

A Shoulder to Lean On: Simplifying Evaluation of Common Shoulder Problems

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DISCLOSURES

I have no personal or financial interests to declare.

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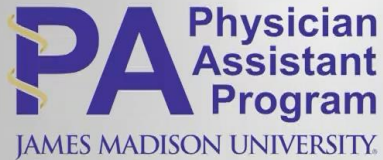
Outline

1. Instability
 - Traumatic Labral Tears
 - Atraumatic Instability
2. Proximal Biceps Tendonopathy
3. SLAP Tear
4. Rotator Cuff Disease
 - Subacromial Syndrome
 - Rotator Cuff Tears
 - Rotator Cuff Arthropathy



Introduction/Background

Shoulder special tests (we'll come back to these later)



Shoulder	
Special Tests	Pathology
Neer Impingement Test	Impingement/Rotator Cuff Tears
Hawkins-Kennedy Test	
Drop Arm Test	
Empty Can Test	

Pre-Test Question #1

Which special test of the shoulder is most specific for evaluating SLAP tears?

- A. Hawkins-Kennedy test
- B. Speed's test
- C. Yergason's test
- D. O'Brien's test

Pre-Test Question #2

Which X-ray view is helpful to obtain when evaluating a patient for possible AC joint injury?

- A. Zanca view
- B. axillary lateral view
- C. Neer view
- D. outlet (scapular “Y”) view

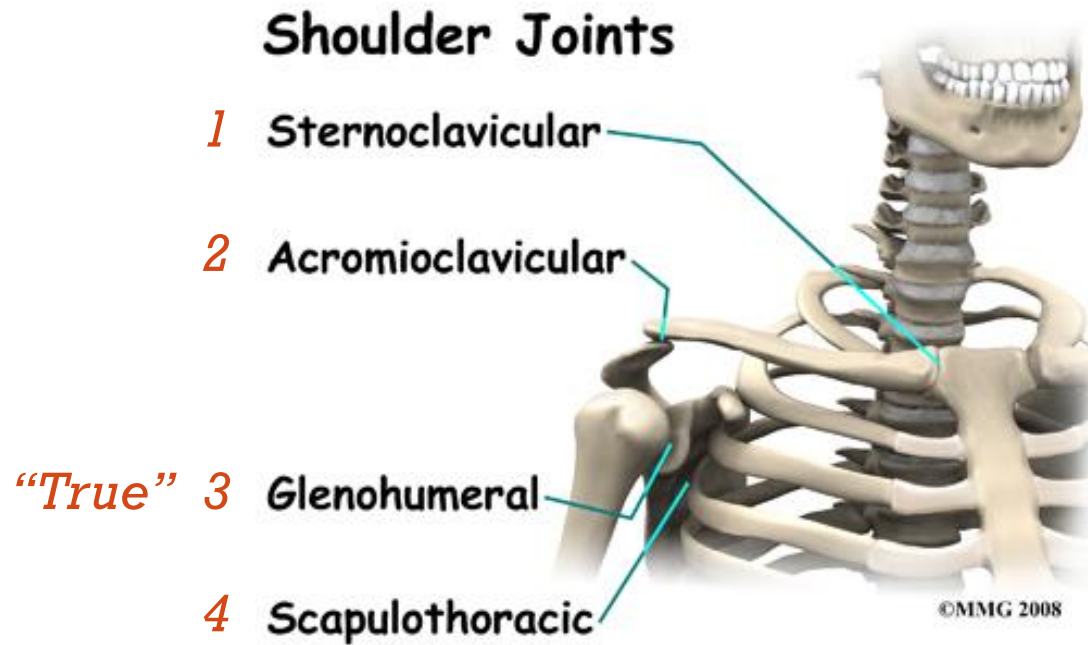
Pre-Test Question #3

Secondary impingement is caused by...

- A. tearing of the labrum
- B. weak/uncoordinated rotator cuff muscles
- C. inflammation in the biceps tendon
- D. bony abnormality of the acromion process

Introduction/Background

The shoulder is comprised of 4 joints



Introduction/Background

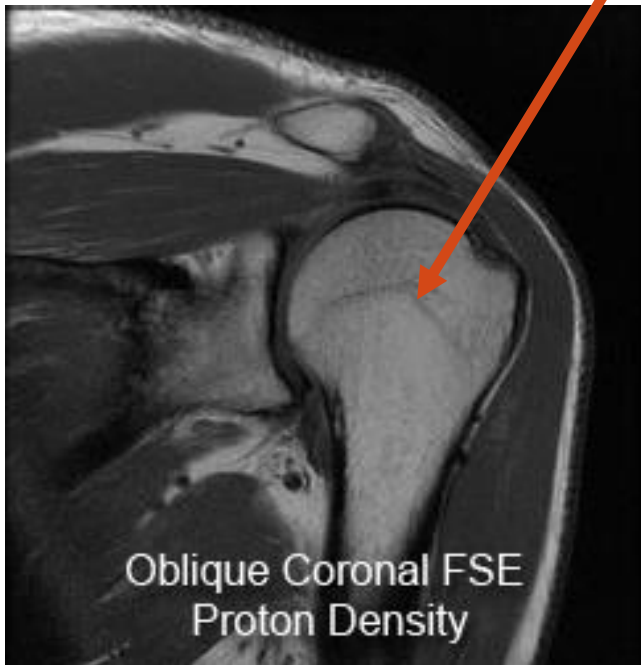
X-ray anatomy: SCAPULAR 'Y' VIEW (OUTLET)



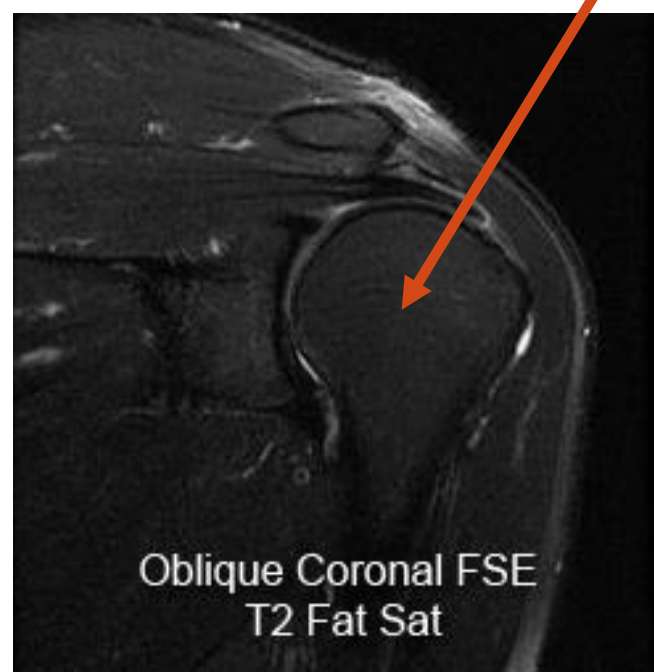
Introduction/Background

MRI basics

T1 = medullary bone is **white**



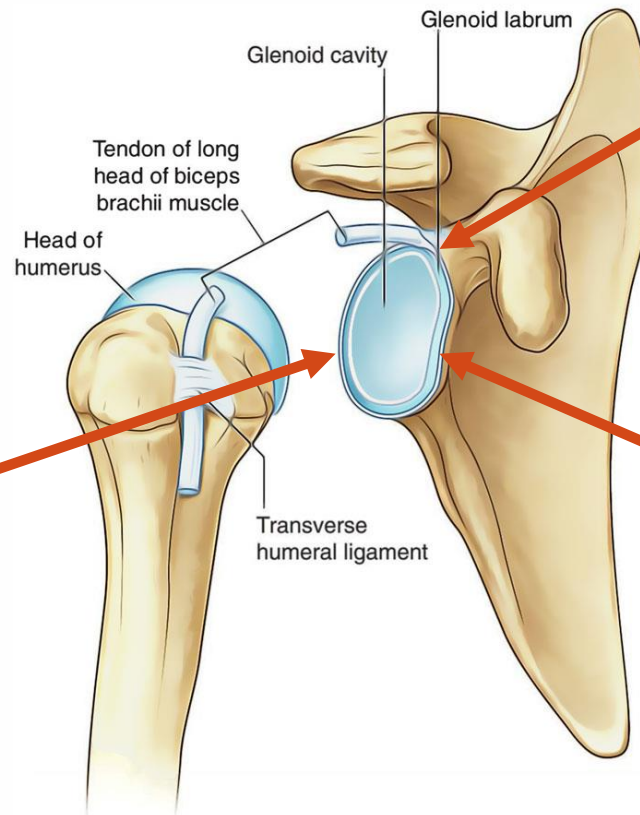
T2 = medullary bone is **black**



Instability

Anatomy Review of Labrum

Superior labrum does **NOT** need to be a “bumper”



Posterior labrum acts as a “bumper”

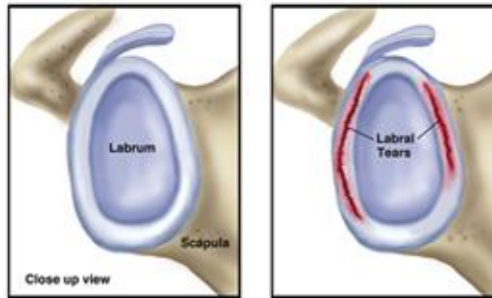
Anterior labrum acts as a “bumper”

Instability

Anatomy Review of Labrum

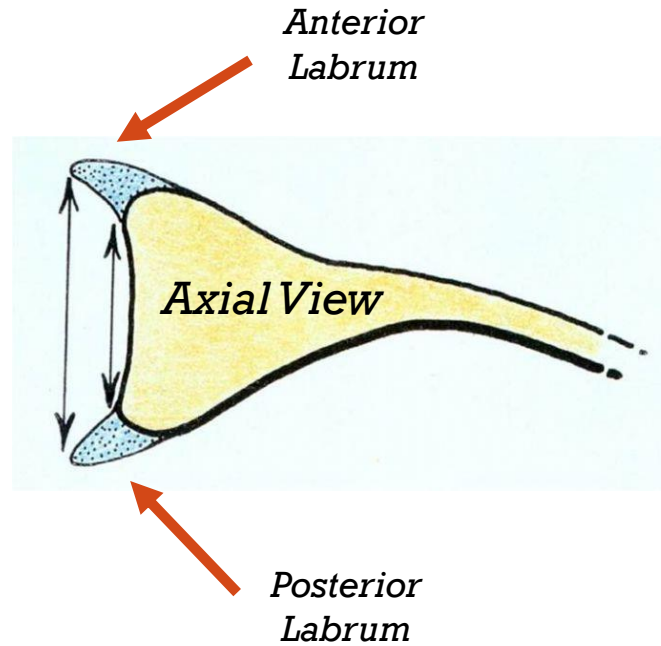
In general:

- Dislocate anteriorly? Tear anterior labrum (**Bankart** tear)
- Dislocate posteriorly? Tear posterior labrum (**reverse Bankart** tear)



Instability

Anatomy Review of Labrum

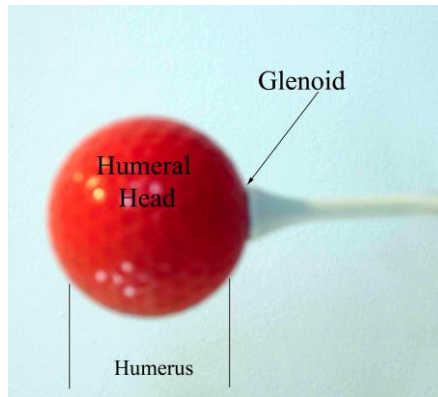


The labrum *deepens* the otherwise shallow glenoid fossa

- makes it more congruent & stable

Instability

Anatomy Review of Labrum

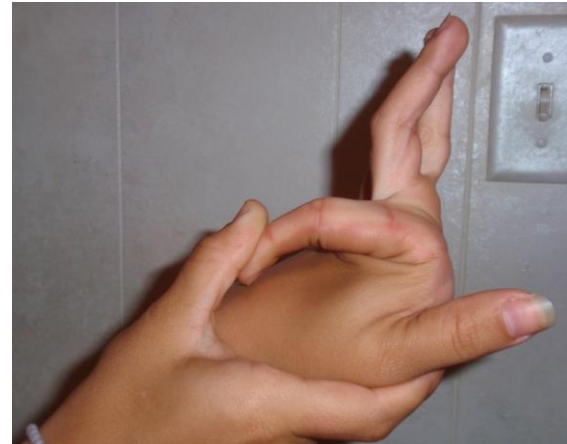
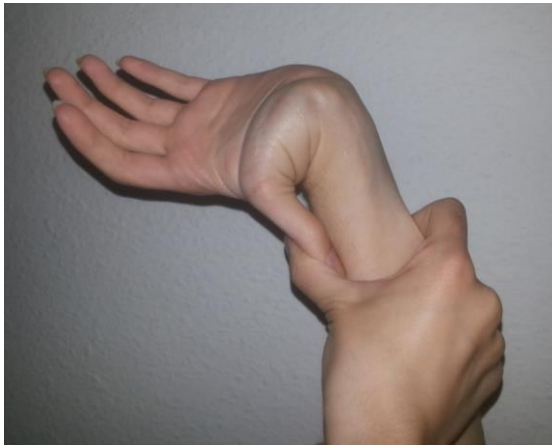


Without the labrum, the shoulder would dislocate/sublux **more often** and **more easily!**

Instability

Key Point: ***Instability ≠ Laxity***

- Laxity: normal, physiologic 'looseness' of a joint
- Instability: pathologic 'looseness' (\pm pain)



Images from Wikimedia Commons

Instability

Image from UpToDate © 2019



Two Types:

1. *Traumatic* Labral Tear

- labrum tears after glenohumeral dislocation/subluxation
- aka 'torn labrum' or 'Bankart tear' or 'reverse Bankart tear'

2. *Atraumatic* Instability

- inherent (genetic) ligament laxity that becomes symptomatic
- aka 'congenital instability' or 'multi-directional instability'



05-Mar-08 18:25

Instability: Traumatic Labral Tears

Temporary detour from Ortho...

- Emergency Medicine: how to reduce an acute glenohumeral dislocation?

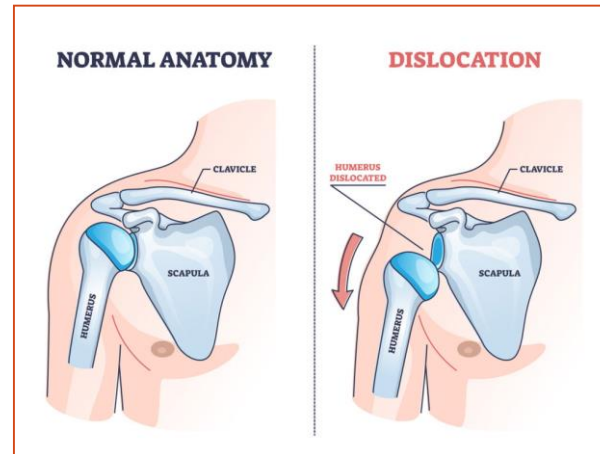


<https://www.youtube.com/watch?v=HtOnreM7heg>

Instability: Traumatic Labral Tears

Incidence of glenohumeral dislocations:

- Anterior: 96%
- Posterior: 3%
- Inferior: <1%



Instability: Traumatic Labral Tears

Anterior Dislocation (most common type of GH dislocation)

Emergent Treatment:

1. Obtain **pre-reduction** X-rays
2. Reduce the dislocation
3. Obtain **post-reduction** X-rays



AP



Lateral



AP



Lateral

Instability: Traumatic Labral Tears

'lightbulb sign'



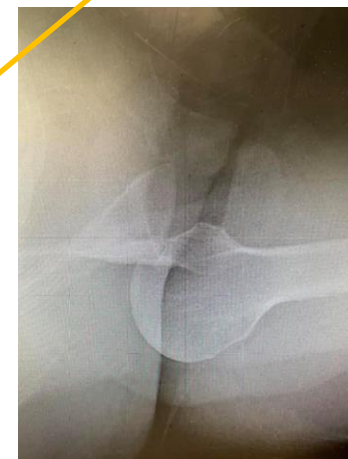
Posterior Dislocation (less common than anterior)

Emergent Treatment:

1. Obtain **pre-reduction** X-rays
2. Reduce the dislocation
3. Obtain **post-reduction** X-rays



AP



Lateral



AP



Lateral

Instability: Traumatic Labral Tears

Population/Demographics:

Likelihood of **repeated dislocation** (in first time dislocator)?

- age <20: recurrence rate 75-100%
- age >50: recurrence rate 15-20%



Image from Wikimedia Commons

Instability: Traumatic Labral Tears

ED follow-up instructions, post GH dislocation:

- arm sling
- follow-up with Orthopedics

Reality:

- no Ortho f/u necessary if improving and/or asymptomatic
- Ortho only needed if ***continued instability/pain***
 - is there a ***symptomatic*** labral tear?

Instability: Traumatic Labral Tears

Nearly 100% of shoulder dislocators have a torn labrum...

History of *anterior* dislocation/subluxation?

- likely tore *anterior* labrum = 'Bankart tear'

History of *posterior* dislocation/subluxation?

- likely tore *posterior* labrum = 'reverse Bankart tear'

...but most patients DO NOT need surgical labral repair!

Instability: Traumatic Labral Tears

History

- mechanical symptoms?
- c/o “going out of place” (instability)
 - recurrent dislocations
 - dislocates/subluxes during sleep
 - subluxes on its own easily

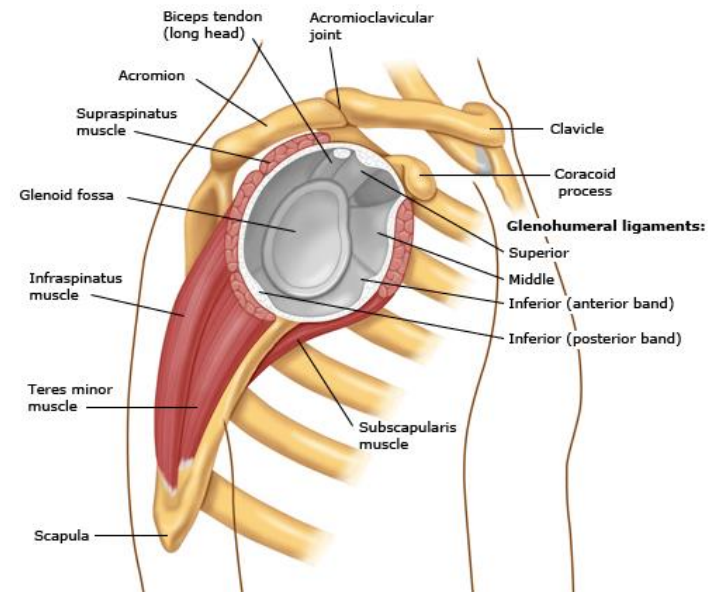


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Instability: Traumatic Labral Tears

Physical Exam

- Range of motion?
- Strength?



