

# Shoulder Disorders in the Injured Worker: 2018



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- **Chief, Sports Medicine, Shoulder Section**
- **New England Baptist Hospital**
- **Occupational Medicine**
- **Prosports Orthopedics/ NE Shoulder & Elbow**



# Speaker's Thoughts/Disclosure

- **Consultant Arthrex, Stryker, Tornier**
- **All questions welcome! ☺**
- **As a former Navy guy, I want this tatoo !!**



# Introduction

- **Shoulder injuries comprise large segment of work related injury**
- **Acute/traumatic vs attritional/repetitive**
- **Often underdiagnosed & overlooked**
- **Newer modalities, imaging, better dx, therapy, less invasive options..**



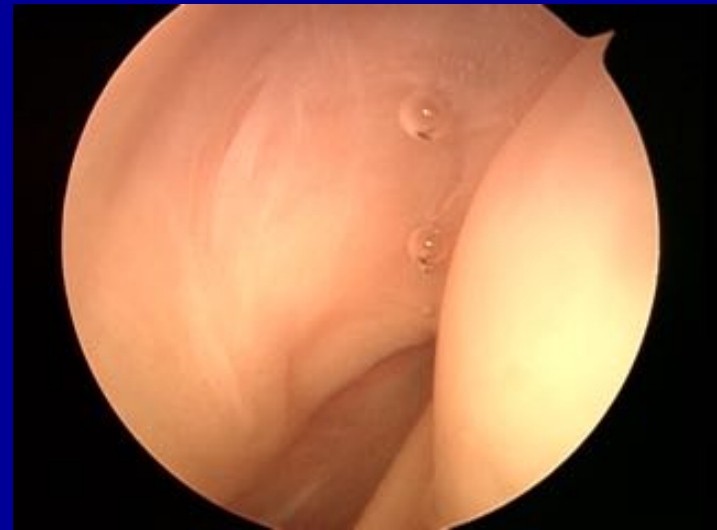
# Scope of Talk: Shoulder

- **Anatomy**
- **Rotator Cuff**
- **Instability/labrum**
- **AC Joint Injuries**
- **Frozen Shoulder**
- **Arthritis/nerve injury/tendon rupture**
- **Rehab/ Imaging**
- **Work issues**



# Shoulder Anatomy

- **Very mobile joint... soft tissue dependant**
- **Deep mm: Rot Cuff: Supraspinatus, infra, subscapularis, teres minor**
- **Superficial: Deltoid, pec major**
- **Nerves: Axillary nerve, suprascapular nn, brachial plexus**





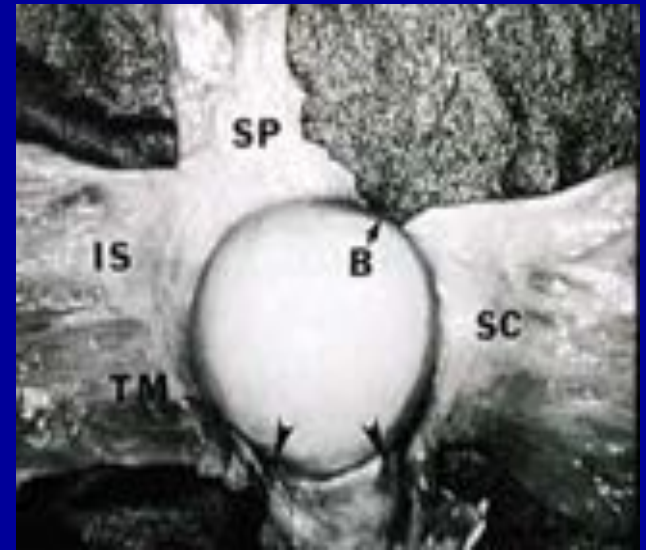
# Occupational Issues: Shoulder

- **Acute injuries:** instability, rot cuff, AC joint, neurologic, vs. “Wear & Tear” rotator cuff, impingement, DJD, neuro.
- **Frozen Shoulder...** when and where...associations
- **Pre-existing conditions:** can be difficult.
- **History:** Date of injury, mechanism, overhead demands, lifting wt. limits, repetition, risks.
- **Surgical results...**recent data



# Impingement/ Rotator Cuff

- **Trauma:** lifting, dislocation, fall
- **Attritional:** repetitive demands, anatomic predisposition
- **Most tears begin in supraspinatus.**
- **Acute vs wear...35 yo +**
- **Pain w/ OH activity, night pain, lateral deltoid pain**
- ***Not* below the elbow**



# Rotator Cuff Anatomy

S.I.T.S.



**supraspinatus**



**infraspinatus**



**teres minor**

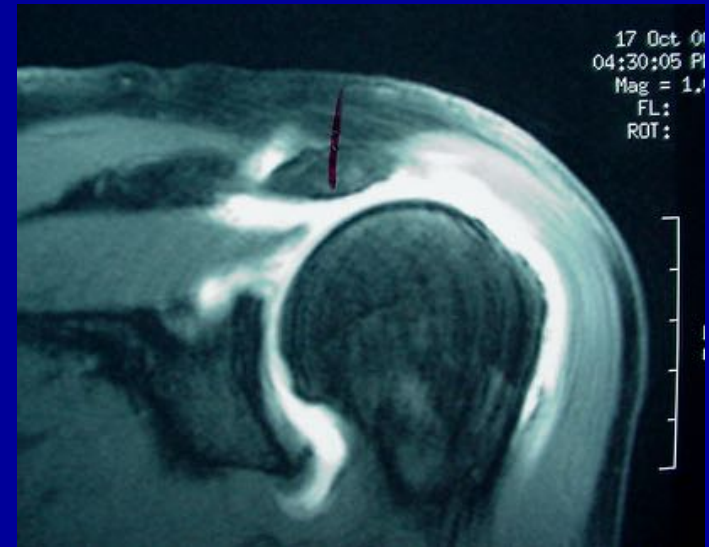


**subscapularis**



# Diagnosis: RCT

- **Mechanism of injury**
- **Weakness w/ Ext Rot**
- **Drop arm sign/empty can**
- **Near full ROM-at least passively**
- **Can have nl strength even w/ modest tear**
- **Imaging: good non-contrast MRI for most.**
- **Partial Tears, bursitis, impingement**



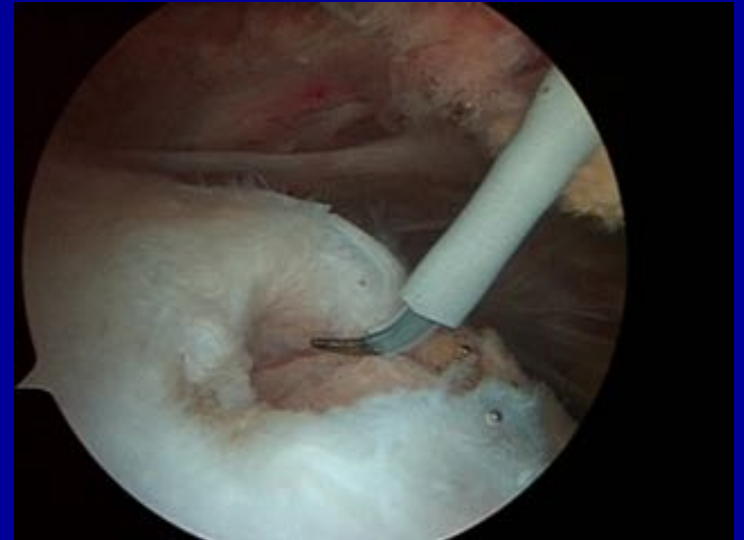
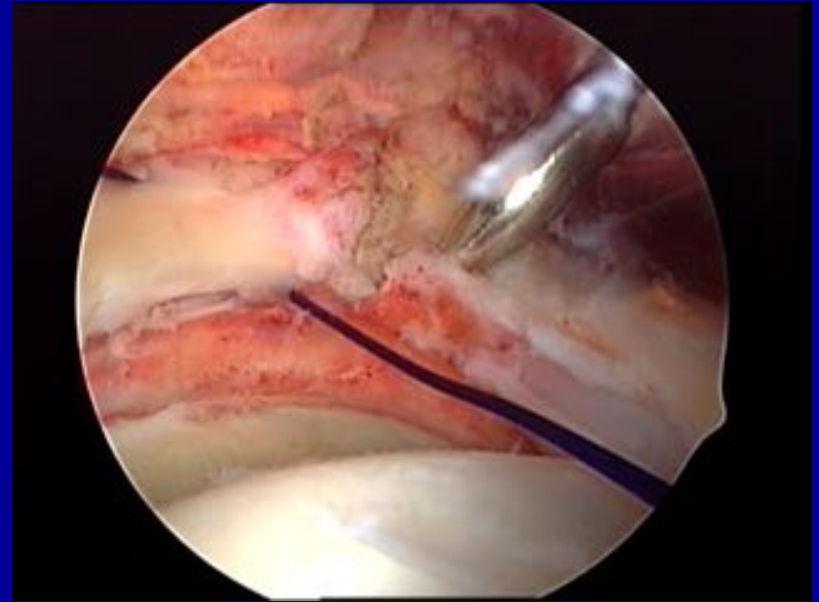
# Treatment: Rot Cuff Tears

- **Partial & Small RCT can go nonop initially They do NOT “heal” on their own**
- **Role of Cortisone/ PRP**
- **Physical Therapy**
- **Most significant tears in most pts are offered surgical repair**
- **Severe or revision tears consider superior capsule reconstruction or Reverse TSR**
- **Assess injury and rx in context of job demands *in advance***

