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Clues to Diagnosing and Managing Common Shoulder & Elbow Disorders

Dr John Trantalis

Overview

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RAMSAY HEALTH CARE

- Key diagnostic criteria for common shoulder and elbow disorders
- Then give summary of condition. Demog, hs, mx, ix , tx
- Frozen shoulder
- Cuff tear: small cuff tear massive
- OA & cuff tear arthropathy
- Elbow OA
- Tennis elbow
- AC joint.
- Interval slides
- Use of cortisone: evidence and technique

A Small Supraspinatus Tear will classically cause which of the following?

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1. Superior Shoulder pain
2. Pain that radiates down to the hand
3. Anterolateral shoulder pain, often at night.
4. Shoulder stiffness

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RAMSAY HEALTH CARE

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4. Shoulder stiffness

What is the initial management of a patient with a rotator cuff tear?

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- XRAY, Ultrasound, MR all reasonable.
- Non-op treatment
  - Analgesics, activity modification, physio, cortisone
- Surgery?: depends on patient profile.

What is the initial management of a patient with a rotator cuff tear?

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- Anterolateral Shoulder / arm pain.
  - Wake at night
  - Worse with lifting / reaching
- If present for >3 months, less than 50% chance of pain resolving.
- 50% chance Tear enlargement over a 5 year period.

Case 1: 43yo M, Felt Snap at front of elbow when lifting fridge 3 days ago

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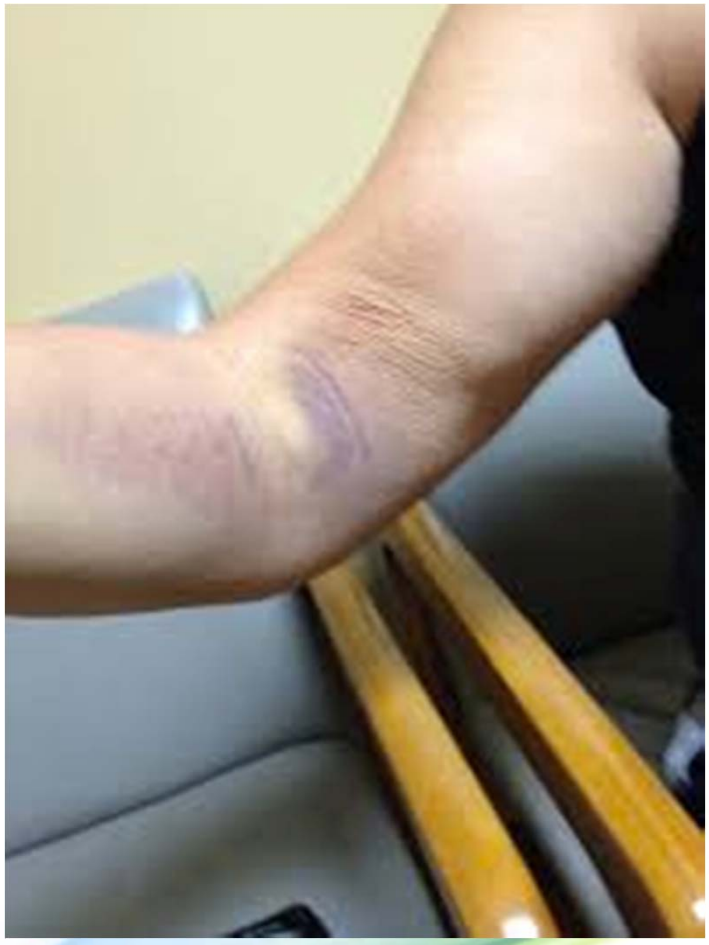
- Minimal Pain Now
- Full ROM
- Bruising down medial aspect of arm



What is the Likely Diagnosis?

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- 1. Fractured Radial Head
- 2. Ruptured Distal Biceps Tendon
- 3. Tennis Elbow
- 4. Dislocated Elbow

What is the Likely Diagnosis?

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RAMSAY HEALTH CARE

- 1. Fractured Radial Head
- 2. Ruptured Distal Biceps Tendon
- 3. Tennis Elbow
- 4. Dislocated Elbow

Diagnosis: Distal Biceps Rupture

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- Classically middle aged men
- Extension force applied to elbow that is trying to flex
- Often not that painful

Ruptured Distal Biceps Tendon

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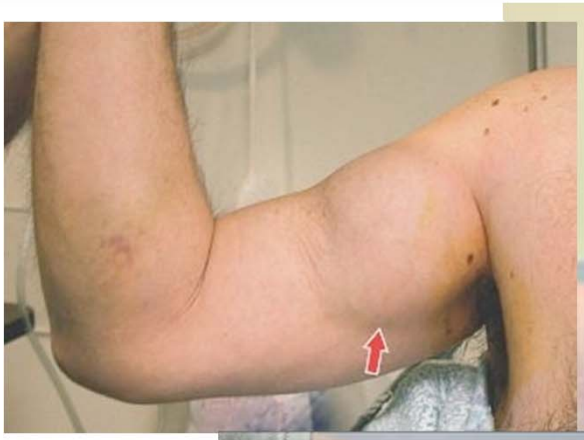
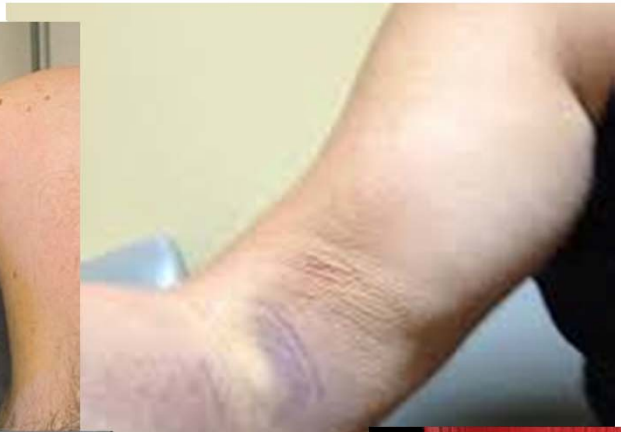
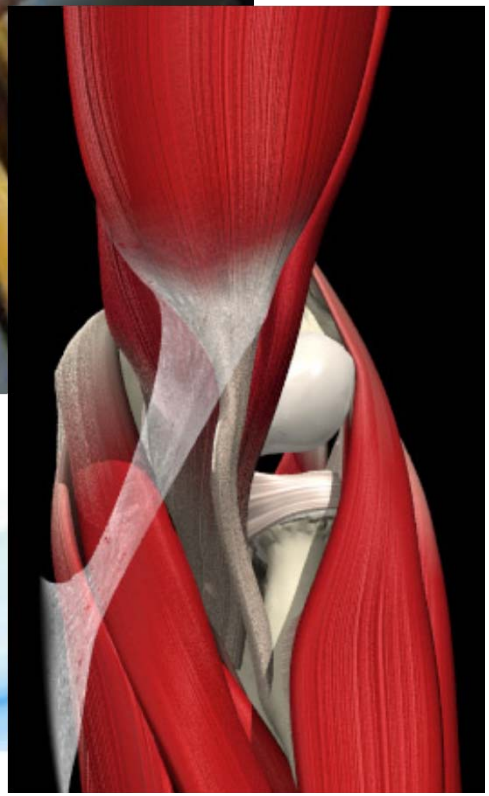
Clinical Signs: *ALWAYS COMPARE SIDES*

- Reverse “Popeye” Sign
- Bruising down the forearm
- Hook Sign
- Weakness of Resisted Supination







What is the Most Sensitive Clinical Sign for Detecting a Distal Biceps Rupture?

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- 1. Weakness of Supination
- 2. Hook Test
- 3. Bruising down Forearm
- 4. Reverse Popeye Sign

What is the Most Sensitive Clinical Sign for Detecting a Distal Biceps Rupture?

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RAMSAY HEALTH CARE

- 1. Weakness of Supination
- 2. Hook Test
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Which Investigation is REQUIRED to make the diagnosis of a distal biceps tendon rupture?

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- 1. MRI
- 2. Ultrasound
- 3. Xray
- 4. None: Clinical Diagnosis
- 5. Nerve Conduction / EMG

Which Investigation is REQUIRED to make the diagnosis of a distal biceps tendon rupture?

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- 1. MRI
- 2. Ultrasound
- 3. Xray
- 4. None: Clinical Diagnosis
- 5. Nerve Conduction / EMG

Ruptured Distal Biceps Tendon

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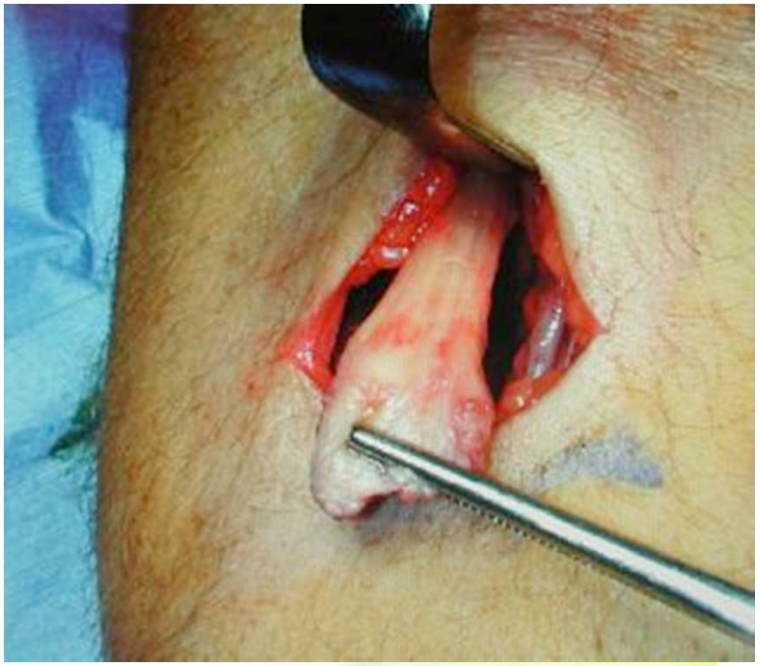
- Important to make the diagnosis early:
- Surgery: Improves Supination strength by 50%
- Surgical Outcomes are better if patient is operated on within 3 weeks after injury



“You Can’t Re-Invent The Wheel!!”

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- The Wheel has been Re-Invented….
- 1. True
- 2. False

“You Can’t Re-Invent The Wheel!!”

People caring for people

- The Wheel has been Re-Invented….
- 1. True!!!!!

Sir George Cayley

George Cayley

Born	27 December 1773 Scarborough, Yorkshire, Englan
Died	15 December 1857 (aged 83) Brompton, Yorkshire, England
Nationality	British
Fields	Aviation, Aerodynamics, Aeronautics, Aeronautical engineering
Known for	Designed first successful human glider. Discovered the four aerodynamic forces of flight weight, lift, drag, thrust and cambered wings, basis for the design of the modern aeroplane.

Loss of Passive External Rotation

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- The likely diagnosis is…..
- 1. Rotator cuff tear
- 2. Biceps Tendinitis / SLAP tear
- 3. Frozen Shoulder
- 4. Osteoarthritis

Loss of Passive External Rotation in 46yo F

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- The likely diagnosis is…..
- 1. Rotator cuff tear
- 2. Biceps Tendinitis / SLAP tear
- 3. Frozen Shoulder
- 4. Osteoarthritis

Frozen Shoulder

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- F>M Age 40-60 Diabetics

- Pain:
  - can be everywhere, even to fingers
  - Severe
  - Pins & needles (DDx cervical)

Frozen Shoulder: Stages

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- 1. Freezing
  - Increasing pain and gradual loss of motion
- 2. Frozen
  - Rest Pain has gone
  - Shoulder just stiff…. “end range pain”
- 3. Thawing
  - Gradual recovery

Frozen Shoulder: Clinical Sign

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- Note: depends on how early you see them.
- Loss of Passive External Rotation
  - Lock elbow at side
    - Stops scapula from moving
  - Measure passive ER and compare sides

What Investigation should be performed?

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- 1. Ultrasound
- 2. Xray
- 3. MRI
- 4. NCS / EMG

What Investigation should be performed?