Instability: Traumatic Labral Tears

Physical Exam, continued: Special Tests

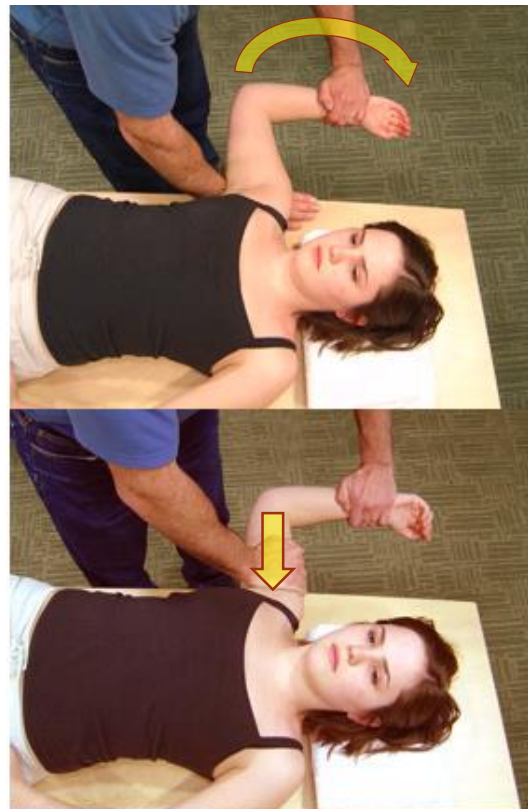
1. For *anterior* instability:
 - Anterior Apprehension test
 - Jobe Relocation test
2. For *posterior* instability:
 - Posterior Apprehension test
 - Jerk test
3. For *inferior* instability
 - Sulcus sign

Instability: Traumatic Labral Tears

Physical Exam, continued: Special Tests

Anterior instability:

Anterior Apprehension test & Jobe Relocation test



Sens	Spec
62%	54%

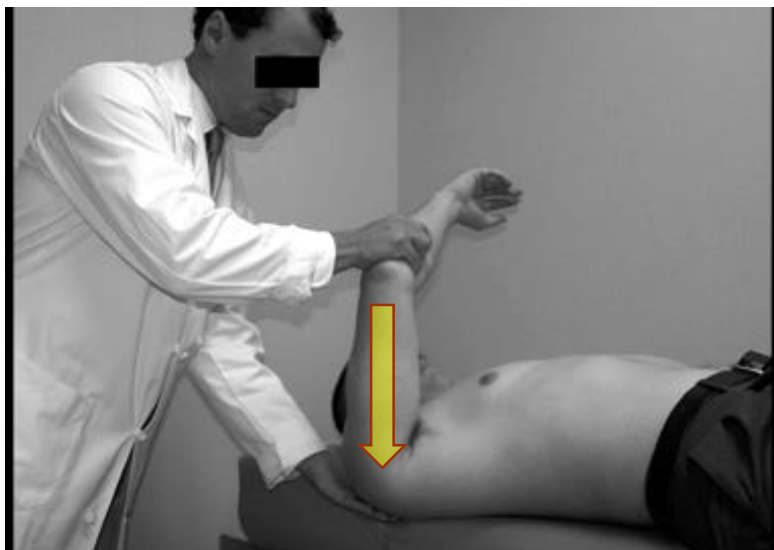
Sens	Spec
62%	54%

Instability: Traumatic Labral Tears

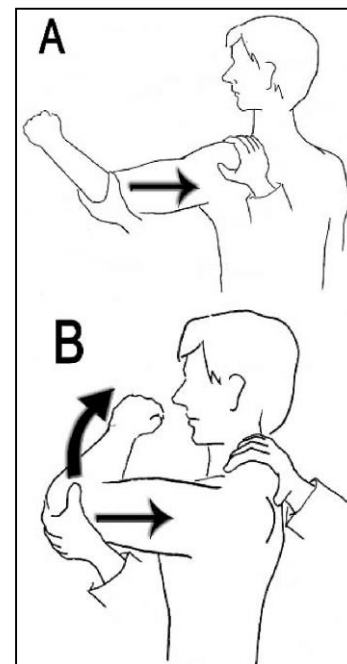
Physical Exam, continued: Special Tests

Posterior instability:

Posterior Apprehension test & Jerk test



Sens	Spec
62%	54%



Sens	Spec
73%	98%

Instability: Traumatic Labral Tears

Physical Exam, continued: Special Tests

Inferior instability: Sulcus sign

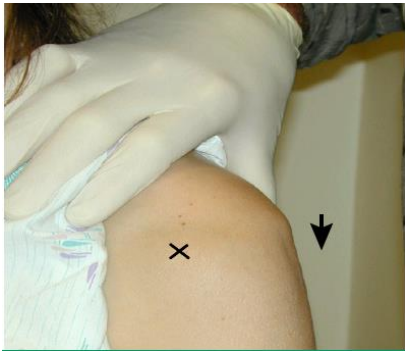


Image from UpToDate © 2019



Sens	Spec
28%	97%

Instability: Traumatic Labral Tears

Imaging

- ***X-rays*** may reveal:
 - 'bony Bankart' lesion
 - Hill-Sachs deformity

Instability: Traumatic Labral Tears

'Bony Bankart' lesion



piece of bony glenoid is fractured

Instability: Traumatic Labral Tears

Hill-Sachs deformity

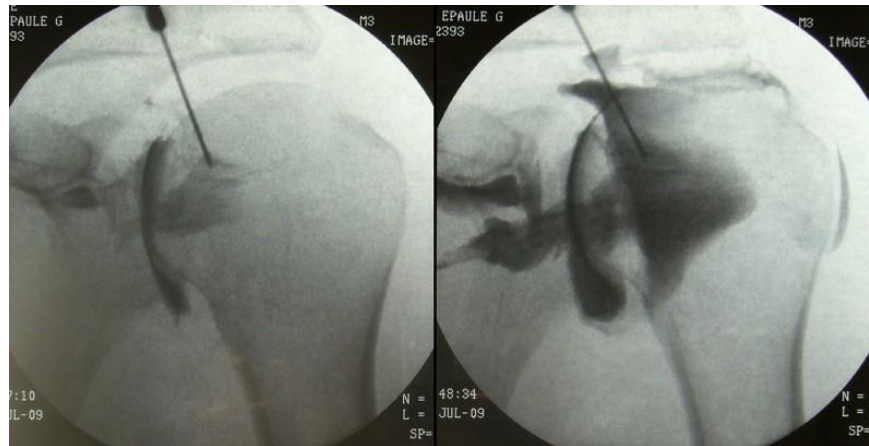


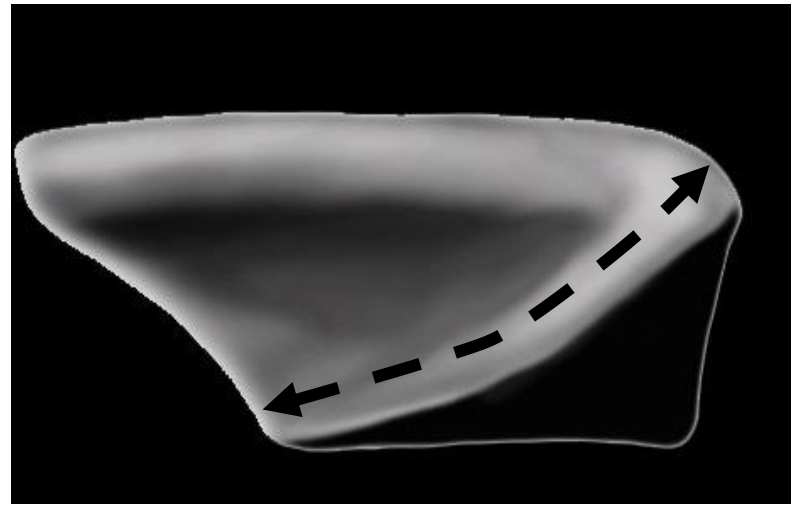
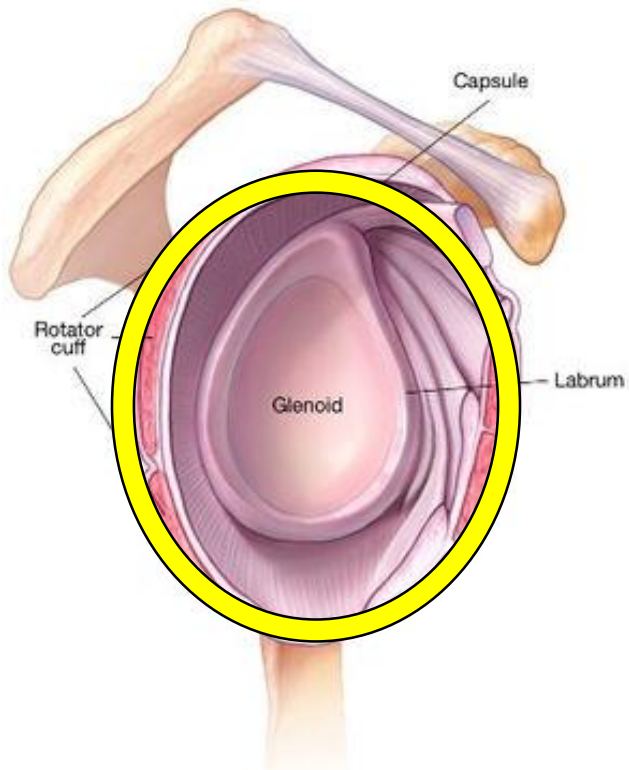
supero-lateral portion of humeral head
with depression fracture

Instability: Traumatic Labral Tears

Imaging

- shoulder MRI
 - imaging of choice, necessary to view the labrum
 - **arthrogram** preferable (increases sensitivity)

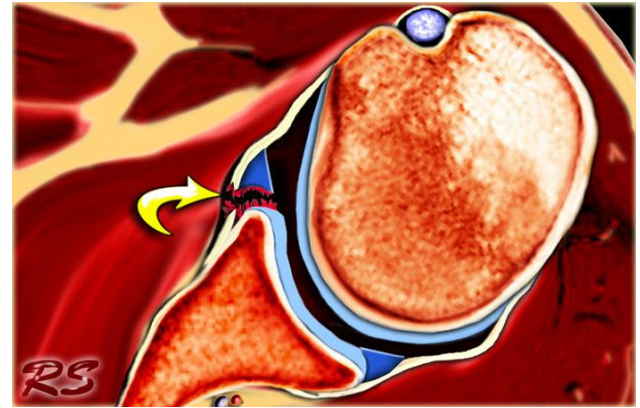
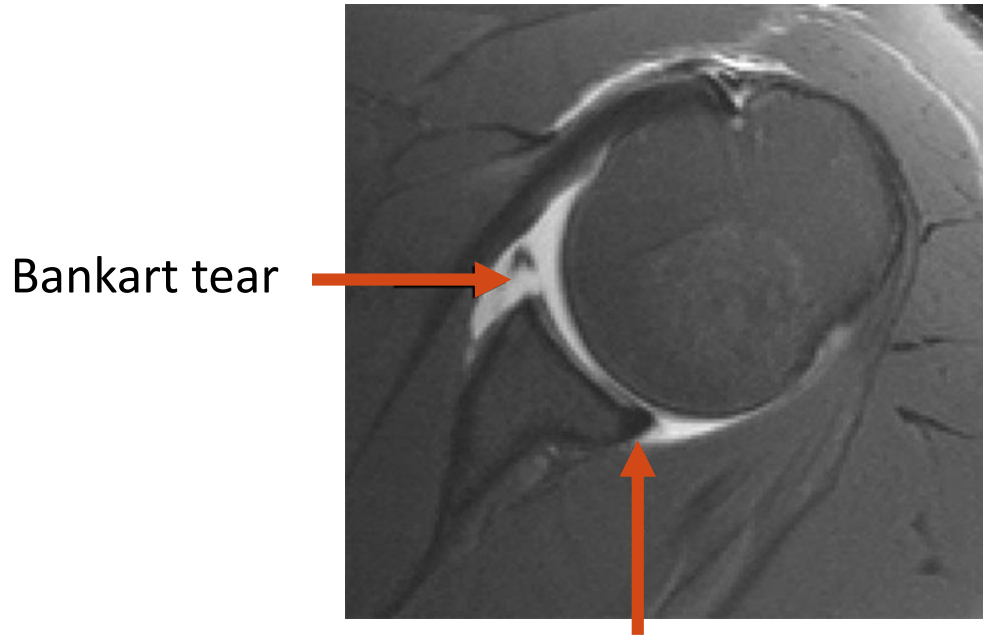




Axial View

Instability: Traumatic Labral Tears

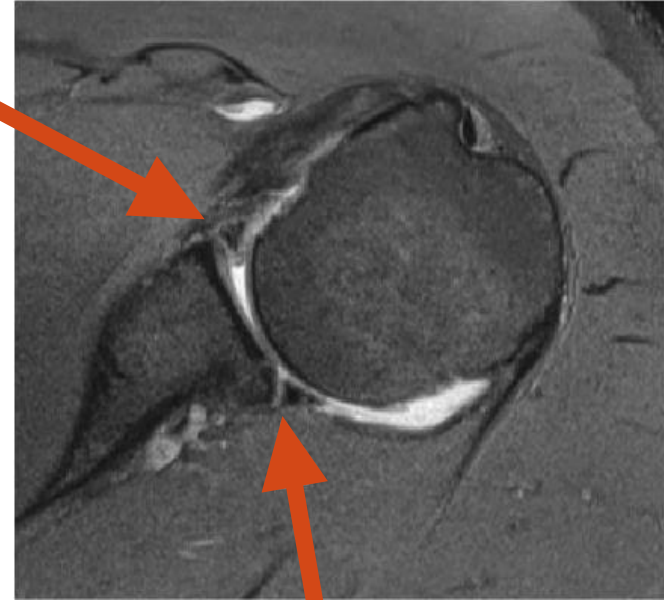
Axial View



Instability: Traumatic Labral Tears

Axial View

Normal
anterior labrum



Reverse Bankart tear



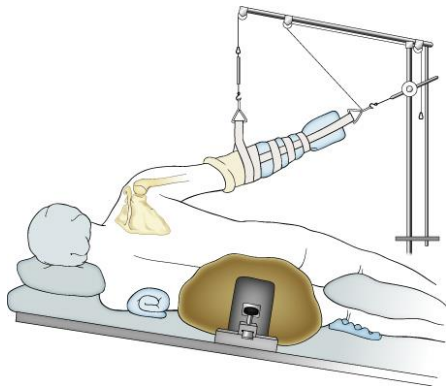
Instability: Traumatic Labral Tears

Management

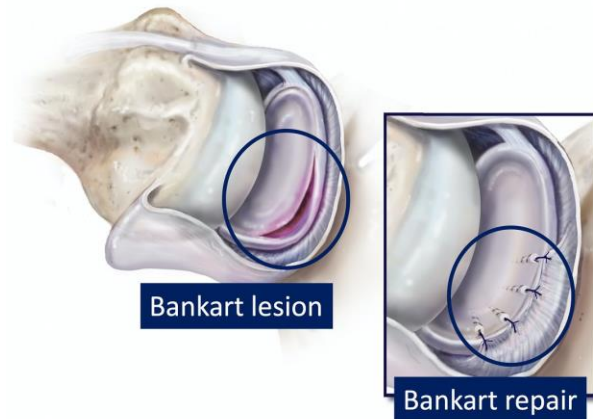
Conservative: None (but labrum will not heal on its own)

Surgery: Labral repair

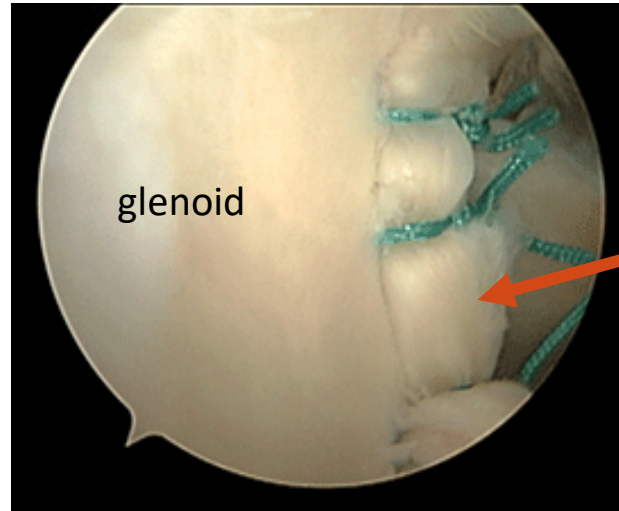
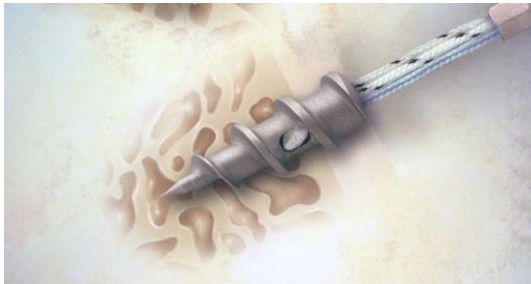
- aka 'Bankart repair' or 'reverse Bankart repair'



lateral decubitus position



Instability: Traumatic Labral Tears



repaired labrum with
suture anchors



Post-op therapeutic exercise is very important!

Instability: Atraumatic/Congenital/MDI

Defining features:

- symptomatic laxity of the glenohumeral joint
- excessive laxity in all directions
- more common in females
- swimmers & gymnasts??



Instability: Atraumatic / Congenital / MDI

Risk Factor: connective tissue disorders

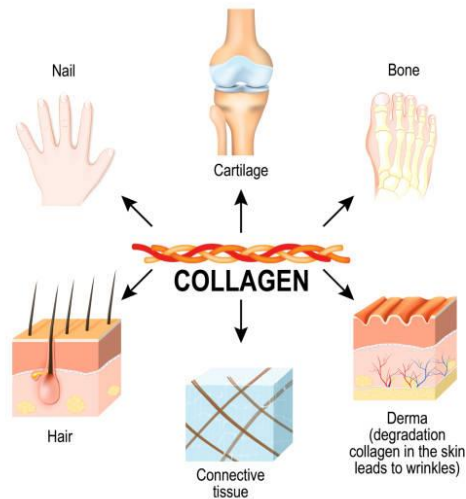
- Ehlers-Danlos
- Marfan syndrome



Instability: Atraumatic/Congenital/MDI

Pathophysiology

- laxity not due to labral tear; due to *capsular redundancy*
- problem at the *cellular level*, collagen stretches!



Instability: Atraumatic / Congenital / MDI

History

- vague & non-specific
- often lack pain
- mechanical symptoms
- sometimes transient neurologic symptoms
- excessive ROM...loose in all directions!
- have learned to avoid certain positions
- will not c/o strength deficits

Instability: Atraumatic/Congenital/MDI

Physical Exam

- Ask patient to demonstrate excessive laxity
 - a) thumb to forearm
 - b) elbow hyperextension
 - c) knee recurvatum
- Excessive ROM, loose in all directions
- Strength likely intact

Instability: Atraumatic / Congenital / MDI

Physical Exam, continued: Special Tests

Same tests as with labral tear, but...