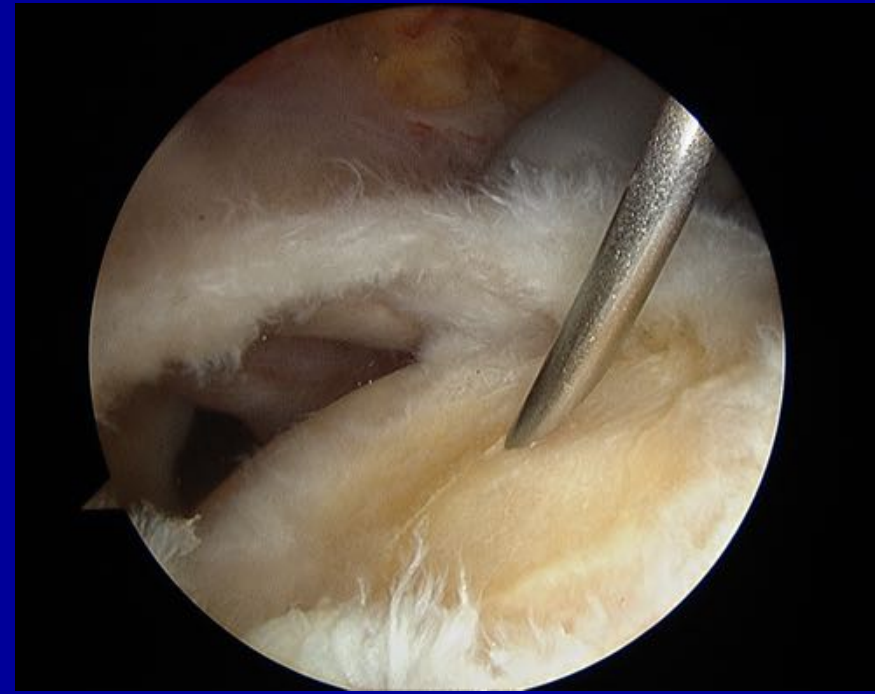
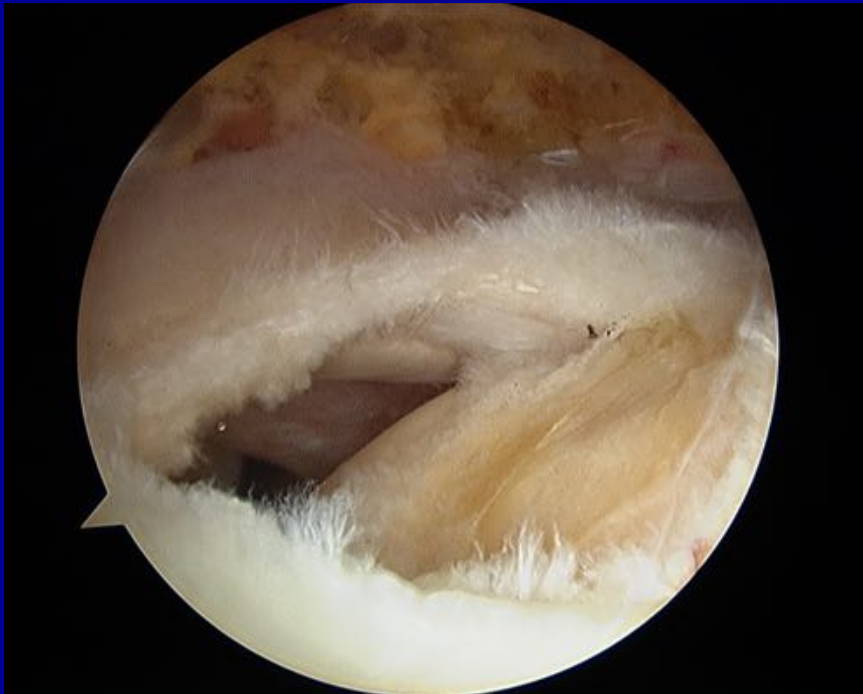
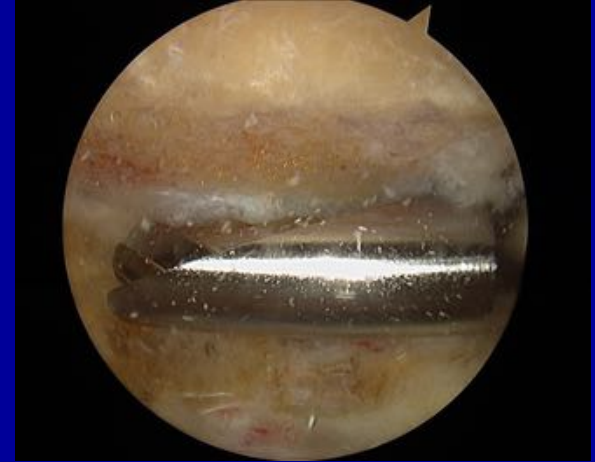


# Rotator Cuff Tears : Surgery

- **Arthroscopy allows less invasive/ less initial pain. Can evaluate entire joint !**
- ***But* the goal of tendon repair is the SAME as traditional open surgery**
- **Scope allows joint eval, labral repair, SAD, biceps tendon**
- **Emphasize that rehab may still require months**
- **Results/ data still evolving, over 90% success rate..but it depends on tear size and age.**



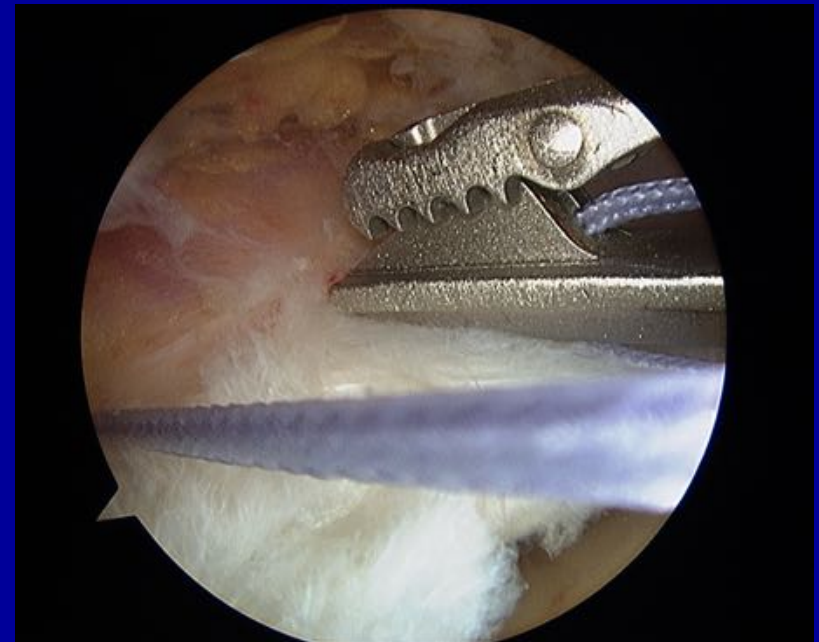
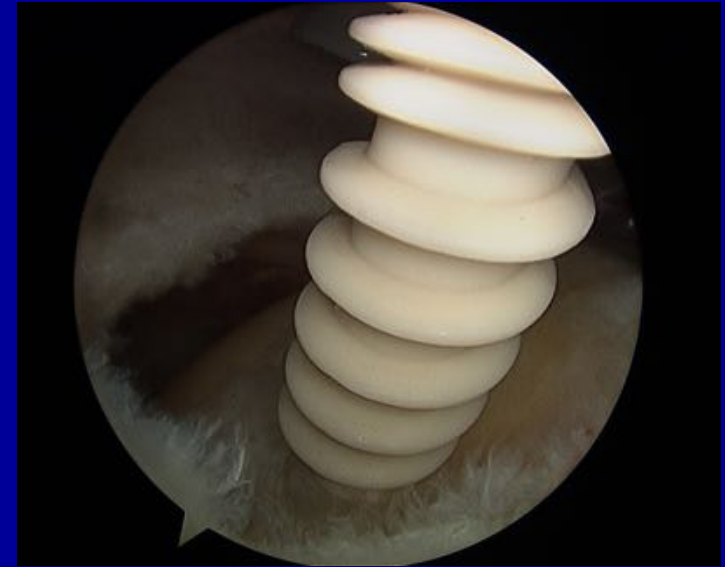
# Rotator Cuff Repair





# Technique: Arthroscopic RCR

- Usually day surgery
- General anesthesia w/ interscalene block
- Lateral position
- 3-5 portals..
- Decompression..? Role of nerve release..
- Suture Anchors/ knot tying... “double row”
- Immobilization...





