder/arm pain from pinched nerves (radiculopathy)
 - Numbness/tingling
- Important to rule out shoulder pathology in patients with shoulder pain



Palpate location of pain

Check range of motion of neck

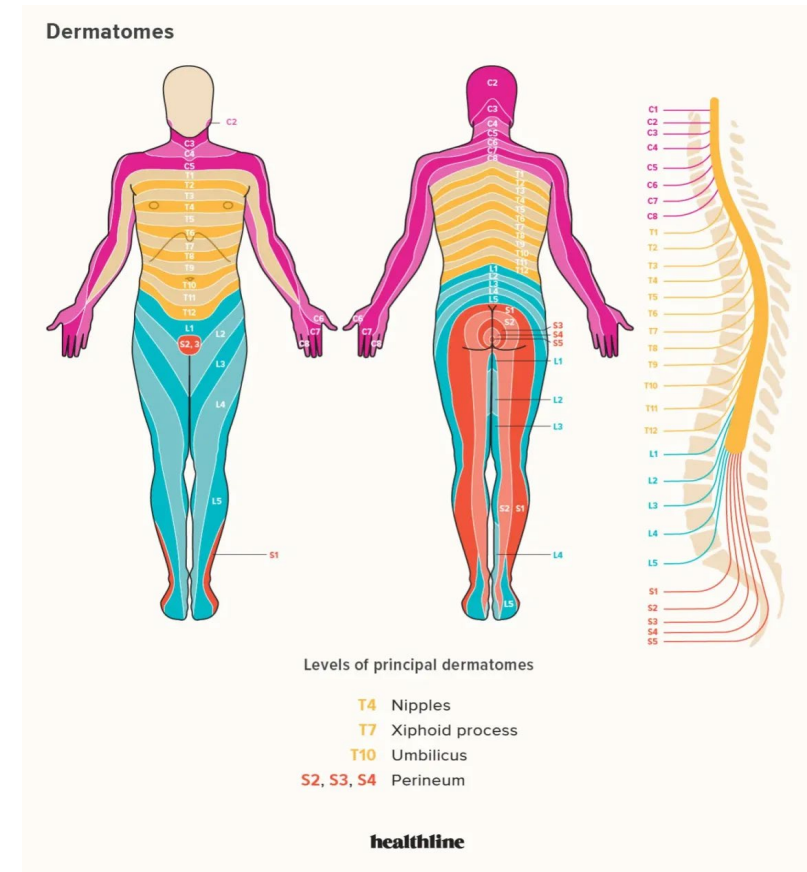
Neurological examination



Examination

Neurological examination

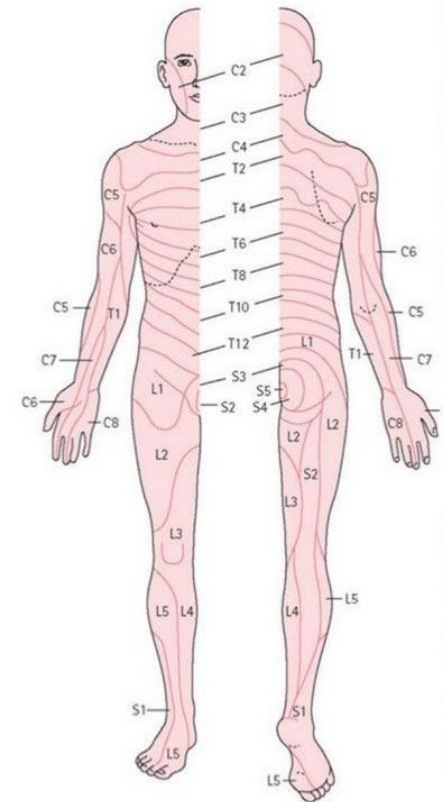
- To figure out which nerve is affected (pinched) if there's arm pain
- When a nerve is pinched, it can affect an area of sensation it supplies (dermatome), a group of muscles it supplies (myotome), and/or reflexes it's associated with



Examination

Neurological examination

- To figure out which nerve is affected (pinched) if there's arm pain
- When a nerve is pinched, it can affect an area of sensation it supplies (dermatome), a group of muscles it supplies (myotome), and/or reflexes it's associated with