- All may be (+) for laxity
- None may be (+) for pain

1. Anterior Apprehension test & Jobe Relocation test
2. Posterior Apprehension test & Jerk test
3. Sulcus sign

Instability: Atraumatic / Congenital / MDI

Imaging

- If not associated with injury, X-rays may not be necessary
 - Yet often done prior to an MRI for insurance reasons and to assess for other potential pathology

- MRI may be obtained, but will often be read as '*Normal*'

Instability: Atraumatic/Congenital/MDI

Management

Conservative Treatment!

- *rotator cuff strengthening****

Surgical Treatment:

- capsular shift
- thermocapsular shrinkage

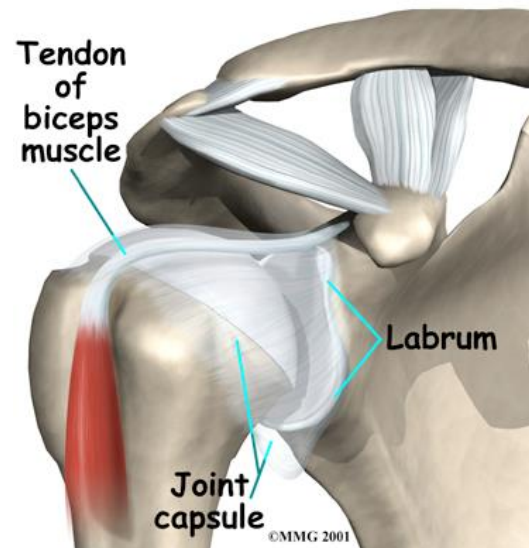
NO!
(last resort)

Proximal Biceps Tendonopathy

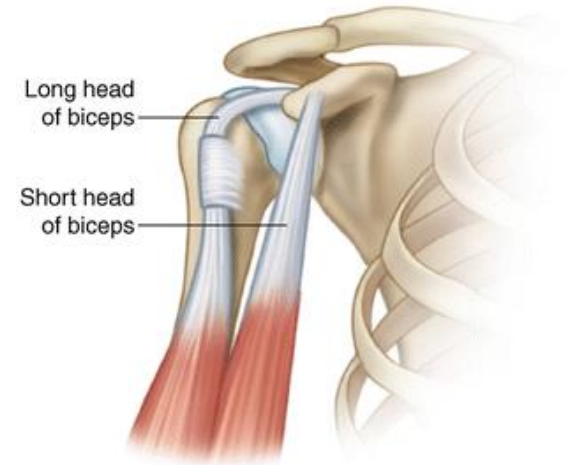
1. Biceps *tendonitis* (inflammation)
 - young to middle aged
 - isolated incident
2. Biceps *tendonosis* (degenerative)
 - older patients
 - worsens, persists over time

- Difficult to distinguish from RTC pathology
- Often, they co-exist!

**with or without
subluxation!



Proximal Biceps Tendonopathy



History

- **Anterior** shoulder pain
- Aggravated by **overhead** activities, lifting, pulling, throwing
- May or may not also have **snapping** (torn retinaculum?)

overlap with RTC pathology due to **impingement**

Proximal Biceps Tendinopathy



Physical Exam

- TTP at proximal biceps long head (bicipital groove)
- Assess PROM & AROM
 - But pain/weakness with **RR**OM is likely most helpful

What are the 3 actions of the biceps brachii?

Proximal Biceps Tendonopathy

Physical Exam, continued: Special Tests

1. Speed's Test



A. Speed's test:

To perform the "Speed's" test, the patient forward flexes the shoulder about 30 degrees against the clinician's resistance while keeping the elbow fully extended and the arm fully supinated.

Sens	Spec
85%	20%

Image from UpToDate © 2019

Proximal Biceps Tendonopathy

Physical Exam, continued: Special Tests

2. Yergason's Test



B. Yergason's test:

To perform the "Yergason's" test, the patient holds her arm adducted with the elbow flexed to 90 degrees and the arm fully pronated. While they hold hands, the patient attempts to supinate while the examiner resists.

Sens	Spec
40%	85%



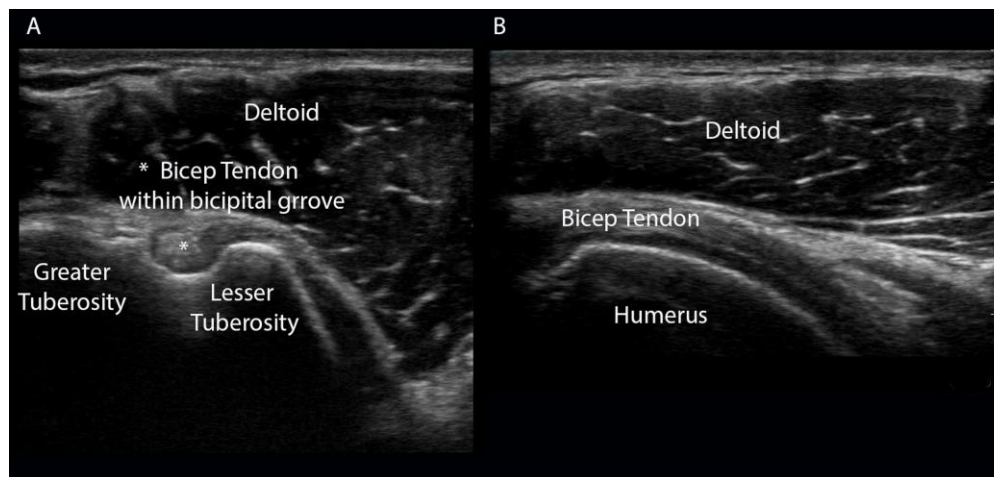
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Proximal Biceps Tendonopathy

Imaging: not necessary, *a clinical diagnosis*

Optional:

- Ultrasound (for those trained)
- MRI (only when concern for additional shoulder pathology and/or surgical planning)



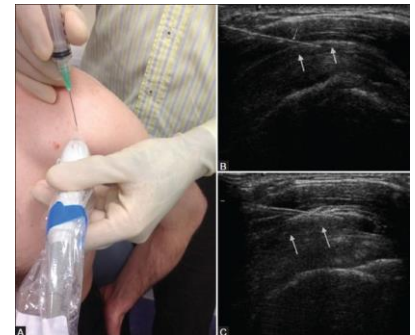
Proximal Biceps Tendonopathy

Management

- Depends on tendonitis vs. tendonosis
- Depends on concomitant pathology

Conservative Treatment

- oral analgesics
- therapeutic exercise
- therapeutic ultrasound
- corticosteroid injection (into biceps sheath)



Proximal Biceps Tendinopathy

Surgical Treatment

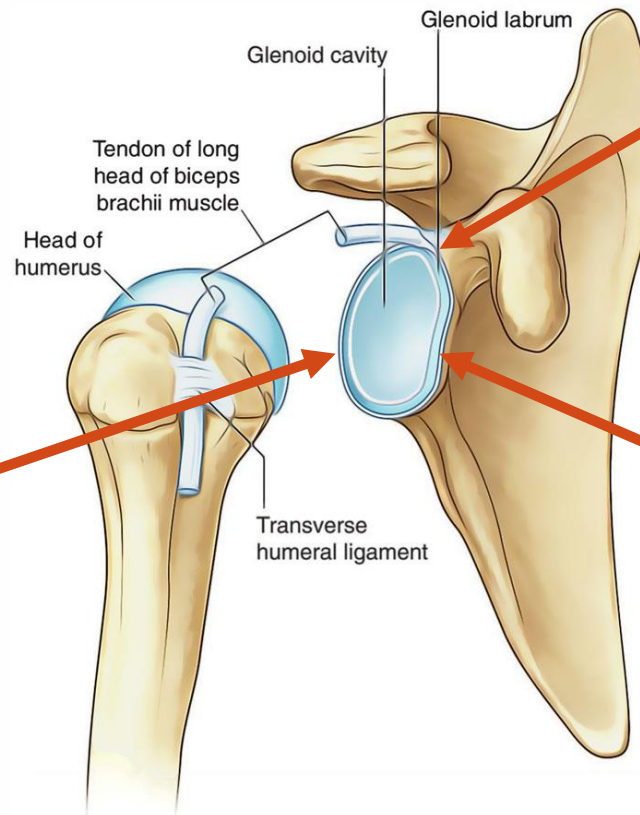
1. Biceps *tenotomy*: cutting the long head tendon proximally & not reattaching it
2. Biceps *tenodesis*: cutting the long head tendon proximally & re-attaching to proximal humerus

Functional difference?

SLAP Tear

Anatomy Review of Labrum

Superior labrum does **NOT** need to be a “bumper”



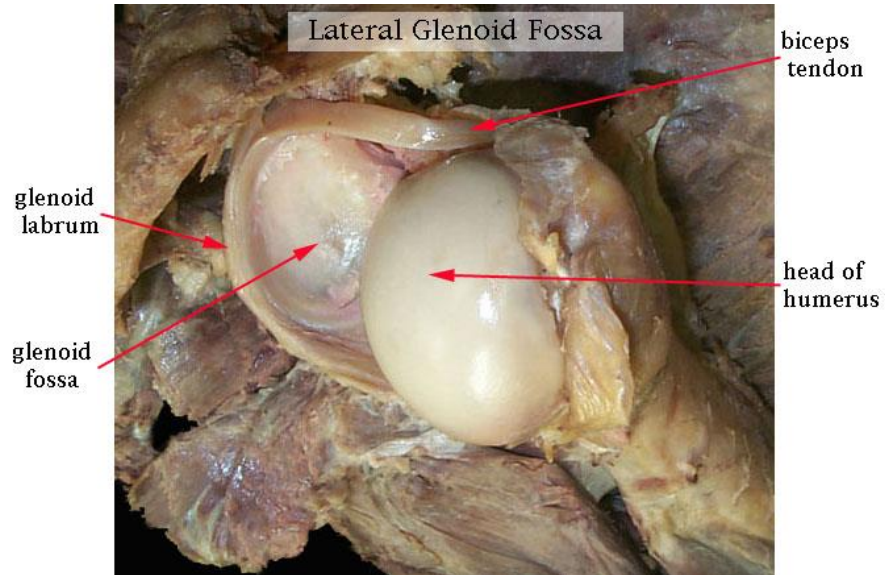
Posterior labrum acts as a “bumper”

Anterior labrum acts as a “bumper”

SLAP Tear

Anatomy Review of Labrum

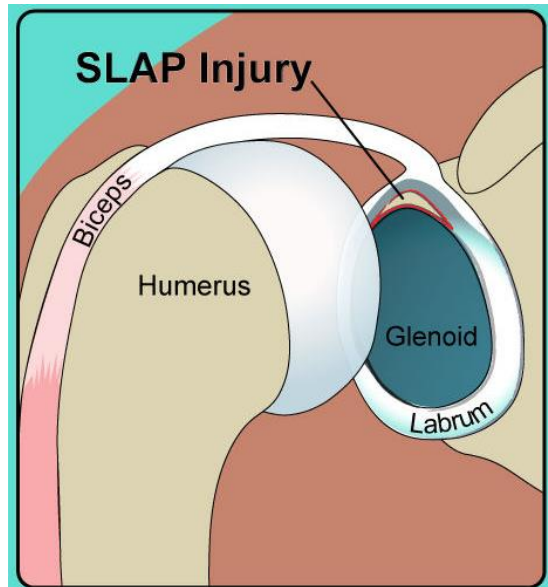
The superior labrum serves as an *attachment/anchor* for the biceps long head



humeral head reflected from
glenoid fossa

SLAP Tear

- Definition: disruption of biceps anchor
- Acronym: 'superior labrum, anterior to posterior'



SLAP Tear

Two Mechanisms of Injury:

1. *Traumatic/acute injury*

- from fall with arm outstretched arm
- catching oneself from falling (traction/eccentric injury)

2. *Degenerative/overuse*

- repetitive throwing ('peel back' mechanism)



SLAP Tear



History

- often a vague history
- sometimes c/o **anterior** pain
 - worse with throwing or **overhead** motions
- sometimes have mechanical symptoms
- if a throwing athlete, may c/o decline in function/velocity
- if a recent injury, is the MOI consistent?

SLAP Tear

Physical Exam

- TTP at proximal biceps long head (bicipital groove)
- Assess PROM, AROM, & RROM

What are the 3 actions of the biceps brachii?

- Throwing athletes can have *excessive ER* and *limited IR* in their dominant shoulder

SLAP Tear

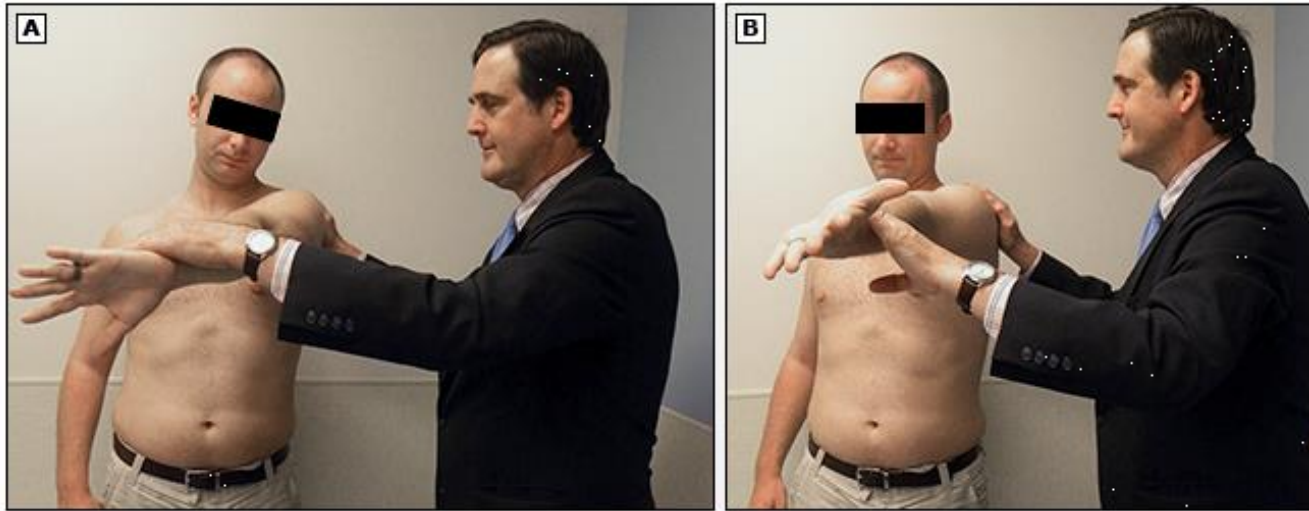
Physical Exam, continued: Special Tests

1. Speed's Test
 2. Yergason's Test
 3. **O'Brien's Test**
 4. **Crank Test**
- Load the **long head of the biceps***
- Assess for **SLAP Tear***

SLAP Tear

Physical Exam, continued: Special Tests

3. O'Brien's Test



Sens	Spec
70%	96%

The active compression test is used to help diagnose SLAP lesions of the shoulder labrum. It is performed first with the patient's thumb pointed down (image A) and then with the thumb up (image B).


Images from UpToDate © 2019

SLAP Tear

Physical Exam, continued: Special Tests

4. Crank Test

Sens	Spec
91%	93%



Crank Test

To perform the crank test, the patient abducts their arm 160 degrees while keeping the arm in the plane of the scapula. The elbow is flexed 90 degrees. The examiner then applies an axial load to the humerus with one hand while rotating the arm internally and externally with the other. Pain, a clicking sensation during the maneuver, or reproduction of symptoms similar to those experienced at work or sport indicates a positive test.

Courtesy of Stephen Simons, MD.

SLAP Tear

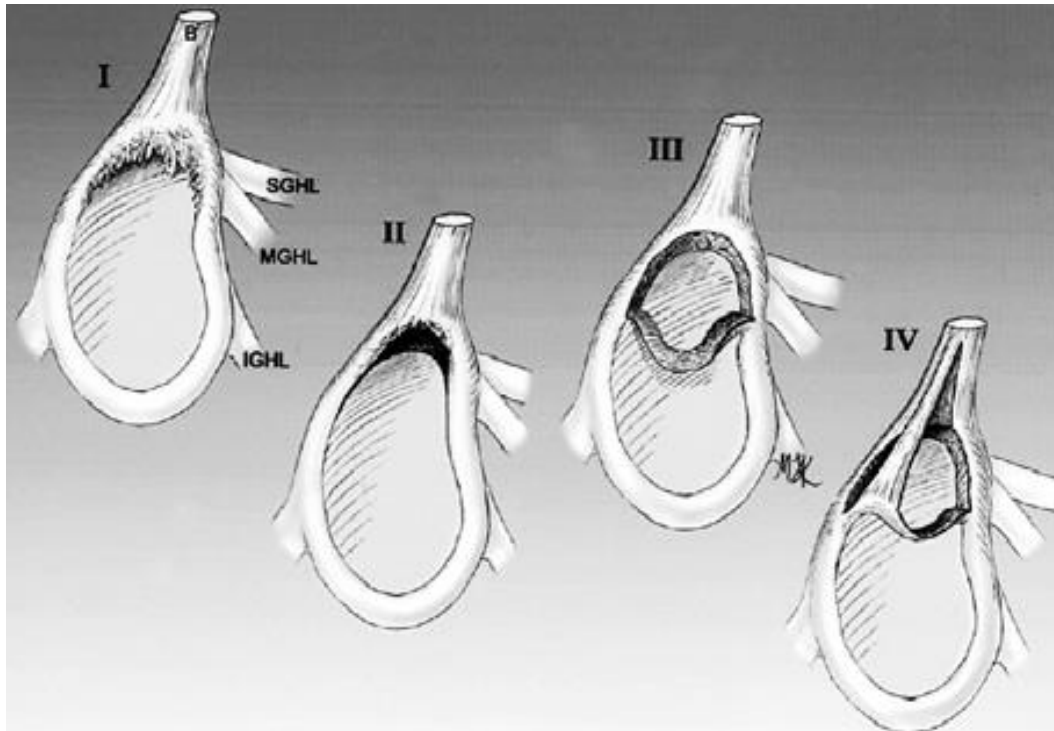
Classification

Type I: *fraying* of the labrum near biceps insertion

Type II: *anchor disruption* (superior labrum pulled away) ****most common**

Type III: *bucket-handle tear* of superior labrum, **but biceps anchor intact**

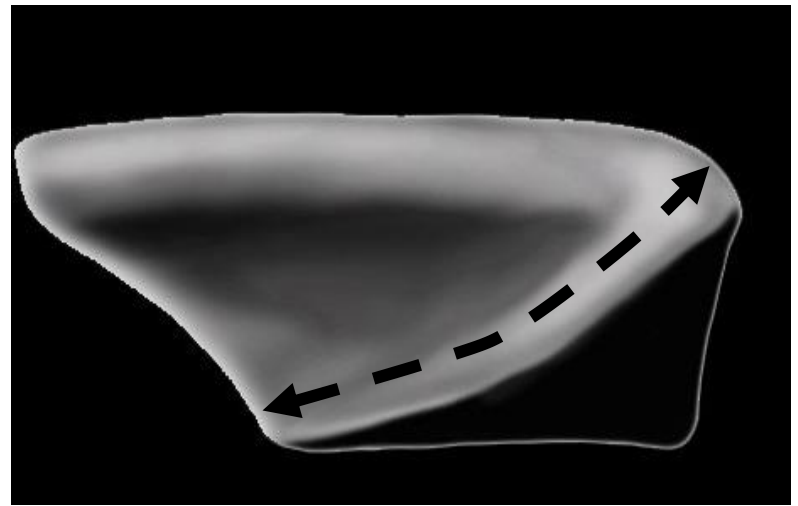
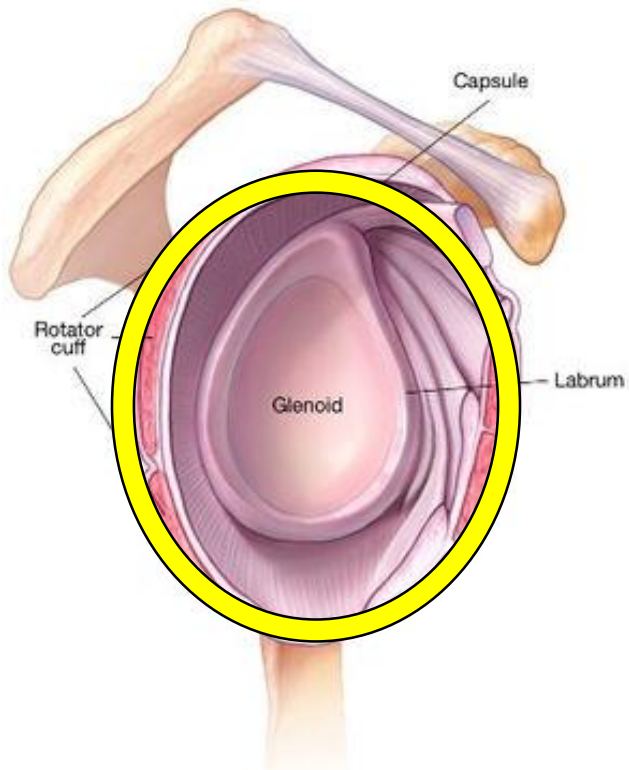
Type IV: bucket-handle tear **AND** biceps tendon tearing



