

Common Orthopaedic Conditions of the Shoulder in Weekend Warriors

Christopher V. Bensen, M.D.

A PA's Guide to the Musculoskeletal Galaxy
June 22-26, 2022
Denver, CO

Disclosures

- Partner, Keys Medical Group
- Medical Staff, Lower Keys Medical Center
 - ❖ Key West, Florida
- No corporate affiliation, interests, or royalties
- bensencv@gmail.com
- 828-773-9227



















Continental Divide

Milner Pass elevation: 10,759 ft.

The "Great Divide" separates drainage to the Atlantic Ocean from the Pacific Ocean. It traverses America from Alaska almost to Cape Horn.

Atlantic Ocean
← Drainage

Pacific Ocean
Drainage →

The Cache La Poudre Creek drains into the Platte River which flows to the Missouri, then to the Mississippi, thus reaching the Gulf of Mexico.
(A part of the Atlantic Ocean)

Beaver Creek drains into the Colorado River, which then flows through Grand Canyon National Park and on to the Gulf of California (a part of the Pacific Ocean)



LOWER KEYS
MEDICAL CENTER

KEY WEST - FLORIDA













© DESPAIR.COM

PERSEVERANCE

THE COURAGE TO IGNORE THE OBVIOUS WISDOM OF TURNING BACK.

Objectives

- Know how to properly evaluate a patient with shoulder injury or other symptoms
- Formulate an appropriate differential diagnosis based on history and PE findings
- Recommend initial treatment plans for patients with shoulder impingement, rotator cuff disease, adhesive capsulitis, and glenohumeral arthritis

Introduction

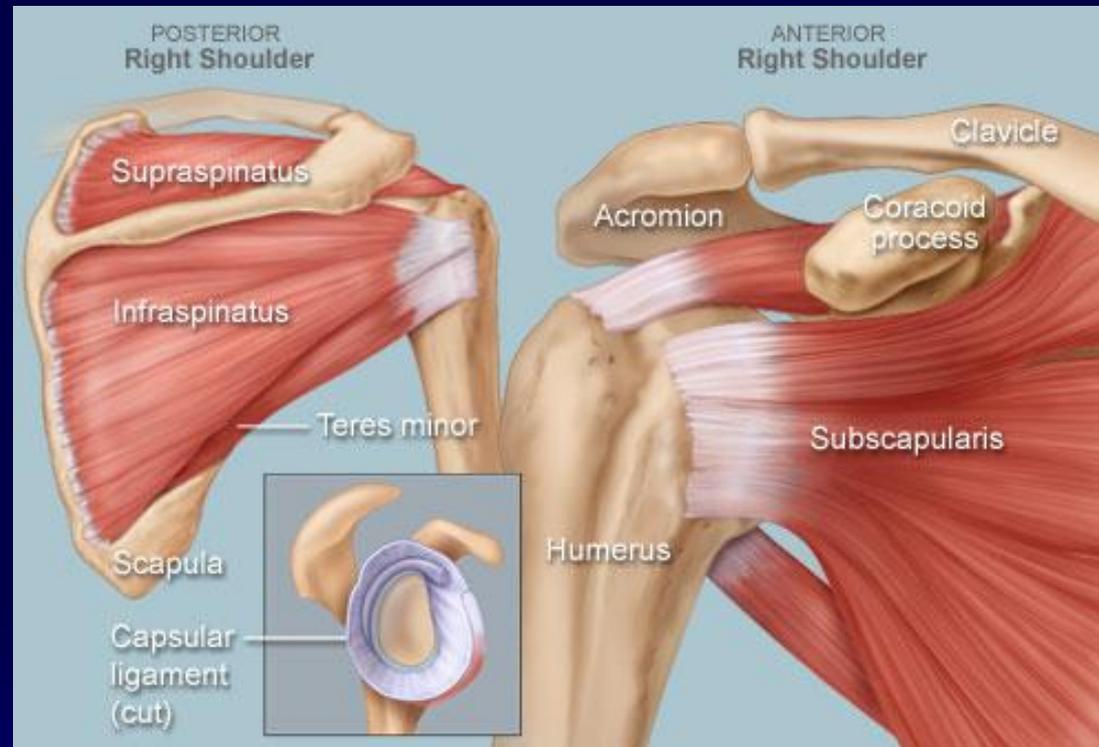
- Shoulder anatomy
- Shoulder impingement
- Rotator cuff disease
- Rotator cuff arthropathy
- SLAP lesions
- Adhesive capsulitis
- Glenohumeral arthritis

“Life may not begin at 40, but it certainly doesn’t have to end there”



Rotator Cuff

- Four muscles/tendons covering scapula
 - ❖ Supraspinatus
 - ❖ Infraspinatus
 - ❖ Subscapularis
 - ❖ Teres minor



Case #1

- 58yo RHD male avid tennis player presents with a 3 month h/o right shoulder pain
- Localized deep and lateral
- Increased with overhead serves
- Partially relieved by rest and NSAIDs

Case #1

- Exam reveals painful arc of motion in forward elevation and abduction
- No rotator cuff atrophy
- TTP over lateral subacromial bursa
- Positive Neer and Hawkins signs
- Mild weakness in abduction and ER

Case #1



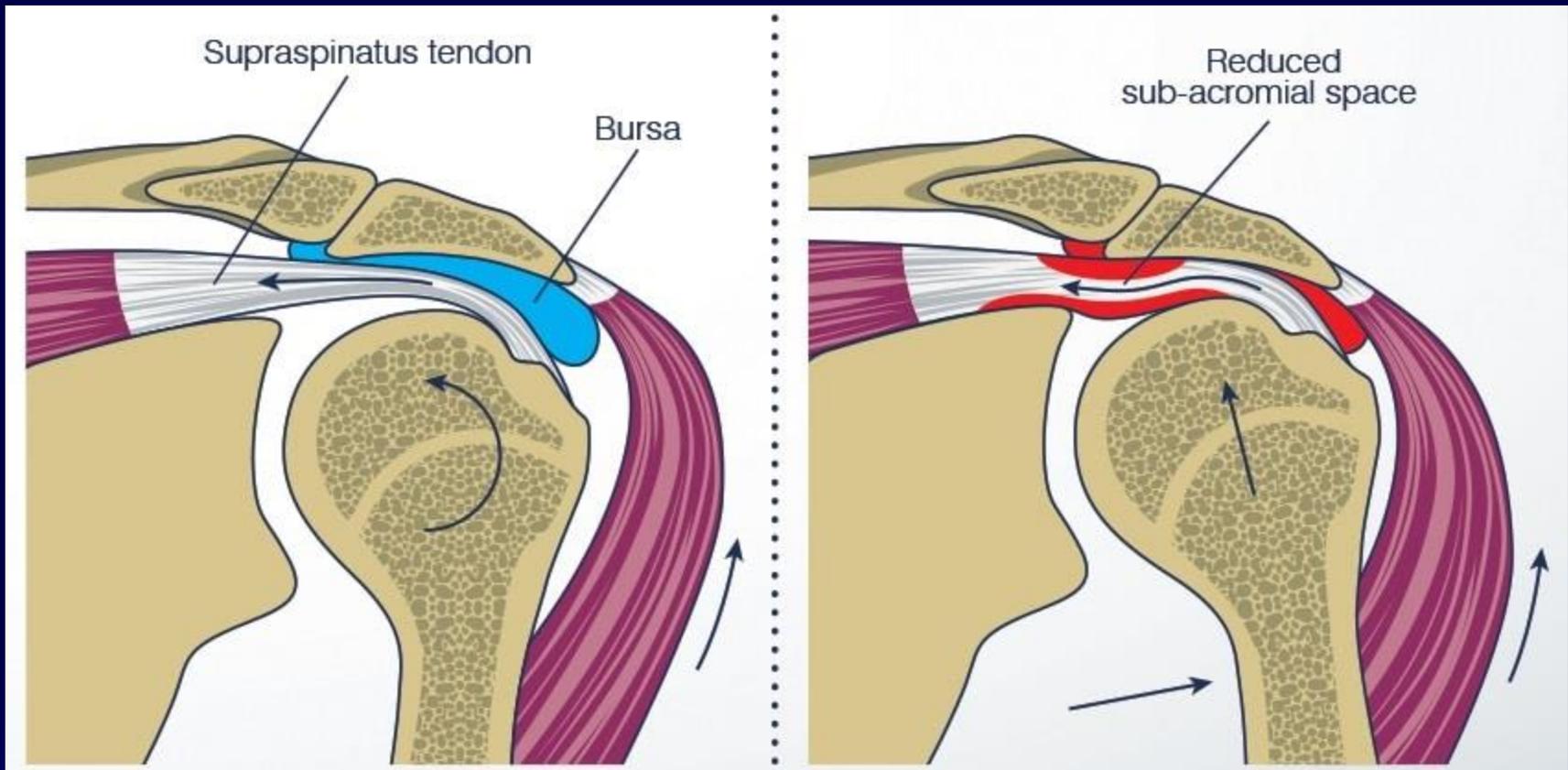
Case #1

- Diagnosis?