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RAMSAY HEALTH CARE

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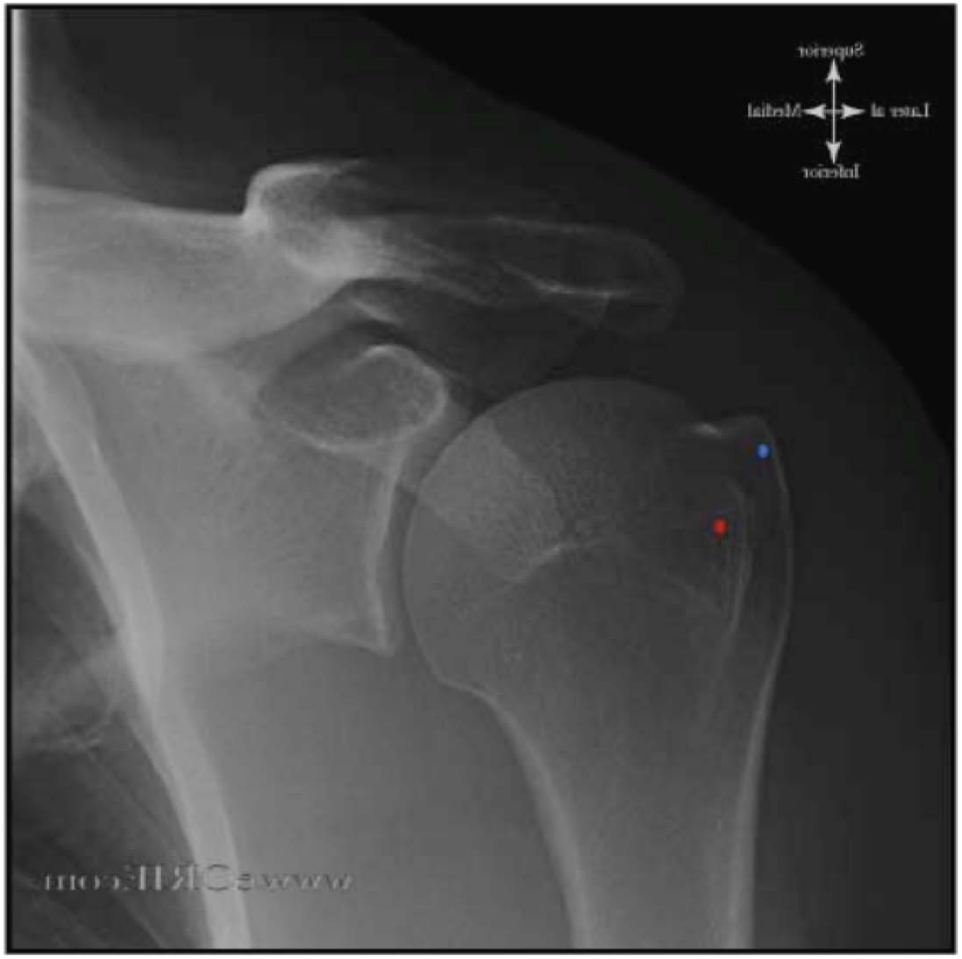
- 2. Xray
- 3. MRI
- 4. NCS / EMG

Loss of ER: Either Frozen Shoulder or Osteoarthritis…. Need proper xray



Normal Glenohumeral joint space→

Frozen Shoulder

What Treatment does the Level 1 Literature Support?

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- 1. Physiotherapy
- 2. Cortisone / physio
- 3. Early Surgery
- 4. Hydrodilatation
- 5. Manipulation

What Treatment does the Level 1 Literature Support?

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RAMSAY HEALTH CARE

- 1. Physiotherapy
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- 5. Manipulation

Cortisone and Frozen Shoulder

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- Needs to be given into glenohumeral joint.
- Strongly recommend Image guidance
- The earlier it is given, the better.
- Only one injection into GH joint
  - Cartilage effect

The Natural History of Frozen Shoulder

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- 70% Full recovery
- 20% Good recovery but with mild loss of motion
- 10% Minimal recovery
- Worse outcomes in Diabetics

Tennis Elbow
(aka Lateral Epicondylitis)

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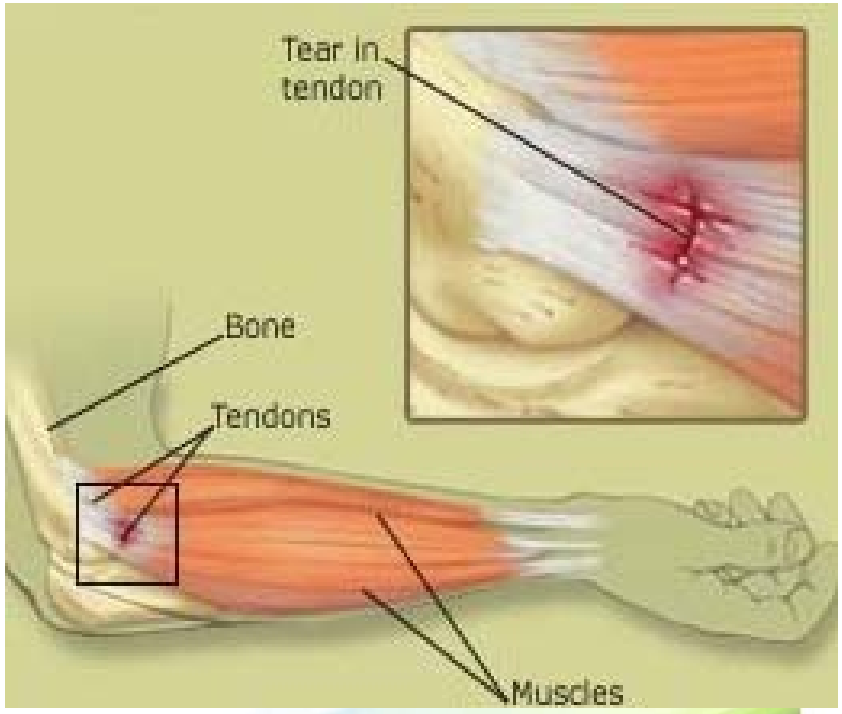
- Pain on the lateral side of the elbow
- Due to degeneration (not inflammation) in the ECRB tendon



Tennis Elbow: Clinical Signs

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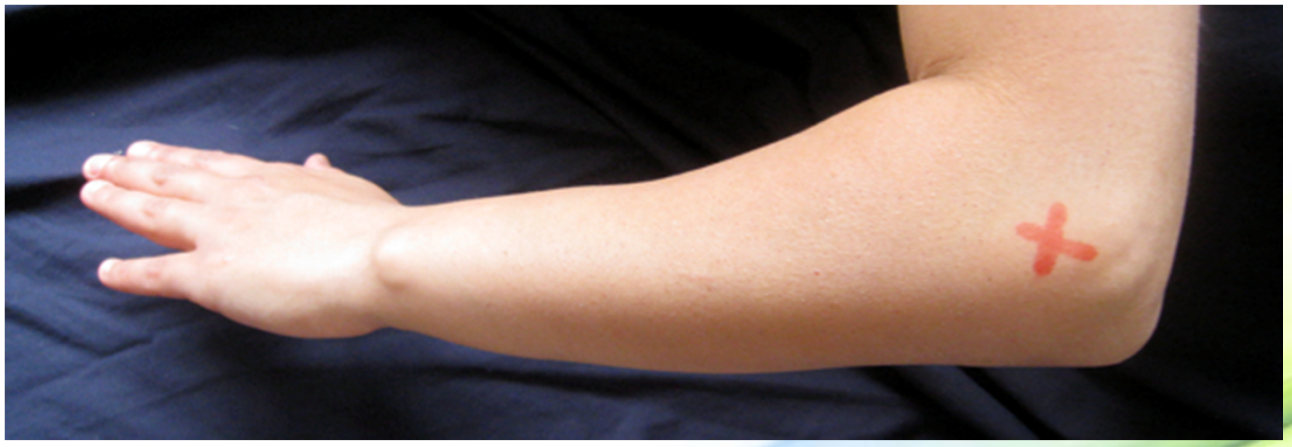
- Sensitive clinical sign
  - Tenderness just distal to lateral epicondyle



Tennis Elbow: Clinical Signs

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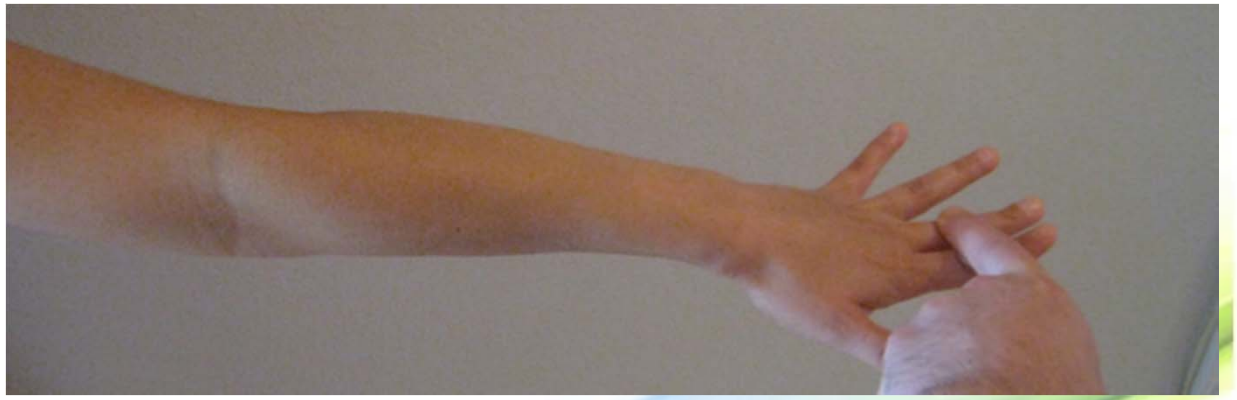
- Sensitive Clinical Sign
  - Pain at elbow with isolated stressing of ECRB tendon



Tennis Elbow: Management Options

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- Analgesia
- Activity modification
- Counterforce bracing
- Physiotherapy: Active Release Therapy
- ?Injections

Which treatment has a higher chance of resulting in ongoing pain at 1 year?

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RAMSAY HEALTH CARE

1. Physiotherapy
2. Cortisone
3. PRP (Platelet Rich Plasma Injections)
4. Activity Modification

Which treatment has a higher chance of resulting in ongoing pain at 1 year?

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RAMSAY HEALTH CARE

1. Physiotherapy
2. Cortisone!!!!!
3. PRP (Platelet Rich Plasma Injections)
4. Activity Modification

Effect of Corticosteroid Injection, Physiotherapy, or Both on Clinical Outcomes in Patients With Unilateral Lateral Epicondylalgia

A Randomized Controlled Trial FREE

Brooke K. Coombes, PhD; Leanne Bisset, PhD; Peter Brooks, MD, FRACP; Asad Khan, PhD; Bill Vicenzino, PhD

[+] Author Affiliations

JAMA. 2013;309(5):461-469. doi:10.1001/jama.2013.129.

Interventions Corticosteroid injection (n = 43), placebo injection (n = 41), corticosteroid injection plus physiotherapy (n = 40), or placebo injection plus physiotherapy (n = 41).

Conclusion and Relevance Among patients with chronic unilateral lateral epicondylalgia, the use of corticosteroid injection vs placebo injection resulted in worse clinical outcomes after 1 year, and physiotherapy did not result in any significant differences.

Tennis Elbow: Surgery

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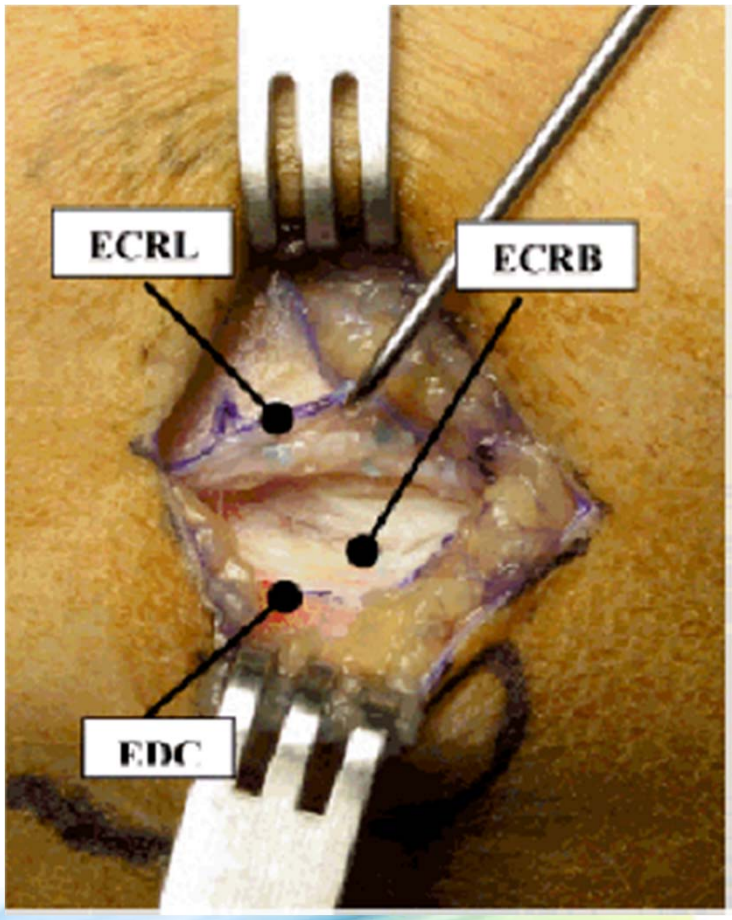
- Only after at least 1 year of symptoms.
- Surgery involves
  - Cut out degenerate tendinosis
  - Stimulate tissue to heal.
    - Aka “Red Hot Poker”
  - Repair the tendon
  - 95% good outcomes



