# Shoulder Injuries: Treatments that Work, Do Not Work, and When ENOUGH is Enough?

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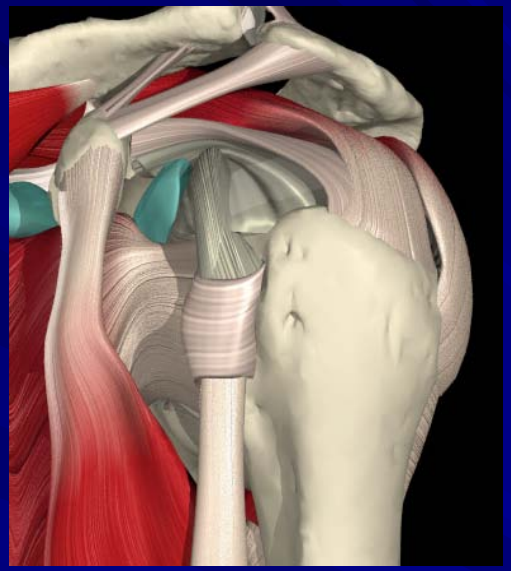
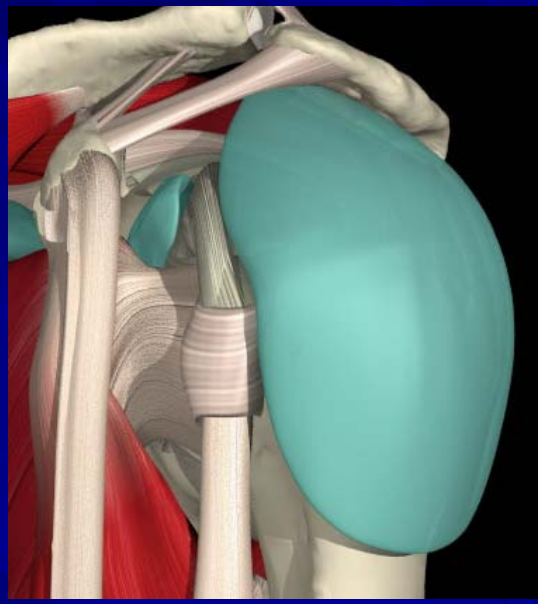
# Bony Anatomy

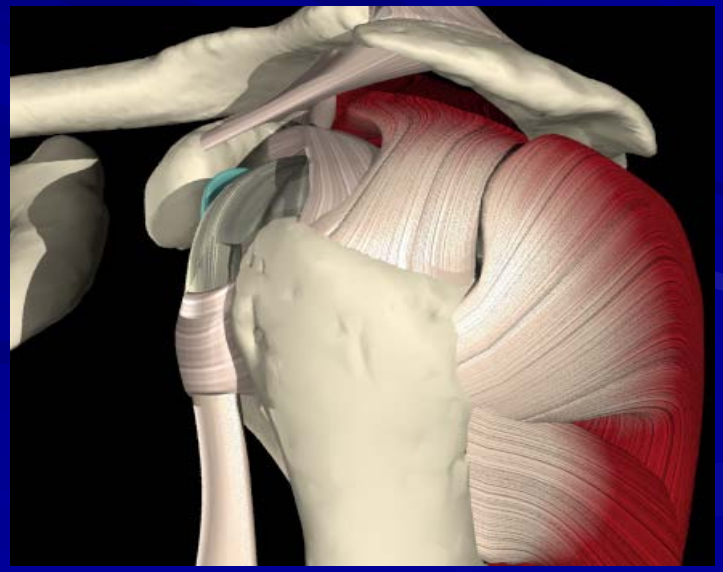
- Multiaxial ball and socket
- Little Inherent Instability
- Glenohumeral Joint Dual Innervation by Axillary and Suprascapular Nerves
- AC Joint Dual Innervation by Suprascapular and Pectoral Nerves

# Soft Tissue Anatomy

- Soft Tissue
  - Rotator Cuff Tendon
  - Biceps tendon
  - Subscapularis
  - Rotator interval
  - Bursa
  - CA ligament
  - AC ligaments
  - Labrum/Ligaments
- Physical Exam
  - Essential
  - Low sensitivity/specificity