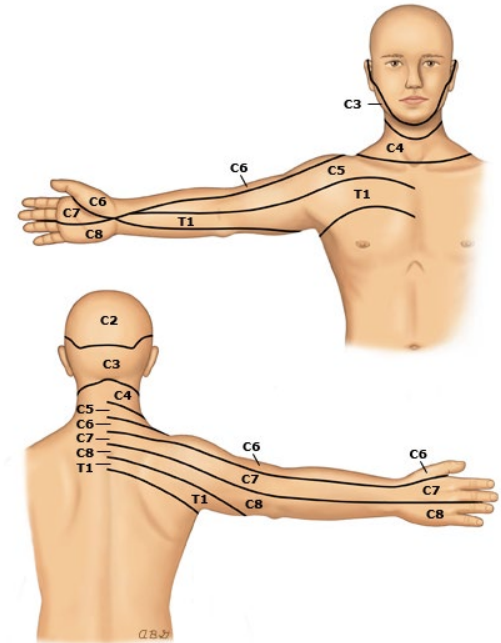
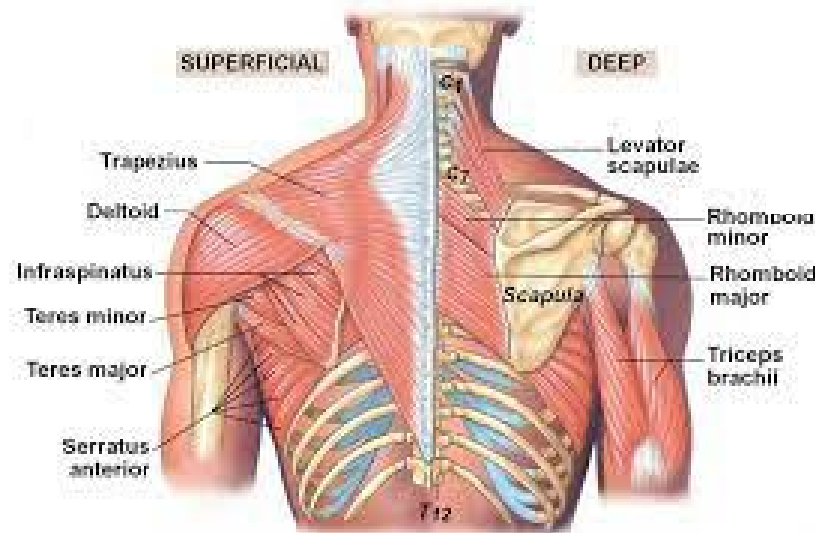
Nerve Root Motor Function	
Nerve Root	Test
C5	Elbow Flexion
C6	Wrist Extension
C7	Wrist Flexion, Finger Extension
C8	Finger Flexion
T1	Finger Abduction
L1,2	Hip Abduction
L3,4	Knee Extension
L5, S1	Knee Flexion
L5	Great Toe Extension
S1	Great Toe Flexion

Root Values for Tendon Reflexes	
Root Value	Tendon Reflexes
C5	Biceps
C6	Brachioradialis
C7	Triceps
L3,4	Quadriceps
L5, S1	Achilles Tendon

Examination

In patients with neck and shoulder pain—important to make sure pain isn't coming from the shoulder

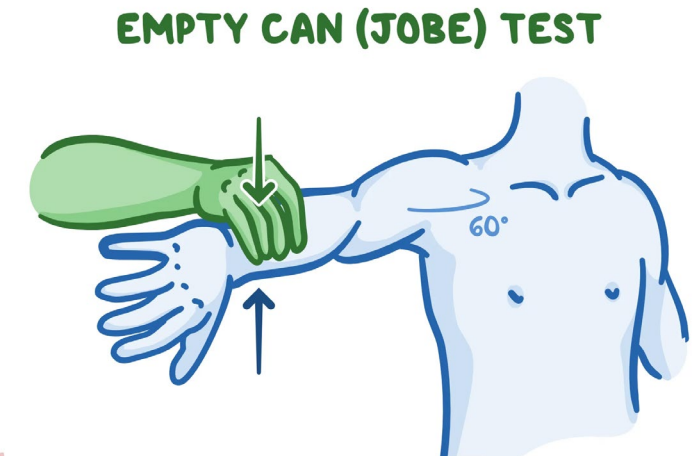
- Shoulder pain can cause neck pain
 - Due to intertwined muscles between the neck and shoulder