Impingement Syndrome

- Most common overuse problem in the shoulder in the older overhead athlete
- Compression of subacromial bursa and/or rotator cuff tendons between humeral head and undersurface of the acromion
- Subacromial bursitis
- Rotator cuff tendinitis

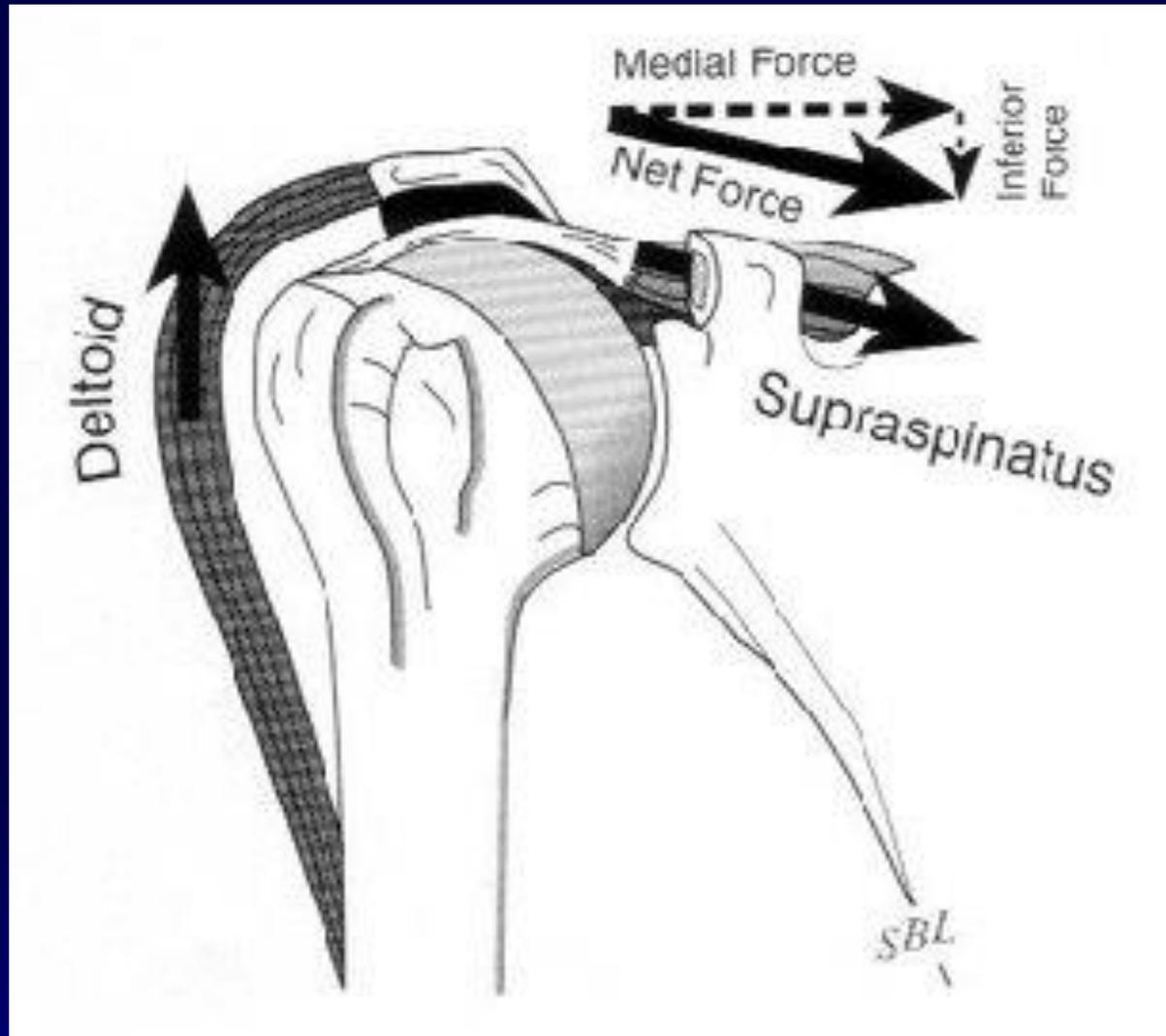
Impingement Syndrome



Impingement Syndrome

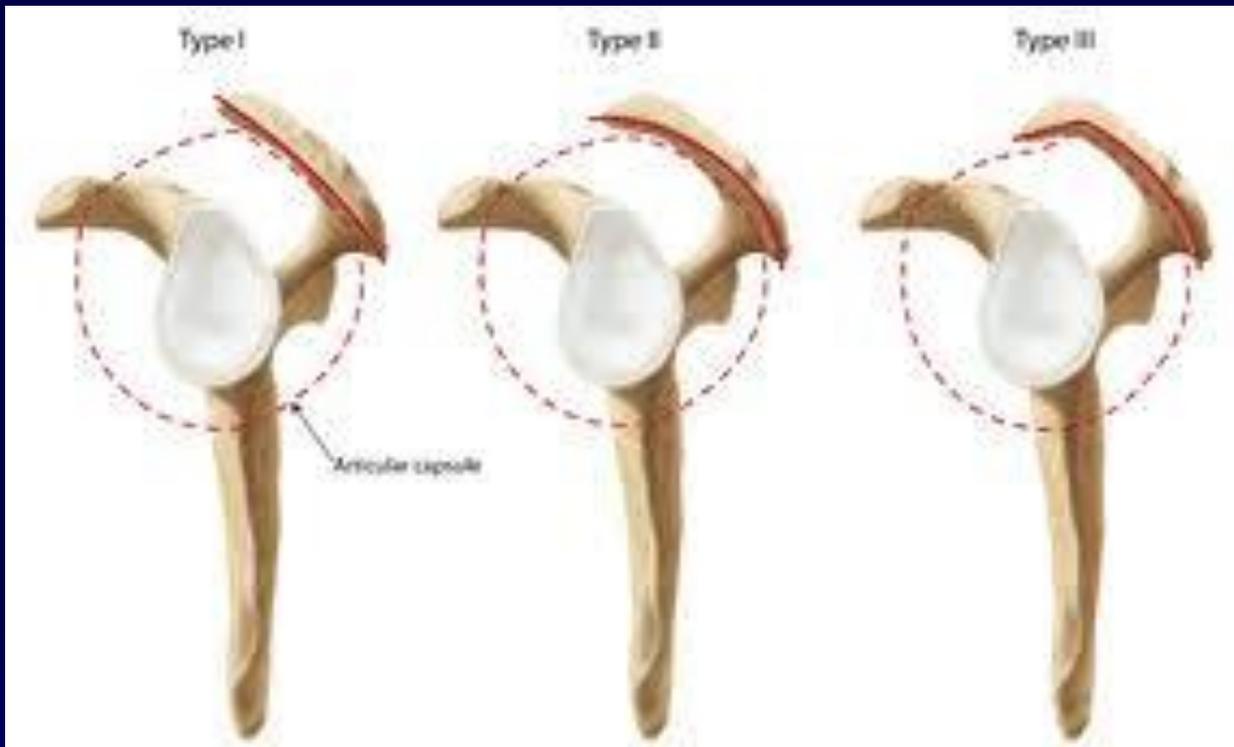
- Treatment
 - ❖ Rest from aggravating factors
 - ❖ NSAIDs
 - ❖ Consider cortisone Injection
 - ❖ Physical therapy for RC strengthening
- Surgical decompression
 - ❖ Partial bursectomy
 - ❖ Acromioplasty