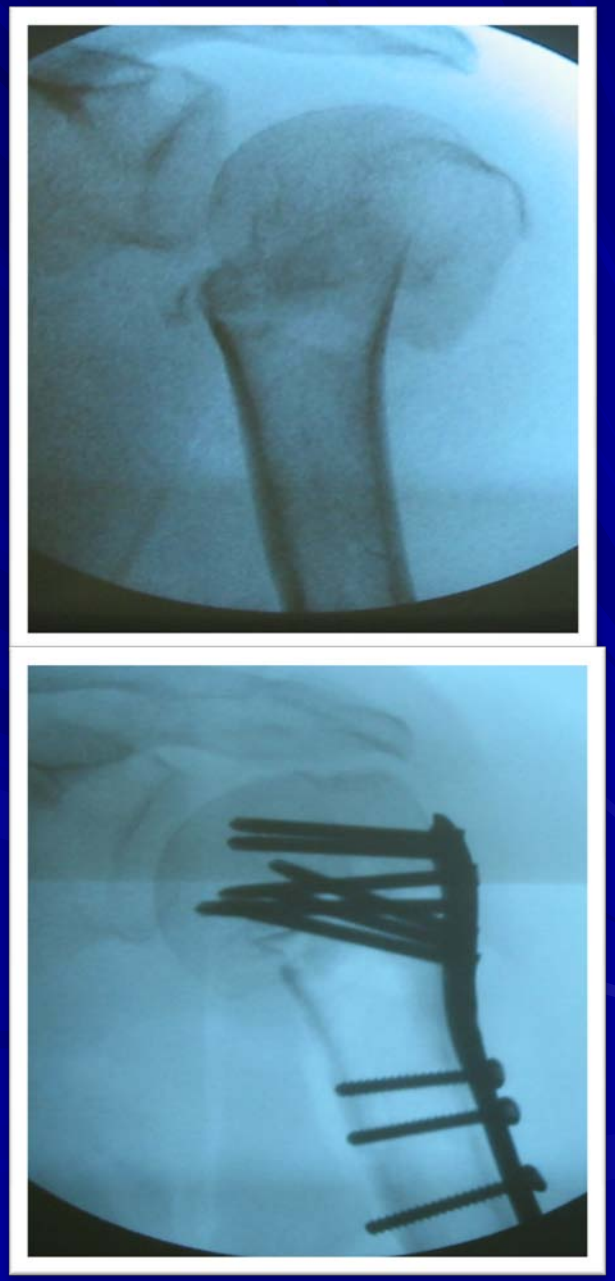




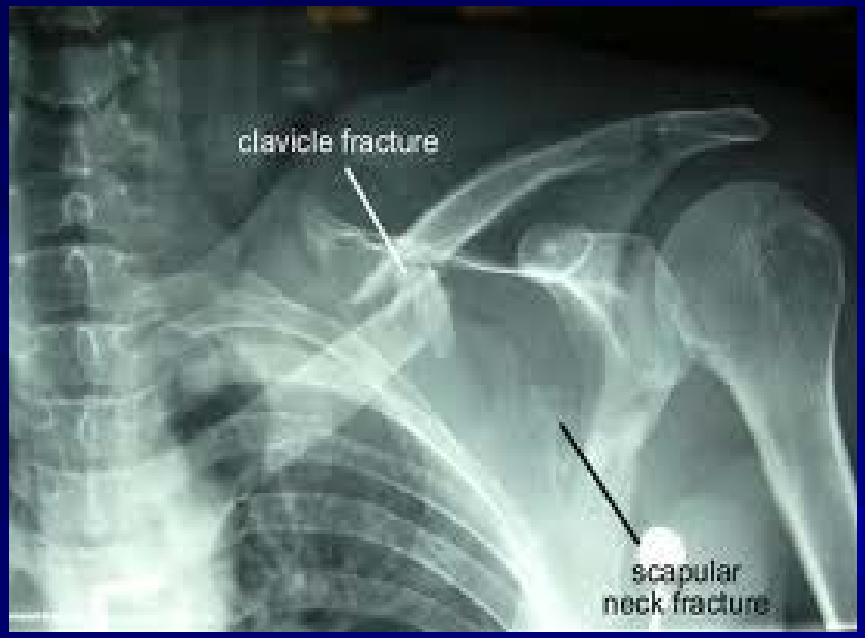


# Fractures

- General Principals of Fracture Care
- Safe and Early Mobilization
- Humeral Neck Fracture Outcomes Trend Better with ORIF vs Hemiarthroplasty
  - Bell etal JBJS Am. 2011
    - 30% ORIF
    - 20% hemiarthroplasty
- Scapula and Glenoid Fractures ORIF rarely Indicated



# Unusual Fractures




- Floating Shoulder
  - Disruption of Suspensory Complex
  - ORIF Clavicle


Unstable Os Acromiale

- Pagnani J shoulder and Elbow Surg 2006

# Overuse Injuries

- Impingement Syndrome
- Tendonitis
- Myofascial Pain Syndrome
- AC Joint Inflammation

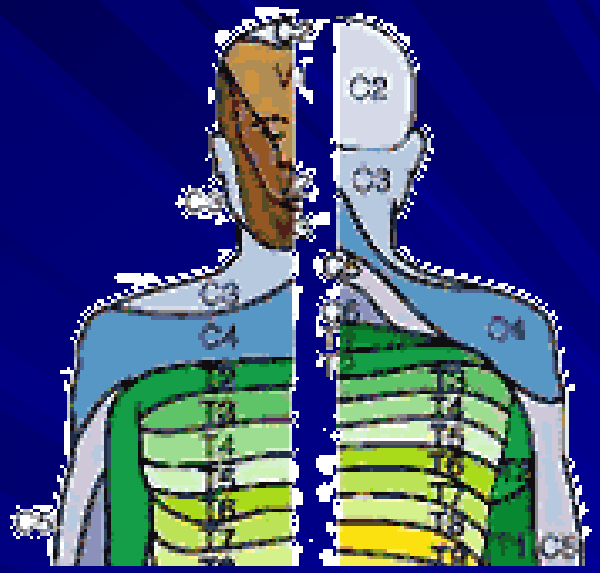
- Conservative Treatment for 3-4 months
  - Activity Modification (Work restrictions)
  - NSAID
  - Injections
  - Ergonomic Evaluation
  - Physical Therapy