SLAP Tear

Imaging

- X-rays will not show this soft tissue problem
 - yet often done prior to an MRI for insurance reasons and to assess for other potential pathology
- Ultrasound NOT helpful
 - superior labrum surrounded by bony structures and is too deep
- **MR arthrogram** is the diagnostic study of choice



Coronal View

SLAP Tear

SLAP Tear, grade II



Coronal View

SLAP Tear

Normal



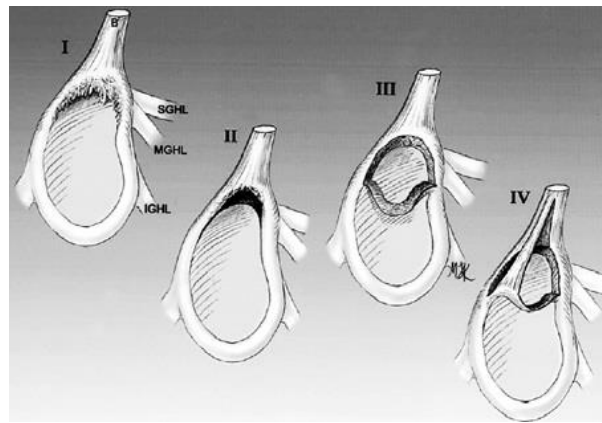
SLAP Tear, grade II



Coronal Views

SLAP Tear

Management



Classification

Type I: *fraying* of the labrum near biceps insertion

Type II: *anchor disruption* (superior labrum pulled away) ****most common**

Type III : *bucket-handle tear* of superior labrum, **but biceps anchor intact**

Type IV: bucket-handle tear **AND** biceps tendon tearing

	Treatment	Recovery
Type I	Debridement	Fast (~2 weeks)
Type II	Repair (sutures/anchors)	Slow (12 weeks)
Type III	Debridement	Fast (~2 weeks)
Type IV	Repair (sutures/anchors)	Slow (12 weeks)

SLAP Tear

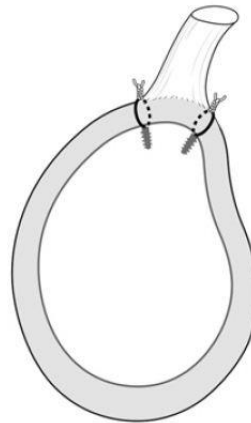
Suture Anchors (for Type II repairs)



Non-absorbable

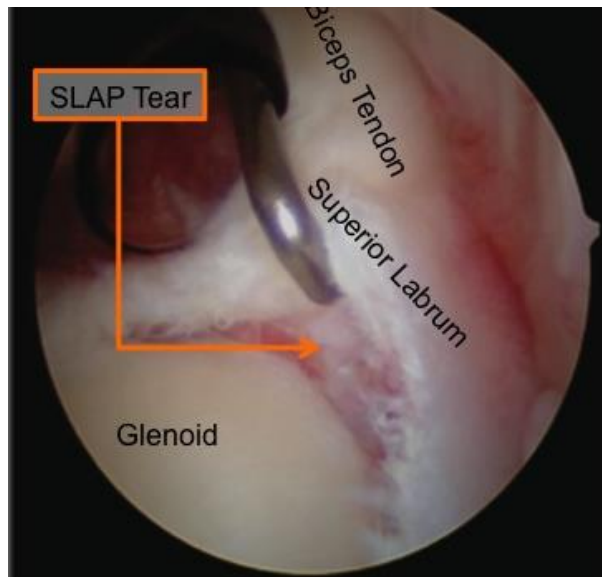


Absorbable

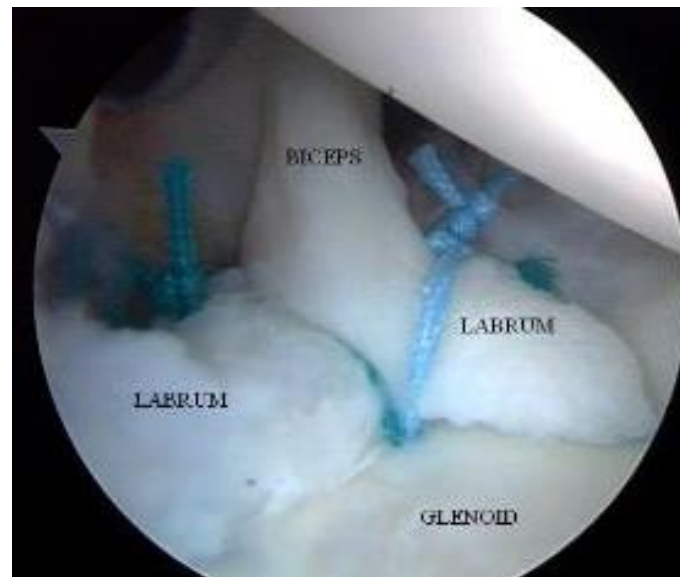


SLAP Tear

Arthroscopic Views: Type II Repairs



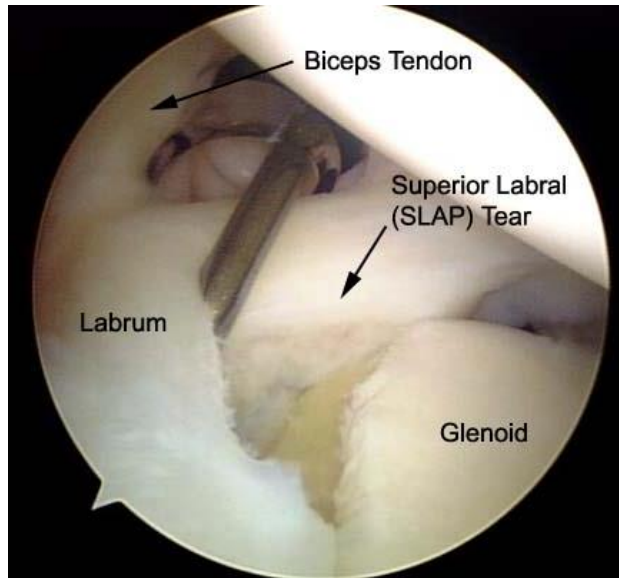
Before



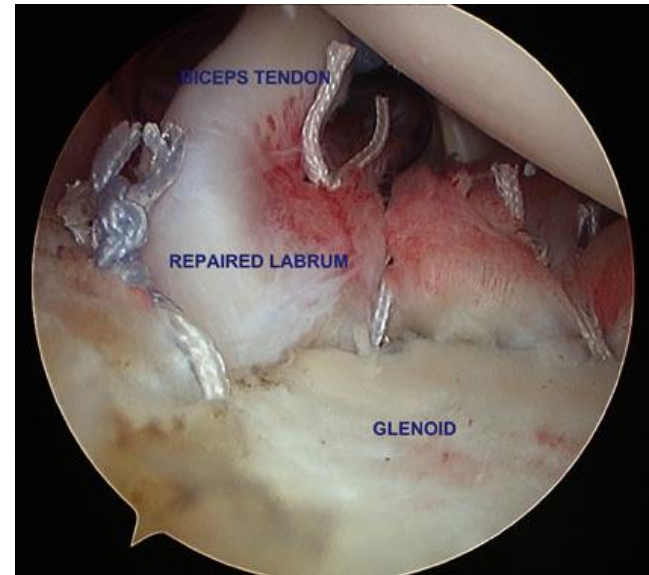
After

SLAP Tear

Arthroscopic Views: Type II Repairs

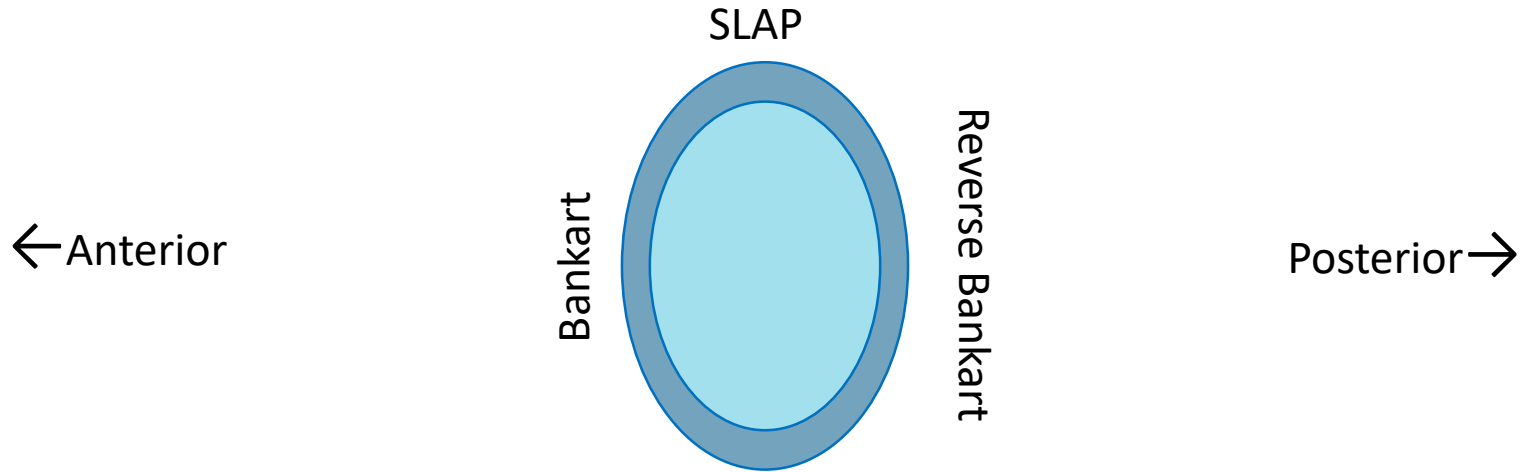


Before



After

Labrum SUMMARY



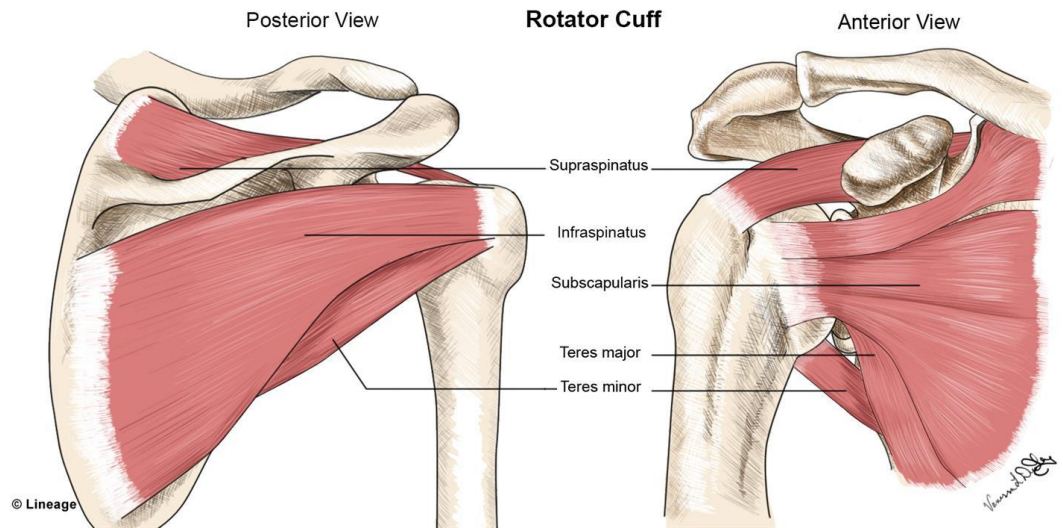
	SLAP Tear	Bankart Tears & Reverse Bankart Tear
What's the chief complaint?	Pain	Instability and/or Pain
What's the MOI?	Trauma (fall) or Repetitive stress	Trauma (dislocation)
Surgical indication?	Pain	Instability and/or Pain

Rotator Cuff Disease

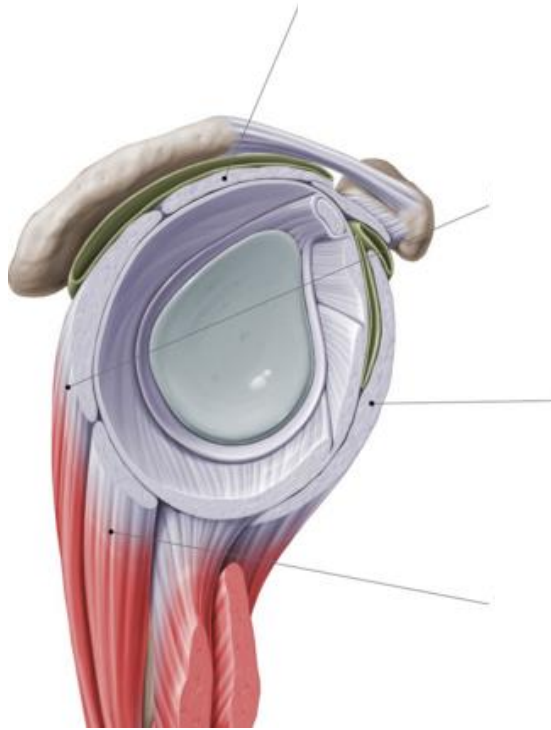
Anatomy Review: Rotator Cuff

“SITS” muscles:

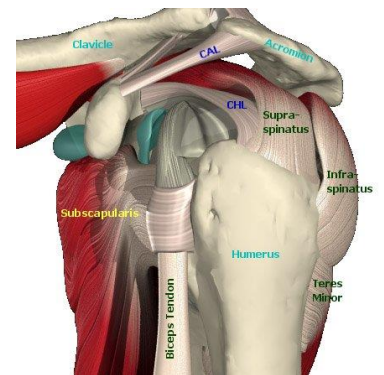
- **S**upraspinatus
- **I**nfraspinatus
- **T**eres minor
- **S**ubscapularis