Symptoms – Referred Pain

From the shoulder

- To differentiate shoulder issues from neck issues
 - Shoulder provocative exams – suggest shoulder issues when there's pain with:
 - Hawkins
 - Empty can/Jobe test

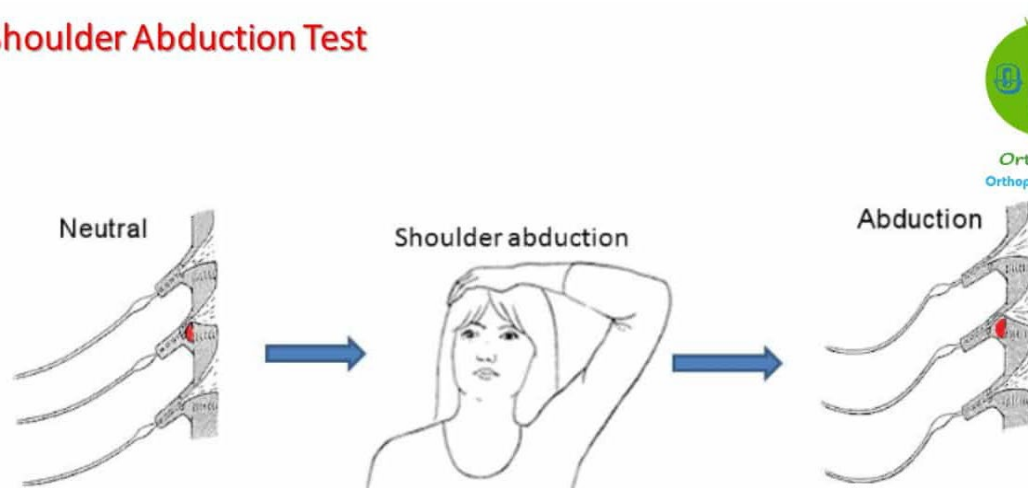


Examination – Referred Pain

From the shoulder

- To differentiate neck issues from shoulder issues
 - Shoulder abduction test – pain is better when arm is placed over the head suggests neck issues
 - Shoulder patients typically have a difficult raising their arms

Shoulder Abduction Test



Red Flags

- Signs or symptoms of atypical neck pain
- Need advanced imaging or studies urgently as opposed to observing with conservative care
 - History of cancer
 - Unexplained weight loss
 - Intravenous drug use
 - Prolonged use of corticosteroids
 - Pain out of proportion
 - Trauma
 - Osteoporosis
 - Fever
 - Bowel or bladder dysfunction

Imaging

X-rays – Good for alignment

- Include forward flexion and extension...unless there's a fracture

MRI—good for soft tissues (nerves, disc, muscles, tendons)

- Arm/nerve symptoms
- Cancer
- Infection

CT—good for bones

- Trauma
- CT myelogram for nerve symptoms
 - If MRI contraindicated or has prior hardware

Treatment - Conservative

Activity modification

- Stretching
- No prolonged bedrest
- Avoid prolonged sitting/looking down
- Proper mechanics
- Stop smoking

Heating/ice packs

Bracing

- Short term/intermittent

Treatment - Conservative

Anti-inflammatory medications (NSAID's—ibuprofen, naproxen, meloxicam...)

- Beneficial, watch side-effects (stomach and kidney irritation)
- Helps with inflammation and pain

Acetaminophen (Tylenol)

- Helps with pain, not inflammation

Narcotic Pain Relievers

- No more effective than NSAIDs
- Many side effects (addictive, drowsy)

Muscle Relaxants (i.e., Flexeril®)

- Can decrease pain and improve mobility
- 70% with drowsiness/dizziness

Medrol Dose Pack

- Acute disc herniation with radiculopathy

Gabapentin/Lyrica

- Nerve/leg pain
- Can cause drowsiness

Treatment - Conservative

- **Physical Therapy**
 - Cervical traction/stretching
- **Chiropractic/Acupuncture**
 - Not proven, but minimal adverse effects if done right