Shoulder Force Couple



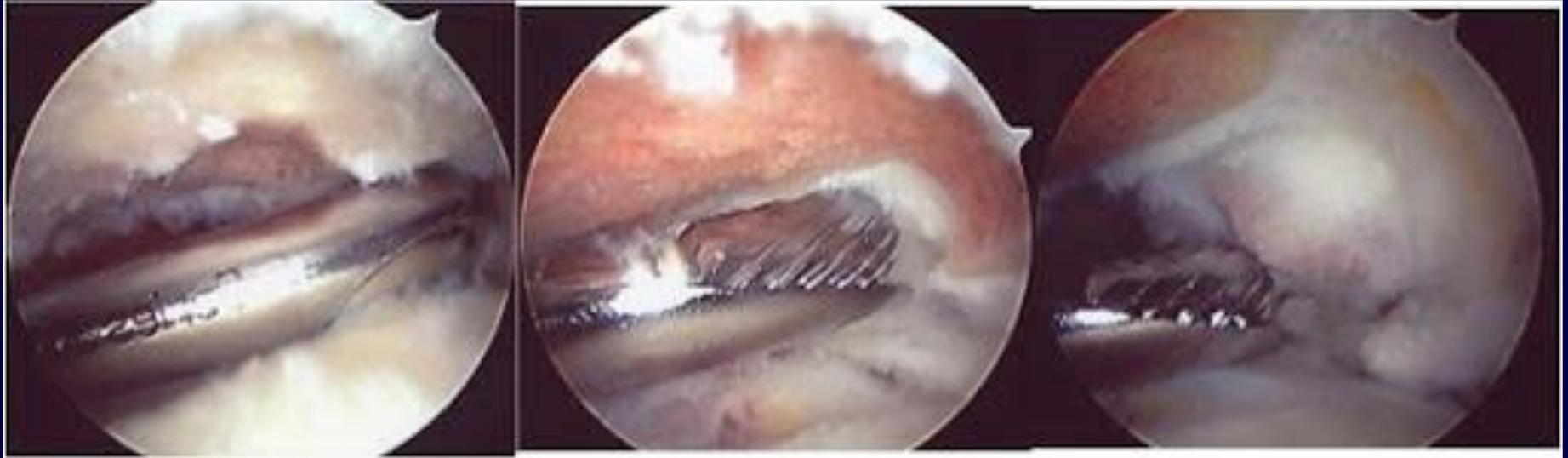
Impingement Syndrome

- Increased risk of rotator cuff disease



Bigliani et al. Orthop Trans 1986

Subacromial Decompression



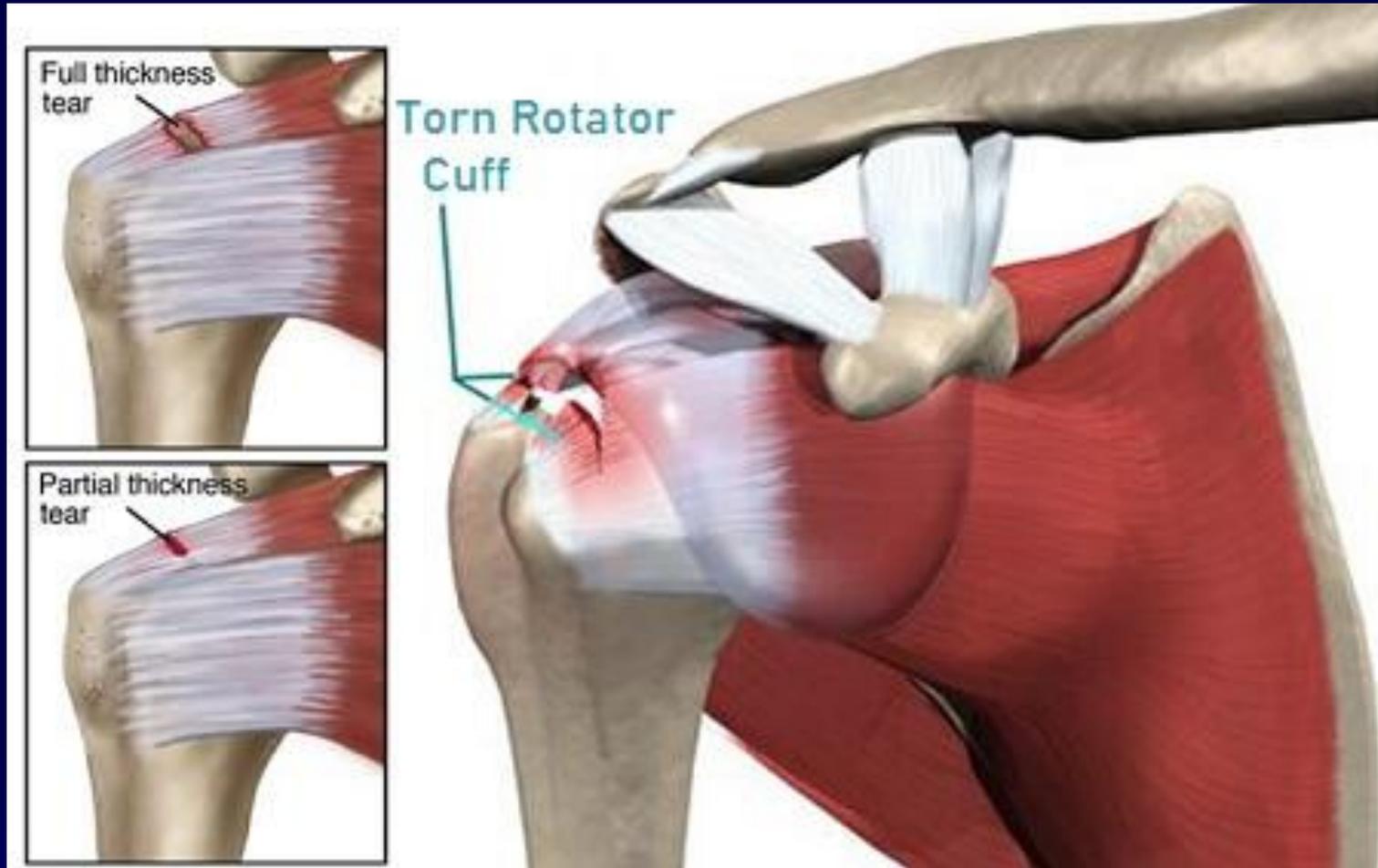
Rotator Cuff Tears

- Most often chronic, degenerative tears or acute-on-chronic presentations
- Initial symptom may be pain only
- Many have few other symptoms
- Ultimately results in weakness as tear worsens and RC muscle atrophy occurs

Rotator Cuff Tears



Rotator Cuff Tears

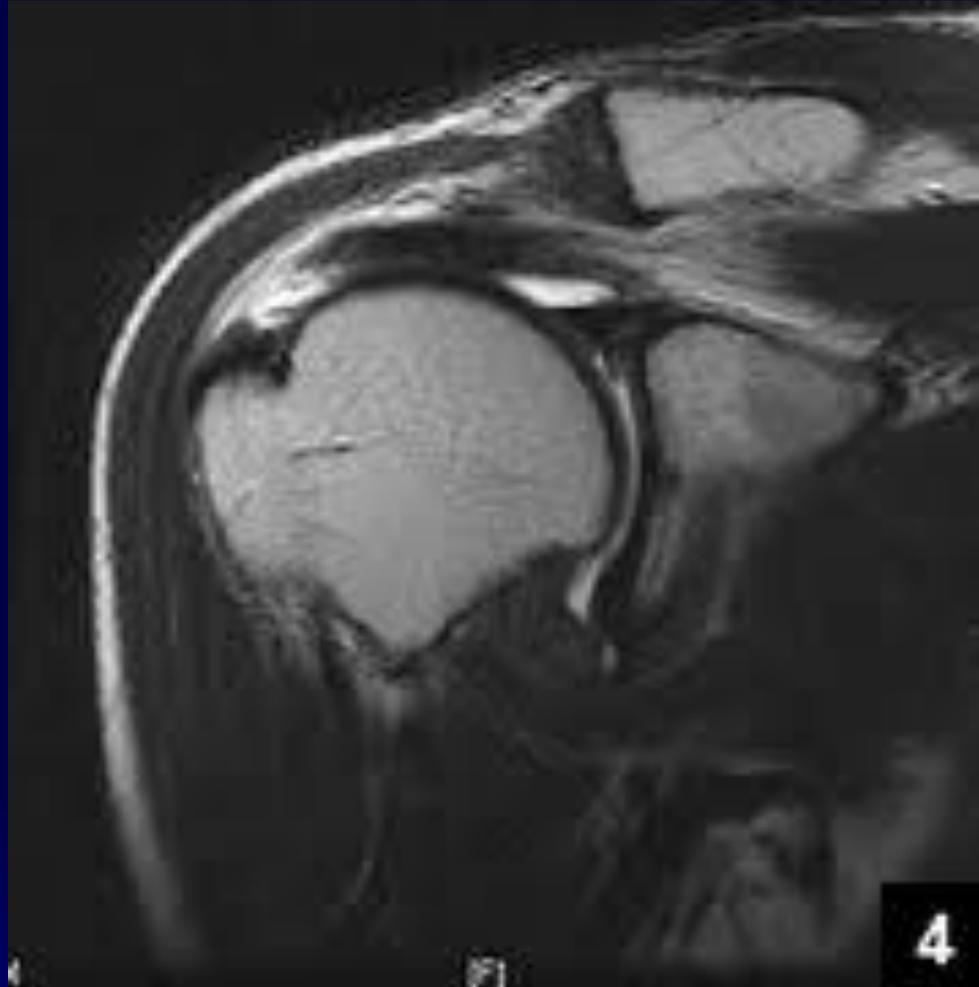


Rotator Cuff - Exam

- Painful ROM, especially ABER-Usually
- Positive Neer and Hawkins signs-Often
- Weakness in ABER-Frequent
- Muscle atrophy-Some
- ER lag-Occasional
- Drop arm sign-Very Rare
- Hornblower's sign-Unicorn