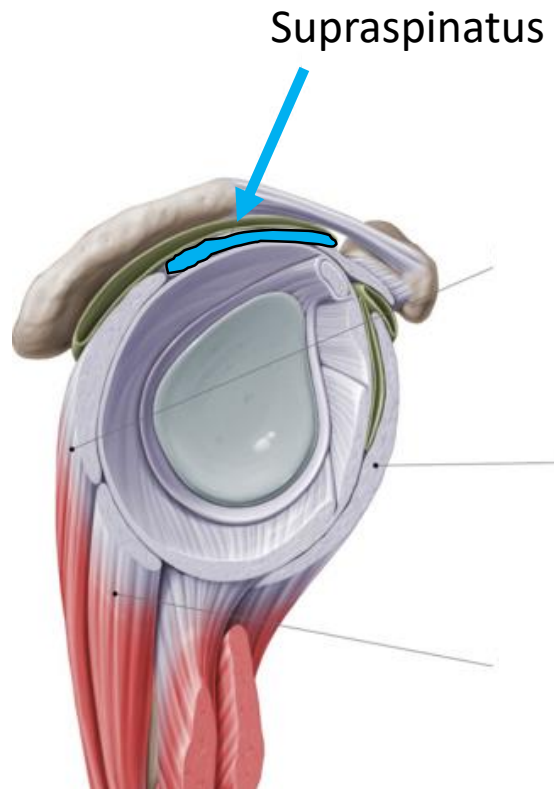
Rotator Cuff Disease



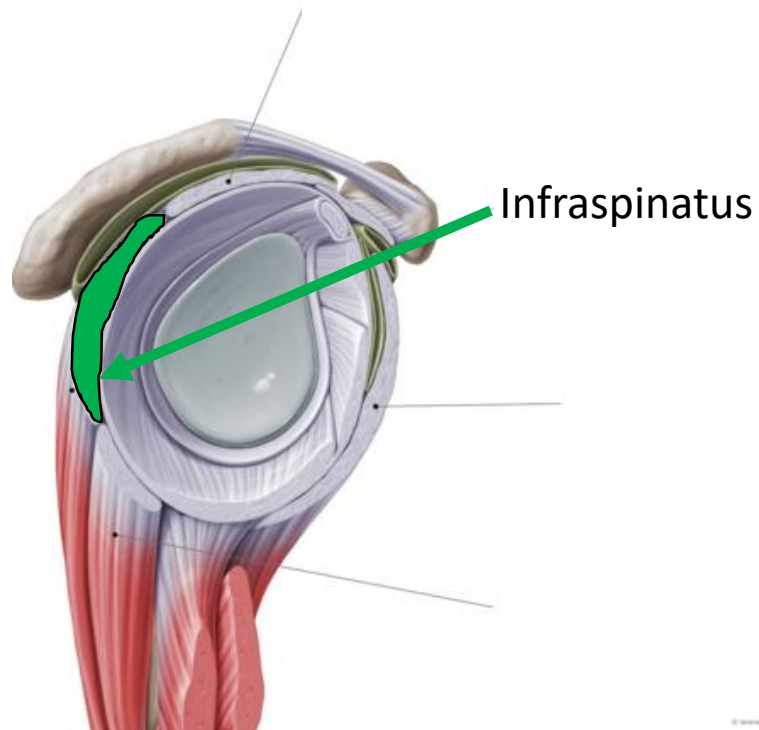

© www.kemhub.com



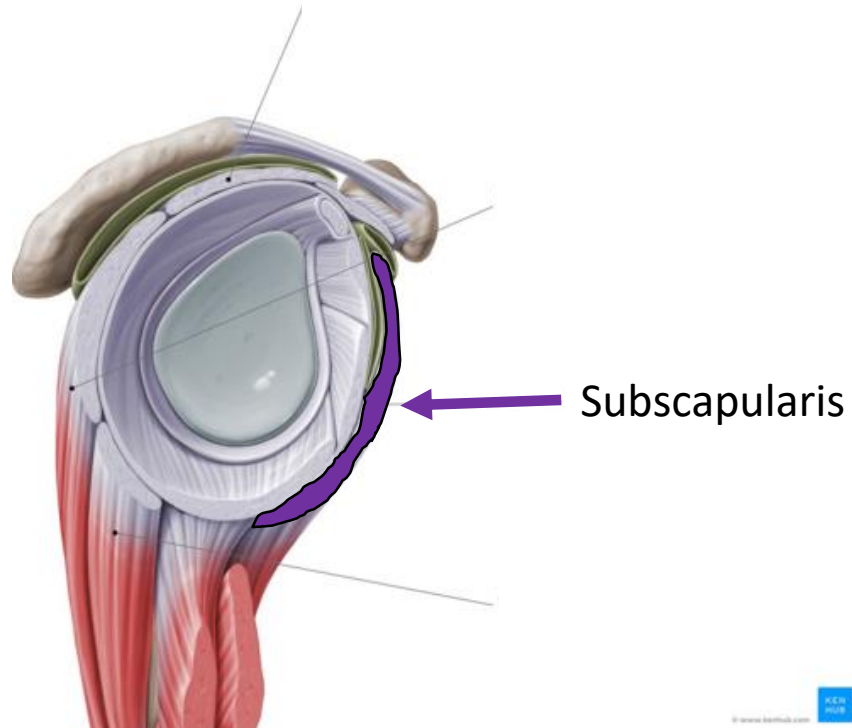
Rotator Cuff Disease



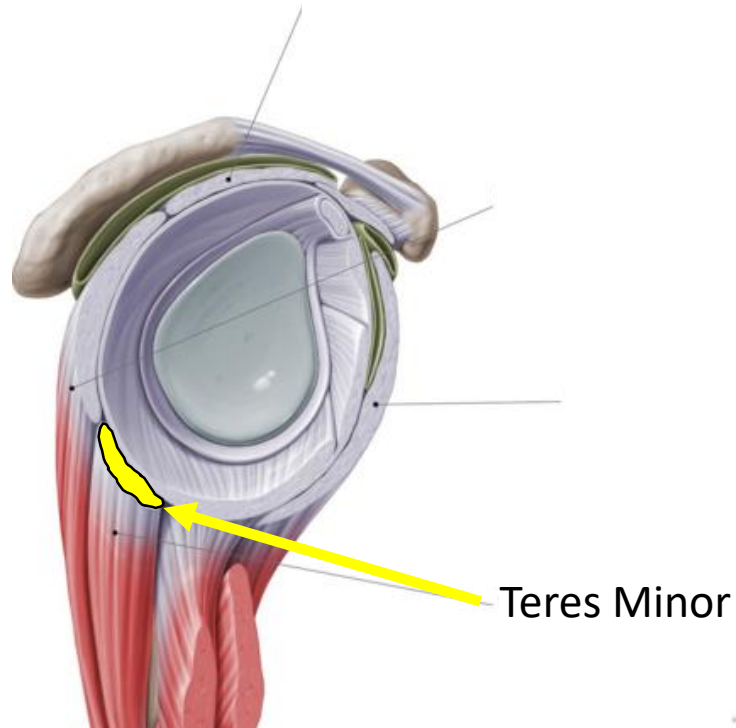
Rotator Cuff Disease



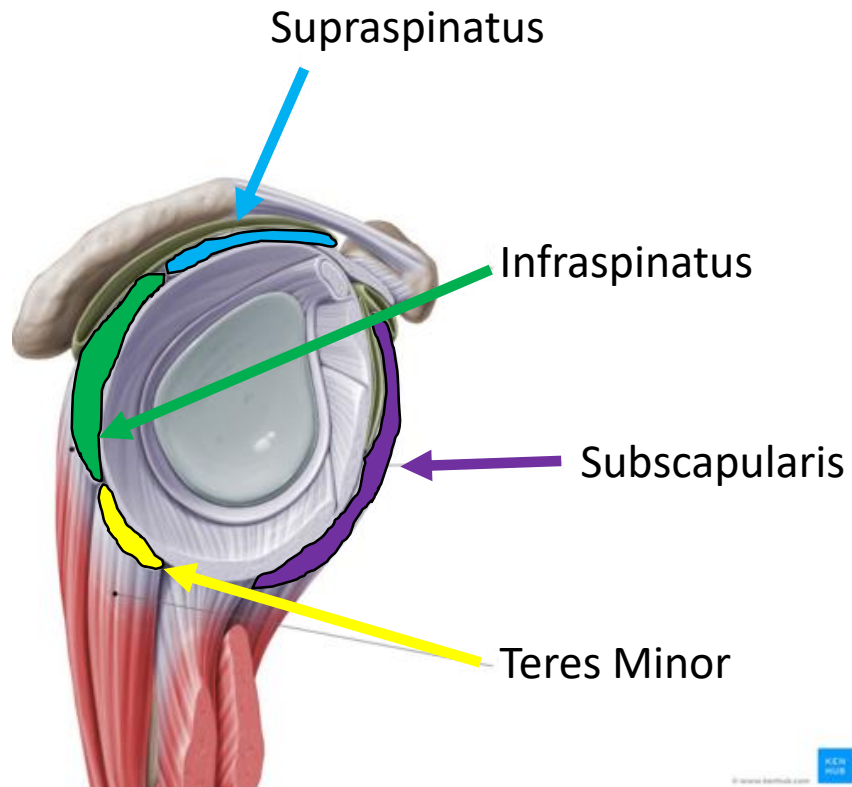
Rotator Cuff Disease



Rotator Cuff Disease



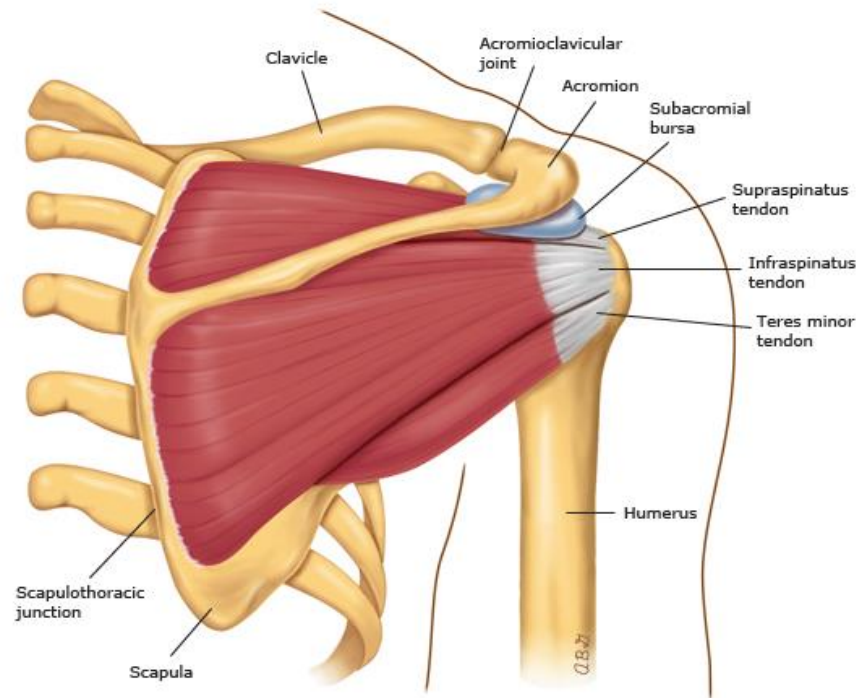
Rotator Cuff Disease



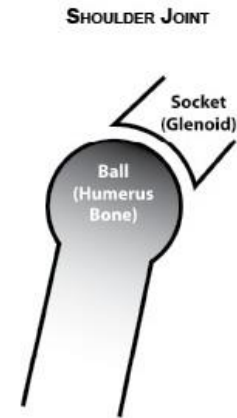
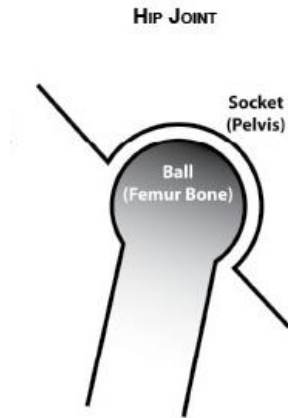
Rotator Cuff Disease

Physiology Review: Rotator Cuff

- a “cuff” of tissue
- provides *dynamic* stabilization



Rotator Cuff Disease



Hip joint

the “socket” (acetabulum) is deep & cup-like

femoral head is very spherical and fits snugly within acetabulum

5 large, strong surrounding ligaments

more stable joint

difficult to dislocate

less ROM available

Shoulder Joint

the “socket” (glenoid fossa) is small & shallow

humeral head is rounded, but not as ball-like as femoral head

thin, wimpy supporting ligaments

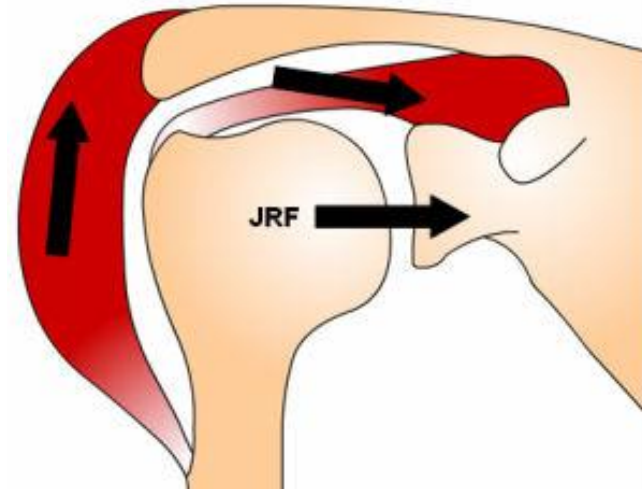
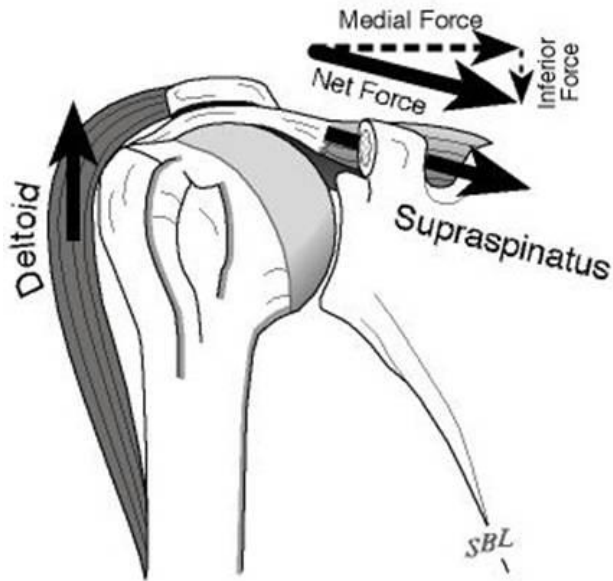
less stable joint

easy to dislocate

lots of ROM available

Rotator Cuff Disease

Biomechanics Review



During abduction, the supraspinatus actually *depresses* the humeral head

Rotator Cuff Disease

Anatomy Review: Outlet

The space underneath the acromion where the supraspinatus rests

- Three acromion shapes possible:



Type I

Flat



Type II

Gentle
curve

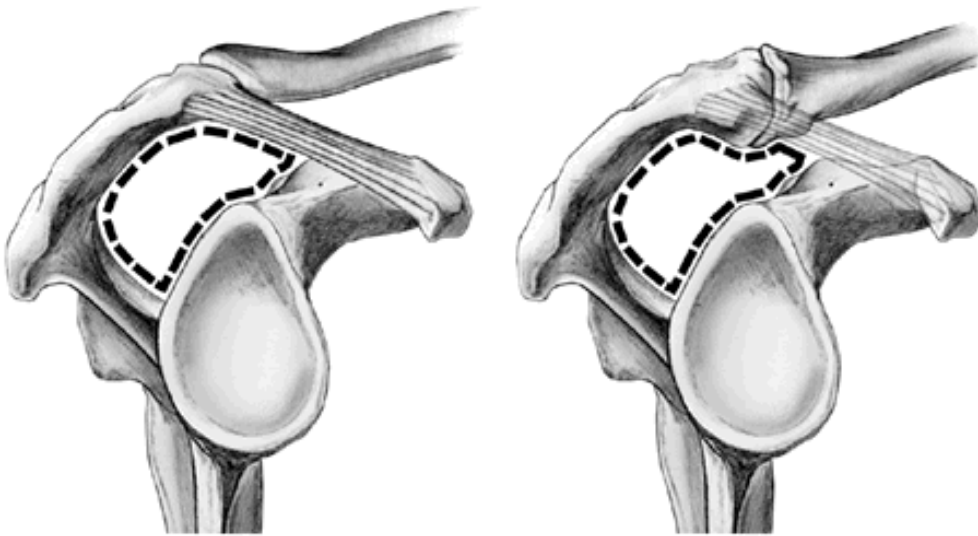


Type III

Sharply
beaked/hooked

Rotator Cuff Disease

Anatomy Review: Outlet



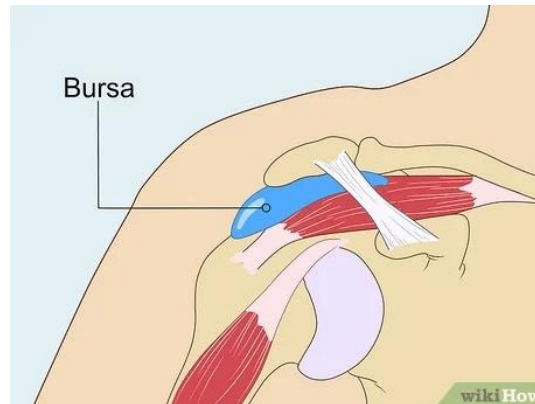
Scapular 'Y' View
aka
Outlet View

Rotator Cuff Disease

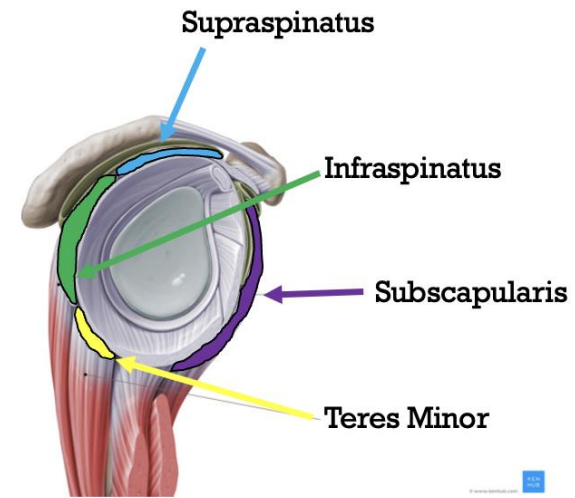
Anatomy Review: Rotator Cuff

Sub-acromial space has a sub-acromial bursa

- rests on top of the supraspinatus
- reduces friction



Rotator Cuff Disease



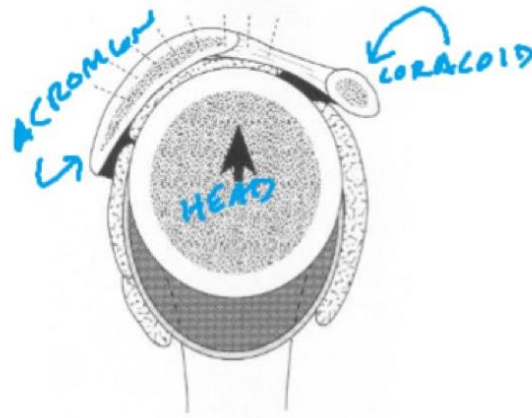
Defining Features:

- ***Supraspinatus*** tears are the most common by far
- Hear “*RTC tear*”? Think supraspinatus tear
 - If tear extends ***anteriorly***, what tendon will be involved?
 - If tear extends ***posteriorly***, what tendon will be involved?