# Impingement Syndrome

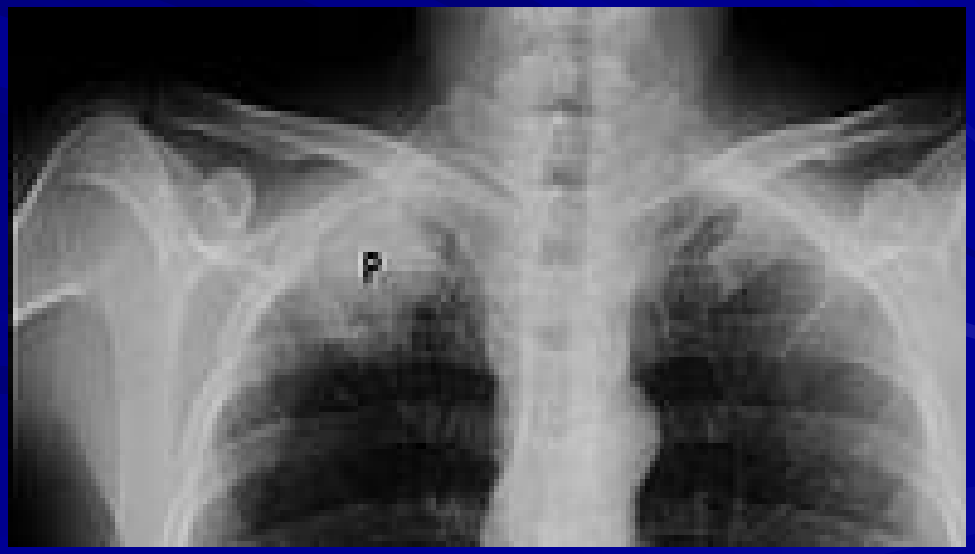
- Primary
  - Rotator Cuff and Subacromial space
  - Age >40
  - Bone Spur
  - Respond to SAD
- Secondary
  - Instability or other causes
  - Age <40
  - Worsening of Symptoms with SAD

# Referred Shoulder Pain

- Cervical Spine Disc
  - C3 & C4 nerve roots

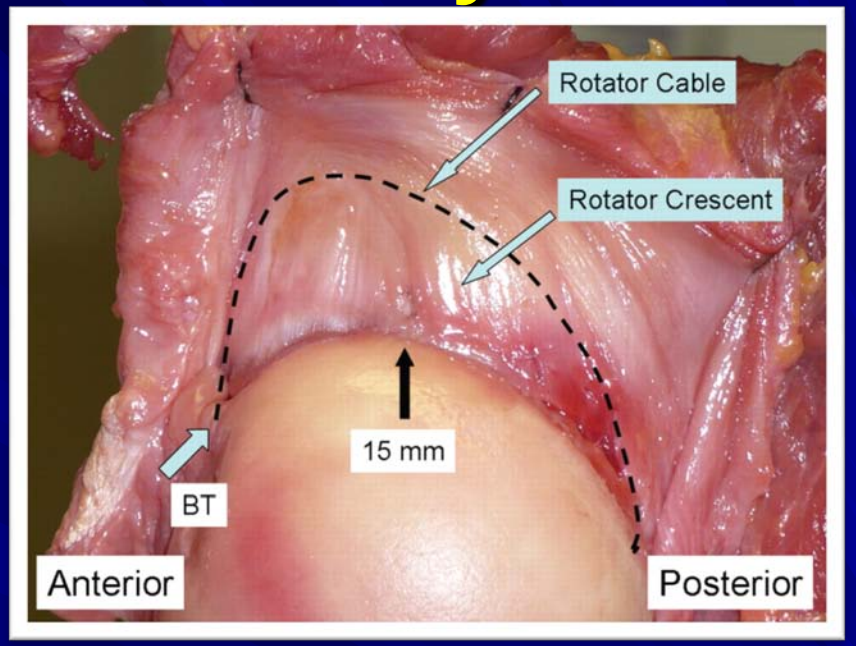


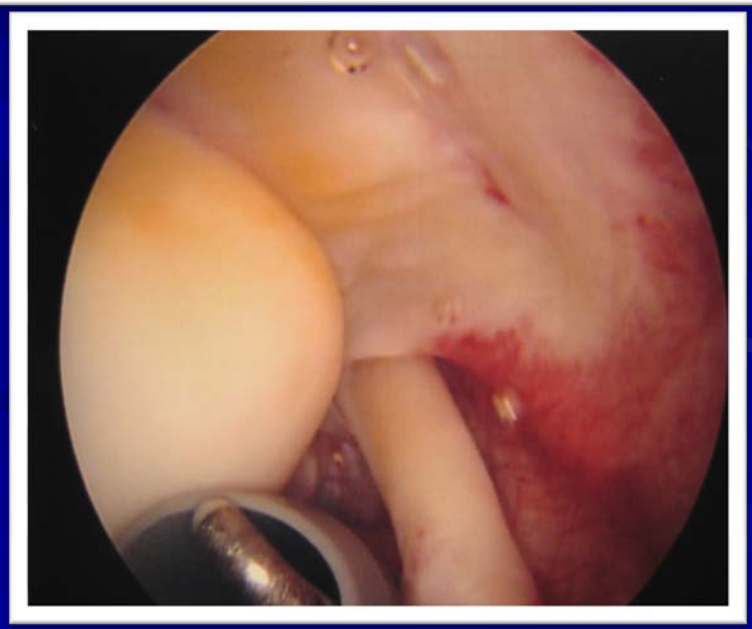

- Pancoast Tumor
  - Non-small Cell tumor
  - Apex of the lung
  - Chest X-ray



# Rotator Cuff Anatomy

- Rotator Cable (Burkhart 1994)
  - Articular Extension of coracohumeral ligament
  - Crescent shape around Codman's "Critical Zone"
- HypoVascular
  - Articular < Bursal