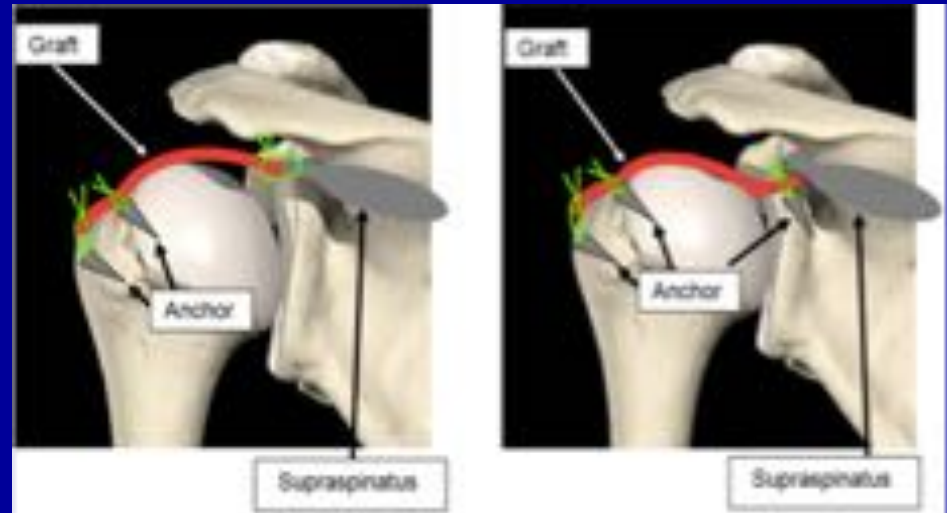
# Postop Rehabilitation: RCR

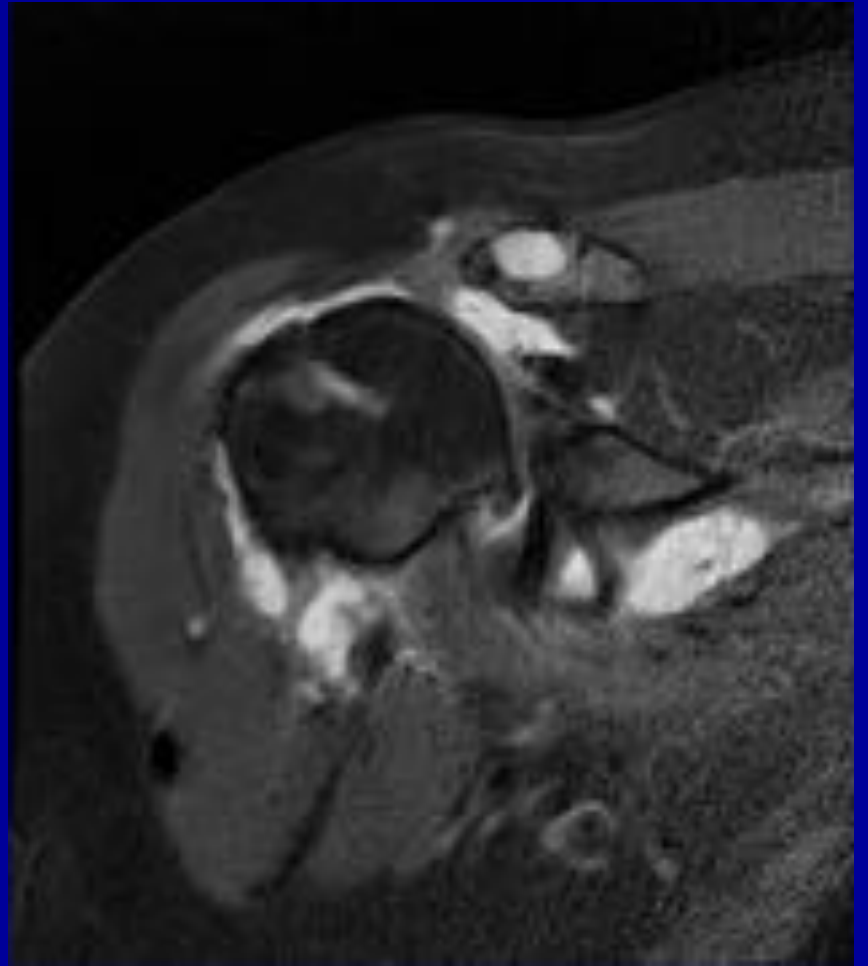
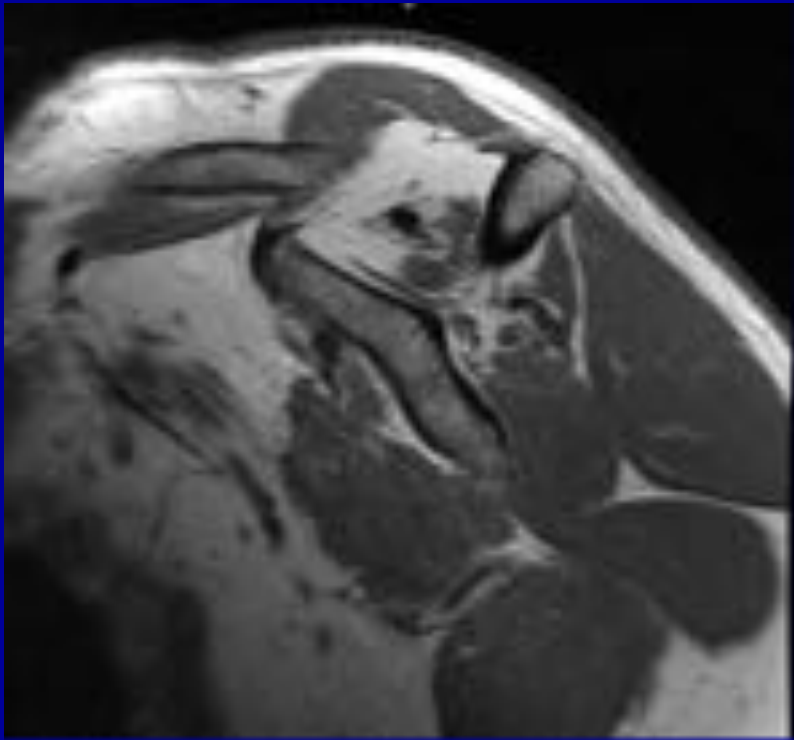
- **3 stage rehab program**
- **Tear size & quality dependent...customize**
- **I-immobilize, passive ROM, stim, 3-6 weeks**
- **II- AAROM, light scap stabilization, stretching**
- **III- eccentric strengthening, safe deltoid, job conditioning..**
- **RTW issues.. Return to what type of demands ??**
- **These pts. cont to improve for 6-12 mos...stay patient..**



# Superior Capsule Reconstruction

- **Newer option for severe rotator cuff deficiency.. Revision or primary. Pt age <65 yo**
- **Superior humeral migration, RC atrophy, poor tissue, minimal arthritis.**
- **Can reverse pseudoparalysis**
- **Places a tissue allograft from the glenoid to the humerus to centralize the joint..**
- **Good outcomes, but caution with heavy lifting and high demand occupations**
- **Have performed 28 in past 3 years with good overall success**

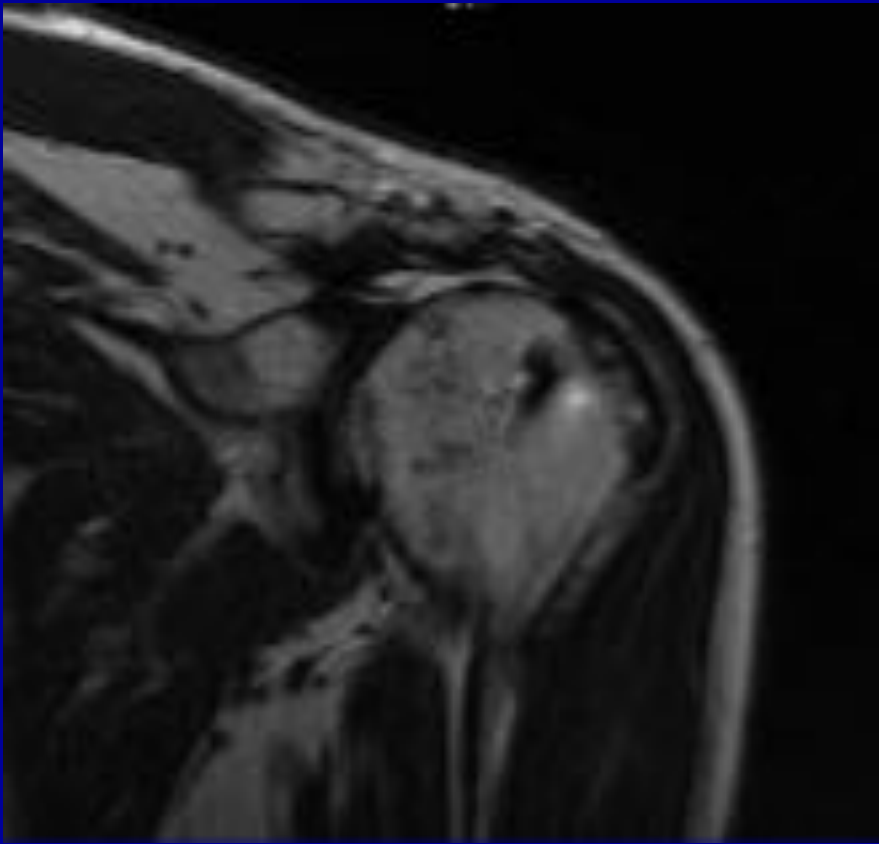




- Mihata 2013
- 23 shoulders follow up
  - Mean age 65.1 years
  - MRI 3,6,12 months postop
  - Average follow up 34.1 months
  - Very successful results
  - Improvement
    - ASES score
    - Acromiohumeral distance
    - Pain relief
    - ROM