First Investigation Should Be…

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1. Ultrasound
2. Xray
3. CT
4. MRI
5. NCS / EMG

First Investigation Should Be…

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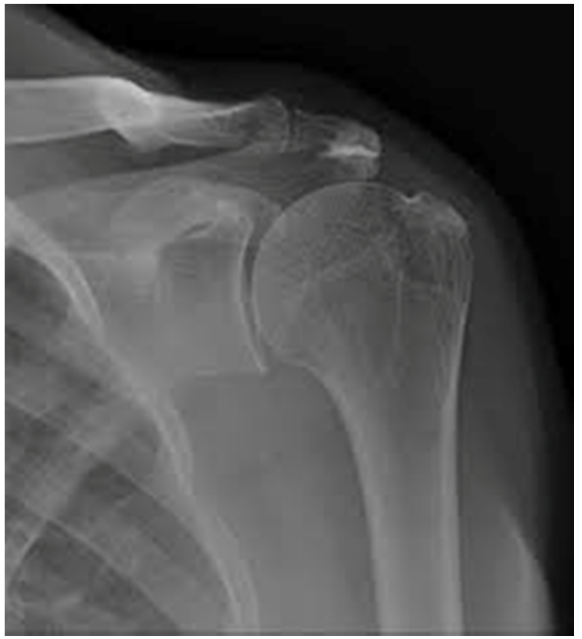
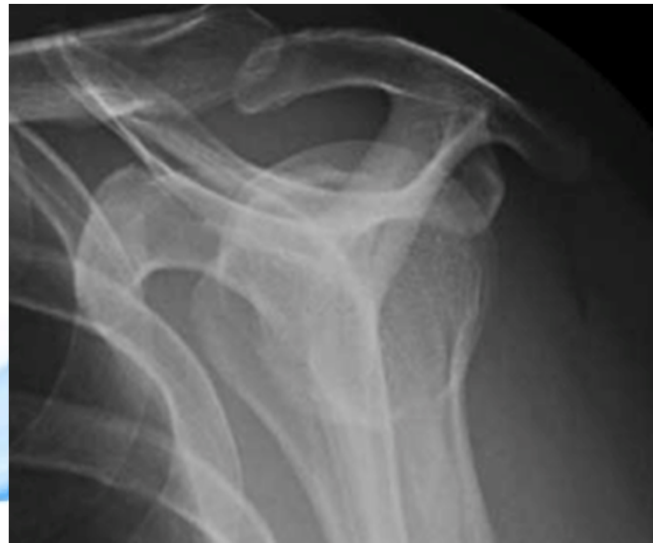


Exclude dislocation
Or Fracture



Mercedes-Benz

Xray Normal: Likely Diagnosis and Management should be…..

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1. Frozen Shoulder: Cortisone and Physio
2. Impingement: Cortisone and rest.
3. Cuff Tear: Cortisone / Physiotherapy
4. Cuff Tear: Urgent Referral

Xray Normal: Likely Diagnosis and Management should be…..

People caring for people

RAMSAY HEALTH CARE

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Passive vs Active Motion

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- ACTIVE MOTION
  - Patient moves the joint on their own
- For active motion to be intact:
  - The joint must be mobile.
  - The “motor” must be working

- PASSIVE MOTION
  - The examiner moves the joint for the patient
- For passive motion to be intact
  - The joint must be mobile
  - The “motor” does not need to be working.

“Motor”= tendon, muscle, nerve, plexus, roots, spinal cord, brain

WHY IS THIS REFERRAL /SURGERY SO “URGENT”?

Why not trial non-operative management then surgery if this fails?

What happens to the tendon and muscle after a cuff tear?

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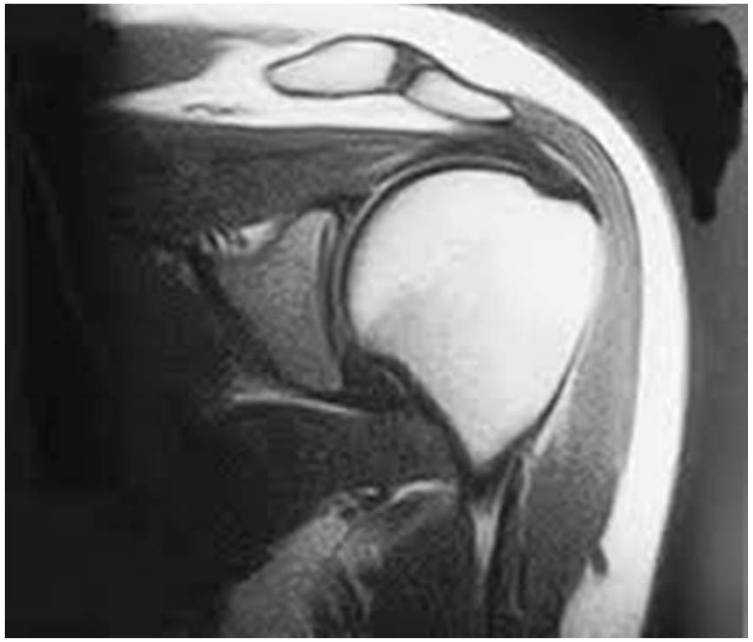
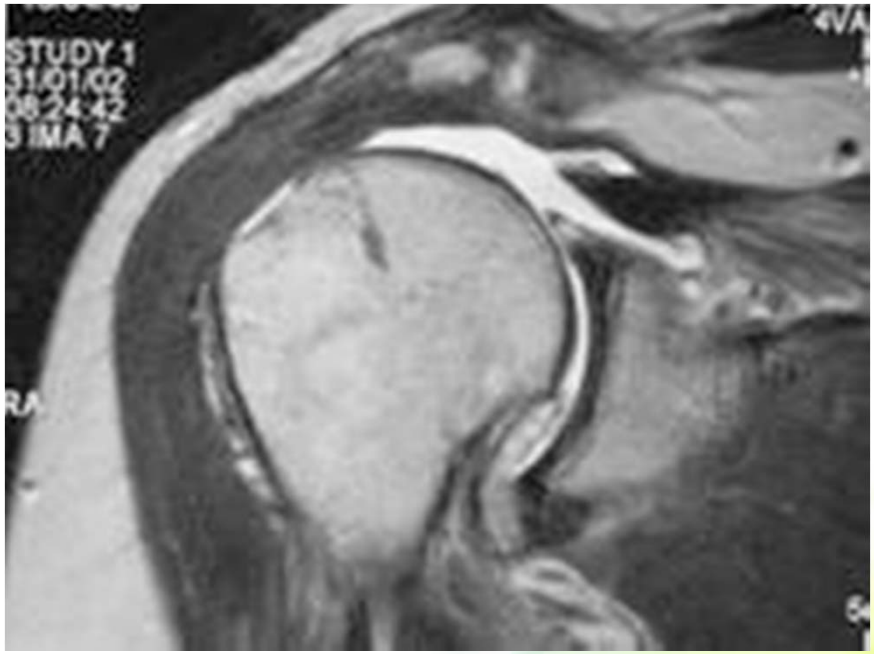
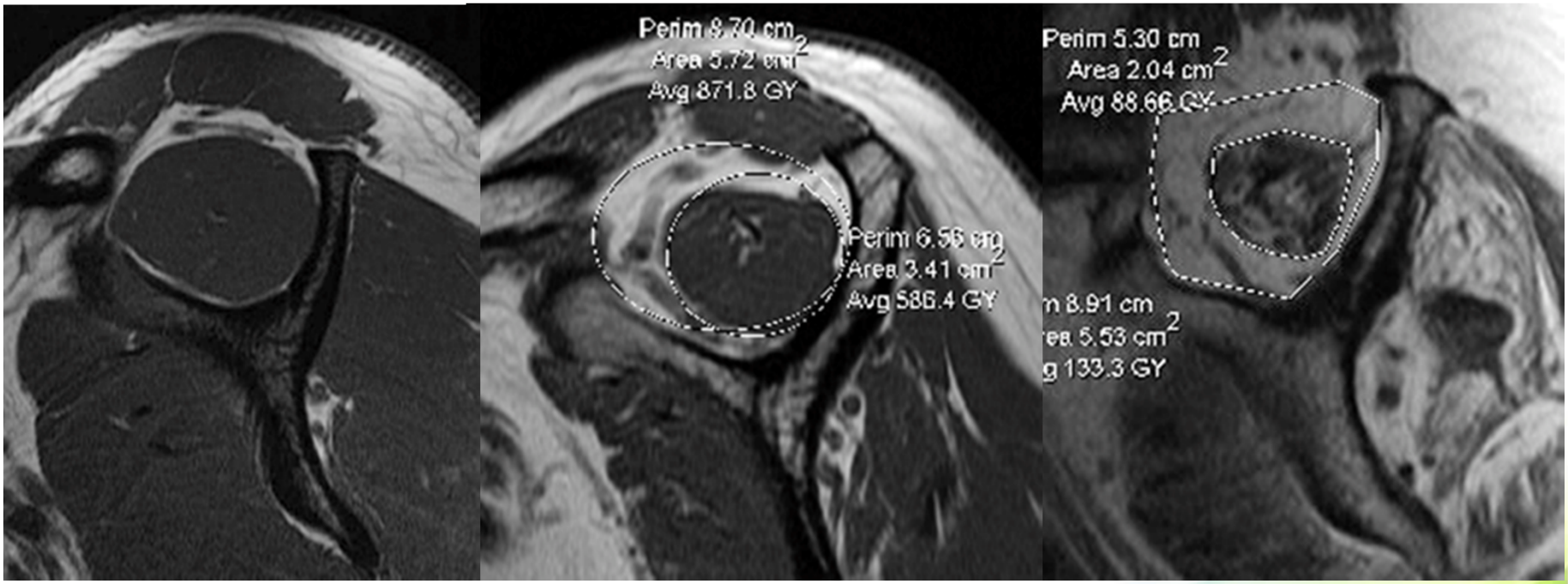
- Tendon - contracts and shortens
- Muscle belly - Turns into fat
- These changes
  - Are IRREVERSIBLE
  - occur rapidly within 6 weeks

Tendon Retraction with Large Cuff Tears





Muscle Wasting and Fatty Infiltration



Significance of these Irreversible Cuff Changes

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- Lower the chance of a successful outcome with surgery.
- Early repair of the rotator cuff → stops the progression of the changes

Massive, Contracted, Immobile

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42yo M Superior Shoulder pain

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RAMSAY HEALTH CARE

- 6 months
- No trauma
- Worse with overhead activity and at gym
- Worse at night

Likely Diagnosis is…..

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RAMSAY HEALTH CARE

1. SLAP tear
2. Rotator Cuff Tear
3. Shoulder Instability
4. Acromioclavicular osteoarthritis
5. Frozen Shoulder

Likely Diagnosis is…..

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RAMSAY HEALTH CARE

1. SLAP tear
2. Rotator Cuff Tear
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AC joint Arthritis / Osteolysis

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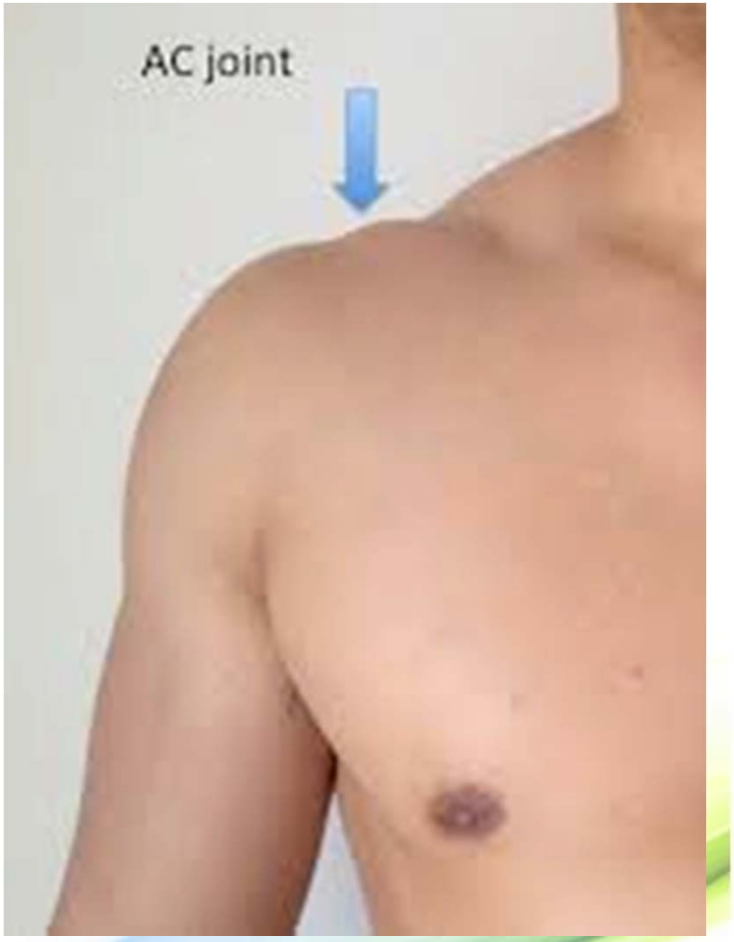
- Location of Pain is key:
  - Superior, over AC joint
- Tenderness over joint (always compare sides)
- Cross body adduction → Pain over AC joint



The most useful initial investigation for AC joint OA is…..