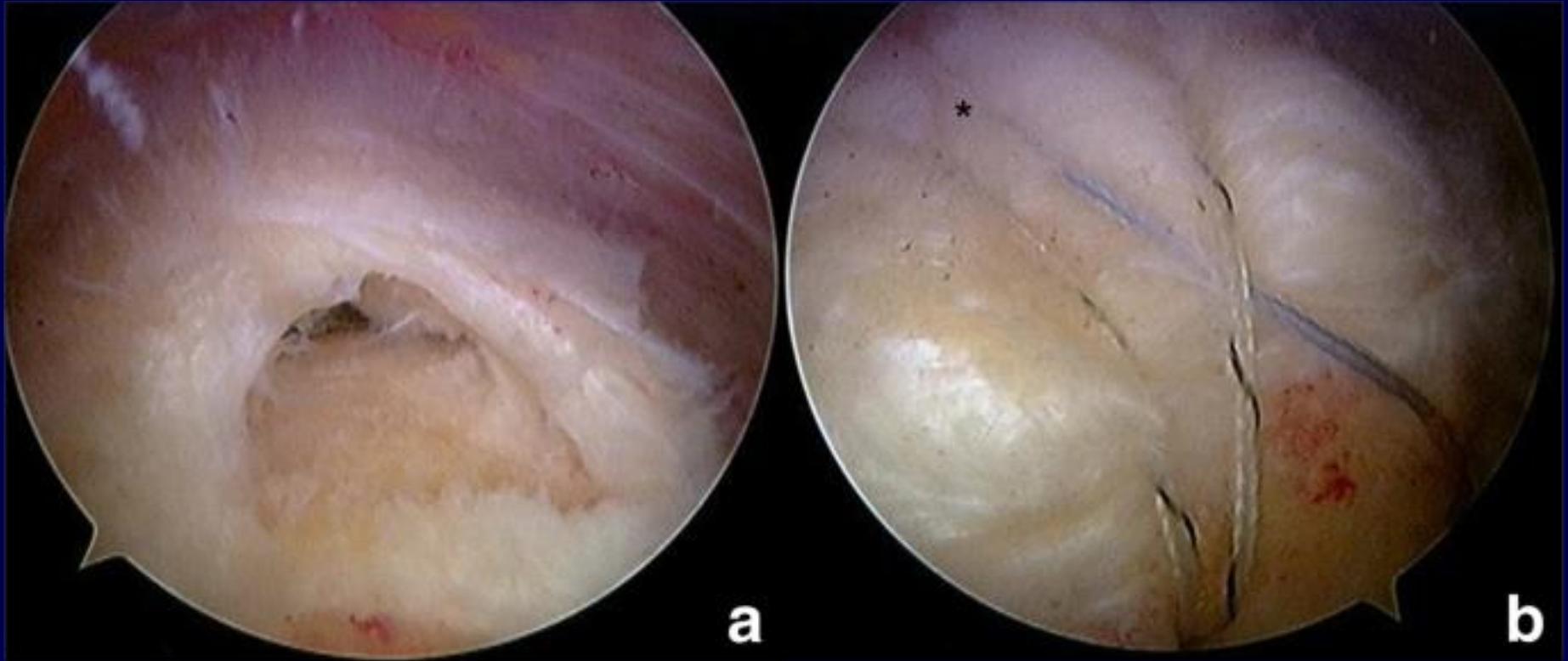
Rotator Cuff - MRI



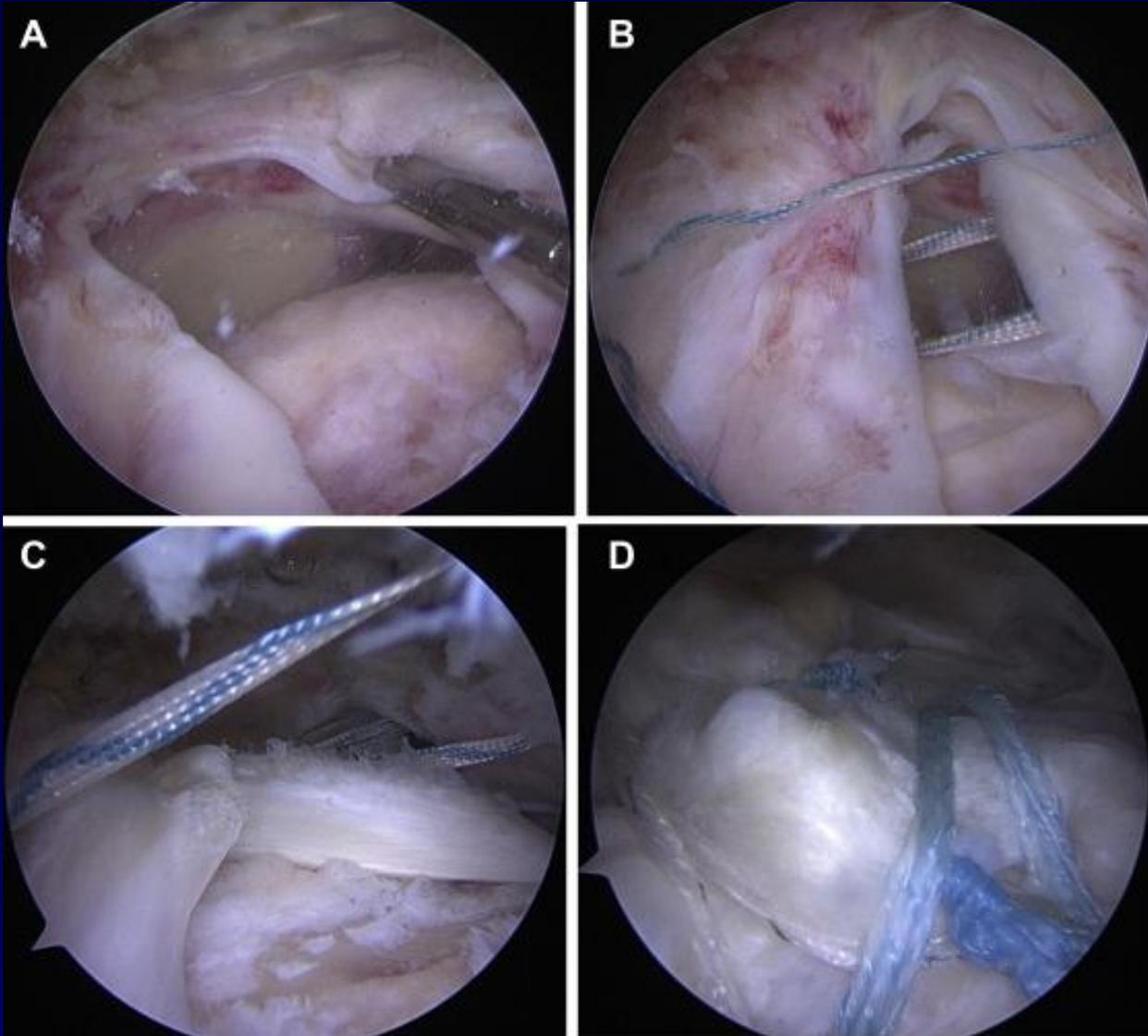
Rotator Cuff Tears

- Initial treatment may be the same as that for subacromial impingement
- Many tears slowly progress and worsen
- Arthroscopic or mini-open rotator cuff repair is often the treatment of choice
- Advanced RC disease often results in secondary glenohumeral DJD
- Rotator cuff arthropathy

Rotator Cuff Repair



Rotator Cuff Repair



Rotator Cuff Tears

“Hey Doc, if I don’t get my rotator cuff tear fixed, will it get bigger or cause me more pain in the future?”

RCT Progression

- Does every patient with a full thickness RCT need a repair?
- Do rotator cuff tears get bigger over time?
- What factors suggest tears will worsen?
 - ❖ 47% total over 2 years (≥ 2 mm)
 - ❖ Full thickness
 - ❖ Medium tears
 - ❖ Smokers, Males, Hand dominance, Trauma

Yamamoto et al. Am J Sports Med, 2017.

Biologics

- Growth factors (Platelet-rich plasma)
- Interpositional grafts
- Scaffolds
- Patches

Platelet-Rich Plasma

- Peripheral blood drawn from patient, centrifuged, plasma buffy coat collected
- Re-injected at site of injury
- Growth factors present in supraphysiologic concentrations
- Some studies have shown improved healing rates
- Others show no SSD vs. saline injections

Platelet-Rich Plasma

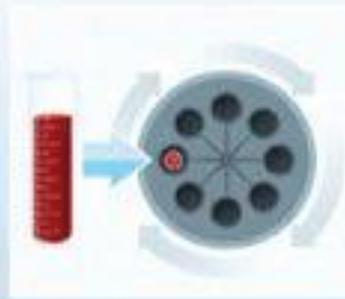
STEP 1



Collecting Blood

A small amount of blood (30-60ml) is drawn from the patient's arm.

STEP 2



Separating the Platelets

The blood goes for a "spin" in a centrifuge separating the platelets from the rest of the blood.

STEP 3



Platelet-Rich Plasma

The patient's own platelet-rich plasma is now extracted from the test tube.

STEP 4



Return of PRP to the Patient

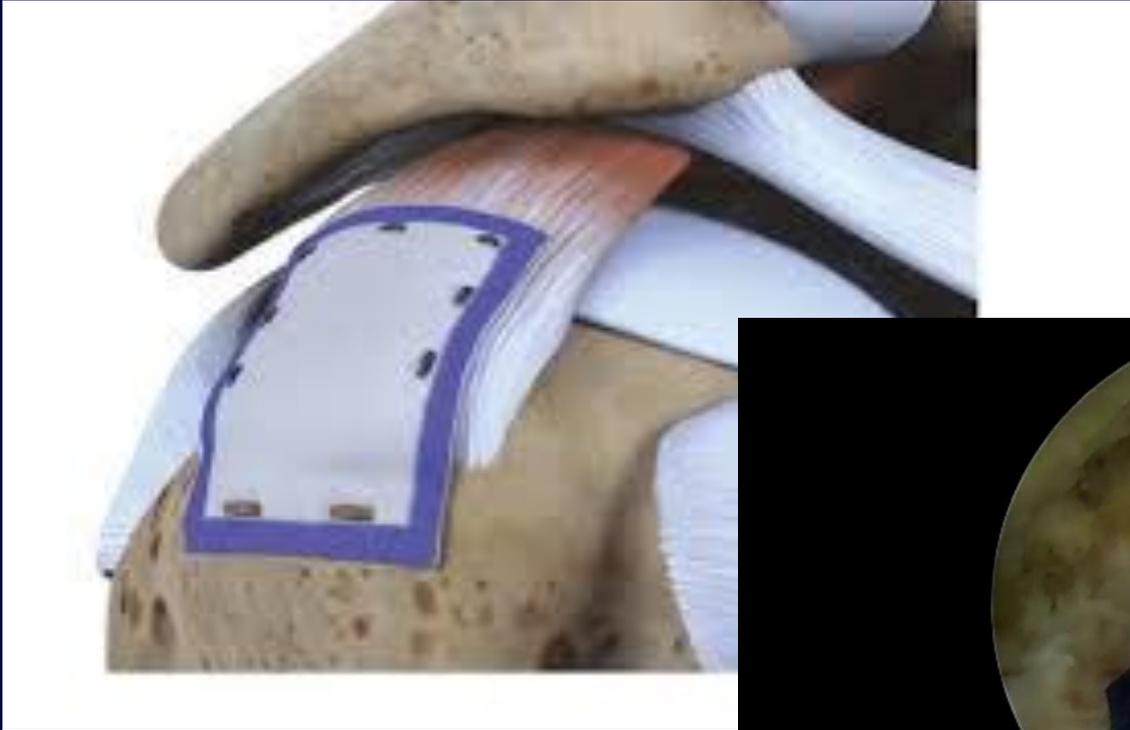
The plasma is injected into the injured area or inflamed tissue.

Bovine Collagen Grafts

- 33 Pts with chronic, degenerative PTRCTs
- ASAD with no traditional RCR
- Implant placed on bursal surface of SS
- Clinical outcomes at 3 months, 1 and 2 yrs
- ASES/CMS scores improved at 2 years
- MRI evidence of tissue fill-in in 100% of intermediate and 95% of high grade tears

Schlegel et al. JSES 30:8, 2021

Biologics



Case #2

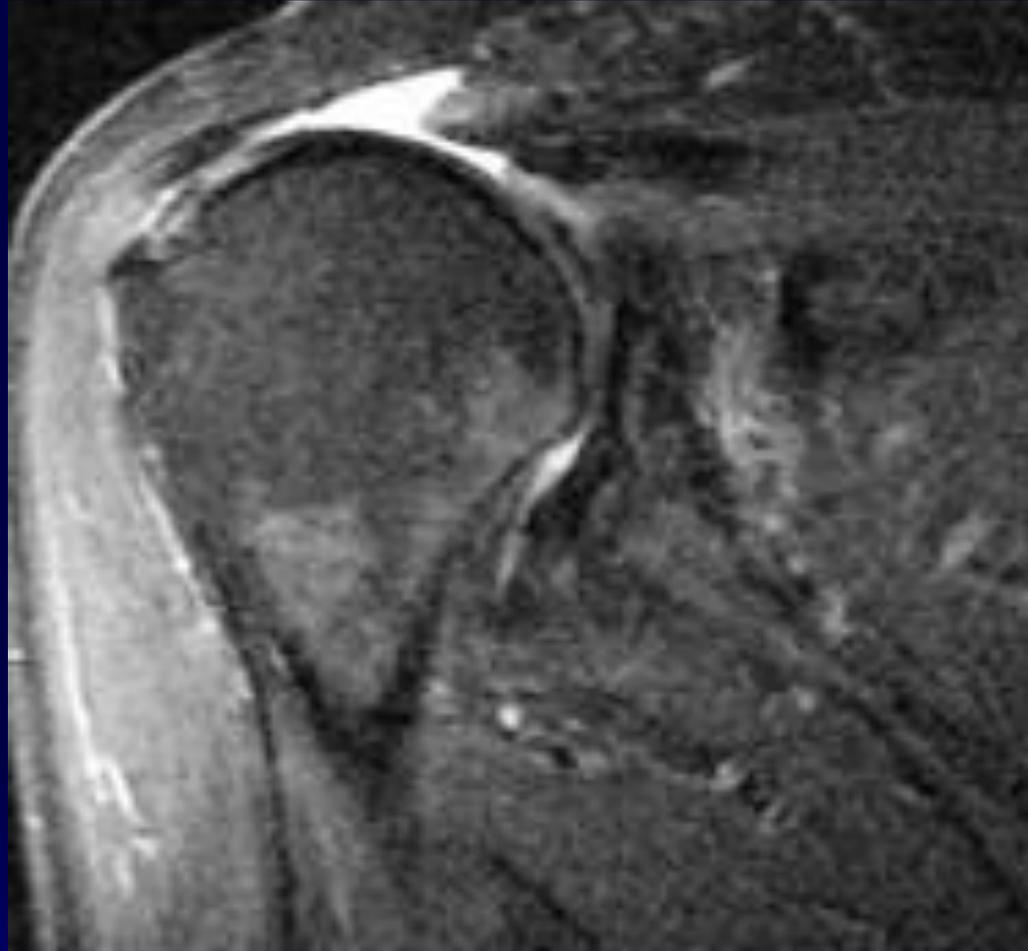
- 78yo RHD retired male presents with a 6 month h/o right shoulder pain
- Associated weakness
- Interfering with ADLs
- Not sleeping well



Diagnosis?