Treatment – Injections

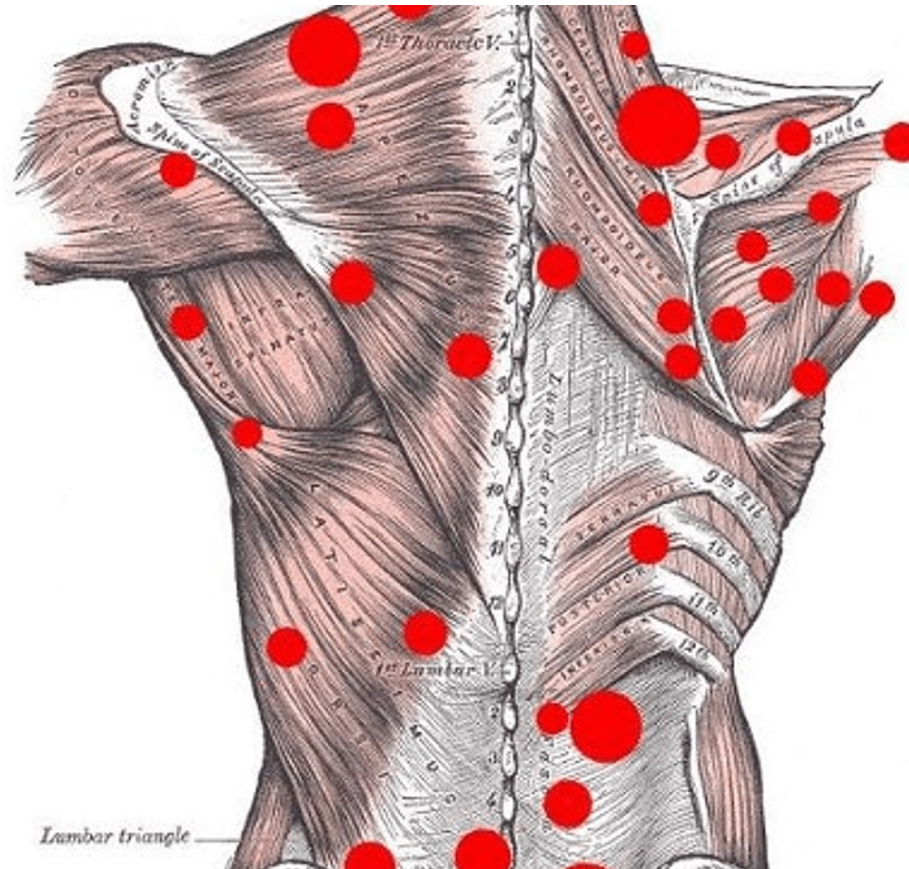
- **Trigger point injection**
 - Due to muscle pain
- **Facet joint injection/Medial branch block**
 - Due to facet joint pain – back pain/without arm pain
- **Epidural/Selective nerve root injection**
 - Due to pinched nerve causing arm pain

What's In The Injection

- **Combination of numbing medication and steroid/PRP**
- **Numbing medication**
 - Lidocaine, Marcaine
- **Steroids (aka cortisone)**
 - Dexamethasone, Depomedrol, Kenalog, etc.
- **Platelet rich plasma**
 - Draw blood from the patient's arm, spin it in a special machine to separate the plasma (yellow portion of blood) from the hematocrit (red portion of blood).

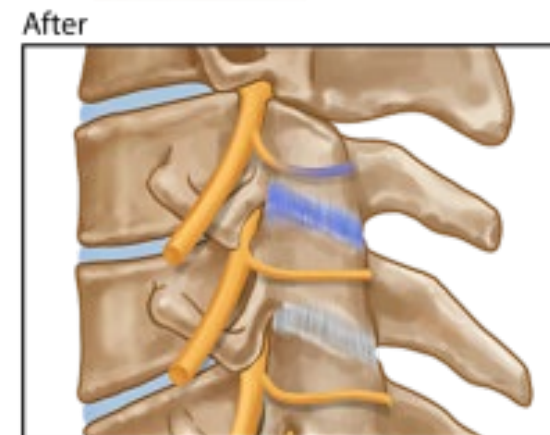
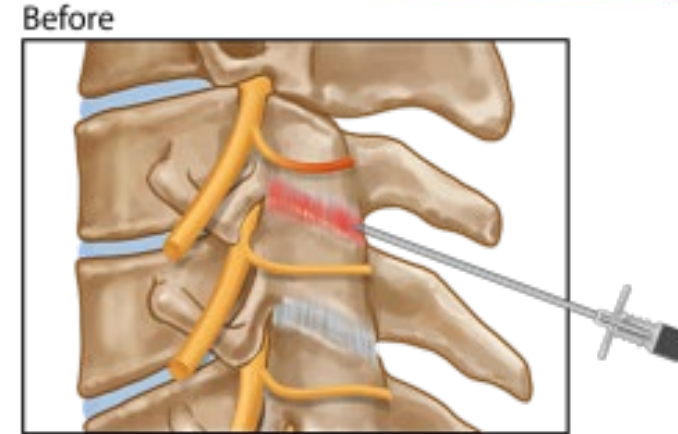
Trigger Point Injections