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1. Xray
2. Ultrasound
3. MRI
4. CT

The most useful initial investigation for AC joint OA is…..

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RAMSAY HEALTH CARE

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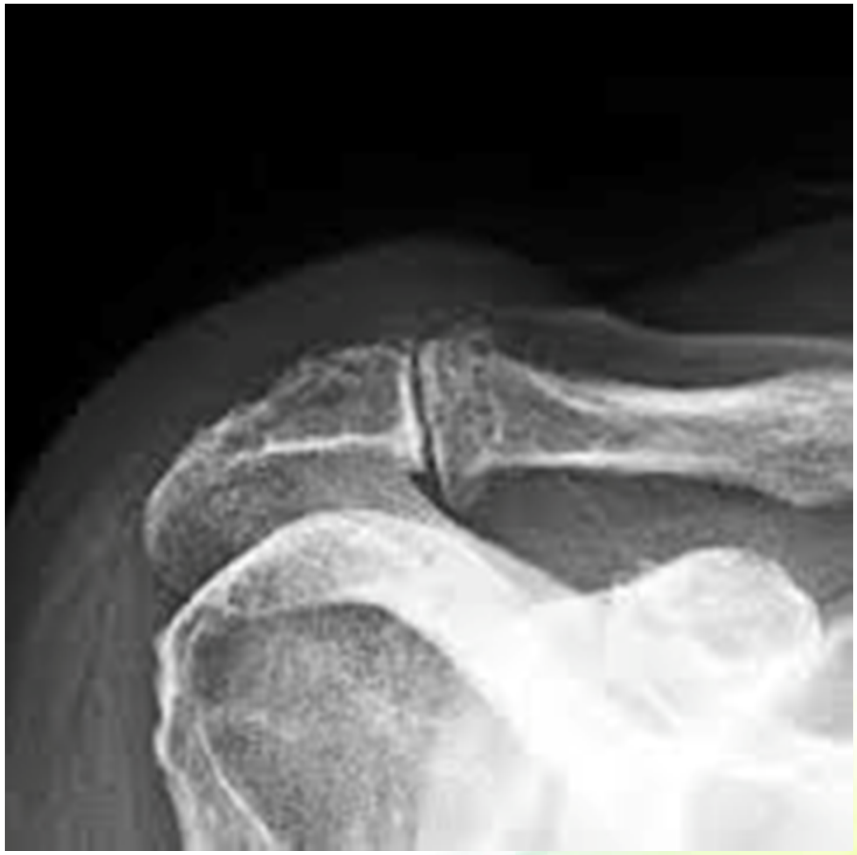

Most middle-aged people have evidence of AC joint arthritis on imaging…. But most people are not symptomatic.

MRI findings: Oedema (inflammation) on MR scan correlates with pain

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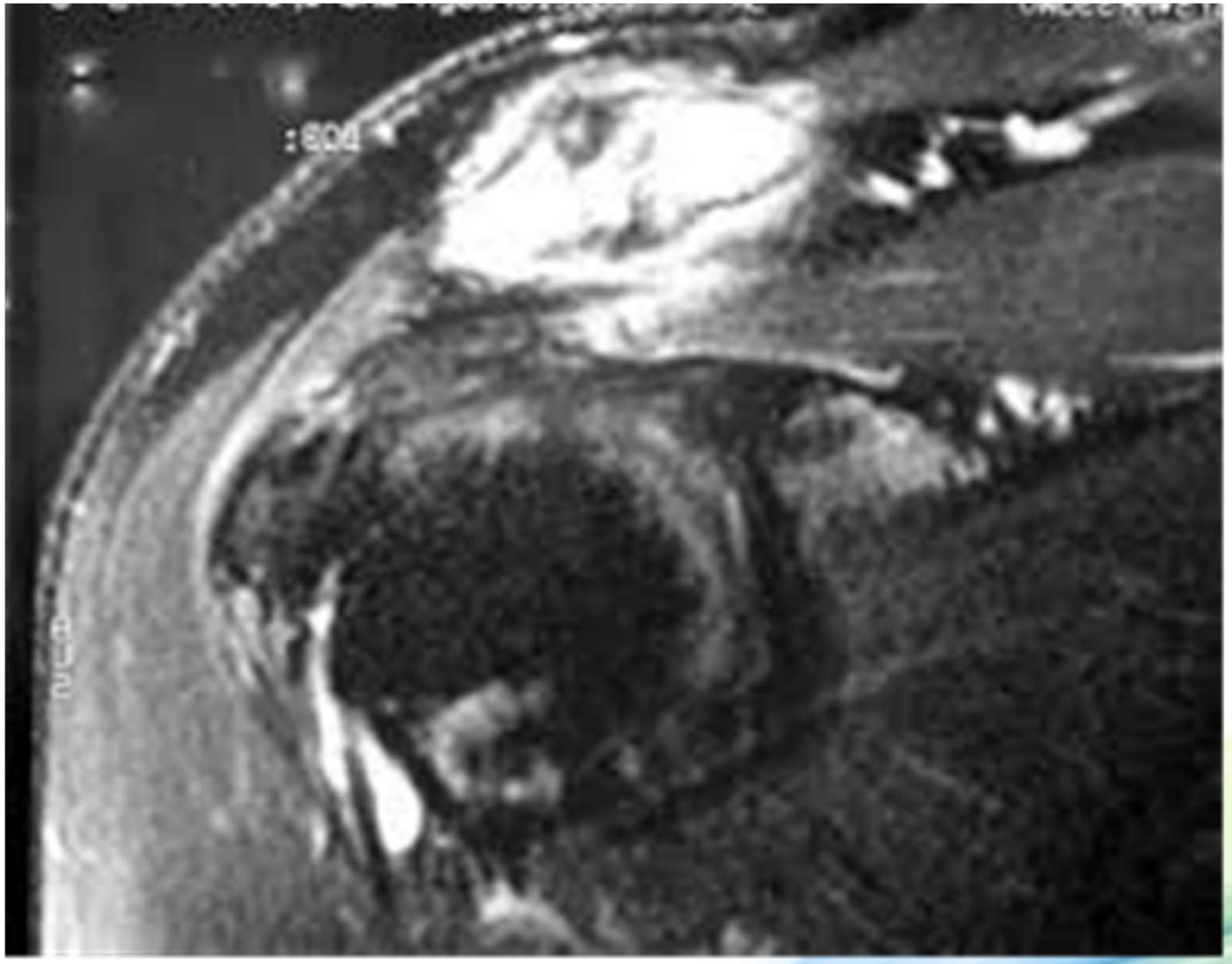

AC joint: Treatment

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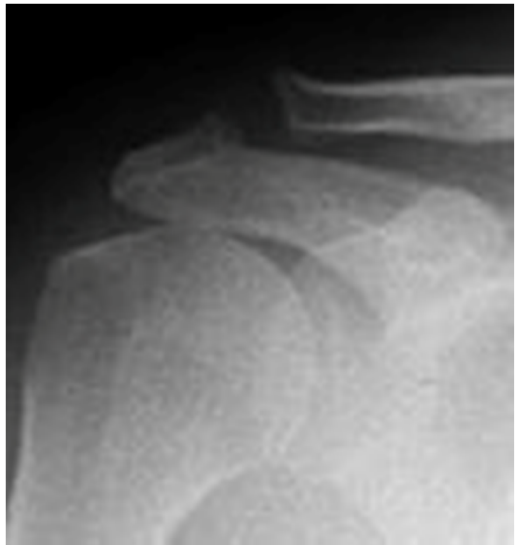
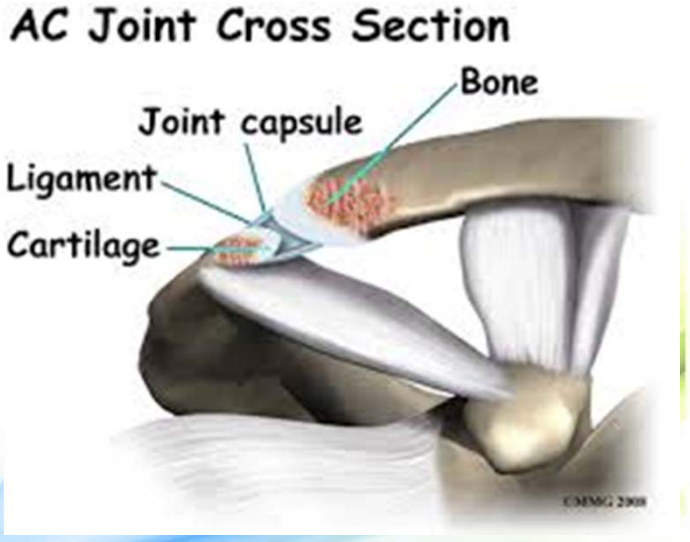
- Analgesics
- Cortisone injections
- Activity modification





- If fail this…..
  Arthroscopic surgery to excise the AC joint

Elbow Pain and Stiffness

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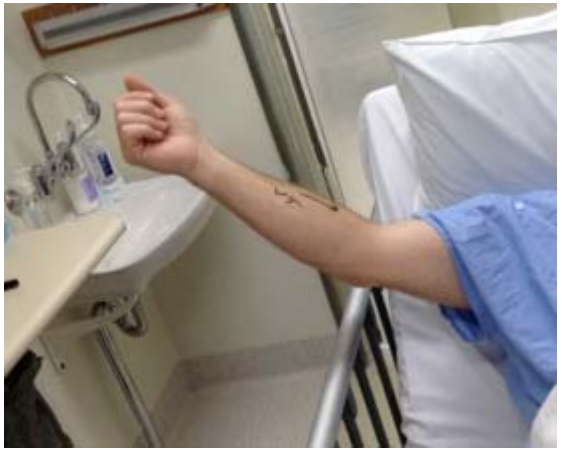
- 45YO MALE INSPECTOR
- NO TRAUMA
- PAIN AT BACK OF ELBOW WHEN REACHING END OF EXTENSION
- STIFFNESS
  - EXTENSION: -40 DEG
  - FLEXION 130 DEG



Likely Diagnosis is……

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1. Tennis Elbow
2. Triceps Rupture
3. Elbow Osteoarthritis
4. Biceps rupture

Likely Diagnosis is……

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1. Tennis Elbow
2. Triceps Rupture
3. Elbow Osteoarthritis
4. Biceps rupture

3 months- better range

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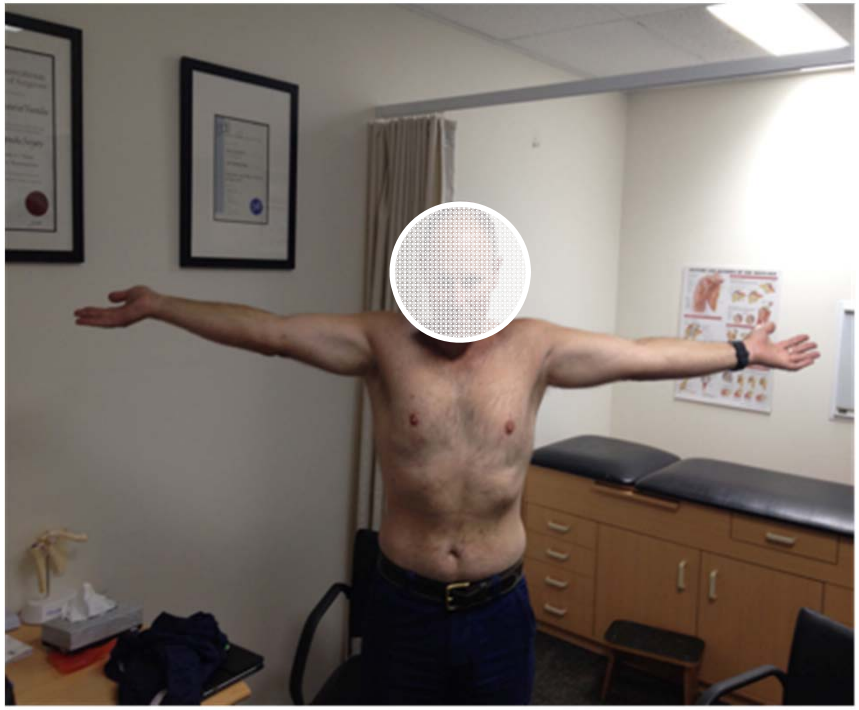