Arthroscopy 2013







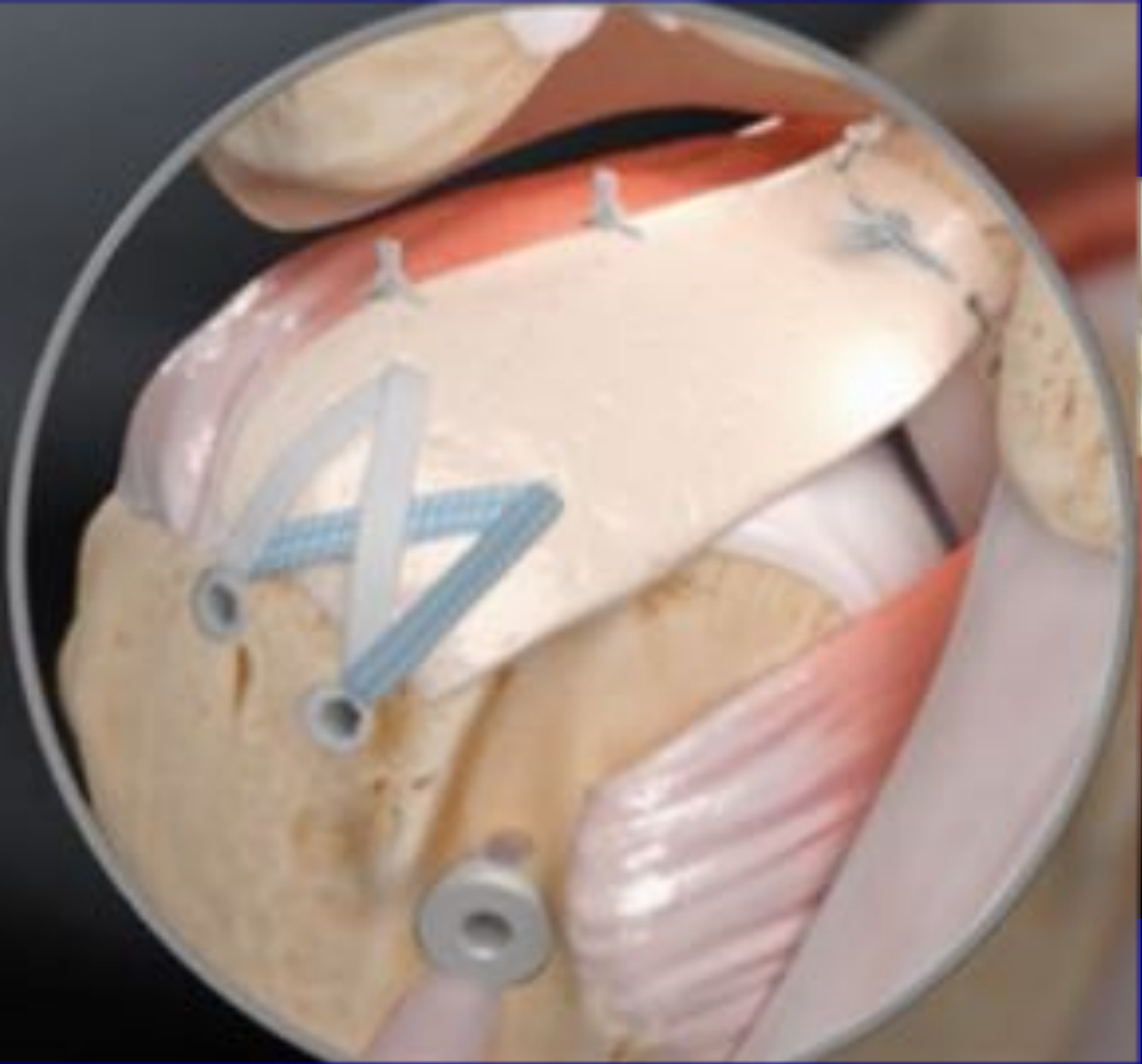














# Reverse TSA for RCT

- For revisions or severe RC deficiency.
- May have arthritis
- Available since 2003, now commonly utilized.
- Will have lifting and mobility restrictions.
- Great for pain relief. Modest function
- High success rate, but need to respect potential for complications.
- RTW issues



# RTSA FOR CUFF TEAR ARTHROPATHY

- **68 yo laborer.. Prior WC RCR.**
- **Reinjured, now with pain and pseudoparalysis**
- **MRI shows stage 4 atrophy with cartilage loss**
- **No improvement with PT**
- **Can lift arm and is out of pain post op..**



# Complications: RCR

- **Stiffness: less common with scope repair**
- **Infection, nerve injury**
- **Re-tear of rot cuff**
- ***But..no deltoid issues !!***
- **Smaller tear, younger age, no smoking, no diabetes, compliant pt...better result !! (surprise ?)**
- **Results are overall 80-90% success...larger tears have poorer prognosis.. Diabetes, smoking, age, size of tear**
- **Workers comp data studies..**



# General RTW Schedule: Decompression vs RCR

- **SAD: no sling**
- **14 days: light ADLs, sedentary work, driving, avoid rep. OH activity, lift < 20#**
- **6 wks: PRE, lift 40#, limited OH activity, progress as tol.**
- **12 wks: unrestricted**
- **RCR is size dependent**
- **4-6 wks: sedentary, light ADLs, no OH, < 10#**
- **6-12 wks: light duty, cont scap stabilization**
- **12 wks: lift 30-40 # below shoulder level**
- **Can take 4-8 mos to RTW unrestricted..**

# After Rotator Cuff Repair Patients with Workers' Compensation Claims Have Worse Outcomes

2008;90:2105-2113. doi:10.2106/JBJS.F.00260 *J Bone Joint Surg Am.*

R. Frank Henn, III, Lana Kang, Robert Z. Tashjian and Andrew Green

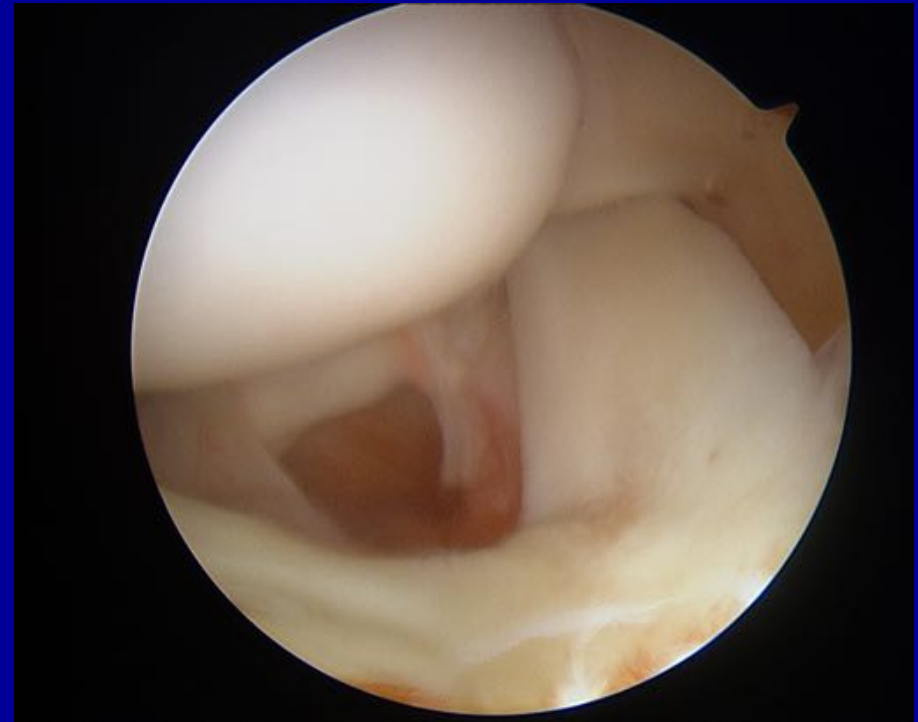
- **Impt data on RCR outcome**
- **N=125 WC=39 one surgeon**
- **1 yr f/u..SST, DASH scores**
- **WC pts: younger, higher work demands, less education**
- **WC had lower DASH, SST.**
- **Multivariate analysis: WC was isolated outcome predictor**
- **Helps cushion surgeon's egos..**





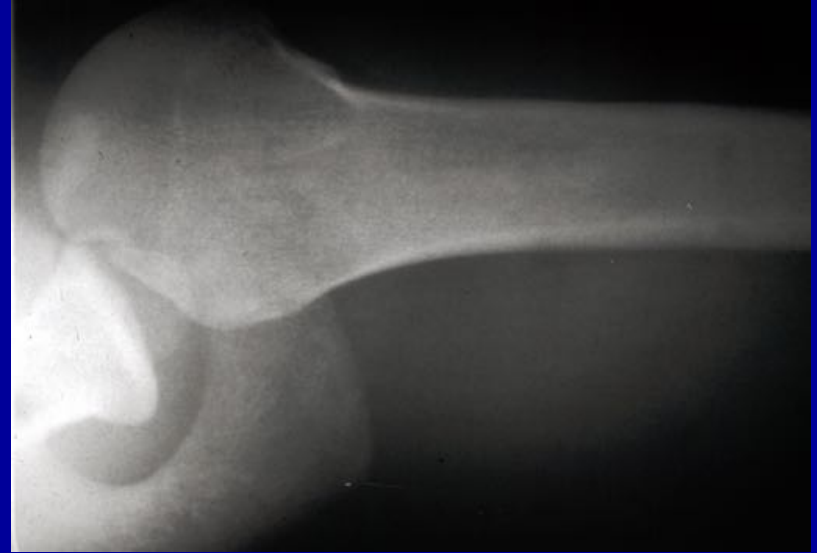
# What about the long head of the Biceps ?

- **Functional importance is debatable. Can be source of pain...**
- **When to tenotomize (cut) and when to tenodesis (repair to bone)**
- **Seen isolated or with RCTs**



# Shoulder Instability

- **Dislocation usually anterior...also MDI**
- **Posterior: electric shock, seizures...can be missed on xray !!**
- **Can be bony or ligament**
- **Older pts: think RCT !**
- **MRI...MRA**
- **Occupational: overhead line workers, construction, lumberjacks, etc.**

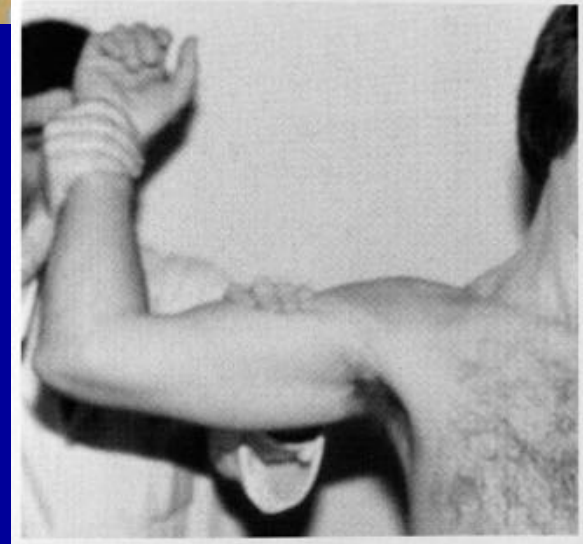


# Posterior Dislocation



# Diagnosis: Shoulder Instability

- **History, prev injuries**
- **Exam: apprehension, axillary n, rot cuff, lig laxity, ROM**
- **Xray: reduction, Hill Sachs..**
- **MRI: Bankart lesion, bone loss, Rot Cuff**