- Injecting numbing medication and steroids/PRP into muscles causing pain.



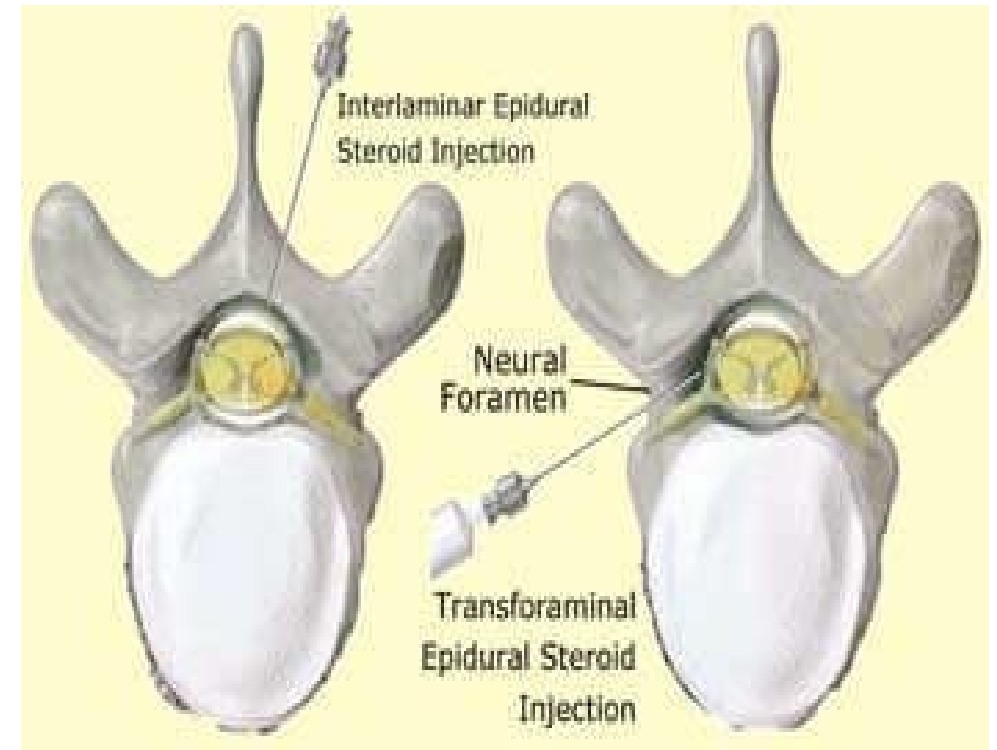
Facet/Medial Branch Block Injections

- Reserved for neck pain only, without radiation into the arms
- And has to hurt over the facet joints, especially when leaning back
- Similar to medial branch blocks
- If more than 80% relief, can proceed to radiofrequency ablation