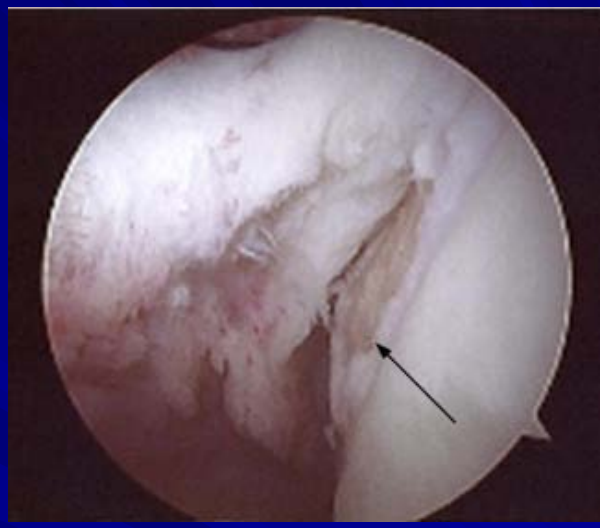
# Natural History

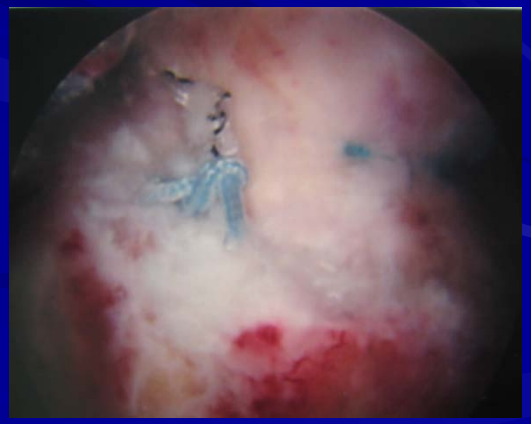
## k. Yamaguchi J shoulder Elbow Surgery 2001

- 5 year follow up
- Partial or full thickness rotator cuff tears
- 51% symptomatic
- 50% of patients showed progression of Rotator cuff tear
- No patients showed decrease in size or healing of rotator cuff tear without surgery

# Treatment for Partial RC Tear

- <50%
  - Debridement
  - +/- Subacromial Decompression
- >50%
  - Complete & Repair
  - PASTA Repair
- Foot Print approx 16mm
- Bursal Sided Tear





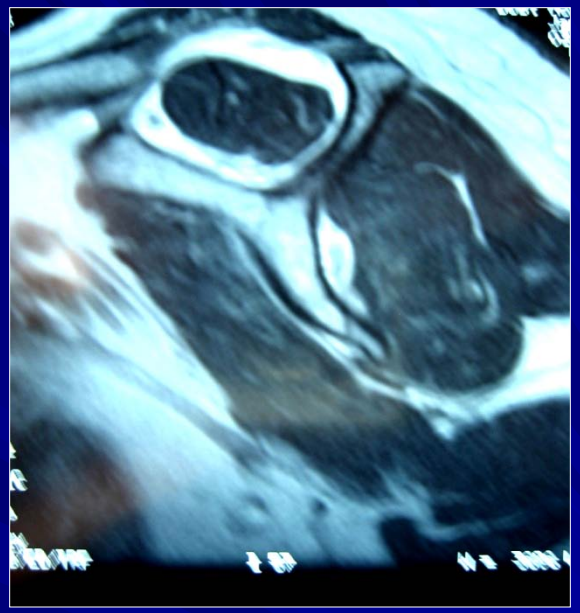
# Indications

- ACOEM (page 210-211)
  - Significant tear
  - Weakness of arm elevation
  - Younger worker
  - Fail none operative treatment for 3 months
  - Acute full thickness RC tears should be treated non-operatively with up to 86% success
- Evidence Based Medicine
  - Age
  - Symptoms
  - Size
  - Activity Level
  - Available Tissue
  - Ability to comply with post operative care/rehab
  - Acute full thickness RC tear is an indication for surgery