# Treatment: Instability

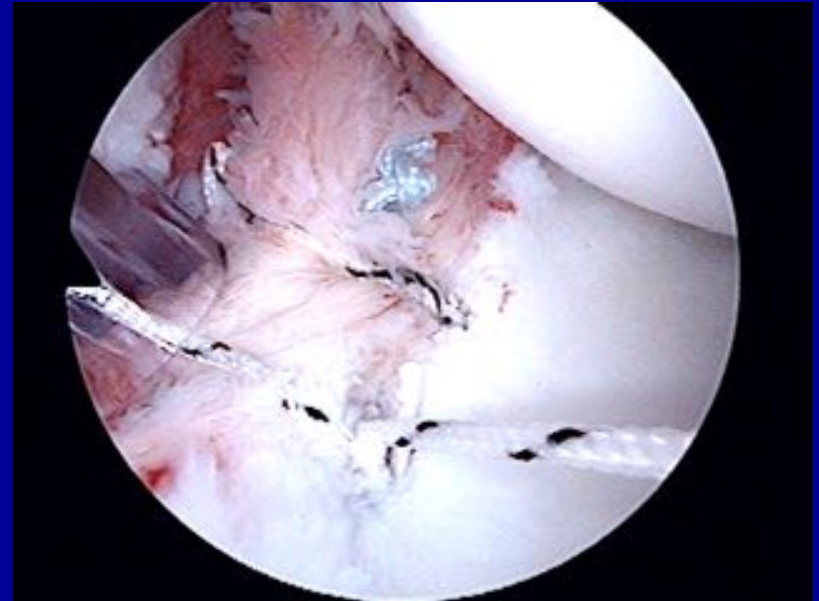
- **Thorough clinical eval**
- **MRI if > 35 yo.**
- **Rehab for *most* 1st time dislocators...Army data**
- **Surgery for recurrent instability, rot cuff tear**
- **What about 1<sup>st</sup> time DL?**
- **Most cases stabilized arthroscopic**
- **Excellent success rate**





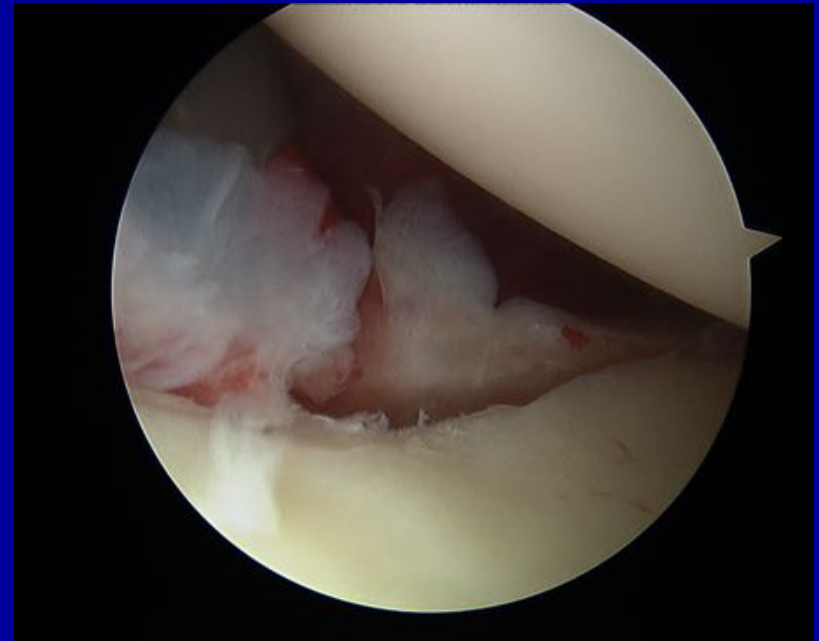
# Instability Surgery

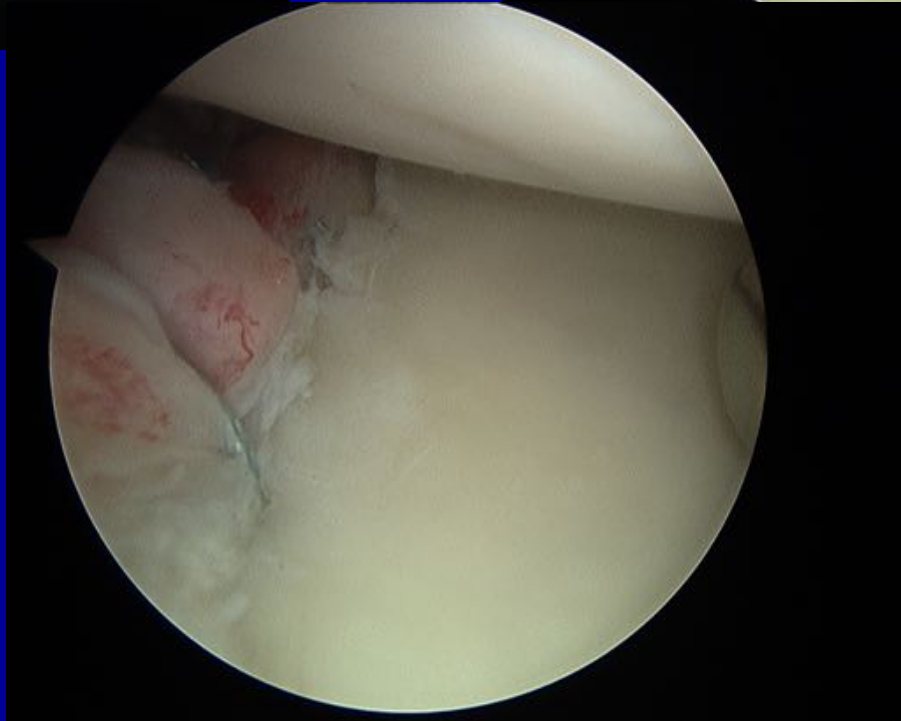
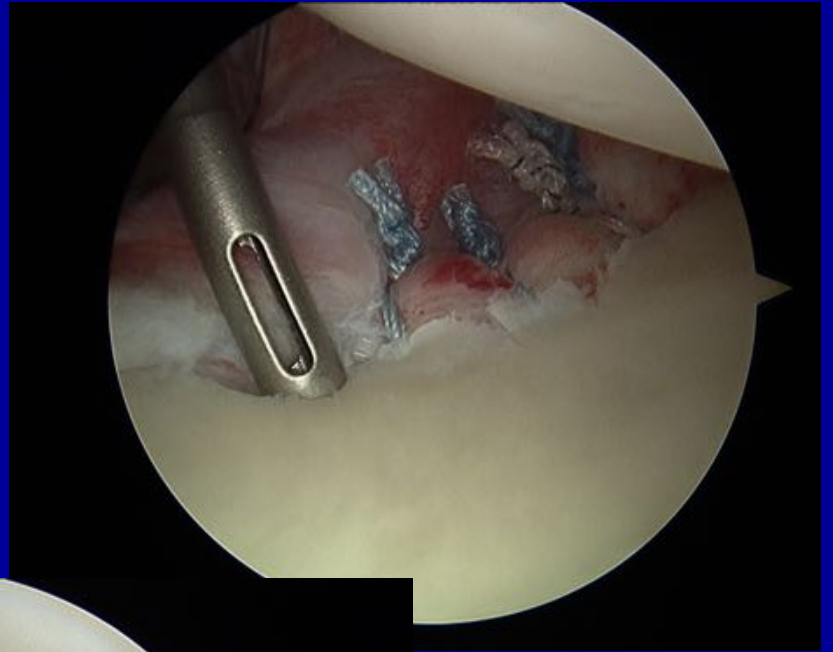
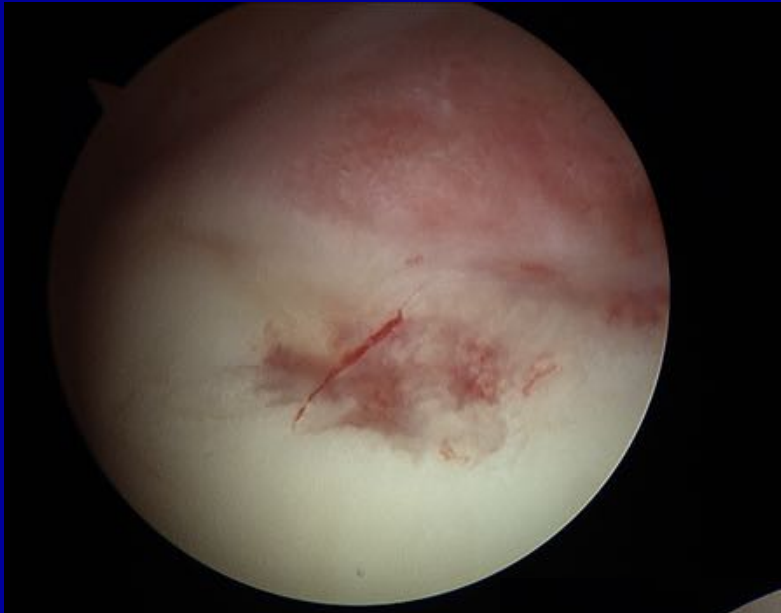
- **Outpatient, scope**
- **2-4 portals**
- **Repair Anterior GH ligament complex , bone, capsule, rot cuff.**
- **3 phase rehab program**
- **RTW/sports typical 4-5 mos.**
- **Recurrence 5-10%**
- **Bone loss: Laterjet, grafts, remplissage..**