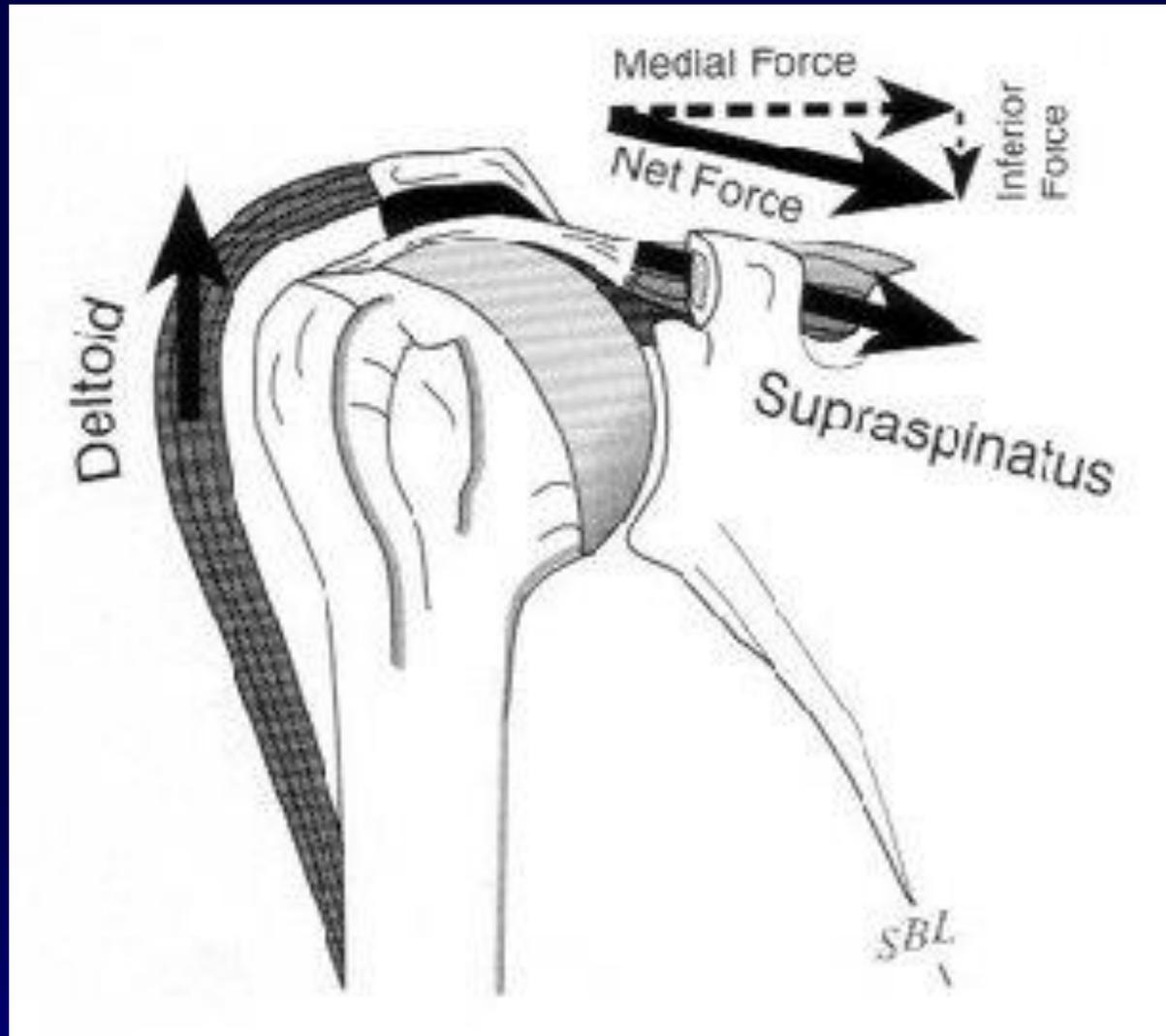
Rotator Cuff Arthropathy



Rotator Cuff Arthropathy

- Growing problem
- Failed RC repair
- Neglected RC tear
- Loss of depressing force of cuff
- Superior migration of humeral head
- Deltoid shortens, becomes weak
- Pseudoparalysis

Shoulder Force Couple



Rotator Cuff Arthropathy

- Conservative treatment
 - ❖ PT
 - ❖ Pain management
 - ❖ Cortisone injections
 - ❖ Activity modification
- Surgical Management
 - ❖ Reverse TSA
 - ❖ SCR
 - ❖ Biceps tenotomy!

Boileau et al. J Bone Joint Surg, 2007.

Superior Capsular Reconstruction

- Described by Mihata with fascia lata
- Recent use of acellular dermal allograft
- Arthroscopic procedure
- Restores tether/fulcrum to prevent superior migration of humeral head
- Limited experience
- May reverse pseudoparalysis over time!

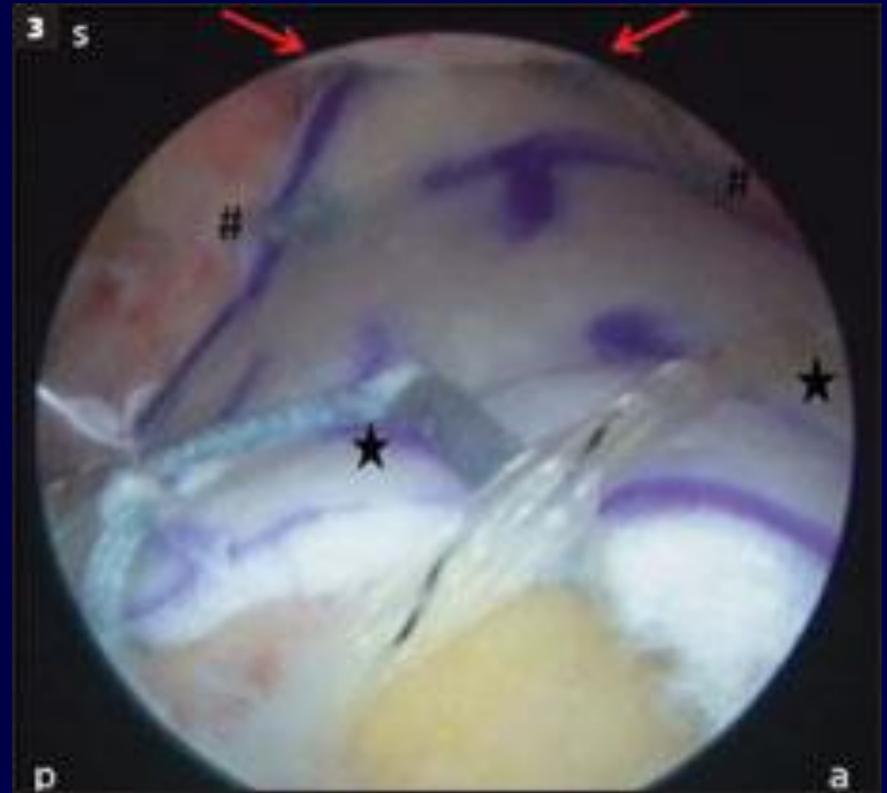
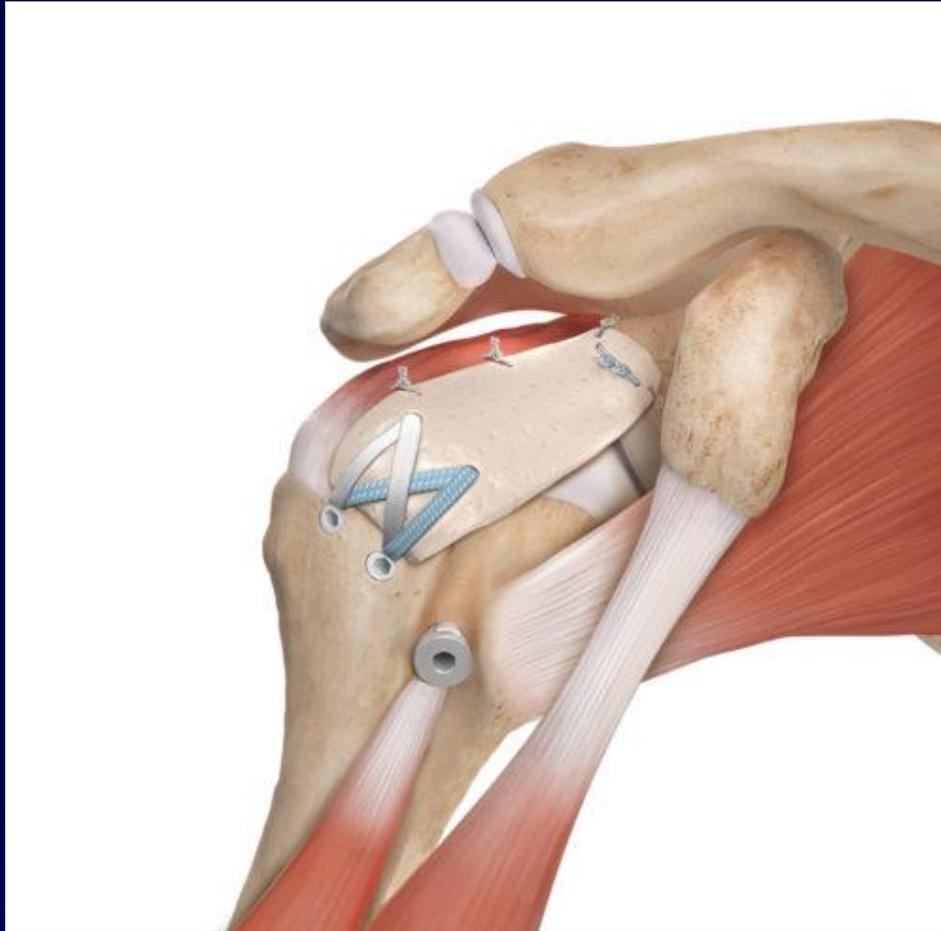
Burkhart et al. Arthroscopy, 2019.