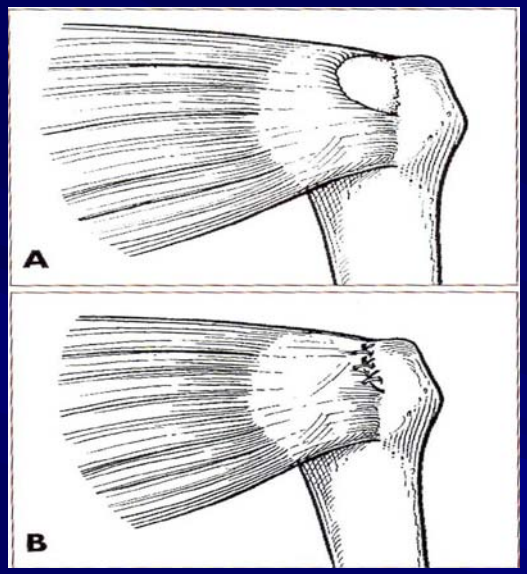
# Full Thickness RC Tear

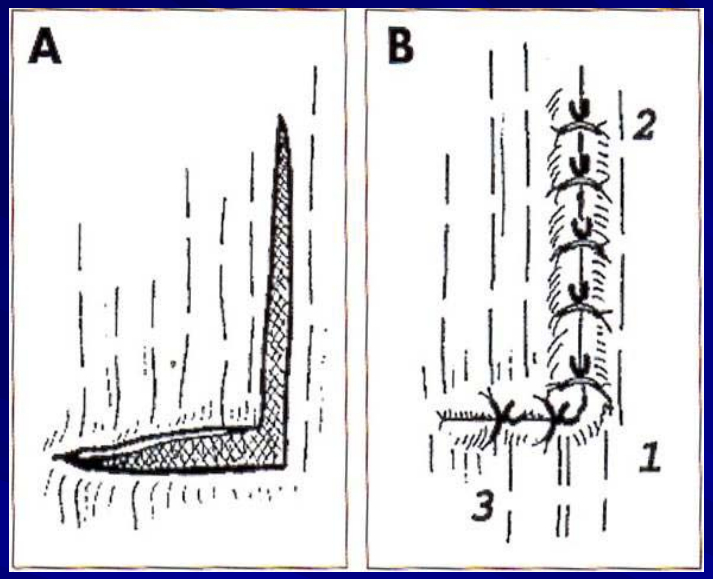
Goutallier, D etal.; Shoulder and Elbow Surgery 2003

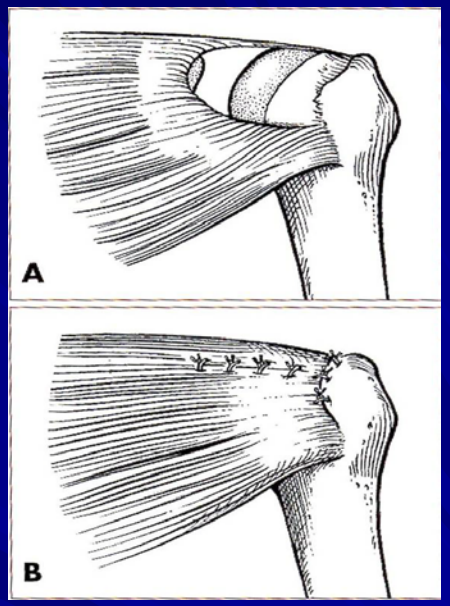
- Fatty Degeneration
  - Grades 0-5
  - Grade 2 and above have significant reoperation rates
- Muscle Atrophy
- Tendon Retraction/mobility
- Preop Range of Motion
- Force Couple/Subscap integrity