**30 yo MBTA worker..5X DL on right..Successful surgery..Now DL on left**

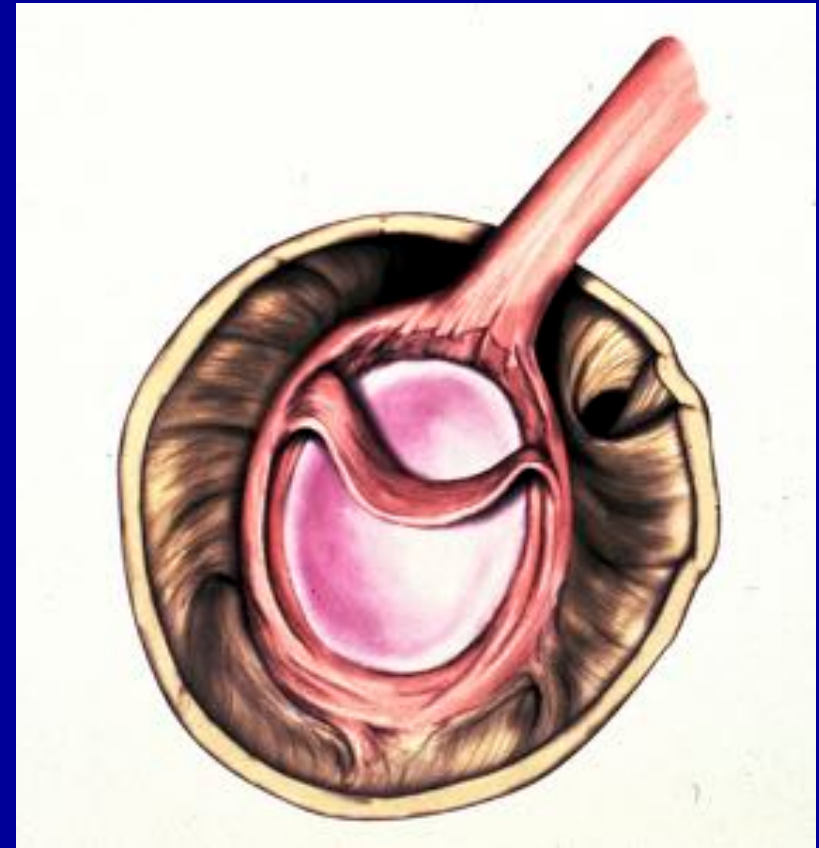
- **Has high demand job**
- **What should be done ?**
- **What does pt want ?**
- **What does employer want ?**
- **Is surgery actually “cheaper” ?**

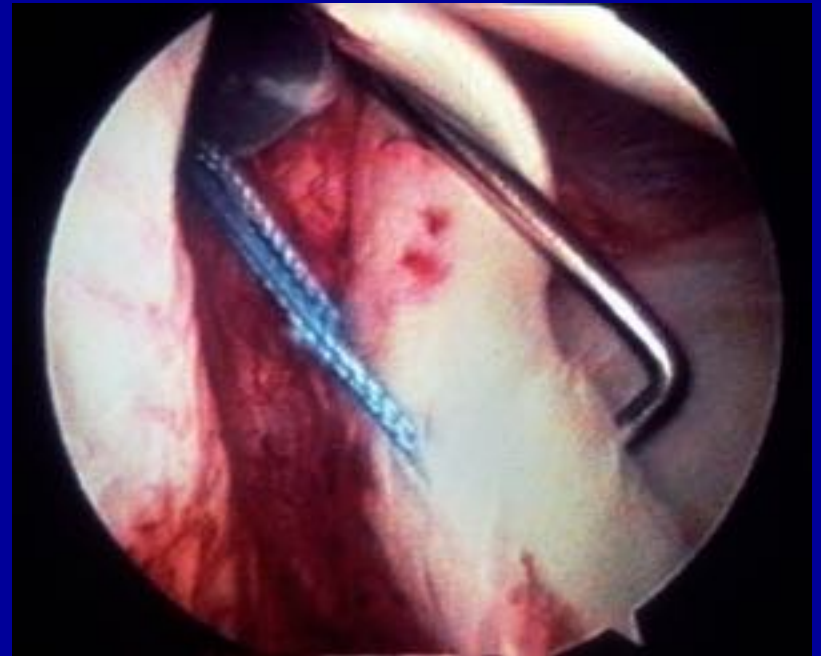
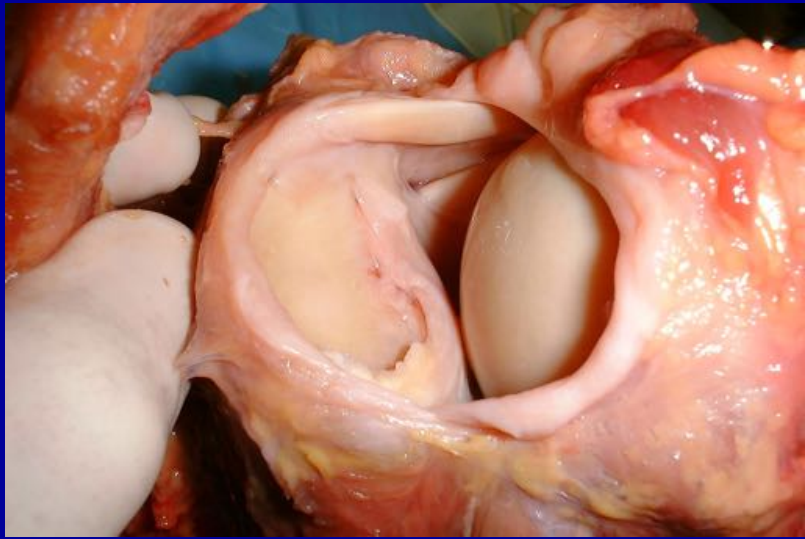




# What about all these labral tears ?

- **Several types of tears**
- **SLAP**
- **Degenerative**
- **Bankart/ALPSA**
- **If not unstable most tears do not need immediate repair.. Many are incidental findings.**
- **Trial of rehab**
- **Rare as cause of pain > 35 yo.**