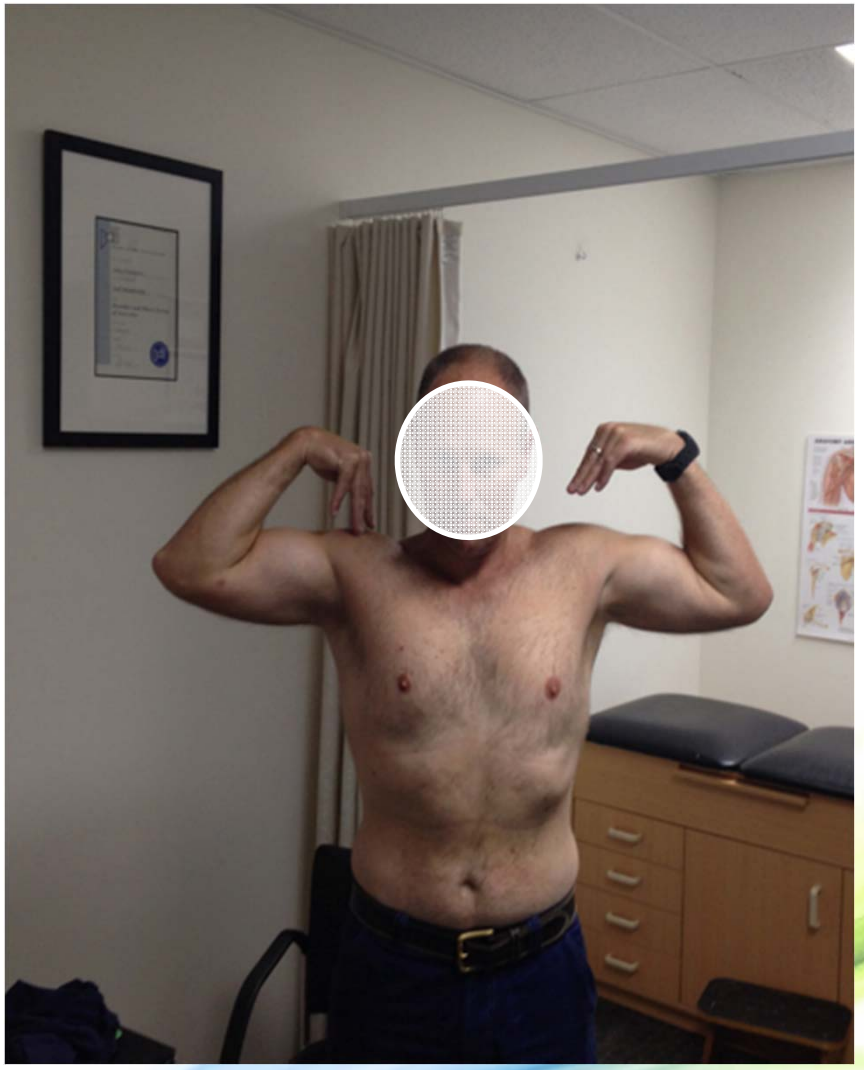

Rotator Cuff Function

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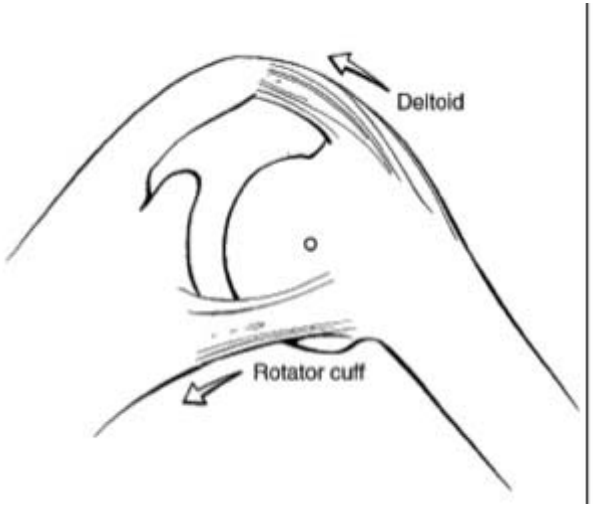
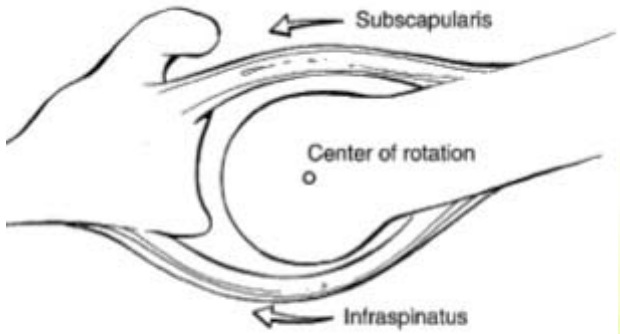
- Humeral head *depressor* / compressor
- RC always co-contracts with the deltoid.
- Deltoid cannot function without the RC





Deltoid contracting alone

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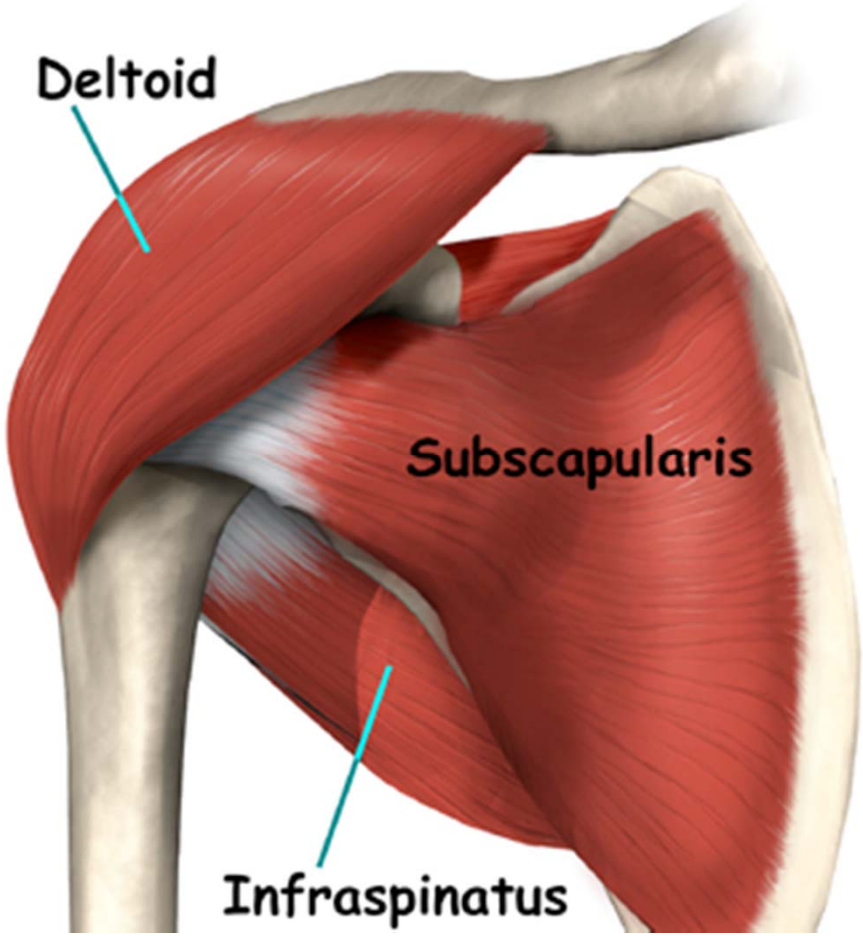