Rotator Cuff Disease

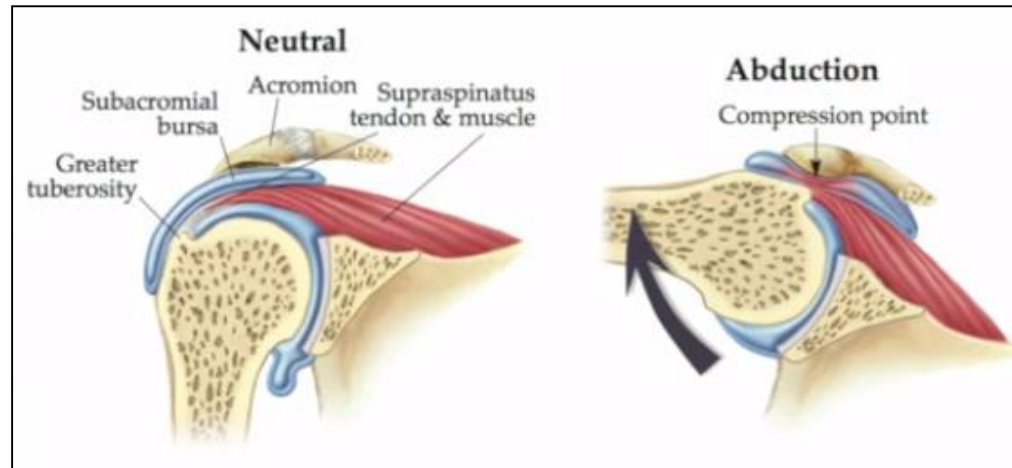
Acute tears are possible, but the vast majority of rotator cuff tears are *degenerative* (overuse)

- *inflammation* over time
- accumulation of *microtears* in tendon
- repetitively *impinged* (pinched) & irritated



Rotator Cuff Disease

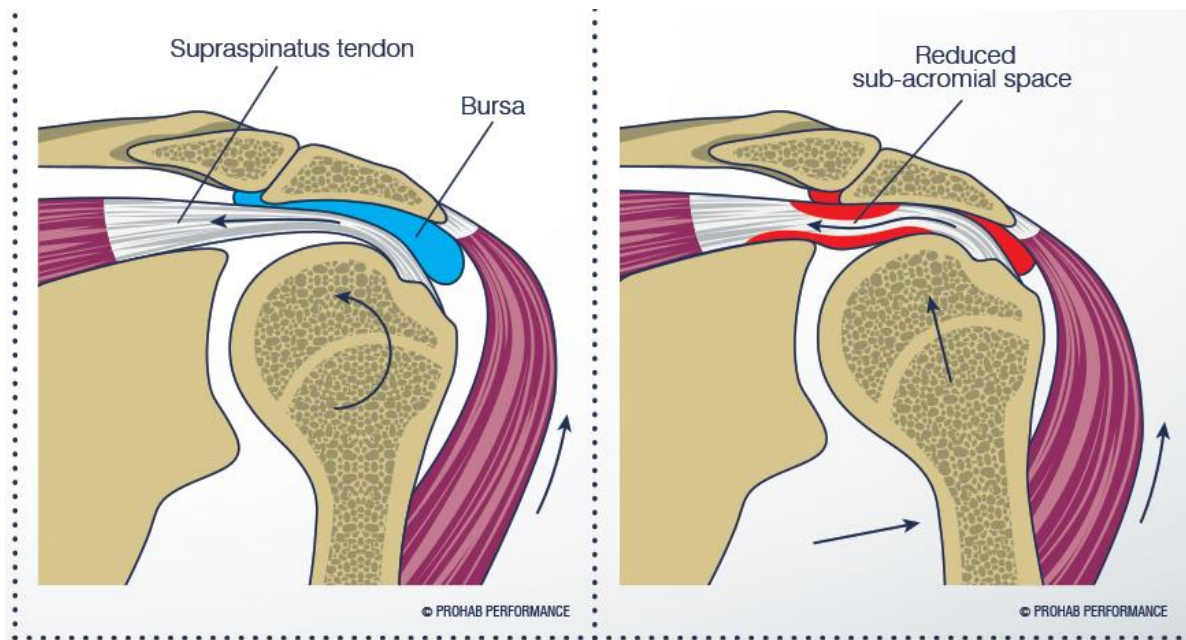
Without the *dynamic stabilization* of the RTC, we would all get “secondary impingement” eventually



Rotator Cuff Disease

Secondary Impingement: pinching of the rotator cuff (mostly the supraspinatus) due to excessive humeral head movement

- Cause: weak, uncoordinated RTC muscles



Rotator Cuff Disease

Primary Impingement: pinching of the rotator cuff (mostly the supraspinatus) due to anatomic abnormality

- Causes: acromion shape, inflamed SA bursa



Type I
Flat



Type II
Gentle curve




Type III
Sharply
beaked/hooked

Rotator Cuff Disease

Early (may never progress)	Progression	Progression	End Stage
Subacromial Syndrome (Impingement, Subacromial Bursitis, RTC Tendonitis)	Partial RTC Tear	Complete RTC Tear	RTC Arthropathy

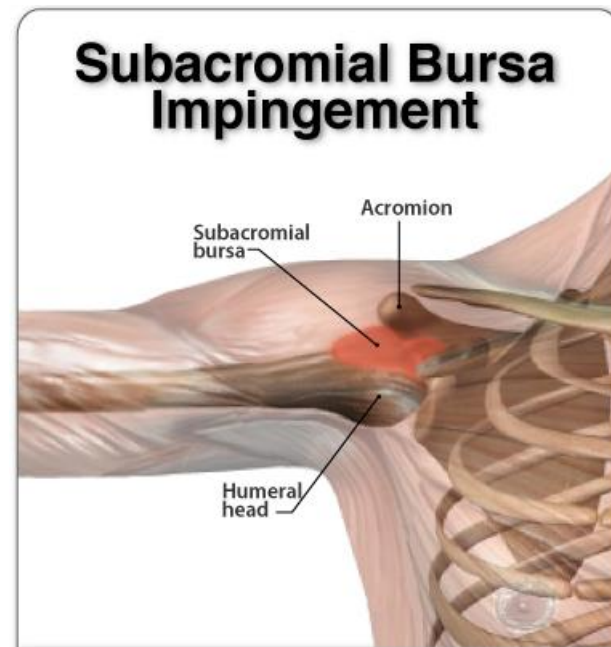
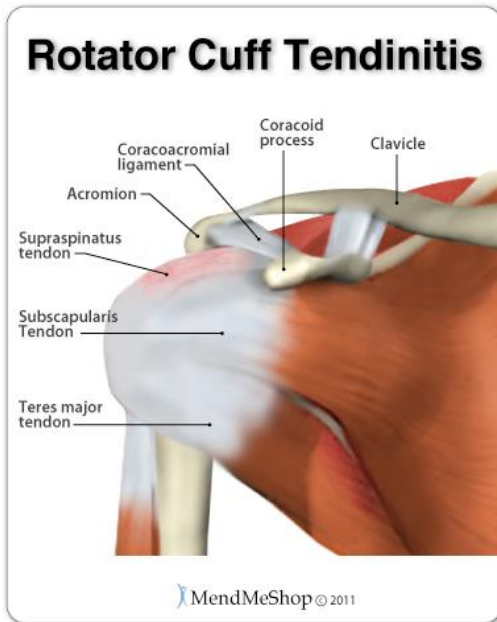
Continuum of RTC Disease



Rotator Cuff Disease

Subacromial Syndrome (Impingement/Subacromial Bursitis/RTC Tendonitis)

- **inflammation** of the subacromial bursa & RTC tendons



Rotator Cuff Disease

Subacromial Syndrome (Impingement/Subacromial Bursitis/RTC Tendonitis)

- *insidious* onset of anterior/lateral pain
- worse with *overhead* movements (occupation/sport?)

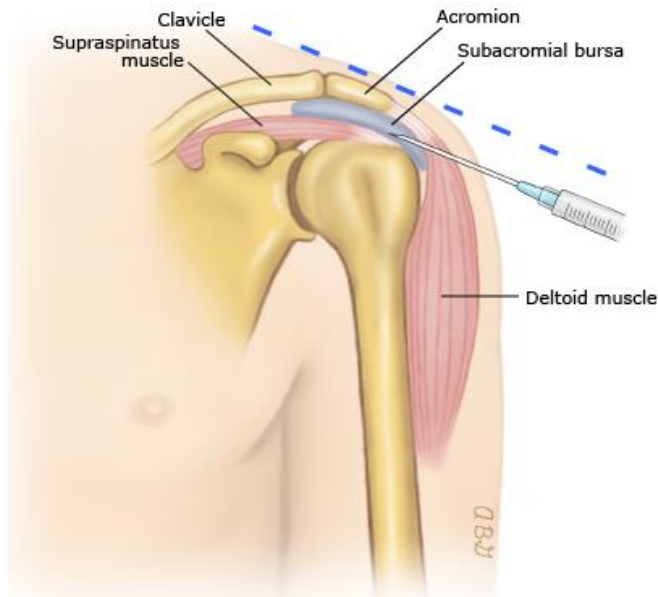
Physical Exam:

- positive *impingement* signs
- but NO *strength* deficits

Rotator Cuff Disease

Subacromial Syndrome (Impingement/Subacromial Bursitis/RTC Tendonitis)

- analgesics/NSAIDS
- no sling - relative rest only
- therapeutic exercises, especially RTC strengthening!
- **subacromial** corticosteroid injection

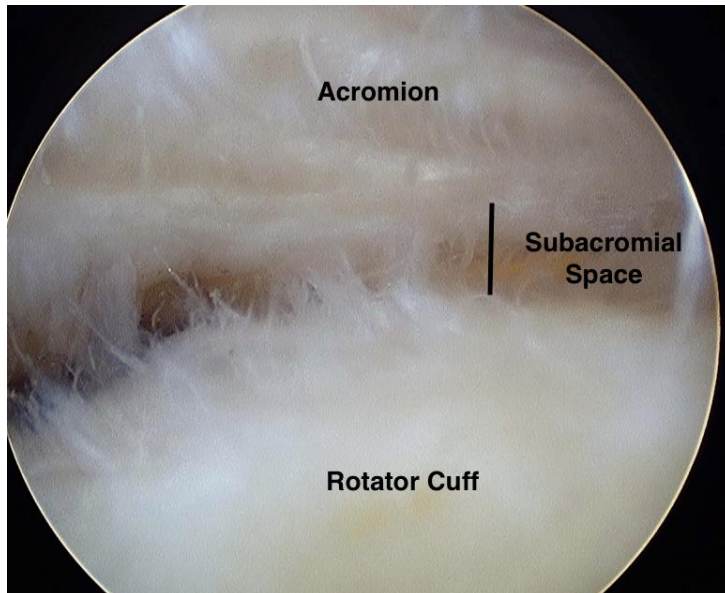


Rotator Cuff Disease



Subacromial Syndrome (Impingement/Subacromial Bursitis/RTC Tendonitis)


- potential treatment: **Acromioplasty**
(for *primary* impingement only)



Rotator Cuff Disease

Early (may never progress)	Progression	Progression	End Stage
Subacromial Syndrome (Impingement, Subacromial Bursitis, RTC Tendonitis)	Partial RTC Tear	Complete RTC Tear	RTC Arthropathy

Continuum of RTC Disease



Rotator Cuff Disease

Rotator Cuff Tears (degenerative)

- dull, achy pain
- night pain – sometimes patient *wakes from sleep*

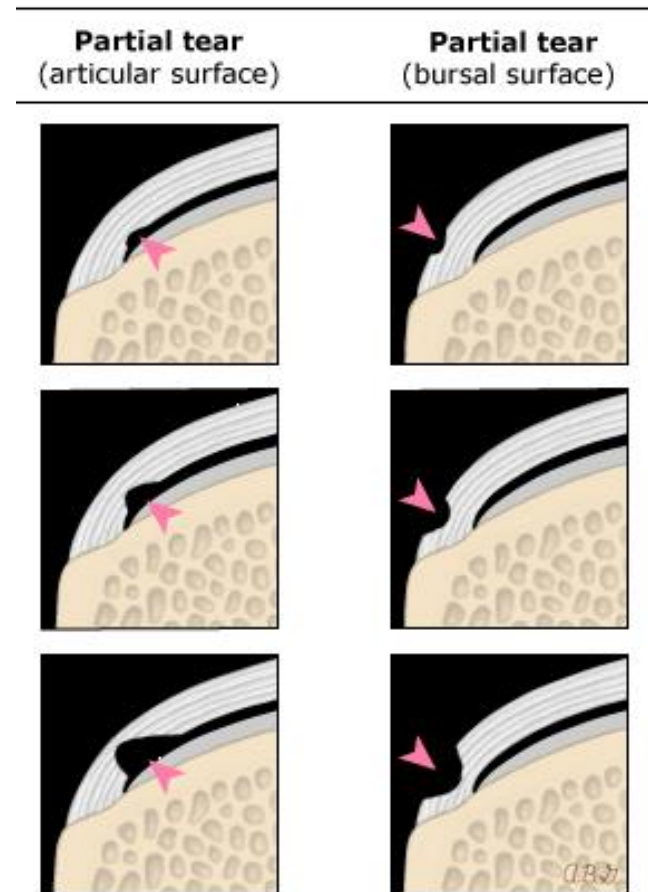


Rotator Cuff Disease

Rotator Cuff Tears (degenerative)

- **Partial-thickness tear**

- articular sided
- bursal sided

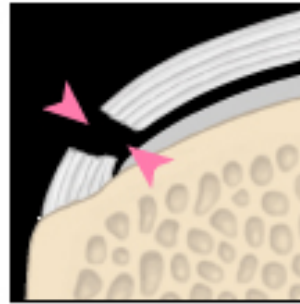


Rotator Cuff Disease

Rotator Cuff Tears (degenerative)

- **Complete** (full thickness) tear

Full tear

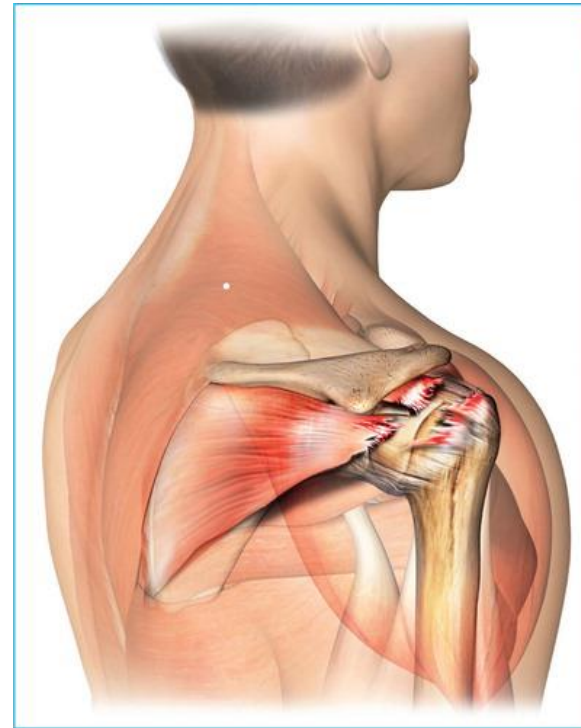


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Rotator Cuff Disease

Rotator Cuff Tears (degenerative)

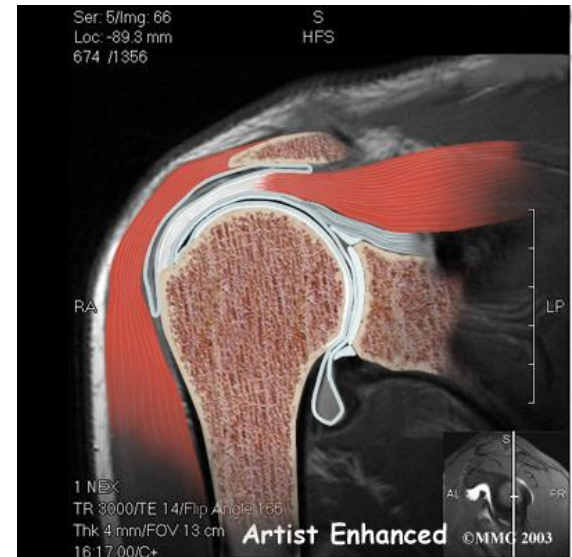
- **Massive** tear
 - multiple tendons
 - retraction
 - fatty atrophy



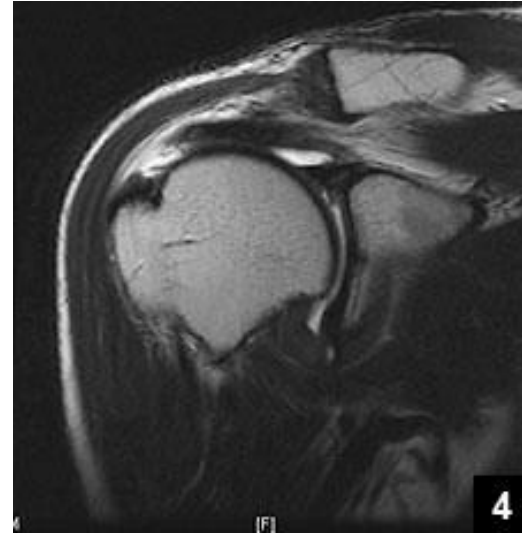
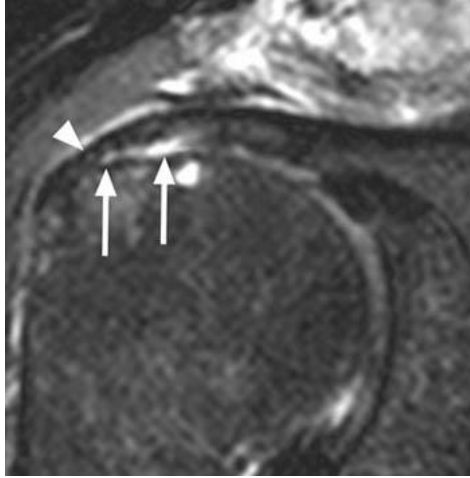
Rotator Cuff Disease

Imaging:

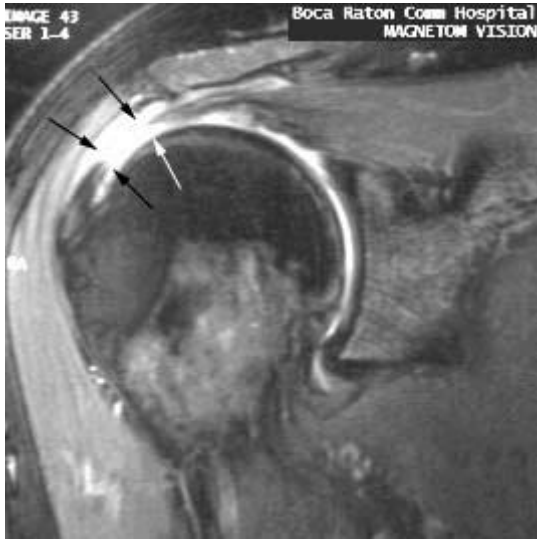
- X-rays
 - helpful to show morphology of acromion
- MRI arthrogram (enhanced with gadolinium)
 - to assess for the actual RTC tear