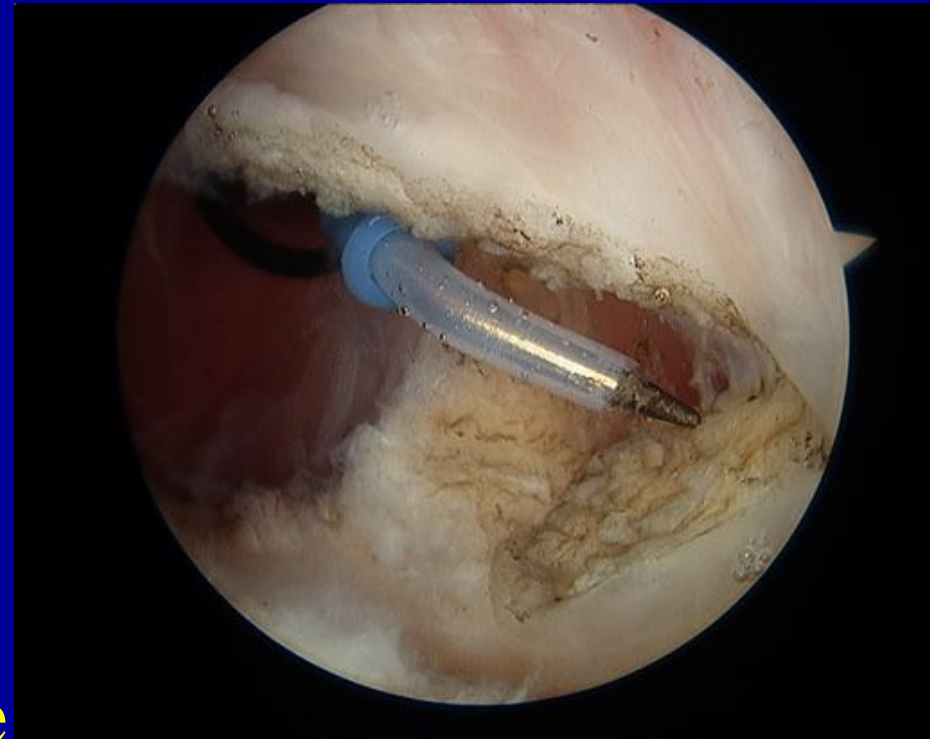






# Treatment: Frozen Shoulder

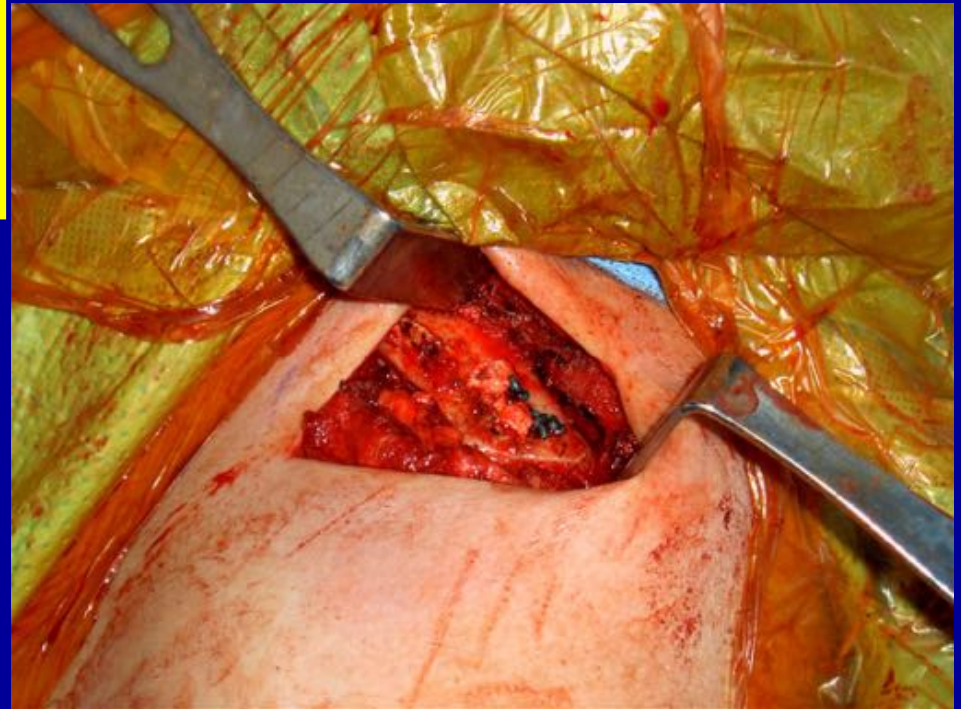
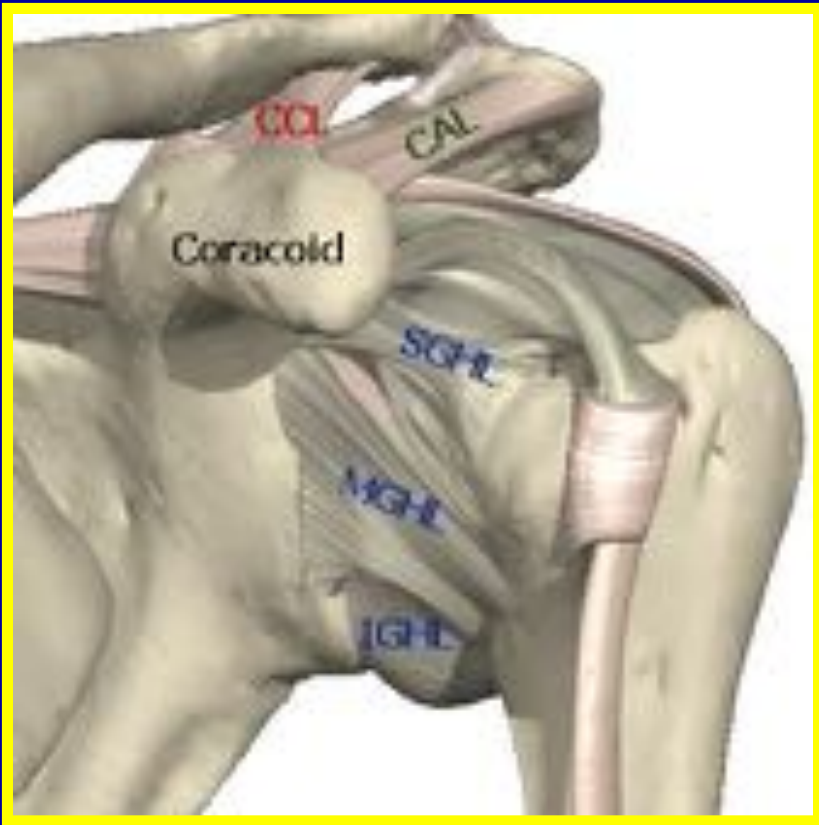
- Phase dependent
- Intraarticular cortisone followed by therapy has best documented outcome.. 85% success
- Must be done w/ fluoro, arthrogram...mri not needed initially.
- Surgery for refractory cases: scope capsule release... 7-10% of cases
- Good outcomes, can take 1-2 yrs to resolve



# Acromioclavicular Injuries (AC jt, Shoulder Separation)

- **Direct fall on shoulder**
- **Tender at AC joint**
- **Xray of AC joint...**
- **Stage 1-6....**
- **Work situations: fall, construction, line, manual labor, “slip and fall”..**





# AC Joint: Treatment

- **Non op: stage I/II**
- **Type III : controversial**
- **4/5/6....operative**
- **Usually reconstruct coracoclavicular lig.**
- **Plate for salvage**
- **Generally good results**
- **Mumford (distal clavicle excision) for late painful AC joint.**





# AC Joint Reconstruction



# Other Shoulder Conditions

- **Clavicle Fxs:** we are more aggressive with ORIF than prev (JBJS)
- **Nerve Injuries:** axillary, suprascapular
- **Proximal humerus fractures**
- **Arthritis: TSR / Reverse TSR**



# Shoulder Arthritis

- **Much more common today: males, laborers, post trauma, OA**
- **Causality ? Can be a difficult issue...**
- **Loss of ROM, grinding, pain, dysfunction**
- **Xrays, imaging**
- **Much better Rxs today**



# Shoulder Arthritis: RX

- **Guided cortisone**
- **PT**
- **Arthroscopy for “CAM” procedure**
- **Hemiarthroplasty**
- **resurfacing**
- **Total shoulder**
- **Reverse total shoulder**



# 44 yo Construction worker s/p Bristow procedure 25 years ago





# JR: 64 yo Tree Surgeon

- **Shoulder pain X 8 yrs.**
- **RHD: works 14 hrs/day**
- **2 THR, TKR, 12 ops**
- **75 FE/ 20 ER/ 5 IR**
- **Crepitus and pain**
- **Climbs trees/chainsaws**