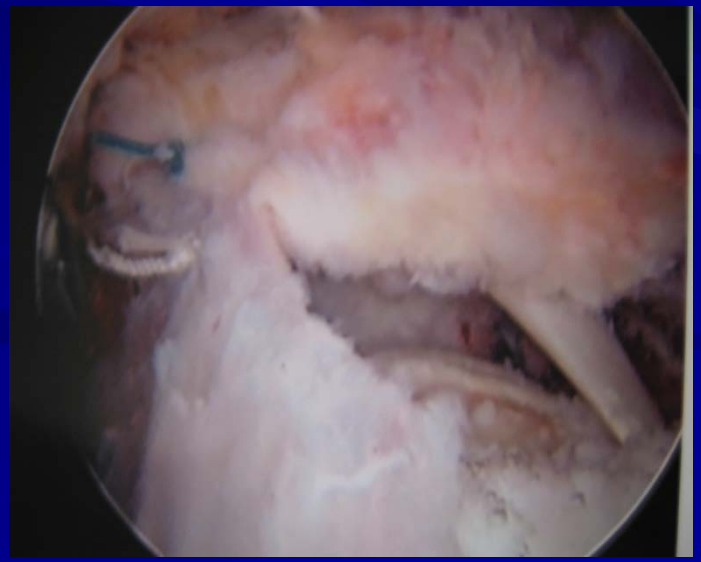


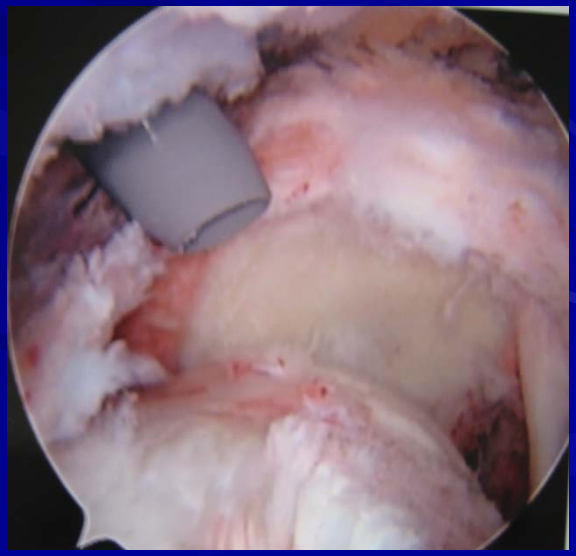
# Tear Pattern



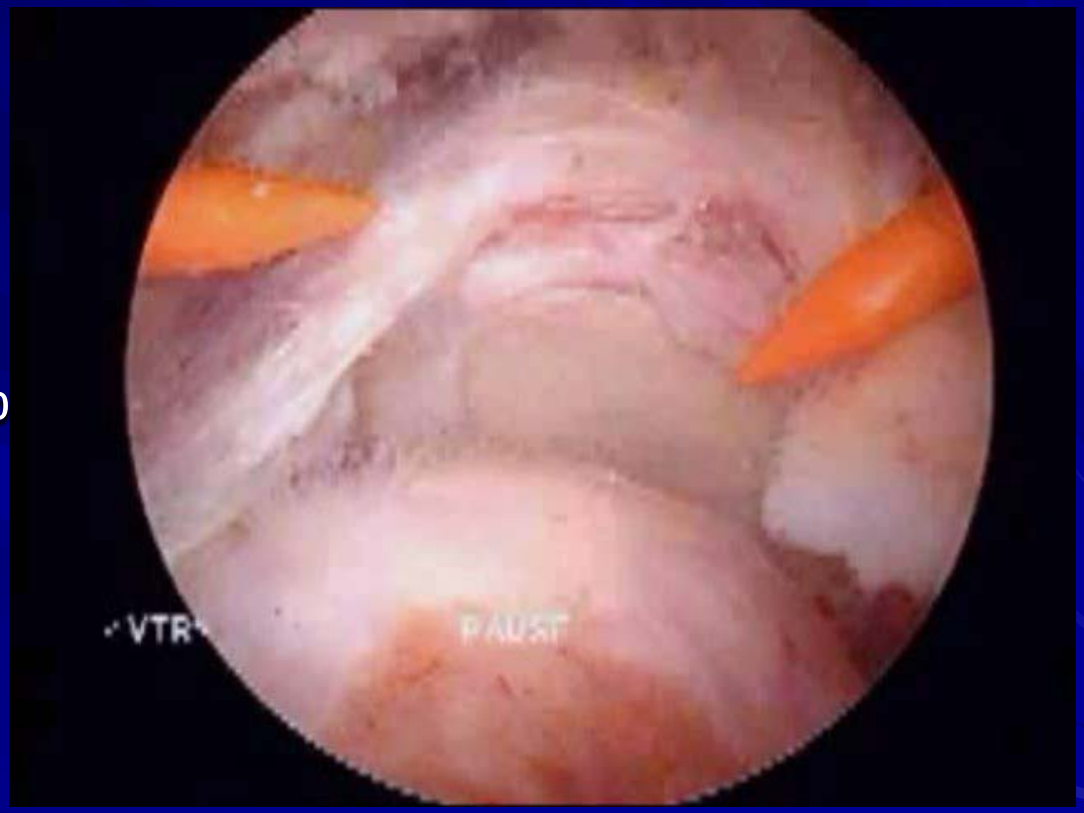





# Repair Technique

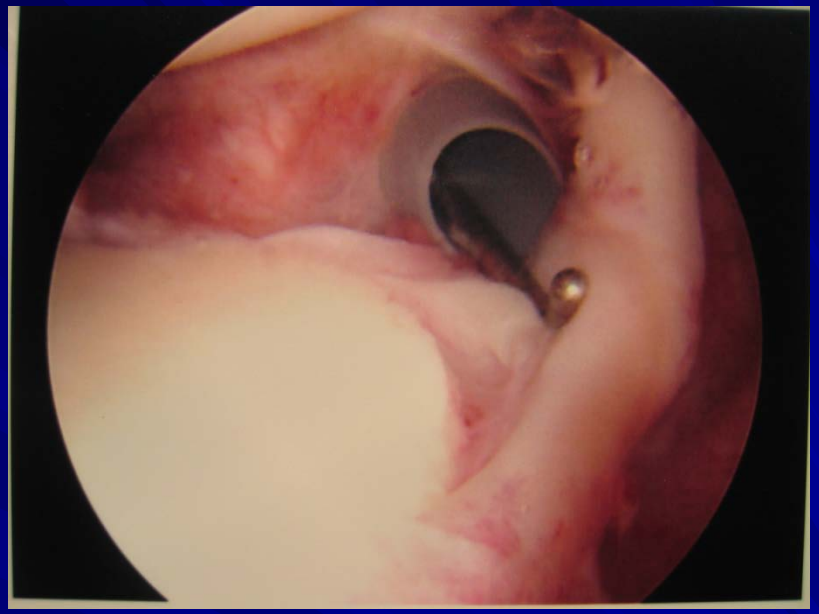
## Severud etal, Arthroscopy 2003

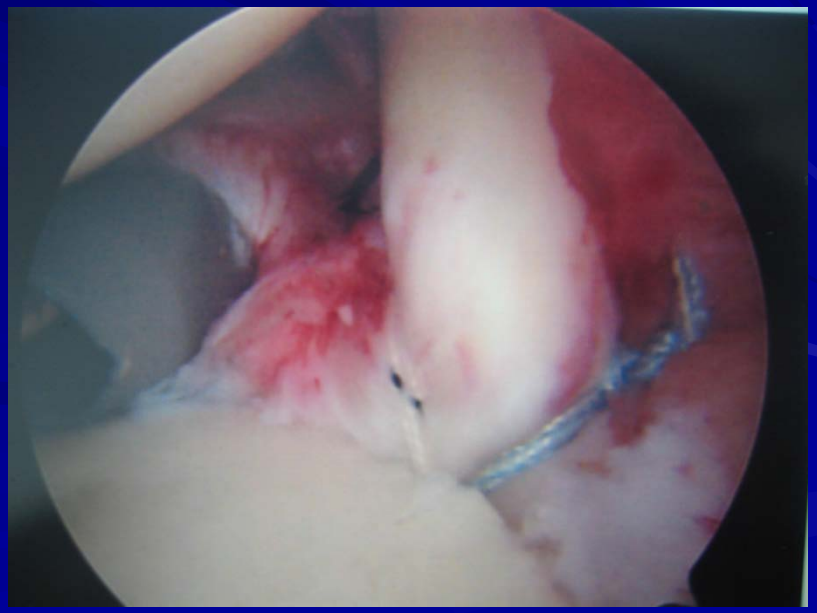
- Arthroscopic Vs Mini Open
  - ROM
  - Pain/Scar
  - Re-tear Rate (20-80% with both techniques)
  - Perceived Patient Satisfaction
- Single Vs Double Row