Rotator Cuff Disease



Rotator Cuff Disease



Full thickness rotator cuff tear on magnetic resonance arthrography

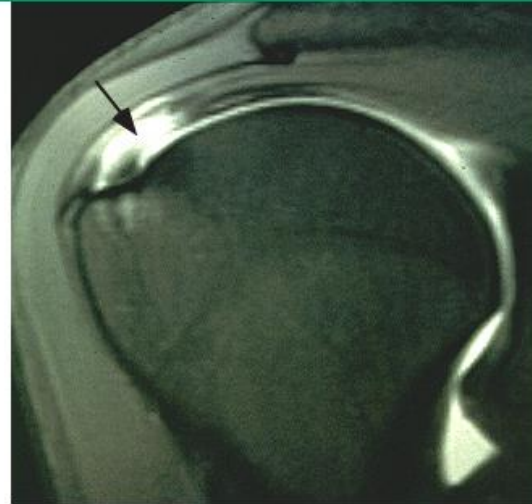
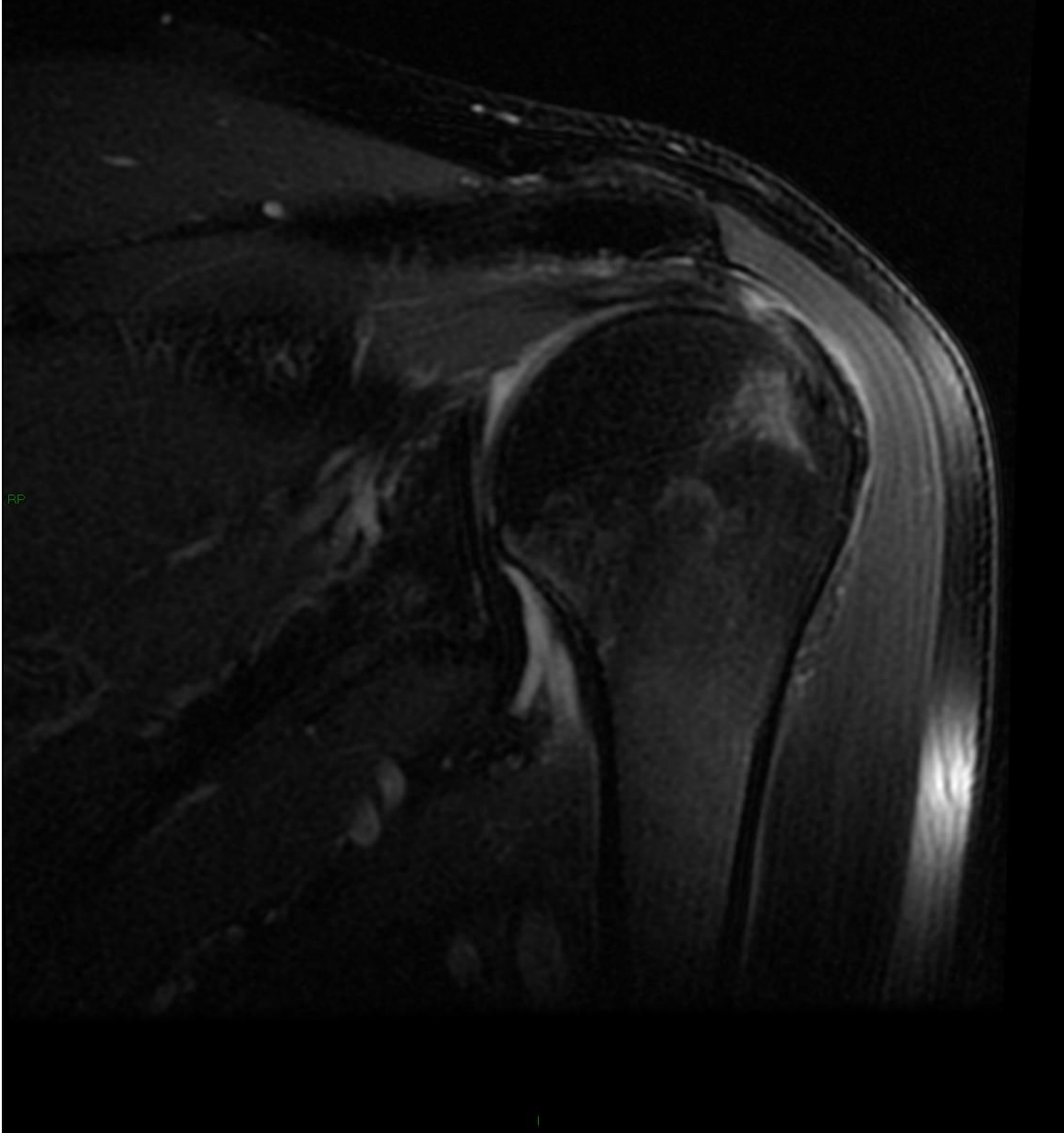


Image from UpToDate © 2019

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Coronal T2

Image 1

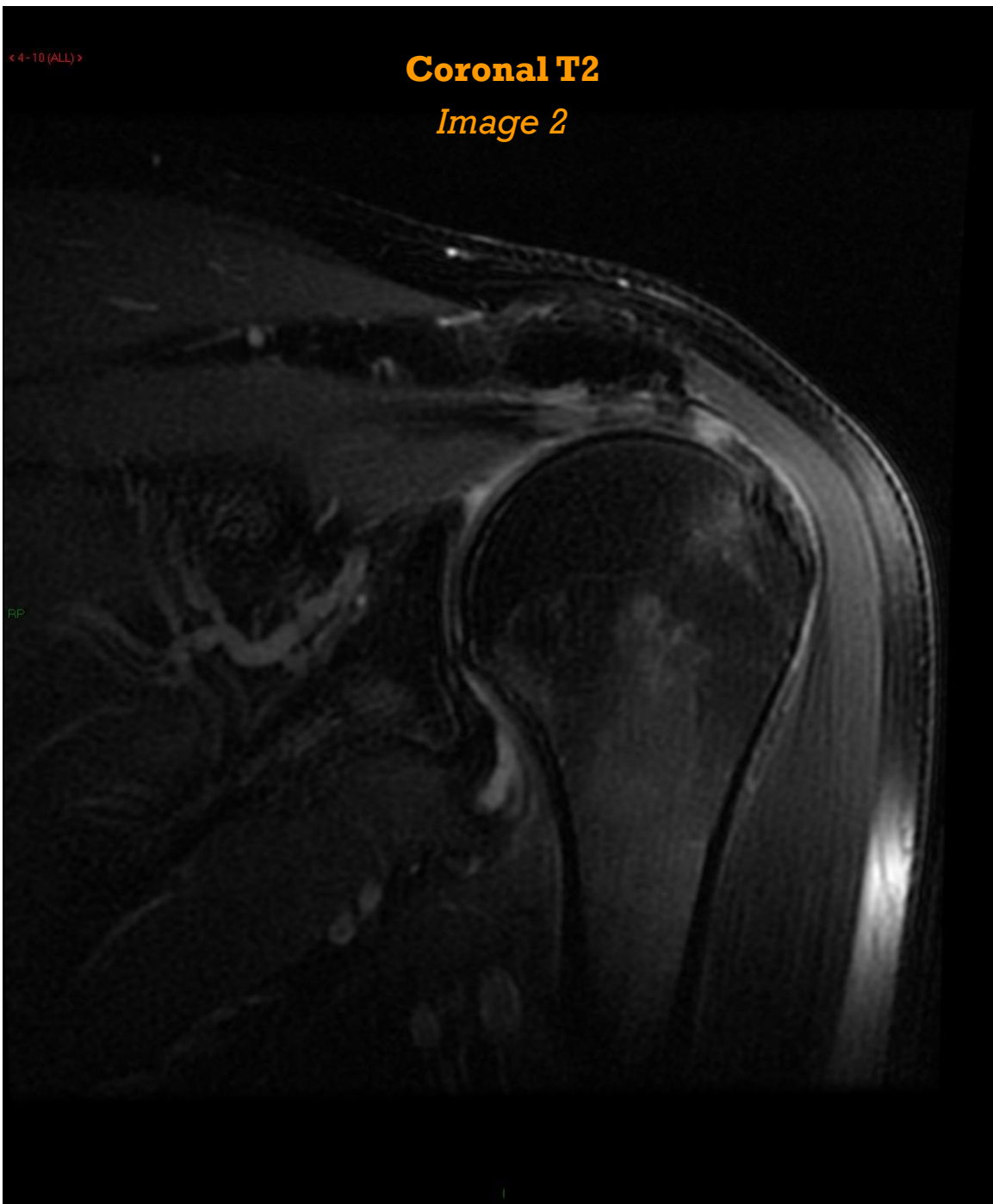


RP

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Coronal T2

Image 2

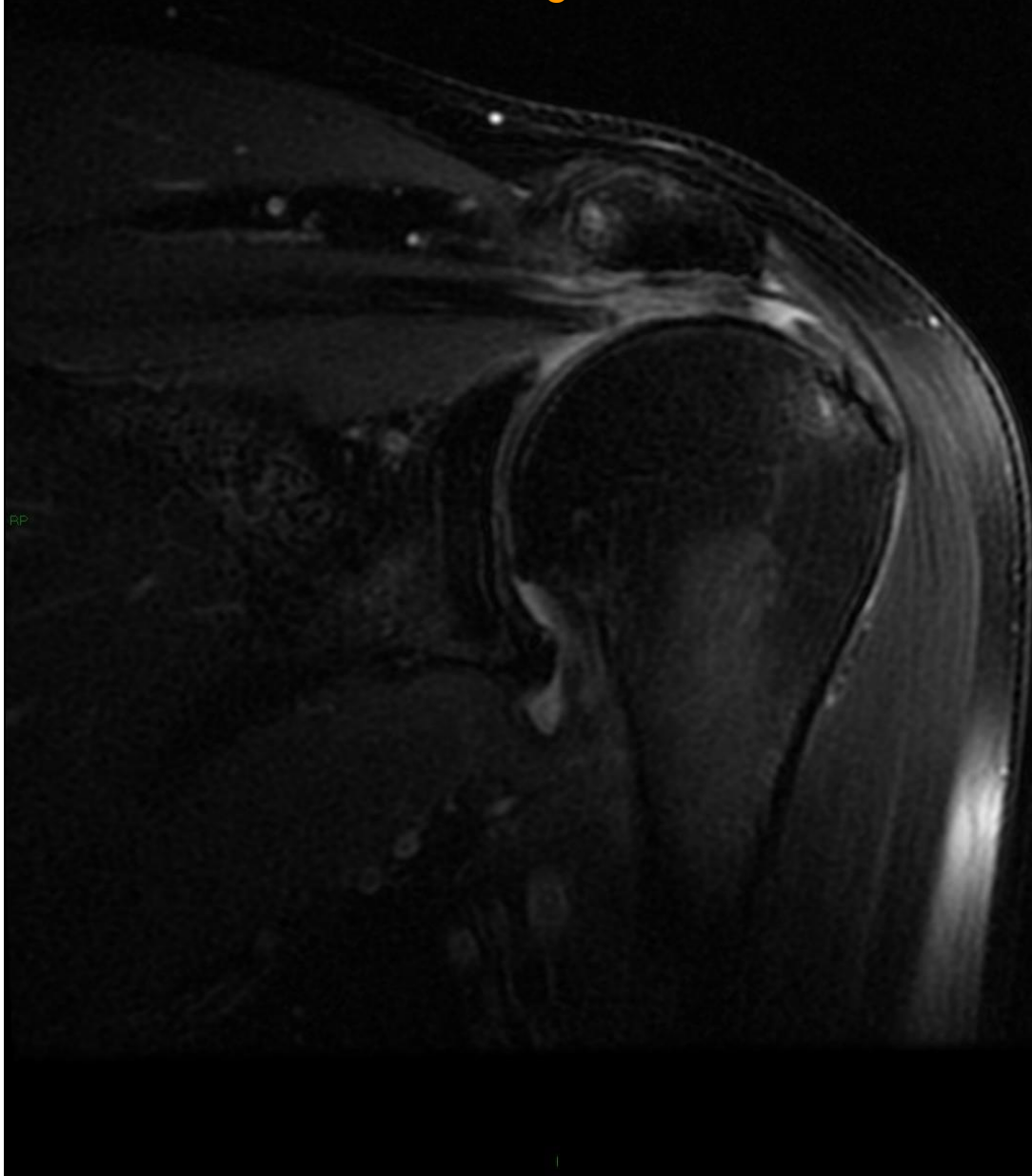


RP

< 4-11 (ALL) >

Coronal T2

Image 3

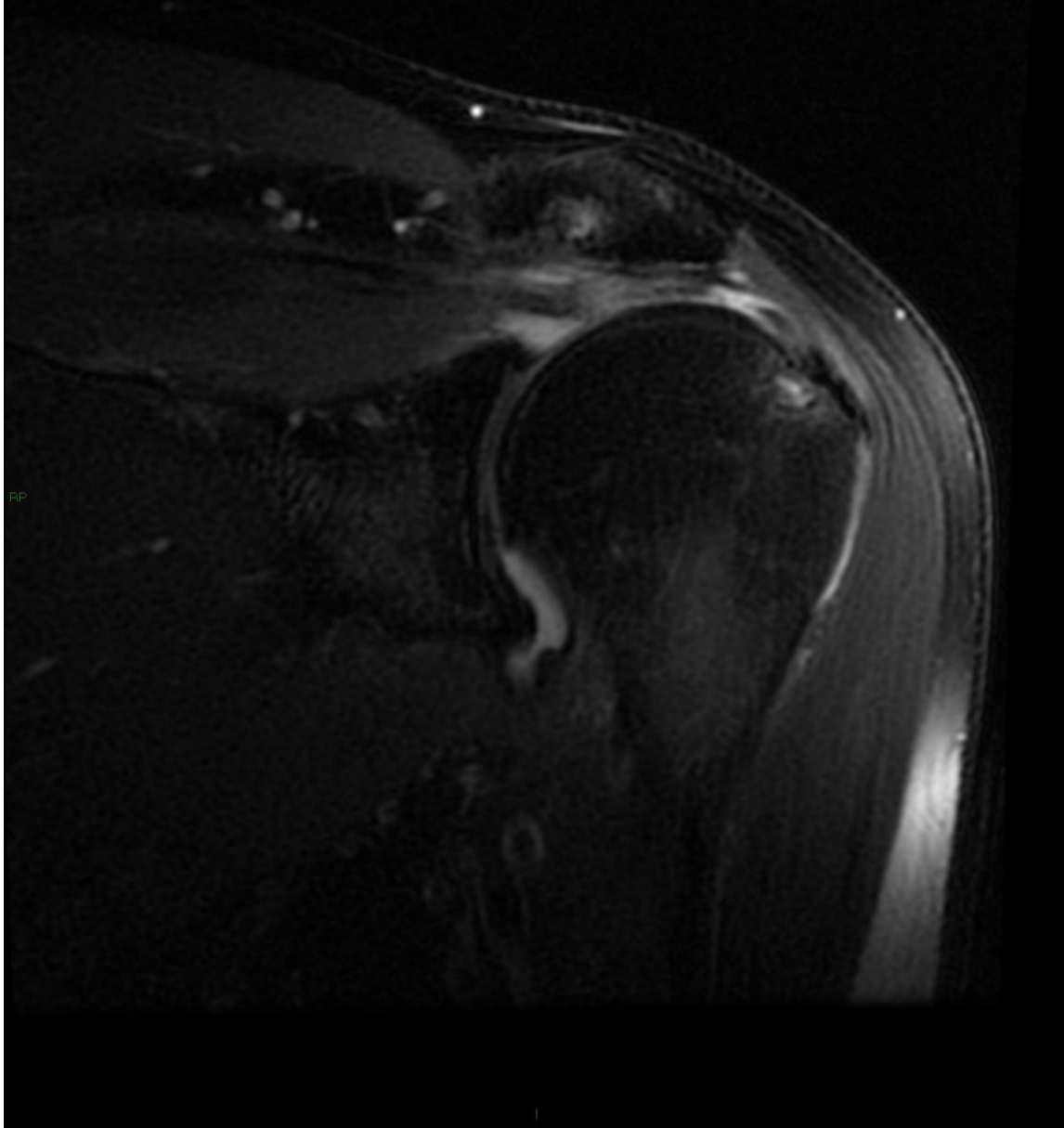


RP

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Coronal T2

Image 4

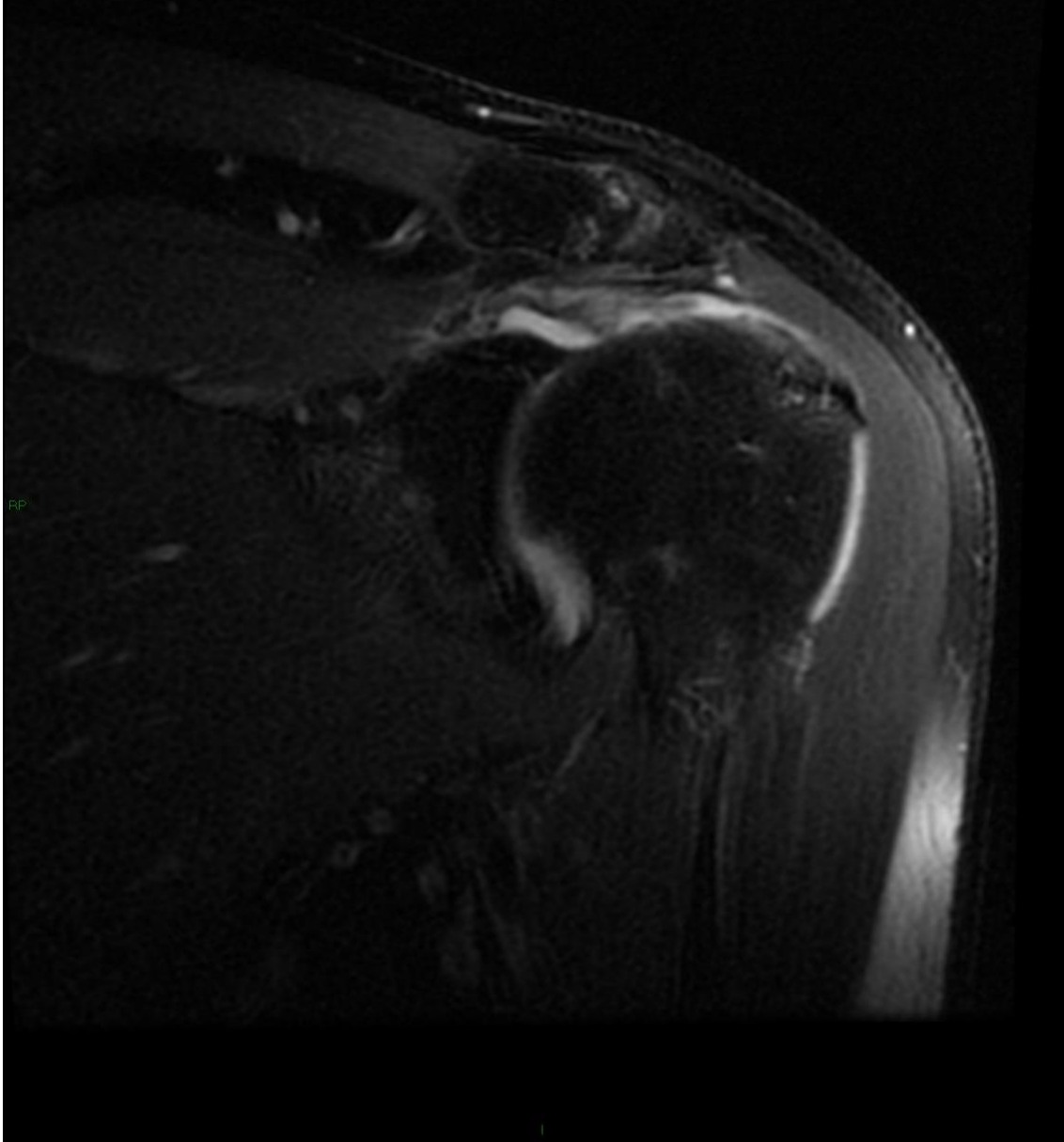


RP

< 4-13 (ALL) >

Coronal T2

Image 5



RP

Rotator Cuff Disease

Treatment

Partial Thickness RTC tears

- conservative measures
 - analgesics/NSAIDS
 - no sling - relative rest
 - therapeutic exercises, especially RTC strengthening!
 - subacromial corticosteroid injection

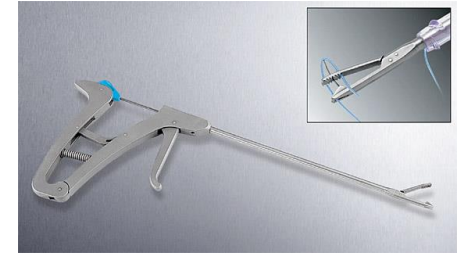
i.e., treat it the same as subacromial bursitis/impingement!