# CT Scan

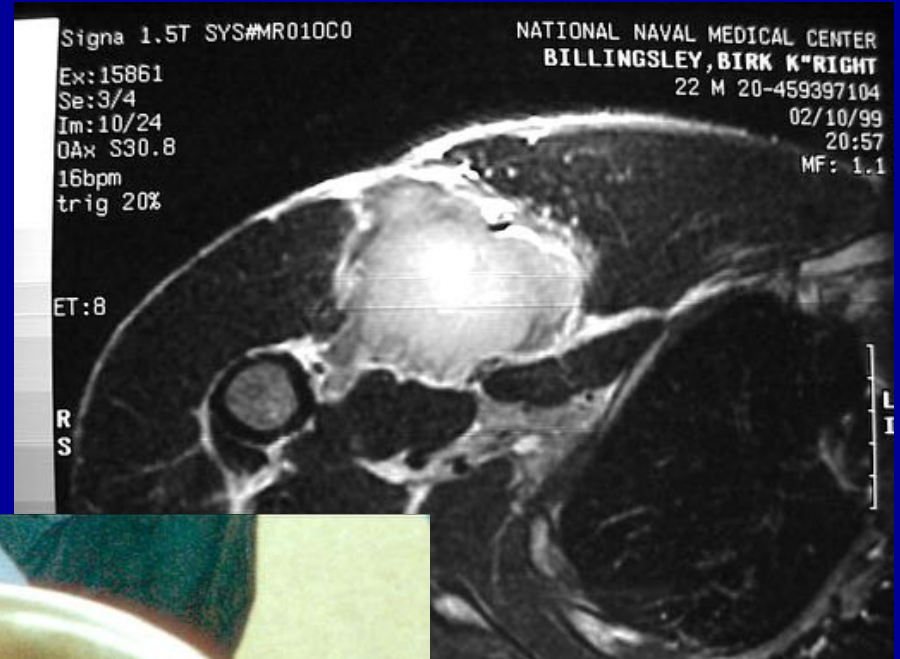


JR

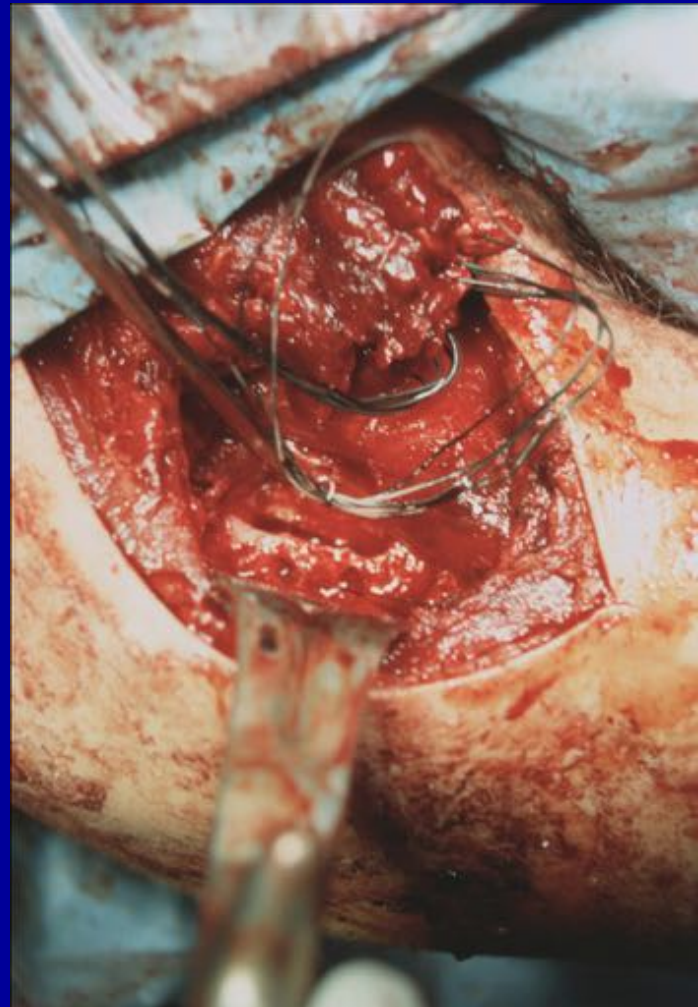
One year followup  
right shoulder



# Pectoralis Major Rupture







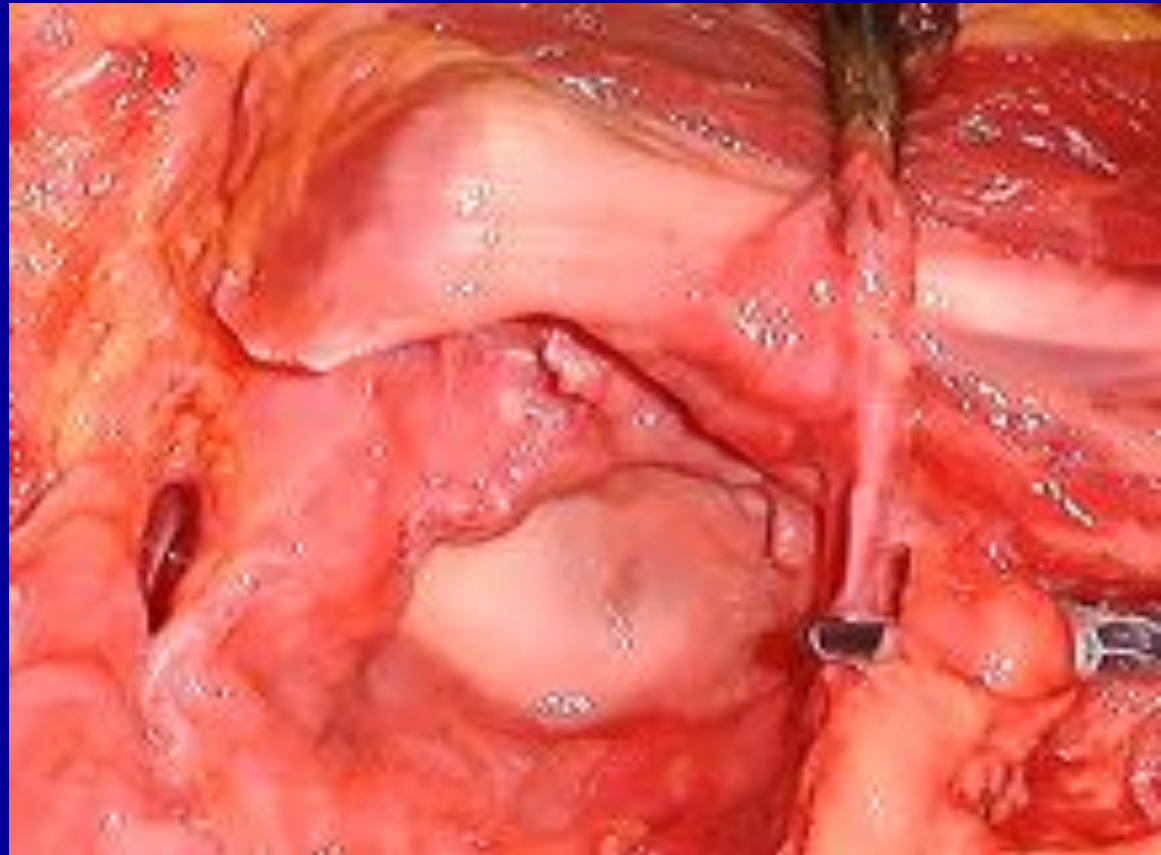
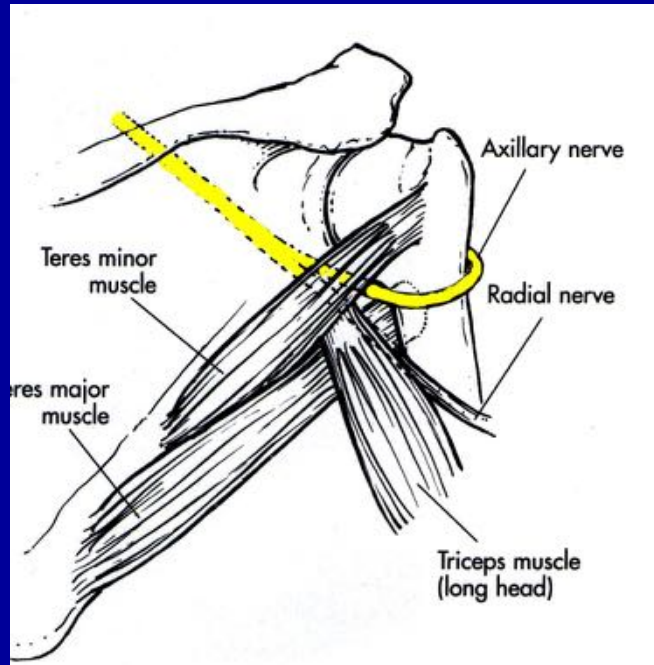


# Nerve Disorders About the Shoulder

- **Can be easily overlooked !**
- **Axillary**
- **Long Thoracic**
- **Musculocutaneous**
- **Suprascapular**
- **Good neuro exam with all trauma. OH athletes may present atruamatically.**
- **Keep dx in mind**

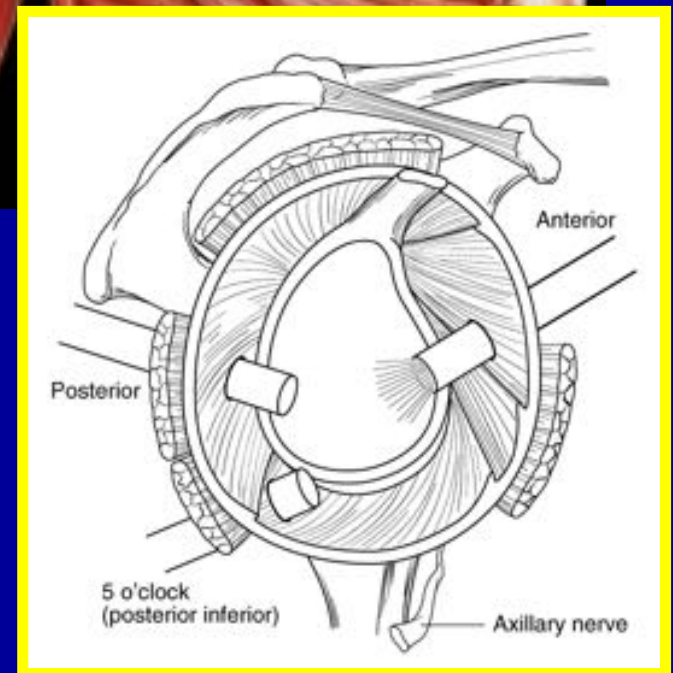
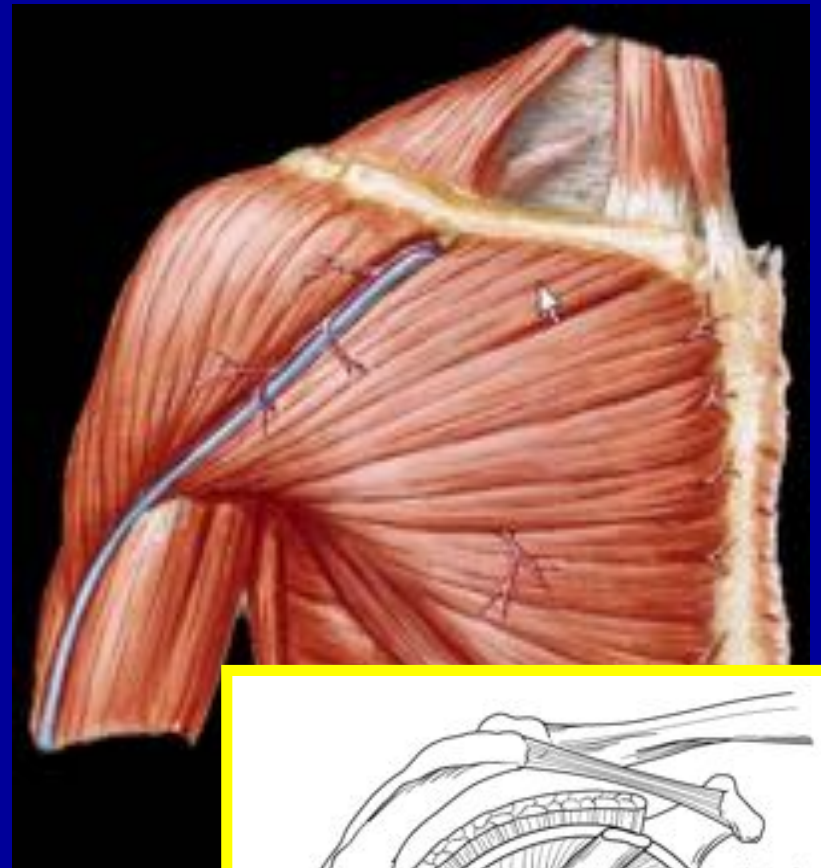


# Axillary Nerve



# Axillary Nerve

- **Most common after DL, severe separation...**
- **Quadrilateral space syndrome**
- **Backpack neuropraxia**
- **Sensory: lateral deltoid (variable)**
- **Motor: deltoid, teres minor.**
- **Most are neuropraxic and improve without surgery.**
- **Role of EMG...when ??**



# Suprascapular Nerve

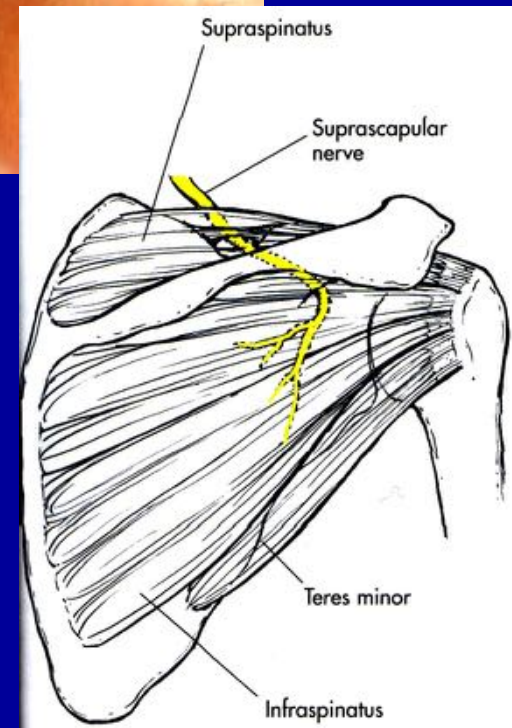
- Seen more frequently
- Volleyball , OH traction
- Motor nerve: check external rotation strength....infraspinatus provides 80%
- Spinoglenoid ganglion with labral tears..
- Suprascapular notch compression





# Suprascapular Nerve

- **Role of EMG**
- **Timing of surgery**
- **Surgical procedure depends on site and pathology involved.**
- **Most traction injuries are treated nonoperatively....**





**Thank You for Your Attention**





**For Further Information**

**[www.NEshoulderandelbow.com](http://www.NEshoulderandelbow.com)**

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**NE Baptist Hospital    617.754.5800**

**Thank You**