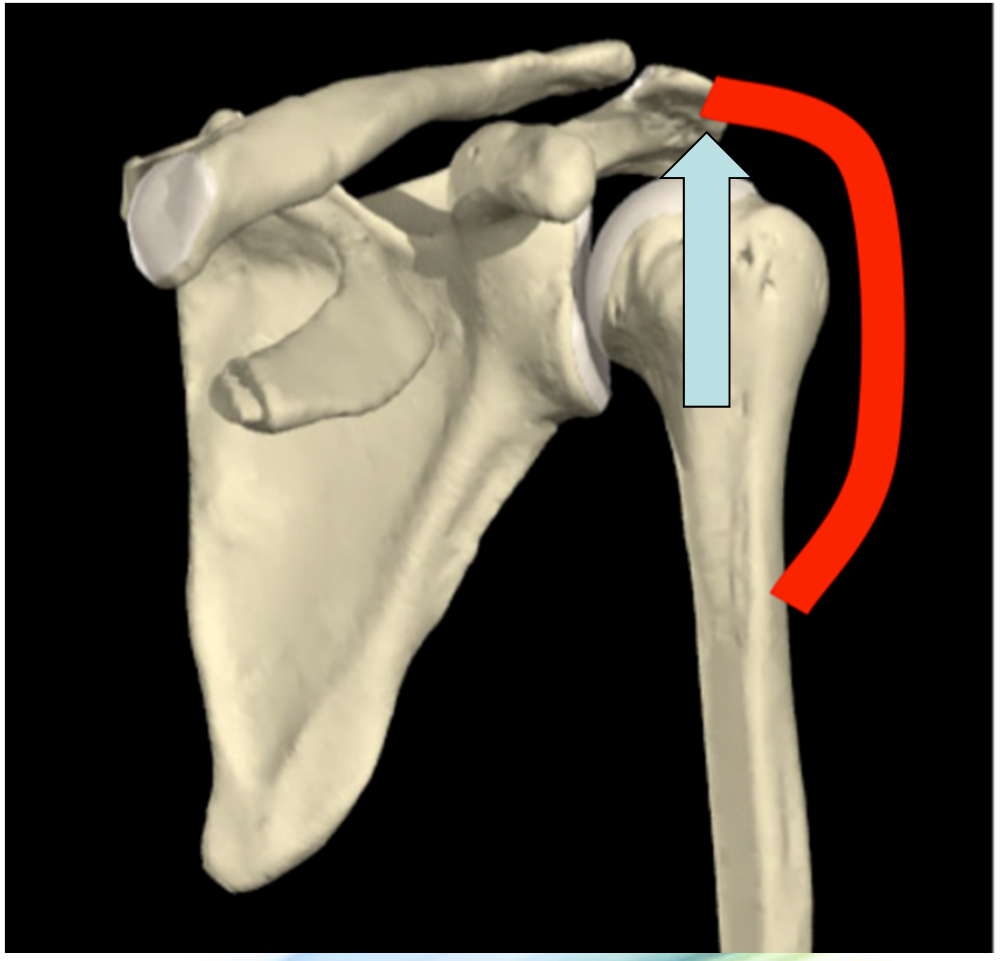

Cantilever EFFECT: Co-Contraction of Deltoid and Rotator Cuff

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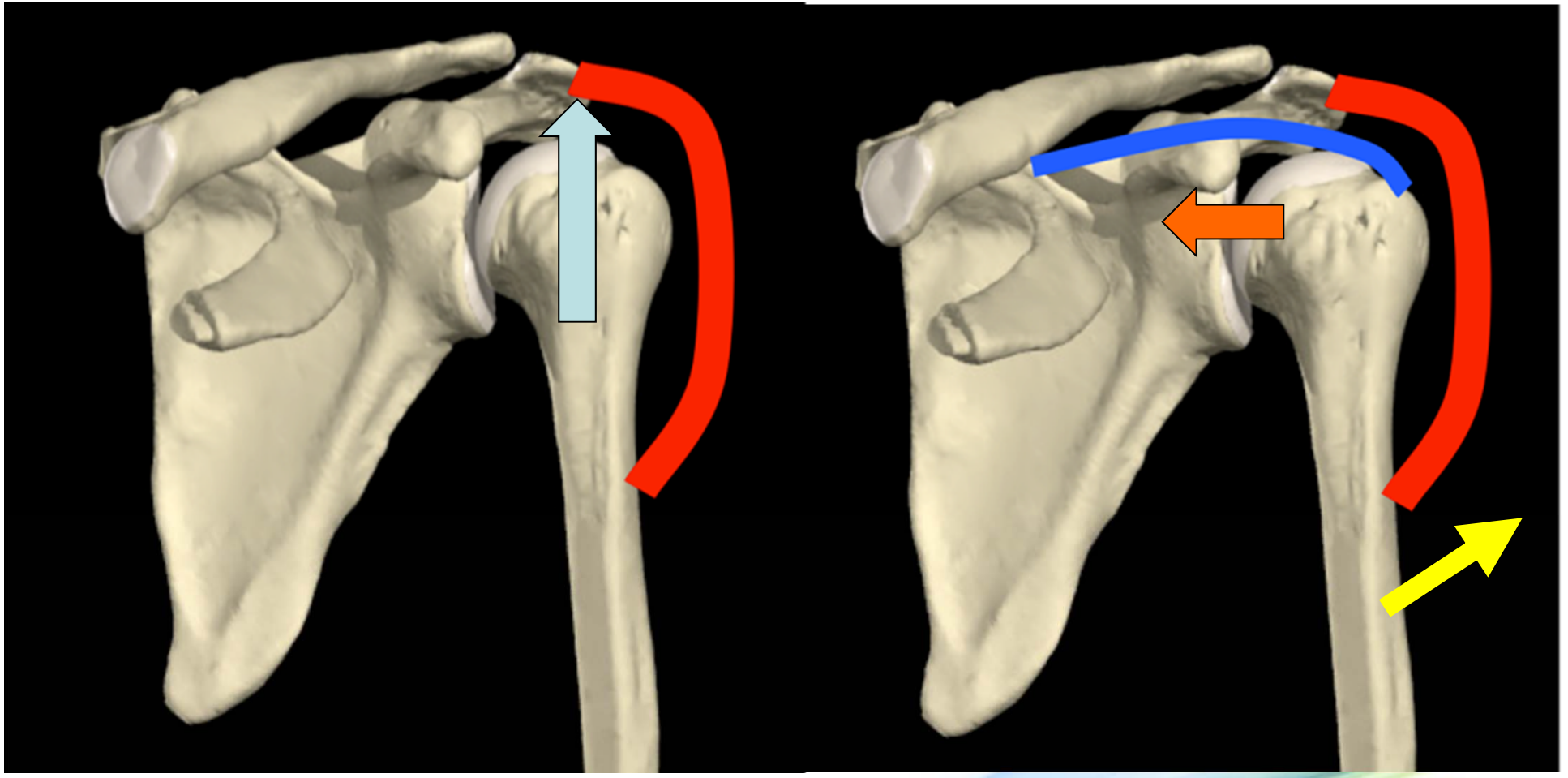

Balanced (Small) v Unbalanced (Large) Cuff Tears

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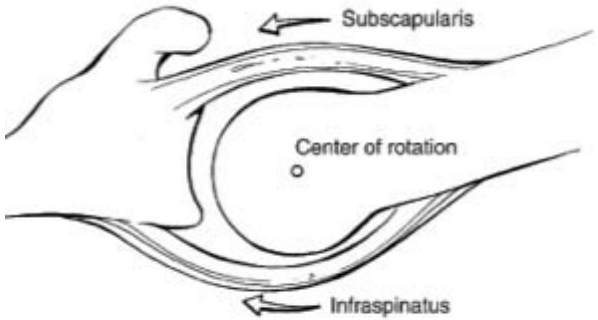
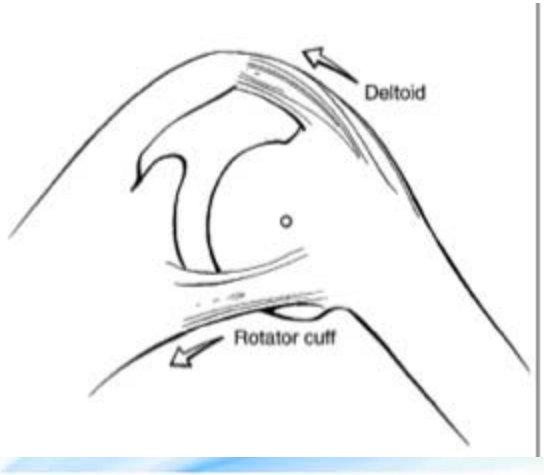
- Small Cuff Tears
  - Cantilever Effect Remains
- Large Cuff Tears
  - Cantilever Effect is lost





Unbalanced CUFF TEARS: Massive Rotator Cuff Tears

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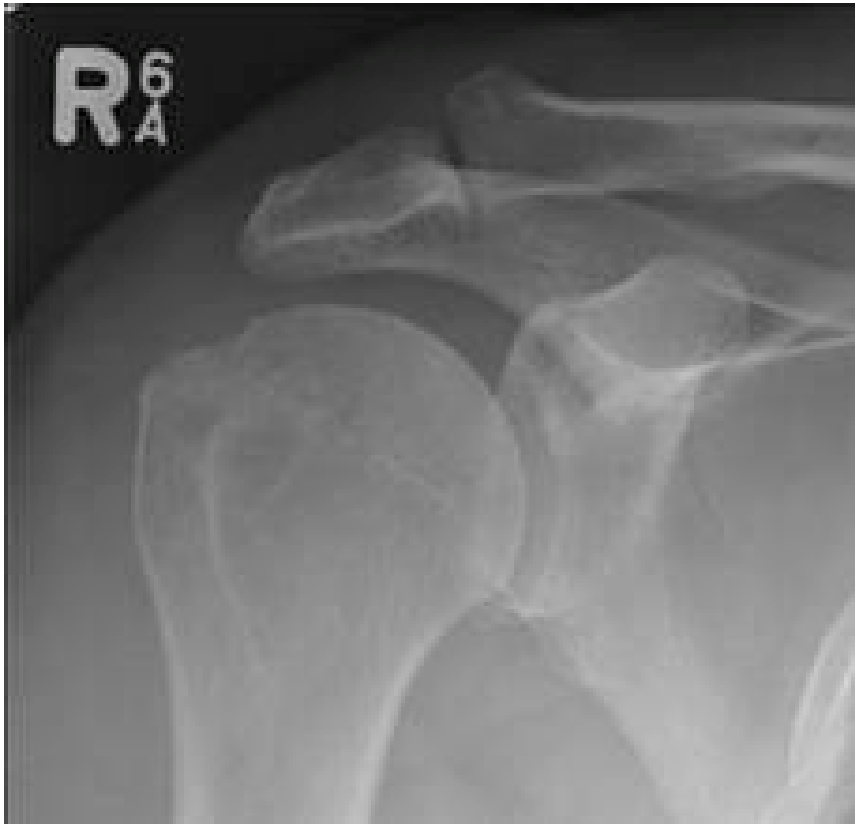
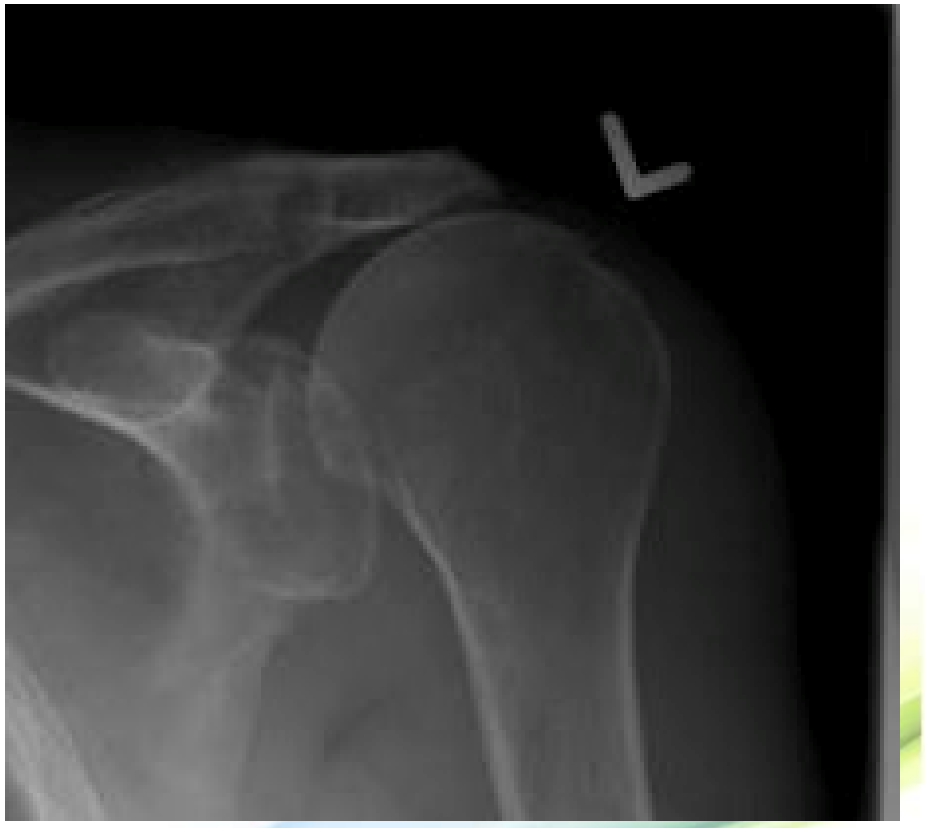
Humeral head in Normal Position



Humeral head is “high riding”



Consequences of a Massive Unbalanced Cuff Tear → Cuff Tear Arthropathy

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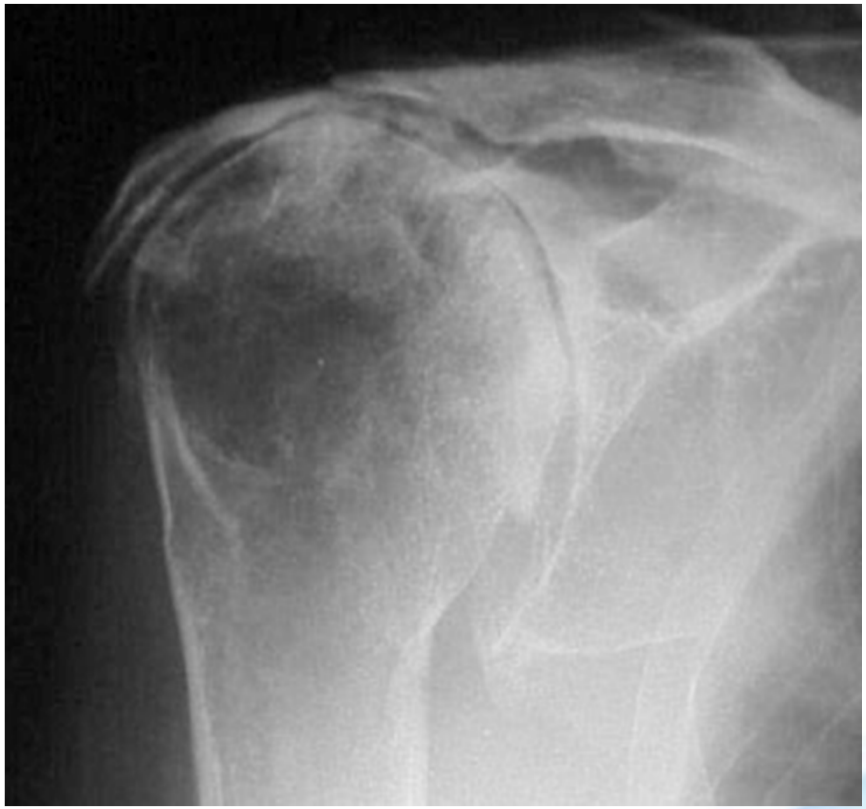

When should a patient with a Rotator Cuff Tear be offered Surgery Early?

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- MASSIVE CUFF TEARS
  - Middle Aged Patient After a Shoulder Dislocation
  - Shoulder Injury Leading to Loss of Ability to Lift Arm Above Head

Why is this surgery so “urgent”?

What happens to the tendon and muscle after a cuff tear?