Superior Capsular Reconstruction

- 10 Pts with complete SS/IS tears
- Tears > 5cm
- AFE <45 degrees
- Full PFE
- F/U at 1 year
- Avg AFE 159 degrees!
- Improved pain, AER, ASES scores

Burkhart et al. Arthroscopy 2019

Superior Capsular Reconstruction



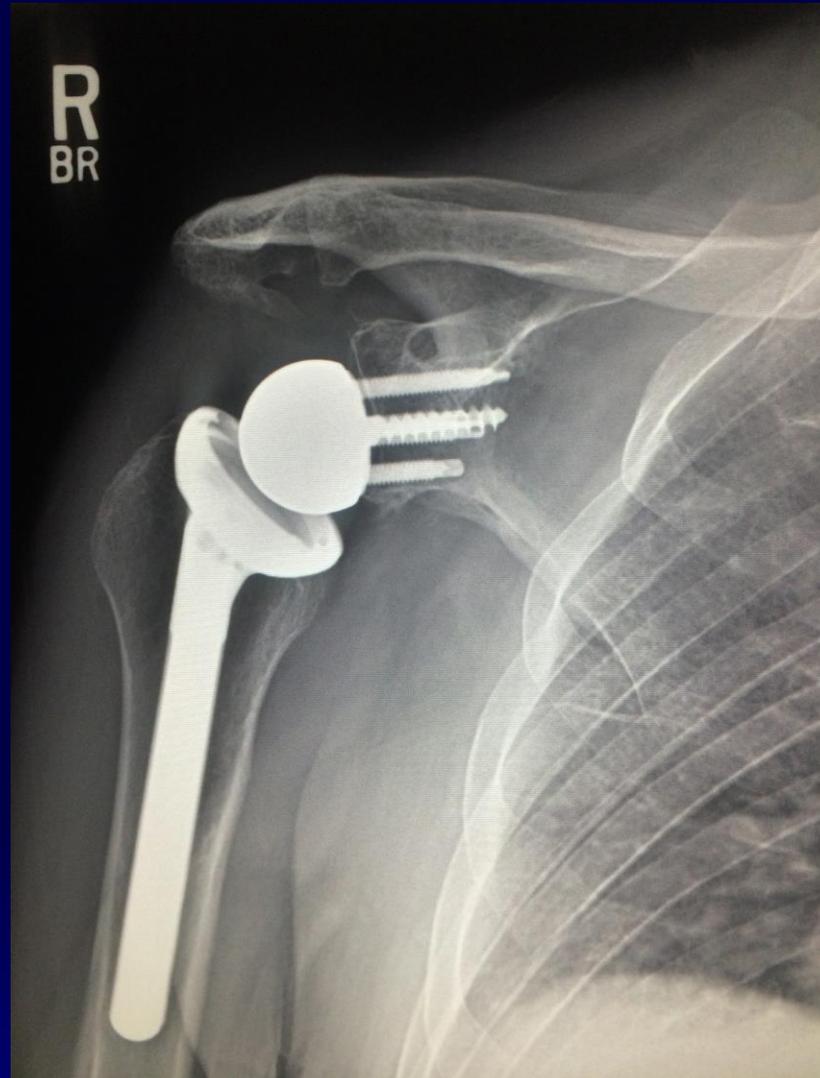
© DESPAIR.COM



LIMITATIONS

UNTIL YOU SPREAD YOUR WINGS,
YOU'LL HAVE NO IDEA HOW FAR YOU CAN WALK.

Reverse Shoulder Arthroplasty





Case #3

- 62yo LHD female golfer presents with 1 year h/o left shoulder pain
- Localized deep and radiates down the front of her upper arm
- Aggravated by driving golf balls
- Pain with lifting objects in front

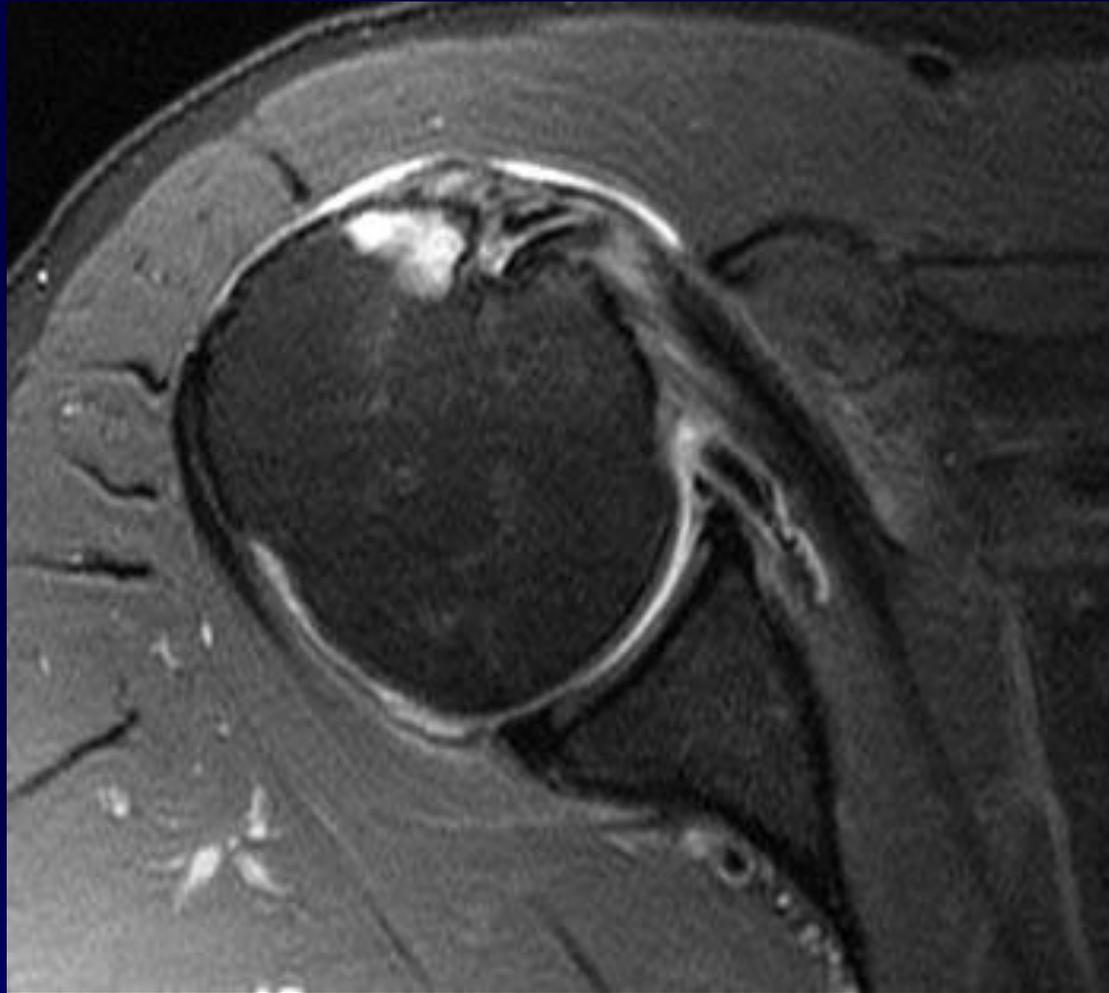
Case #3

- Exam reveals a positive O'Brien's test and positive biceps load test
- No significant weakness
- Plain x-rays normal
- Any other studies?

Case #3



Case #3



Case #3

- Diagnosis?

SLAP Lesion/Biceps Tendinitis

- Commonly associated in Pts > 40
- Treatment options
 - ❖ SLAP repair
 - ❖ Biceps tenodesis
 - ❖ Biceps tenotomy

SLAP Lesion/Biceps Tendinitis

- SLAP Repair
 - ❖ Can achieve good results
 - ❖ Higher complications-Stiffness!!!
 - ❖ Lower healing rates
 - ❖ Pain from associated biceps pathology
 - ❖ Cumulative evidence supports labral debridement and/or biceps tenotomy

Abbot et al. Am J Sports Med 2009

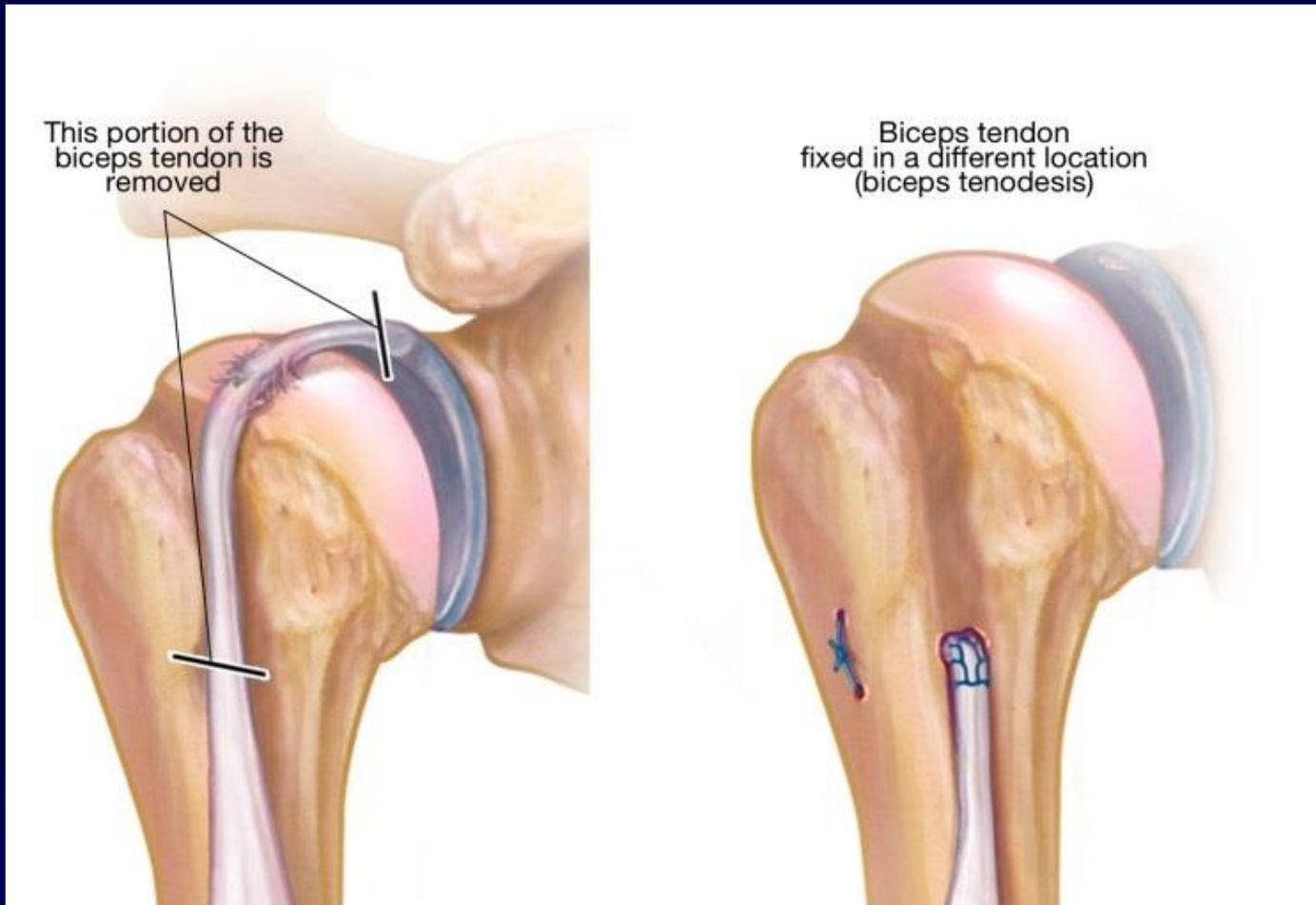
Erickson et al. Am J Sports Med 2015

SLAP Lesion/Biceps Tendinitis

- Biceps Tenodesis
 - ❖ Detach long head of biceps from glenoid
 - ❖ Debride SLAP lesion
 - ❖ Reattach LHB to humerus
 - In bicipital groove
 - Subpectoral humerus