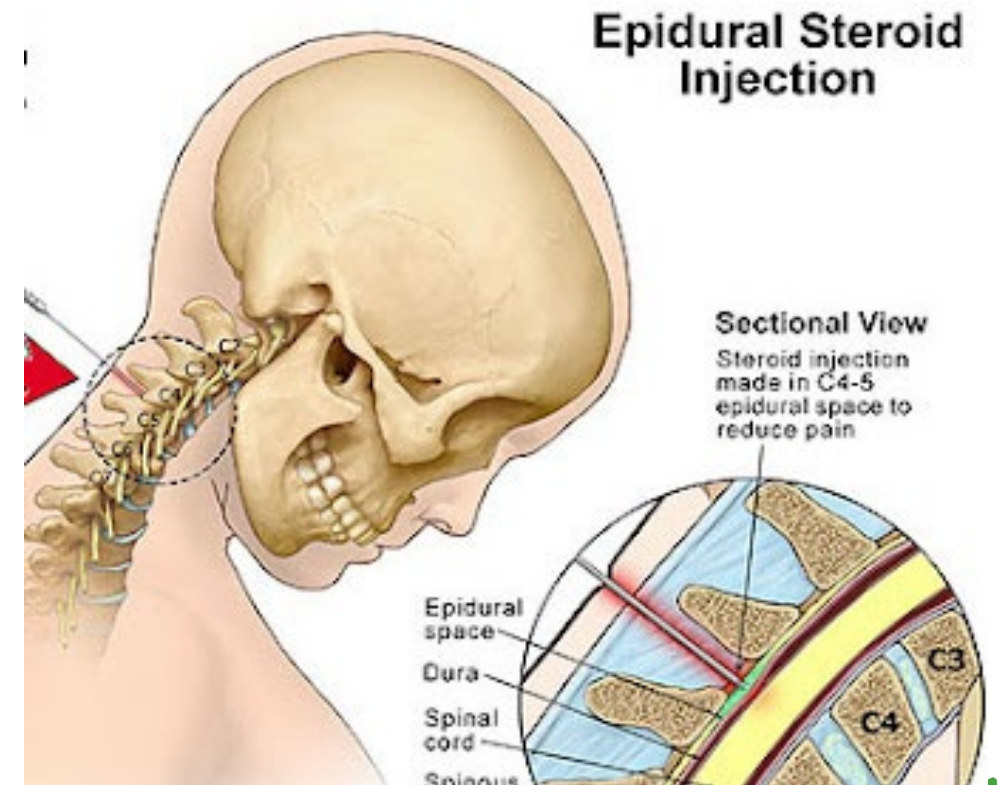
Epidural Injections

- Reserved for pain radiating to the arm due to pinched nerve (radiculopathy)
- Transforaminal (similar to selective nerve root block) vs interlaminar approach



Injection Details

- Takes about 5 to 10 minutes
- Can be done with or without sedation
- Usage of x-ray machine or fluoroscopy
- Common side effects
 - Soreness around needle site
 - Headaches



Treatment – Surgery

- **Goals of Surgery**

- Decompression of pinched nerves causing arm pain (i.e.—radiculopathy)
- stabilization (fusion/instrumentation) of instability (i.e.—spondylolisthesis, fracture)
- deformity correction (i.e.—scoliosis/kyphosis)

Treatment – Surgery

My indications for surgery:

- Failed conservative treatment
- Pain prohibiting ADL's
- Arm pain > neck pain
- RARELY for just neck pain unless:
 - Fracture
 - Tumor
 - Scoliosis/Kyphosis
 - Instability

Surgical Procedures

Decompression

To unpinch the nerve being pinched by bone spurs or disc or both

- Laminotomy
 - Removal of a small portion of the lamina from the back of the neck
- Laminectomy, facetectomy, foraminotomy
 - Removal of a large portion of the lamina from the back of the neck
- Discectomy
 - Can be done from the front or back of the neck
 - Typically, easier from the front of the neck to avoid manipulation of the spinal cord in the neck