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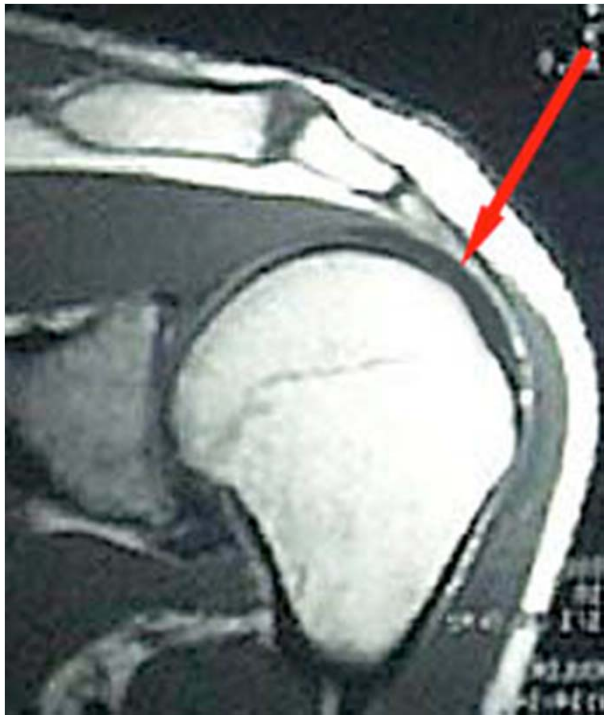
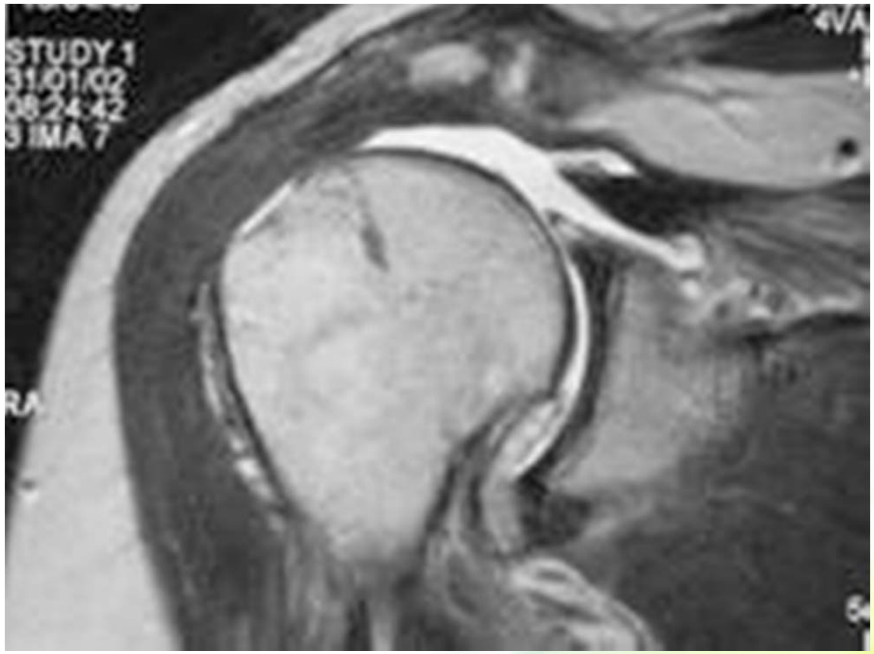
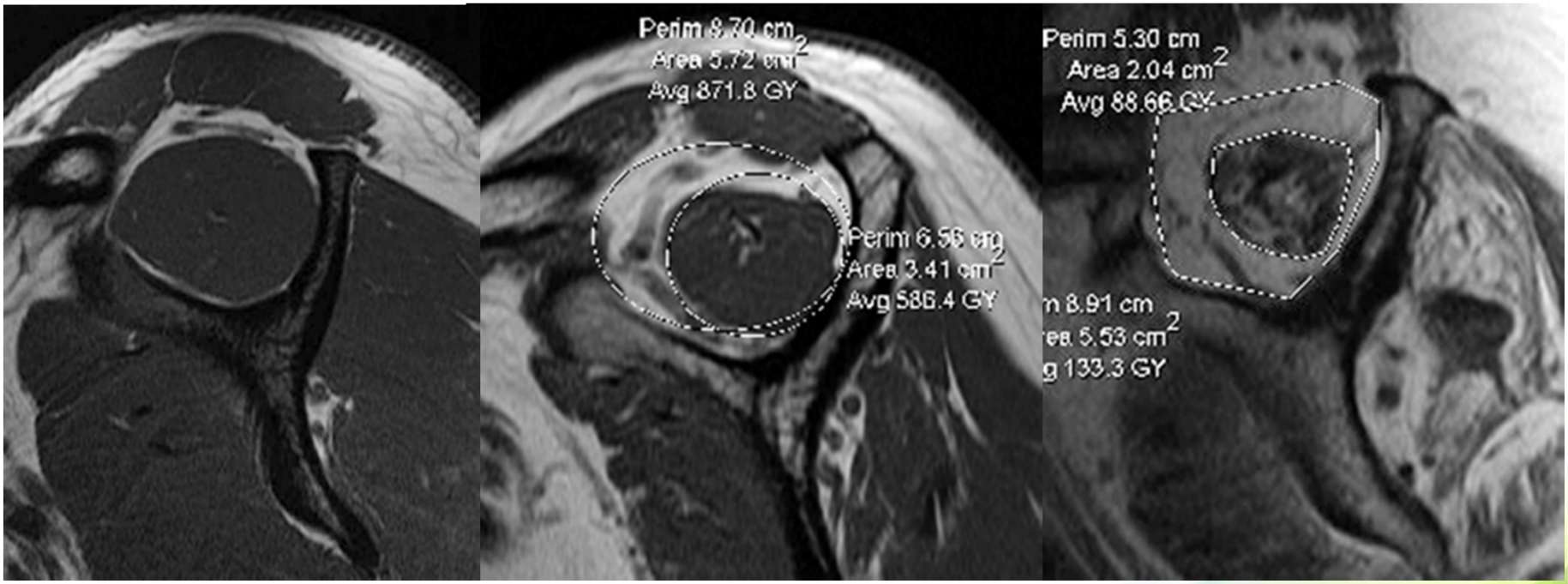
- Tendon - contracts and shortens
- Muscle belly - Turns into fat
- These changes
  - Are IRREVERSIBLE
  - occur rapidly within 12 weeks

Tendon Retraction with Large Cuff Tears





Muscle Wasting and Fatty Infiltration



Significance of these Irreversible Cuff Changes

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- Lower the chance of a successful outcome with surgery.
- Early repair of the rotator cuff → stops the progression of the changes

What is a REVERSE Shoulder Replacement? Ball and Socket Reversed.

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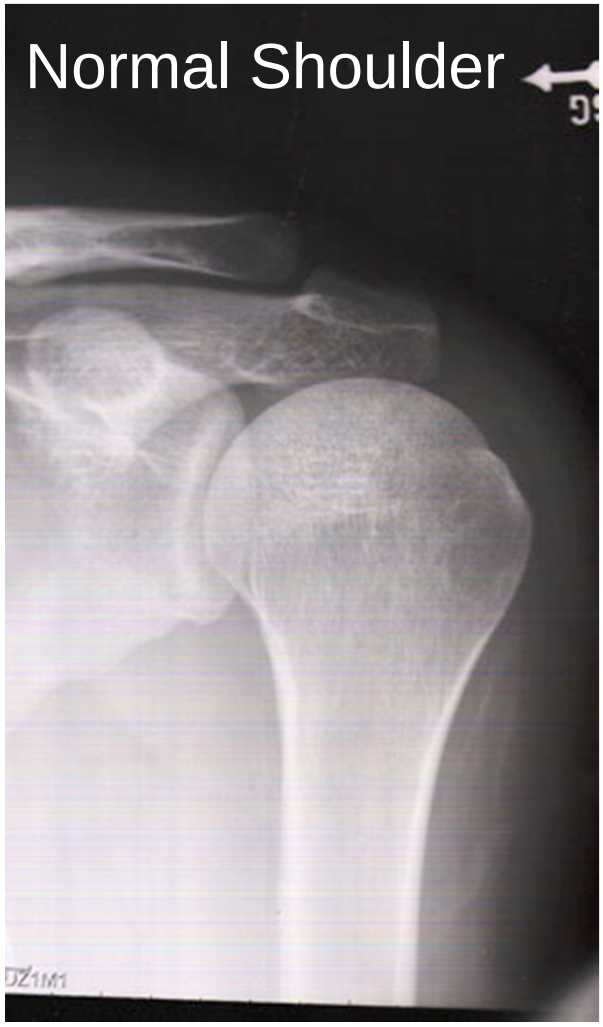

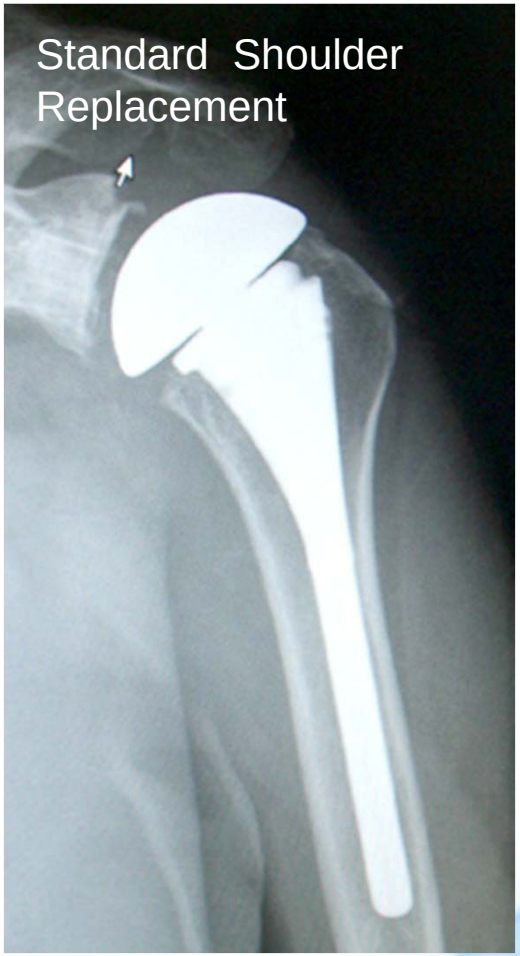

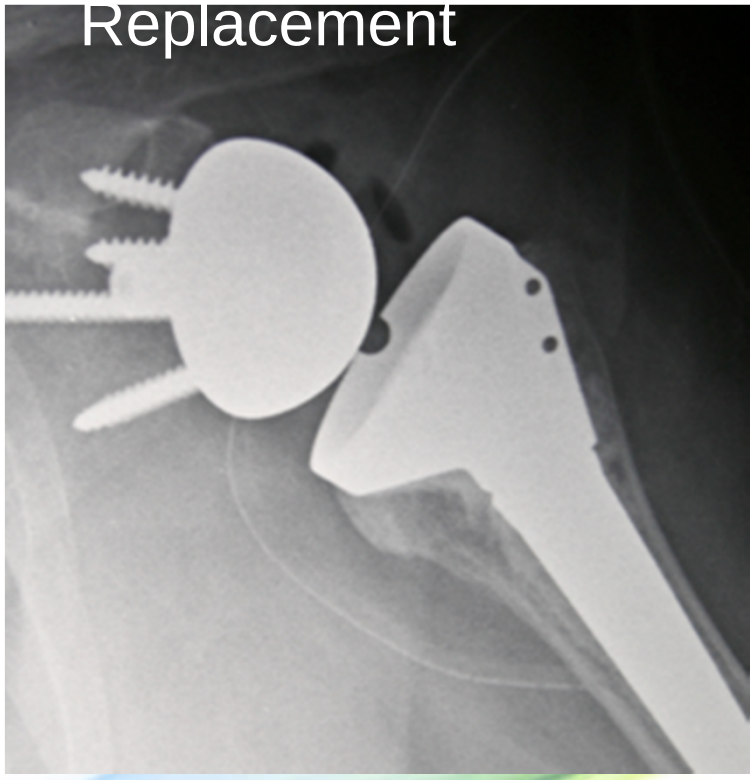

Reverse Total Shoulder Replacement: For elderly patients with massive torn cuffs

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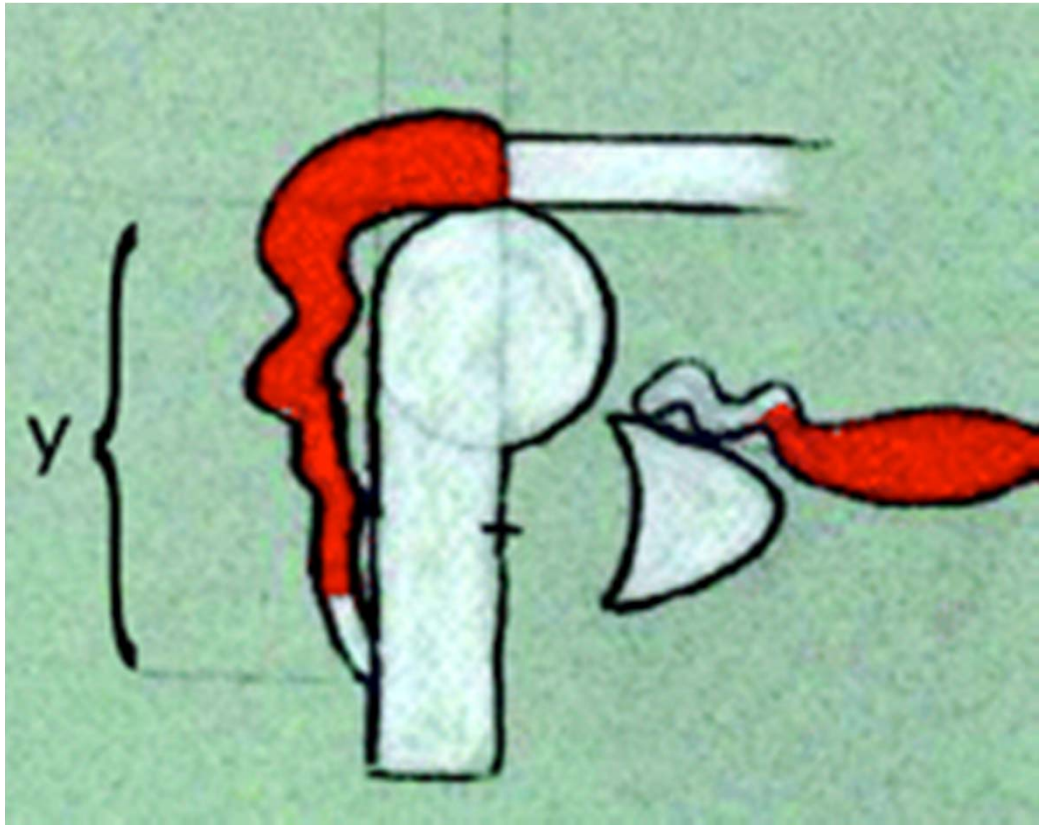