Gottschalk et al. Am J Sports Med 2014

Biceps Tenodesis



Biceps Tenodesis

- Time consuming
- Additional incision
- Additional implant
- Complications
- Is it really necessary?



Biceps Tenotomy

- Faster
- No extra costs
- Minimal weakness
 - ❖ 20% supination loss
 - ❖ 8-20% flexion loss
- Popeye deformity
- “Biceps Killers”



Boileau et al. J Bone Joint Surg 2007

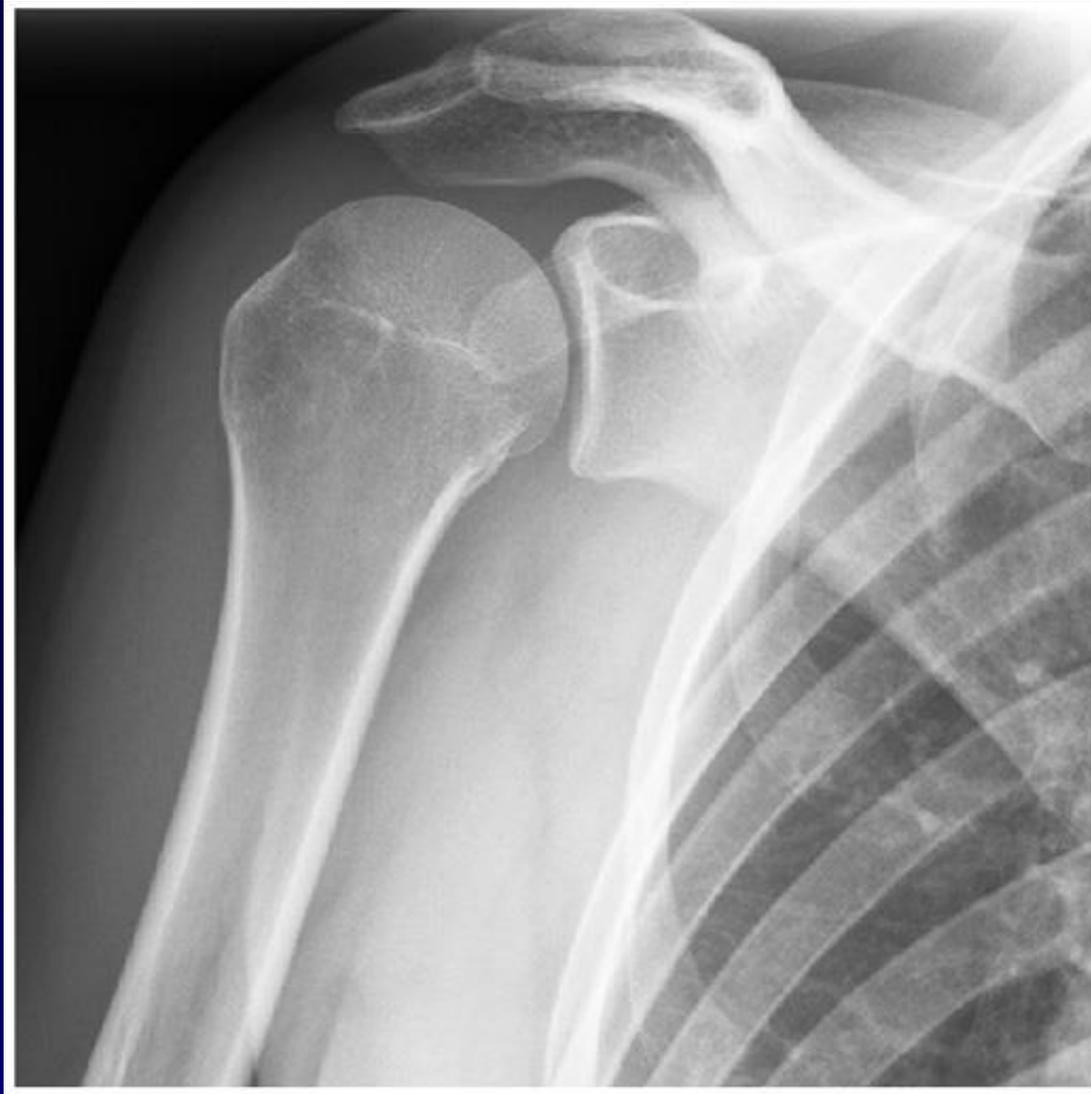
Case #4

- 65yo RHD retired female presents with 6 month h/o right shoulder pain
- Gradual worsening after a fall on right side
- Associated stiffness
- Pain at end of day not as bad as prior
- Difficulty dressing herself

Case #4

- Physical Exam
 - ❖ AROM: FE 100, ER 30, AER 45, AIR 30
 - ❖ PROM nearly the same
 - ❖ Positive O'Briens
 - ❖ No instability
 - ❖ Motor exam normal

Case #4



Case #4

- Any other studies?
- Diagnosis?

Adhesive Capsulitis

- Common cause of pain and stiffness
- Posttraumatic
- Diabetic
- Stroke Pts
- Idiopathic
- Pain, stiffness, resolution phases
- Self limiting

Adhesive Capsulitis

- Conservative Management
 - ❖ Physical Therapy
 - ❖ NSAIDs vs. steroids
 - ❖ Cortisone injection
- Operative Management
 - ❖ Manipulation under anesthesia
 - ❖ Arthroscopic capsular release

Case #5

- 65yo RHD retired male presents with 6 month h/o right shoulder pain
- Localized deep and has associated stiffness as well as grinding sensation
- Pain at end of day
- Difficulty sleeping

Case #5

- Physical Exam
 - ❖ AROM: FE 140, ER 30, AER 60, AIR 45
 - ❖ Moderate crepitance
 - ❖ Slight cogwheeling
 - ❖ No instability
 - ❖ Motor exam normal

Case #5



Conservative Management

- NSAIDs
- Physical therapy
- Cortisone injections
- Activity modification

Case #6



A chance to cut is a chance to cure.
The only way to heal is...

A chance to cut is a chance to cure.
The only way to heal is...
Surgical steel!

Surgical Options

- Arthroscopic debridement
- Meniscal Allograft
- Hemiarthroplasty
- “Ream and Run”
- Total Shoulder Arthroplasty

Arthroscopy

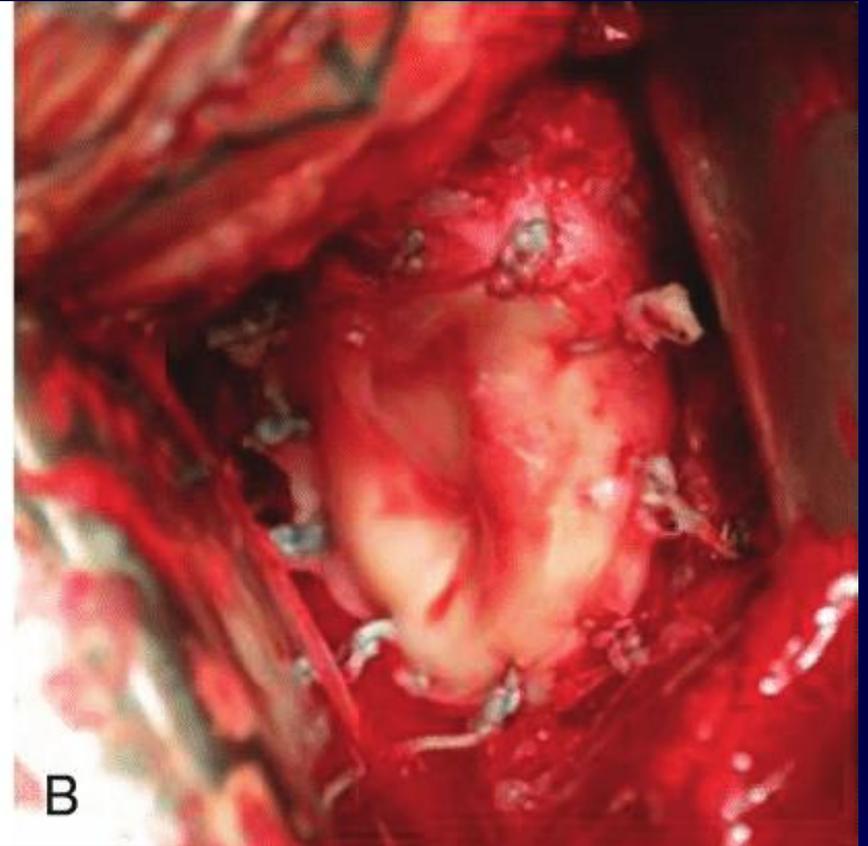
- Limited role in advanced DJD
- Loose body removal
- Debridement of osteophytes
- Short term relief
- Recurrent pain

Meniscal Allograft

- Technically challenging
- Less invasive than arthroplasty
- Partial pain relief
- Does not address humeral side unless combined with hemiarthroplasty

Ball et al. Tech Shoulder Elbow Surg, 2001.