# SLAP Tears

- Four Types
- Type I degenerative
- Great variations in Biceps anchor anatomy
- Mechanism of Injury
  - Arm abducted/outstretched
  - Sudden downward motion on the arm (Eccentric)
  - Peel back mechanism





# SLAP Tears
# Kim etal, JBJS 2003

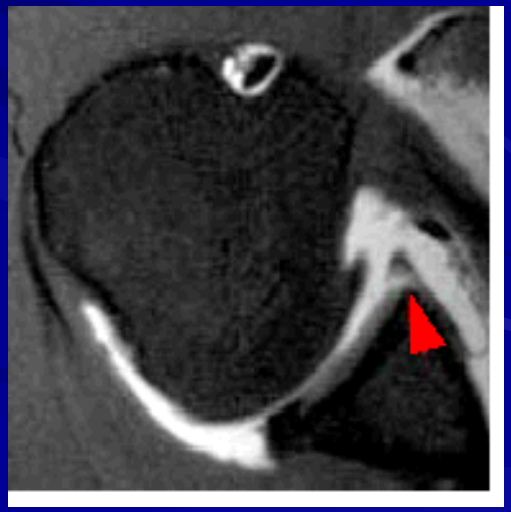
- SLAP Lesions without other associated findings is uncommon
- Often other lesions are responsible for the symptoms
- Recent trends towards less operative treatment and more rehab
- Significant Stiffness and pain with repair of asymptomatic Biceps lesions

# Choice of Anchor
# Park etal, Arthroscopy 2011

- PLL Anchors are associated with higher failure of SLAP repairs
- Reoperation rate up to 24%
- Be aware of using absorbable anchors around the glenoid
- Recommend non-absorbable anchors (PEEK, metal, all suture)

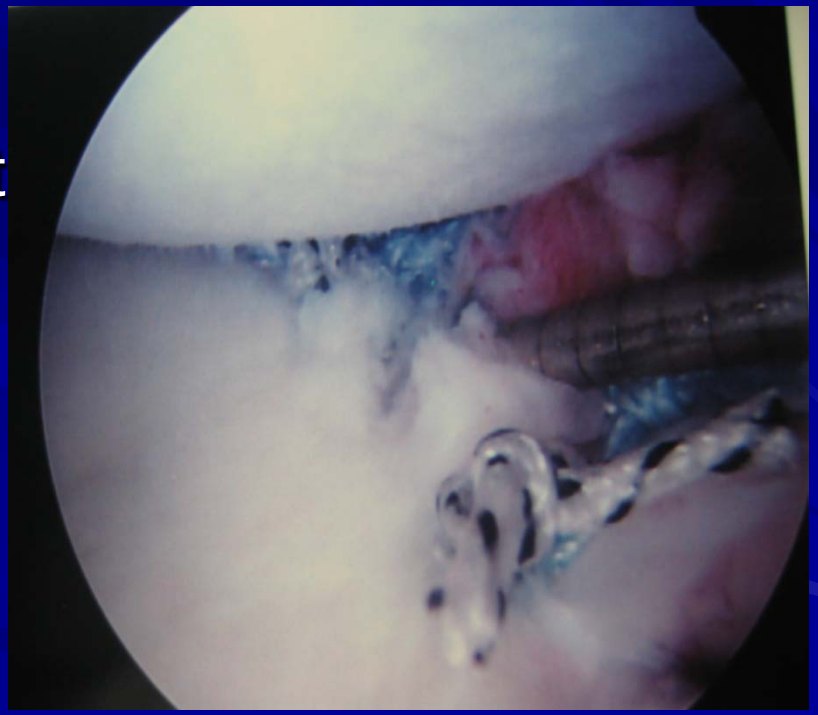
# GH Dislocation

- Traumatic
- First Time Vs Recurrent
- Natural History
  - 66% recurrence
  - Younger > Older
- Factors to consider
  - Bankart vs humeral capsular avulsion
  - Hill Sacs lesion
  - Glenoid Bone loss
  - Activity Level/Occupation



# Treatment of Dislocations

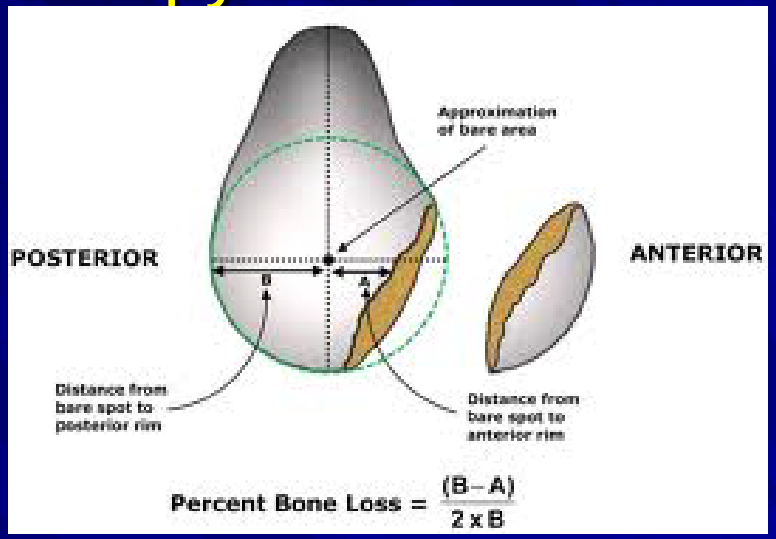
- Closed treatment with immediate external rotation sling (not practical in WC System)
- Recurrent dislocation requires operative treatment
  - Repair Bankart lesion
  - Posterior GH Ligament balancing stitches
  - Engaging Hill Sacs lesion
  - CT better  than MRI to evaluate Glenoid