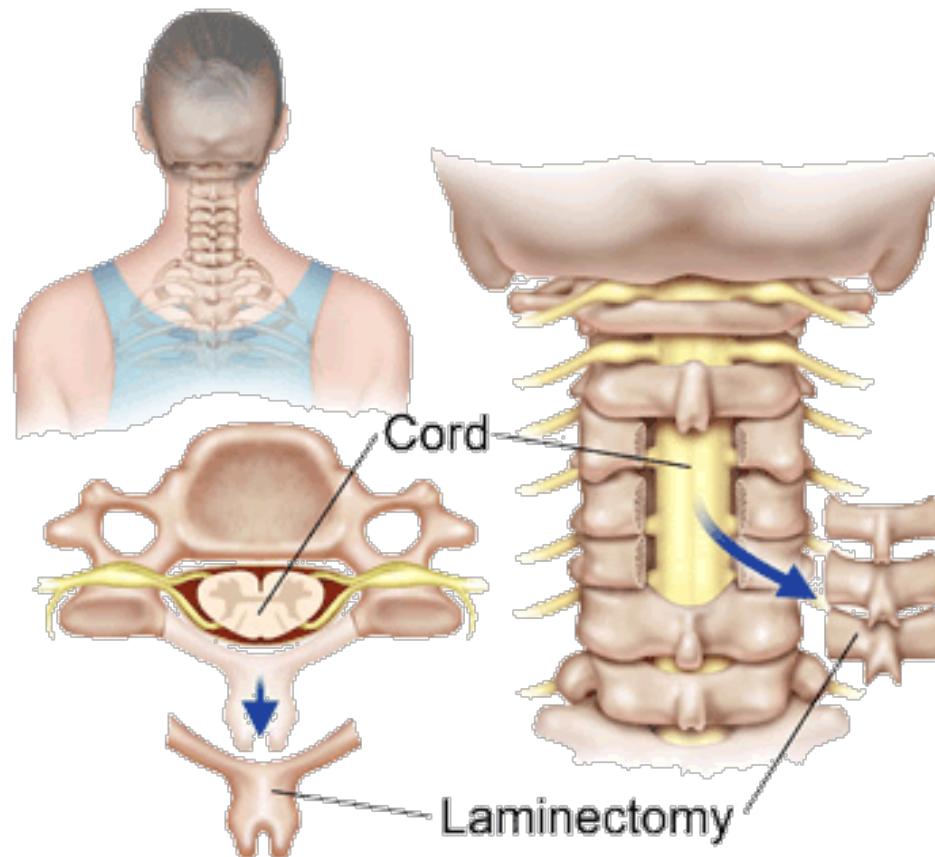
Surgical Procedures

- Laminotomy (i.e., Microdiscectomy)



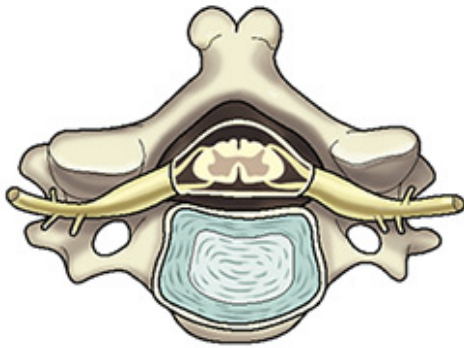
Surgical Procedures

- Laminectomy

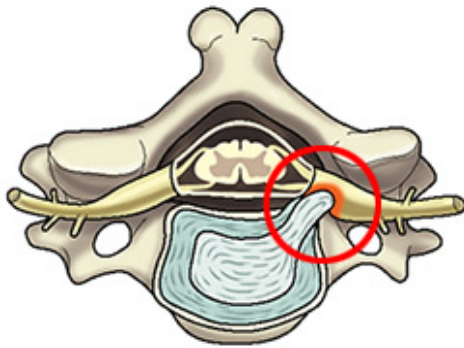


Surgical Procedures

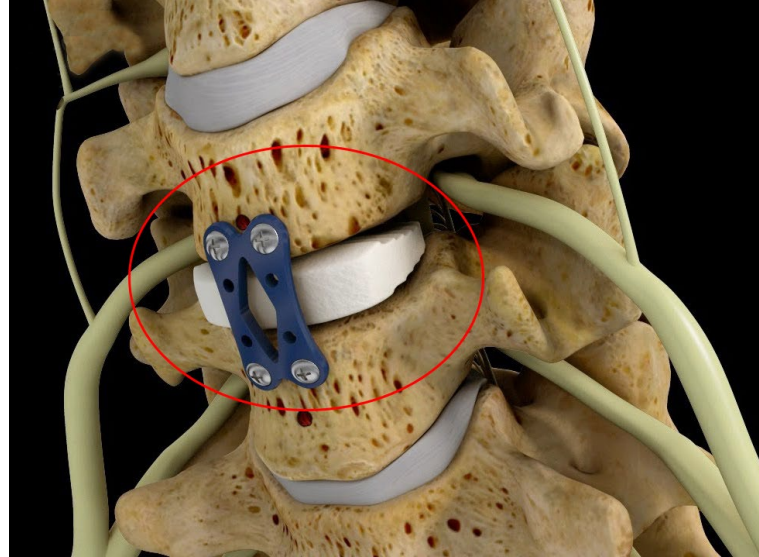
- Discectomy – if done from the front, typically need to fuse or do disc replacement