Meniscal Allograft

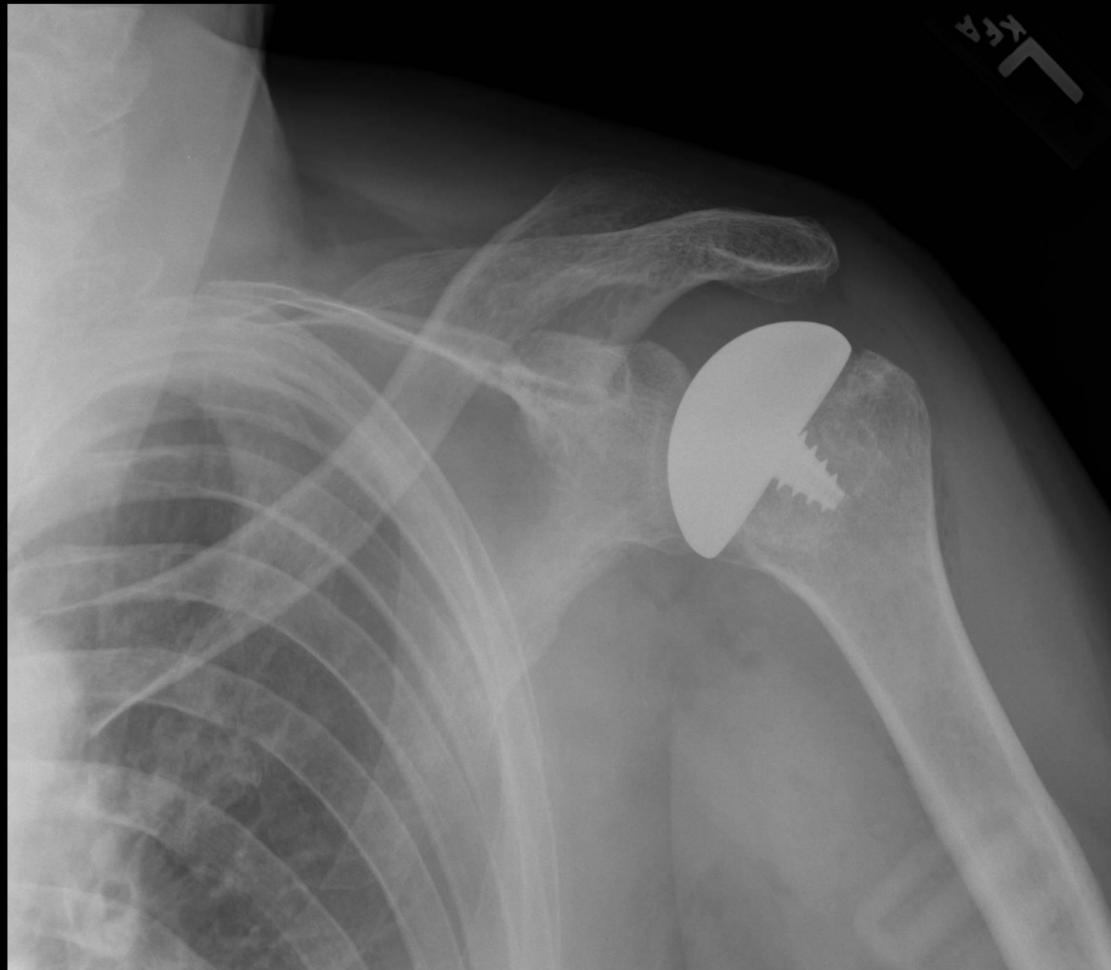


Hemiarthroplasty

- Resurface humeral side
- Easier, less invasive than TSA
- Lower complication rate
- Doesn't address glenoid side
- Higher reoperation rate vs. TSA

Aldinger et al. Int Orthop, 2010.

Hemiarthroplasty

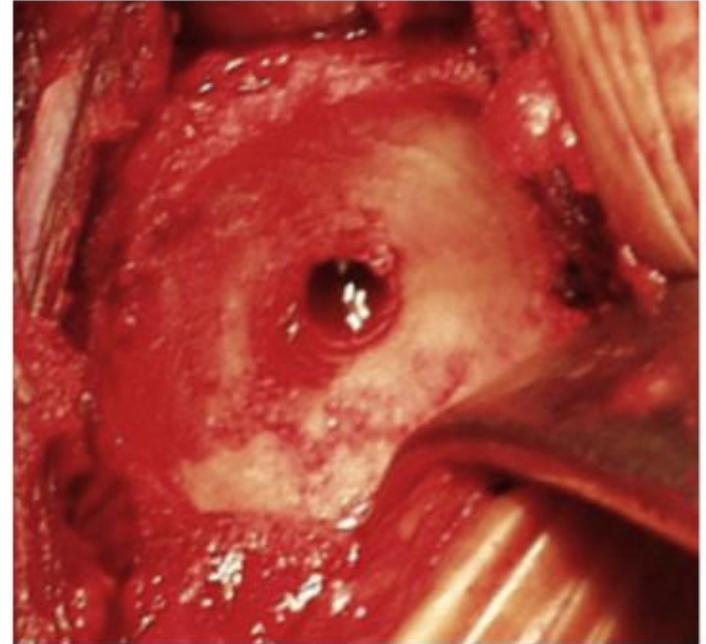
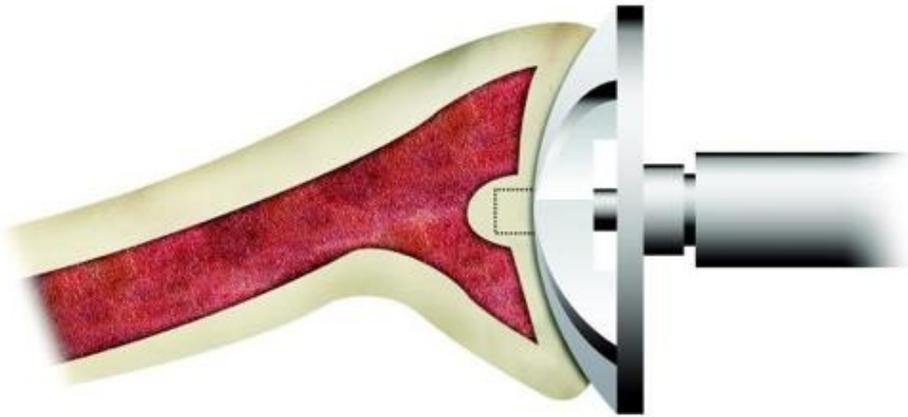


Ream and Run

- Hemiarthroplasty
- Ream glenoid to remove cartilage, spurs
- Creates smooth concavity
- Option for higher demand Pts

Matsen et al. Int Orthop, 2019

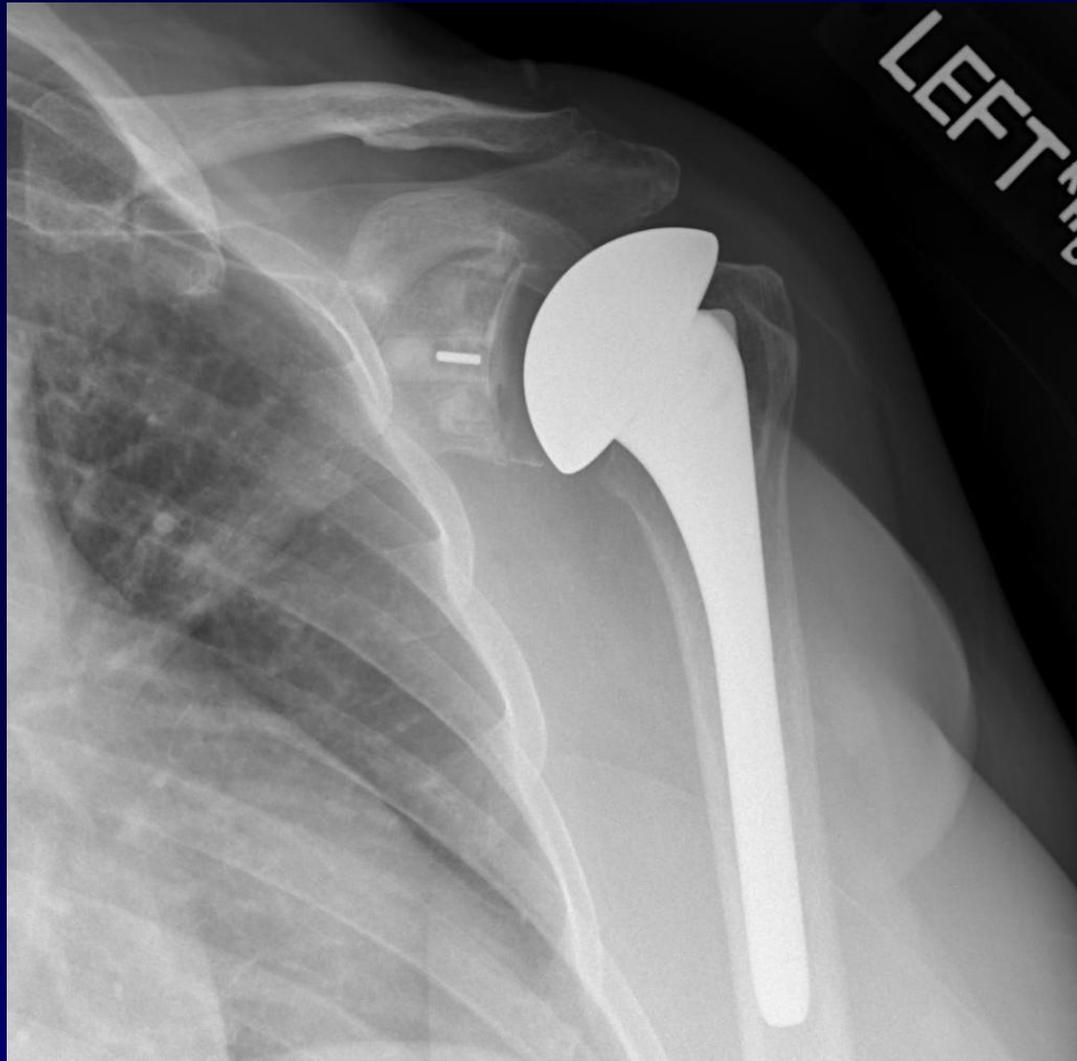
Ream and Run



Total Shoulder Arthroplasty

- Remains gold standard for advanced DJD
- Best pain relief
- Glenoid loosening concerns

Total Shoulder Arthroplasty



Questions?



Thank You!

bensencv@gmail.com

828-773-9227