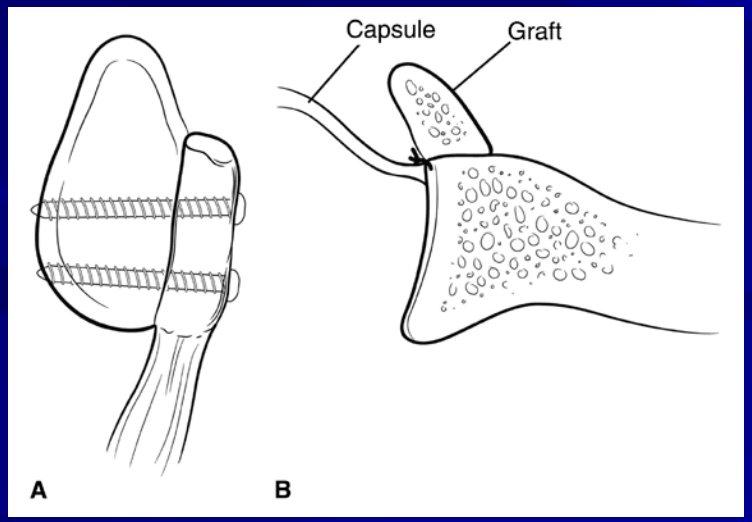


# Glenoid Bone loss

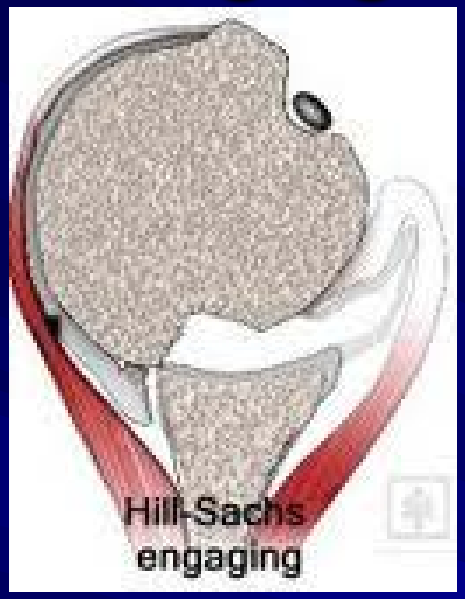
## Burkhart etal, Arthroscopy 2000

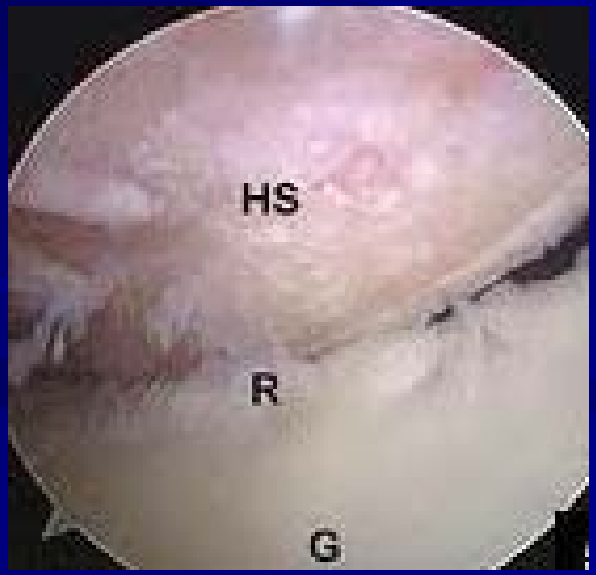
- High failure rate with Glenoid Bone loss>25%
- Bone augmentation (Latarjet)




# Engaging Hill Sacs Lesion




- Remplissage

# Results in WC vs None-WC Patients

- Holtby etal, Impact of WC claims on RC related pathologies. *J shoulder Elbow Surg*. 2010.
  - Injured workers showed statistically significant improvement 1 year following SAD or RC repair although with higher level of disability.
- Kemp etal, RC tear in WC patients, *Occup Med (lond),* 2011
  - Canadian Study concluded that WC patients benefit from treatment, but results are inferior

# Results in WC vs None-WC Patients

- Henn etal, Patients with workers' compensation claims have worse outcome after rotator cuff repair. *JBJS Am*, 2008
  - HSS study concluded that "existence of a workers' compensation claim portends a less robust outcome following rotator cuff repair".
- Verma etal, Outcome arthroscopic repair of type II SLAP lesions in WC patients. *HSS J.* 2007.
  - WC patients do show improvement, but results are inferior

# Results in WC vs None-WC Patients

- Park etal, *Am J Sports Med*. 2011 (Revision SLAP Repair)
- Balyk etal, *Clin Orthop Relat Res.* 2008 (Level I Evidence)
- Pedowitz, etal, Optimizing the management of rotator cuff Problems, J *Am Acad Orthop Surg.* 2011
  - Consenses statement **"surgeons can advise patients that workers' compensation status Correlates with less Favorable outcomes after rotator cuff surgery"**.

# ENOUGH is Enough!

- Patients perception of well being in WC system
- Treat objective findings based on evidence based Medicine
- Encourage self responsibility for own well being
- Patients with longer litigated workers comp generally have worse outcome

# THANK YOU