healthy disc



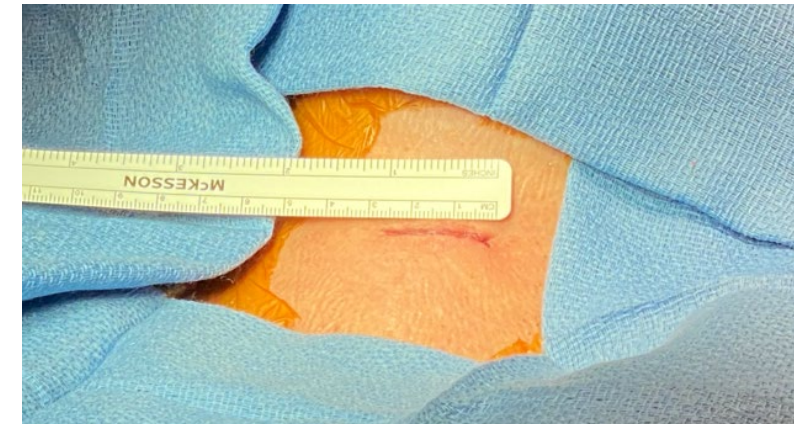
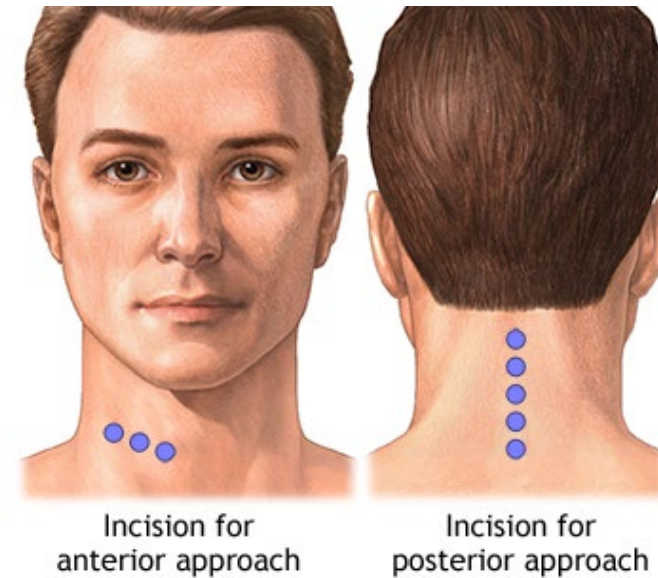
herniated disc



Surgical Procedures

- **Stabilization**

- Fusion—taking away motion across a disc space by connecting two bones into one bone with screws/rods/plates
- Anterior (front) approach
 - Preferred approach unless 4 or more levels need to be addressed
- Posterior (back) approach



Surgical Procedures

- **Stabilization**

- Fusion—taking away motion across a disc space by connecting two bones into one bone with screws/rods/plates
- Example—patient with pinched nerves causing arm pain and neck pain (anterior cervical discectomy and fusion--ACDF)



Surgical Procedures

- **Stabilization**

- Fusion—taking away motion across a disc space by connecting two bones into one bone with screws/rods/plates
- Example—patient with pinched nerves at multiple levels and abnormal alignment (ACDF with posterior laminectomy and fusion)



Surgical Procedures

- **Stabilization**

- Disc replacement—replacing a disc pinching a nerve with an implant without screws/rods/plates to **preserve motion**
 - Not everyone is a candidate for disc replacement
 - Absolute contraindication
 - Instability
 - Relative contraindication
 - A lot of arthritis causing neck pain



Summary

- **Neck pain**

- Can be difficult to diagnose and treat sometimes
- Fortunately, most resolve within 3 months with conservative treatment

- **Surgery**

- In general, not effective for axial neck pain alone
- However, effective if arm > neck pain

Thank You

- Questions?

Thank you.