Rotator Cuff Disease

Treatment

Full Thickness RTC Tears

- Surgery: **arthroscopic RTC repair**
- also for partial tears that have failed conservative Tx

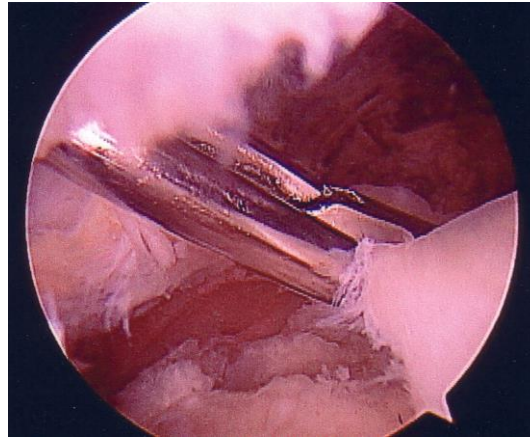
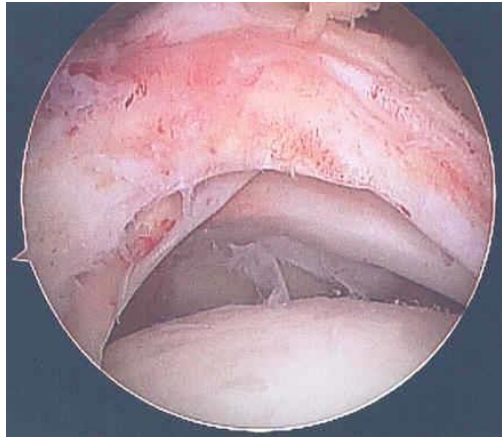


“Beach Chair position”

“Double row repair”




Rotator Cuff Disease



Rotator Cuff Disease

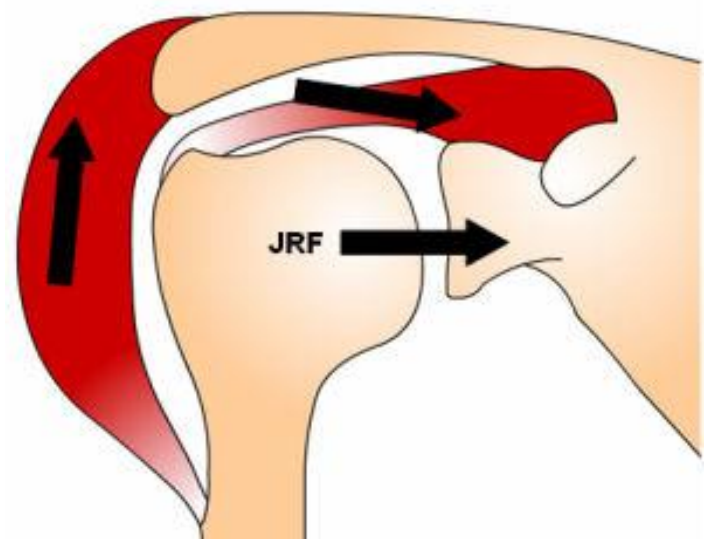
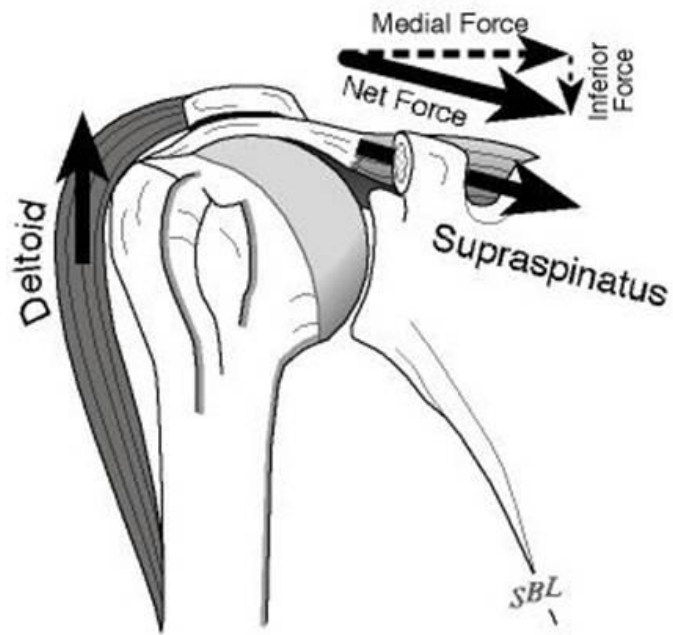
Early (may never progress)	Progression	Progression	End Stage
Subacromial Syndrome (Impingement, Subacromial Bursitis, RTC Tendonitis)	Partial RTC Tear	Complete RTC Tear	RTC Arthropathy

Continuum of RTC Disease



Rotator Cuff Disease

Remember...



Rotator Cuff Disease

Rotator cuff arthropathy

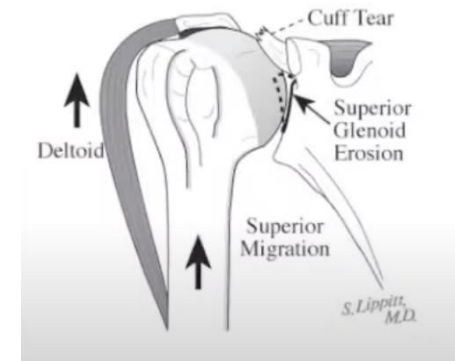
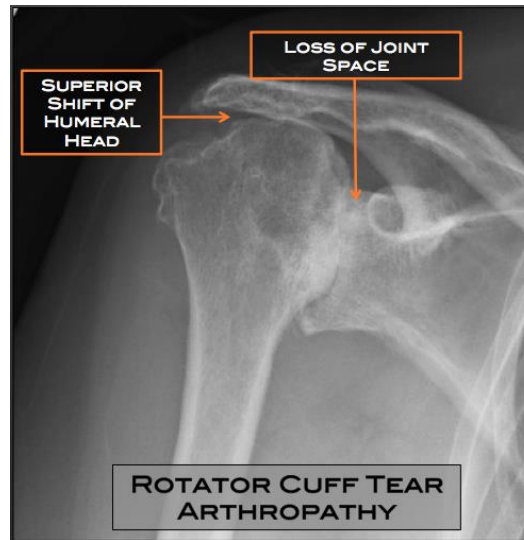
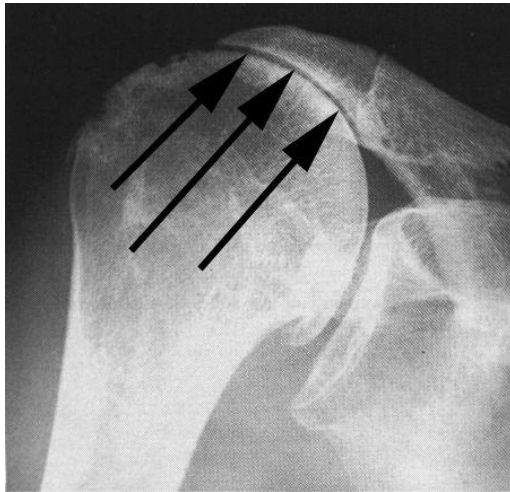
- the result of a **long-standing, chronic** rotator cuff tear
- aka 'end-stage rotator cuff disease'



Rotator Cuff Disease

Rotator cuff arthropathy

- the result of a **long-standing, chronic** rotator cuff tear
- aka 'end-stage rotator cuff disease'

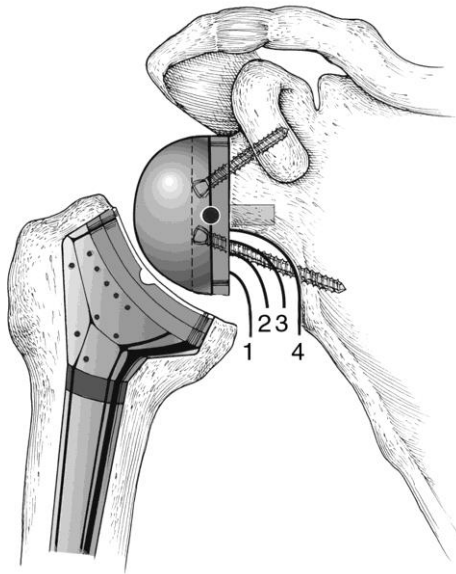


Rotator Cuff Disease

Rotator cuff arthropathy

Treatment:

- **Reverse** total shoulder arthroplasty

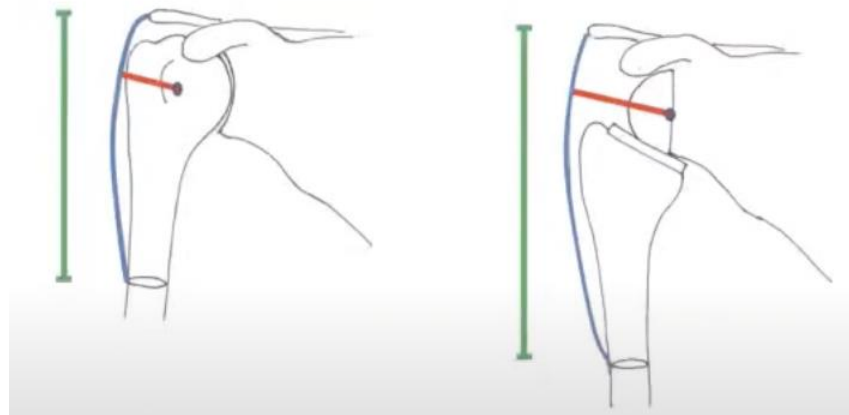


Rotator Cuff Disease

Rotator cuff arthropathy

Treatment:

- **Reverse** total shoulder arthroplasty



Anatomic

Reverse TSA

Rotator Cuff Disease

Early (may never progress)	Progression	Progression	End Stage
Subacromial Syndrome (Impingement, Subacromial Bursitis, RTC Tendonitis)	Partial RTC Tear	Complete RTC Tear	RTC Arthropathy

Continuum of RTC Disease



What about the *Special Tests*???

Rotator Cuff Disease

Special Tests

1. Neer Impingement test



Sens	Spec
80%	50%

The "passive painful arc maneuver" shown above involves passively flexing the glenohumeral joint while simultaneously preventing shoulder shrugging. The test is often referred to as the Neer test, and is used to assess shoulder impingement.

Rotator Cuff Disease

Special Tests

2. *Hawkins-Kennedy test*



Sens	Spec
80%	55%

The Hawkins Kennedy test is used to assess shoulder impingement. In this test the clinician stabilizes the shoulder with one hand and, with the patient's elbow flexed at 90 degrees, internally rotates the shoulder using the other hand. Shoulder pain elicited by internal rotation represents a positive test.

Rotator Cuff Disease

Special Tests

3. “Empty can” (supraspinatus) test



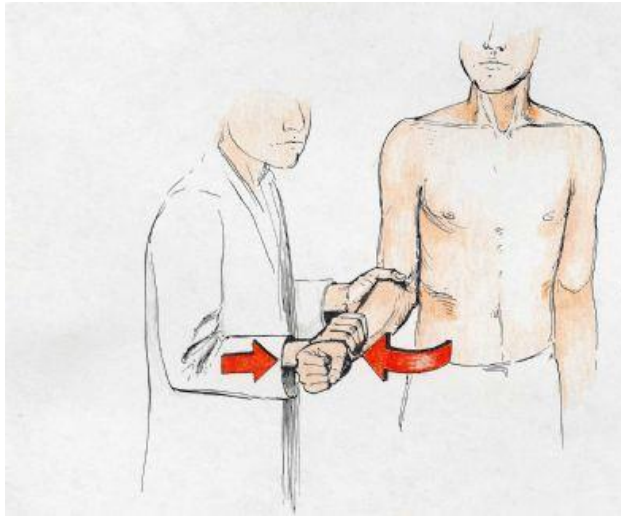
Sens	Spec
89%	59%

Jobe's test (or the "empty can" test) assesses supraspinatus function. The patient places a straight arm in about 90 degrees of abduction and 30 degrees of forward flexion, and then internally rotates the shoulder completely. The clinician then attempts to adduct the arm while the patient resists. Pain without weakness suggests tendinopathy; pain with weakness is consistent with tendon tear.

Rotator Cuff Disease

Special Tests

4. *External rotation (infraspinatus) test*



Sens	Spec
55%	80%

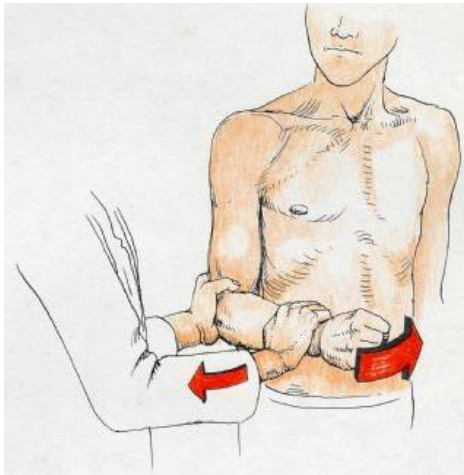
The infraspinatus muscle is primarily responsible for external rotation of the shoulder. The muscle can be tested by having the patient attempt to externally rotate against resistance, as shown in the photograph above. The shoulder is held in adduction and the elbow bent to 90 degrees during testing.

Images from UpToDate © 2019

Rotator Cuff Disease

Special Tests

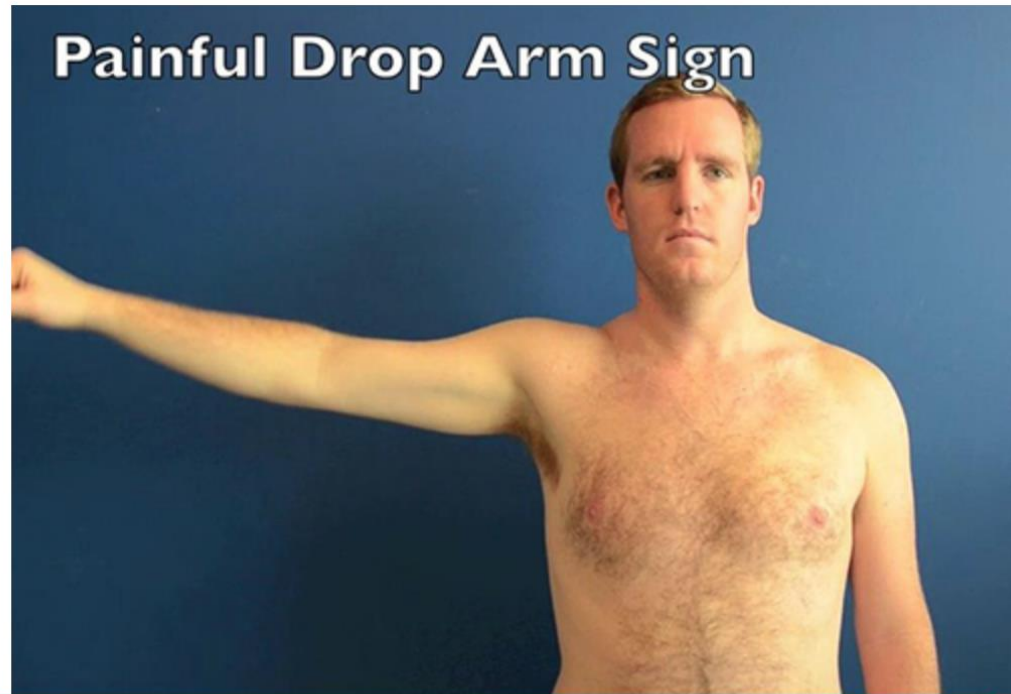
5. *Internal rotation (subscapularis) test*



Rotator Cuff Disease

Special Tests

6. *Drop arm test*



Sens	Spec
24%	96%

The drop arm test assesses the ability of the patient to lower his or her arms from a fully abducted position. A positive test occurs when the patient is unable to lower the affected arm with the same smooth coordinated motion as the unaffected arm.

Rotator Cuff Disease

Putting it all together:

	Subacromial Bursitis RTC Tendonitis Primary/Secondary Impingement	Partial RTC Tear	Complete RTC Tear
Pain w/ overhead movement?	YES	YES	YES
Night pain?	MAYBE	YES	YES
Neer Impingement Test	YES	YES	YES
Hawkins-Kennedy Test	YES	YES	YES
Empty Can (supraspinatus) Test	NO	MAYBE	YES
ER (infraspinatus) Test	NO	MAYBE	YES
IR (subscapularis) Test	NO	MAYBE	YES

Special Tests

Yergason's Test

Speed's Test

O'Brien's Test

Crank Test

Biceps/SLAP Tear

Anterior Apprehension Test

(Jobe) Relocation Test

Anterior Labral Tear/Instability

Posterior Apprehension Test

Jerk Test

Posterior Labral Tear/Instability

Sulcus Sign

Inferior Labral Tear/Instability

Neer Impingement Test

Hawkins-Kennedy Test

Subacromial Syndrome

Empty Can (supraspinatus) Test

External Rotation (infraspinatus) Test

Internal Rotation (subscapularis) Test

Drop Arm test

Rotator Cuff Tear

Post-Test Question #1

Which special test of the shoulder is most specific for evaluating SLAP tears?

- A. Hawkins-Kennedy test
- B. Speed's test
- C. Yergason's test
- D. O'Brien's test

Post-Test Question #1

Which special test of the shoulder is most specific for evaluating SLAP tears?

- A. Hawkins-Kennedy test
- B. Speed's test
- C. *Yergason's test***
- D. O'Brien's test

Post-Test Question #2

Which X-ray view is helpful to obtain when evaluating a patient for possible AC joint injury?

- A. Zanca view
- B. axillary lateral view
- C. Neer view
- D. outlet (scapular "Y") view

Post-Test Question #2

Which X-ray view is helpful to obtain when evaluating a patient for possible AC joint injury?

- A. Zanca view**
- B. axillary lateral view
- C. Neer view
- D. outlet (scapular “Y”) view

Post-Test Question #3

Secondary impingement is caused by...

- A. tearing of the labrum
- B. weak/uncoordinated rotator cuff muscles
- C. inflammation in the biceps tendon
- D. bony abnormality of the acromion process

Post-Test Question #3

Secondary impingement is caused by...

- A. tearing of the labrum
- B. *weak/uncoordinated rotator cuff muscles***
- C. inflammation in the biceps tendon
- D. bony abnormality of the acromion process

Citations

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