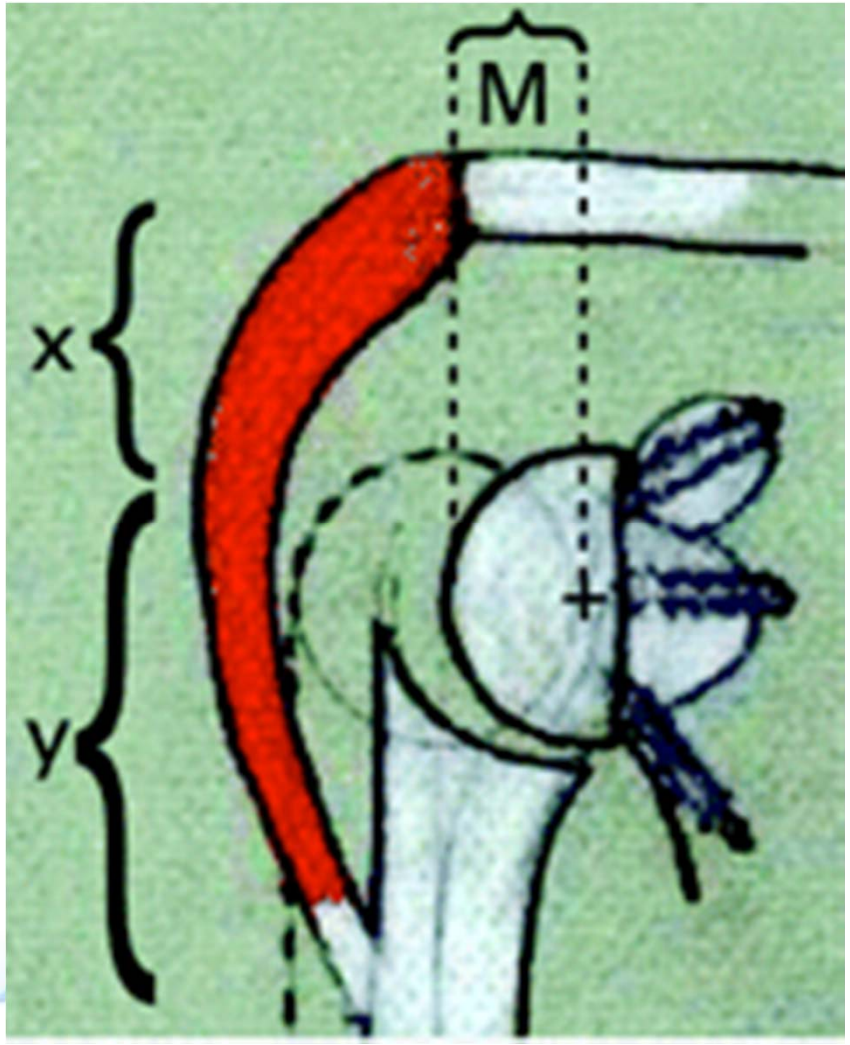

Stitch cuts through tendon like cheesecutter because of high tension (before it has chance to heal)

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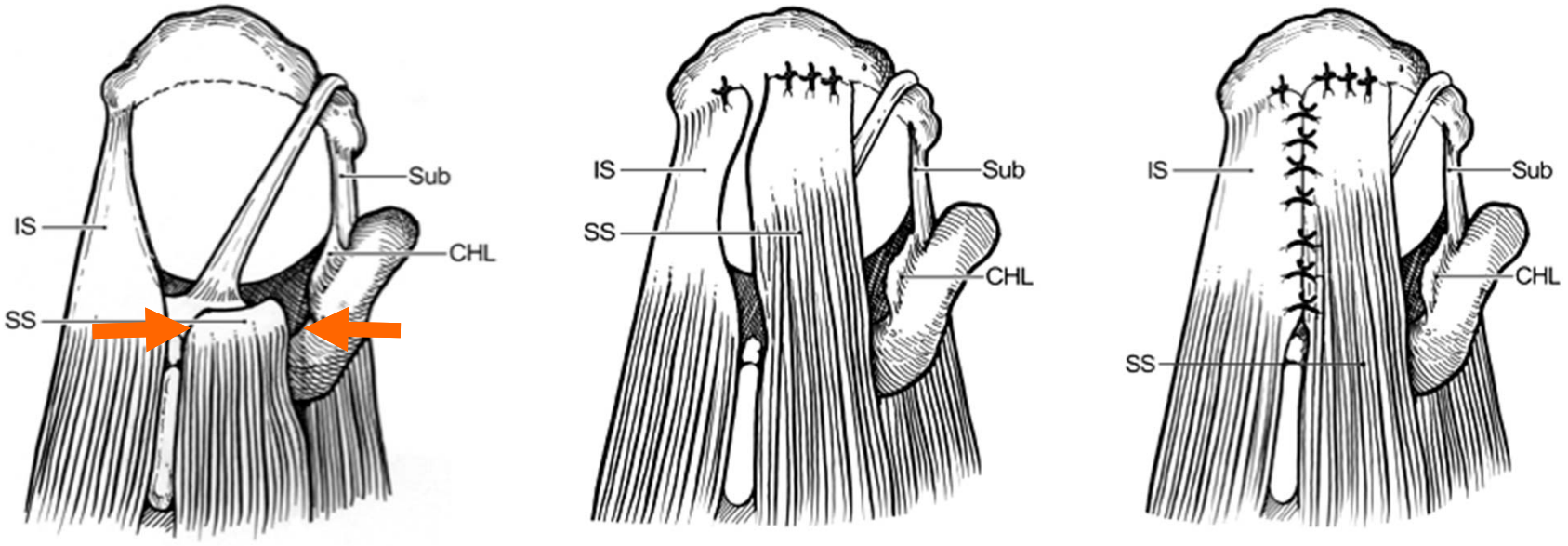
Tension is The ENEMY!!!!

How Can We Decrease Tension with Massive, Contracted Tears?

- Double interval slide: anterior interval slide + posterior interval slide



Release the scar tissue between tendons to allow a lower tension repair

Advanced Arthroscopic Technique:

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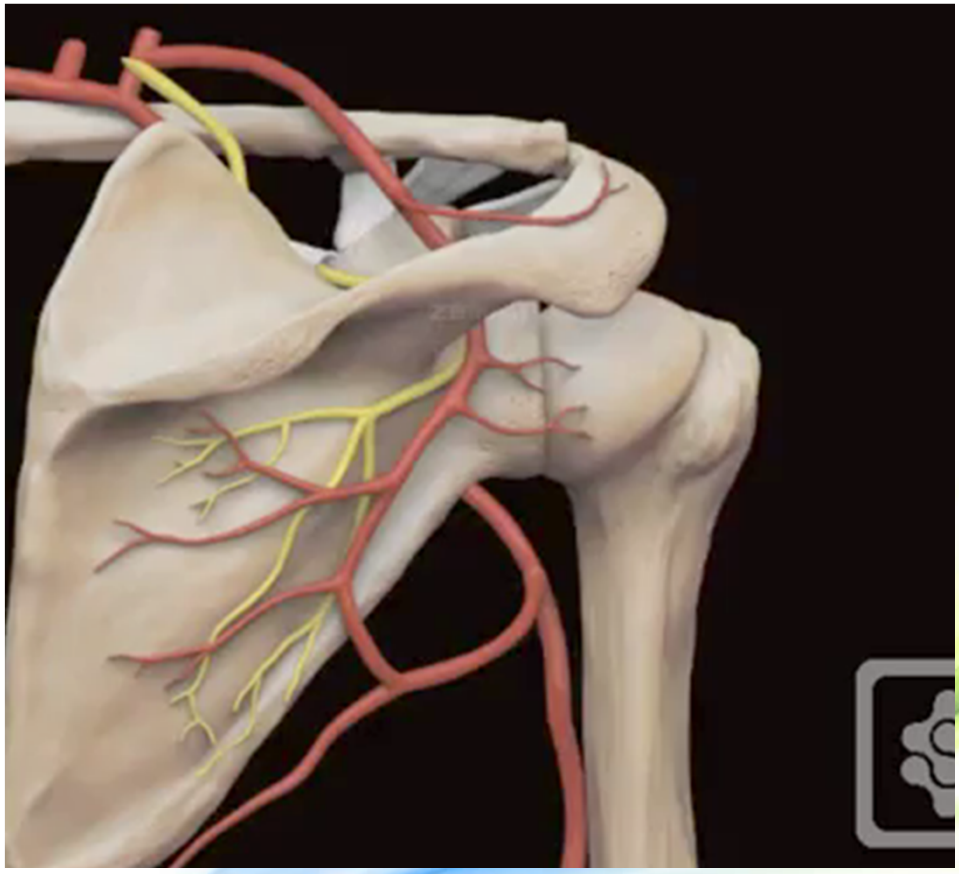
- Suprascapular Nerve and Artery
- Time consuming:
  - + 2.5 hours



Case Example: 54yo Massive Acute on Chronic Cuff Tear

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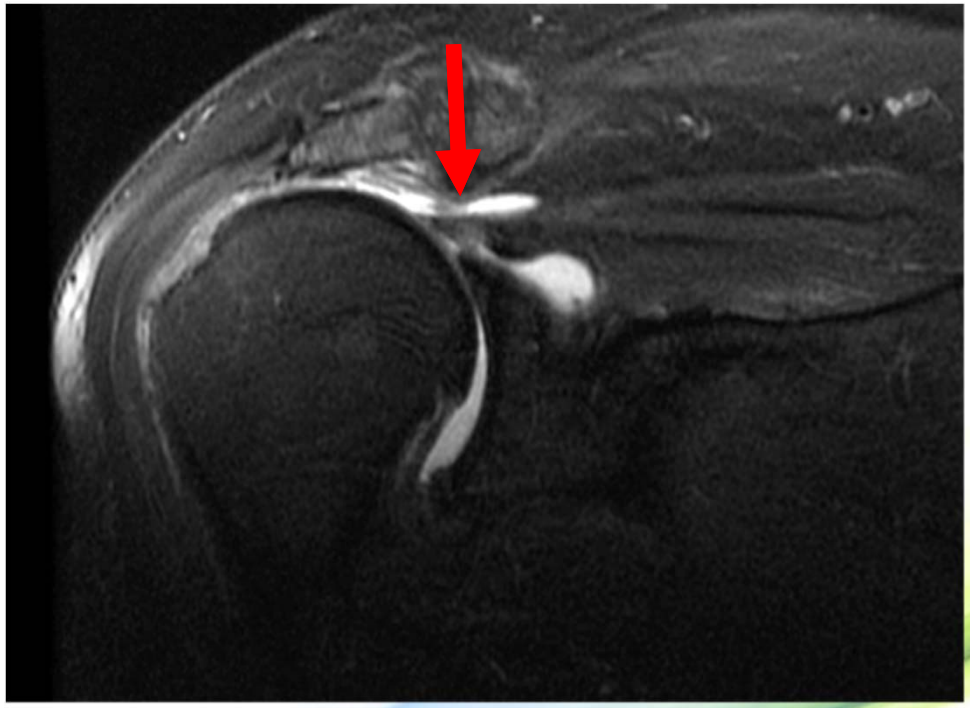
- Injury 3 months ago
- Normally active, Otherwise well
- Stopped smoking for surgery
- Exam
  - Pseudoparalysis
  - Very Weak ER and Bear Hugger



Early Muscle shrinkage and Mild Fatty Change all 3 muscles

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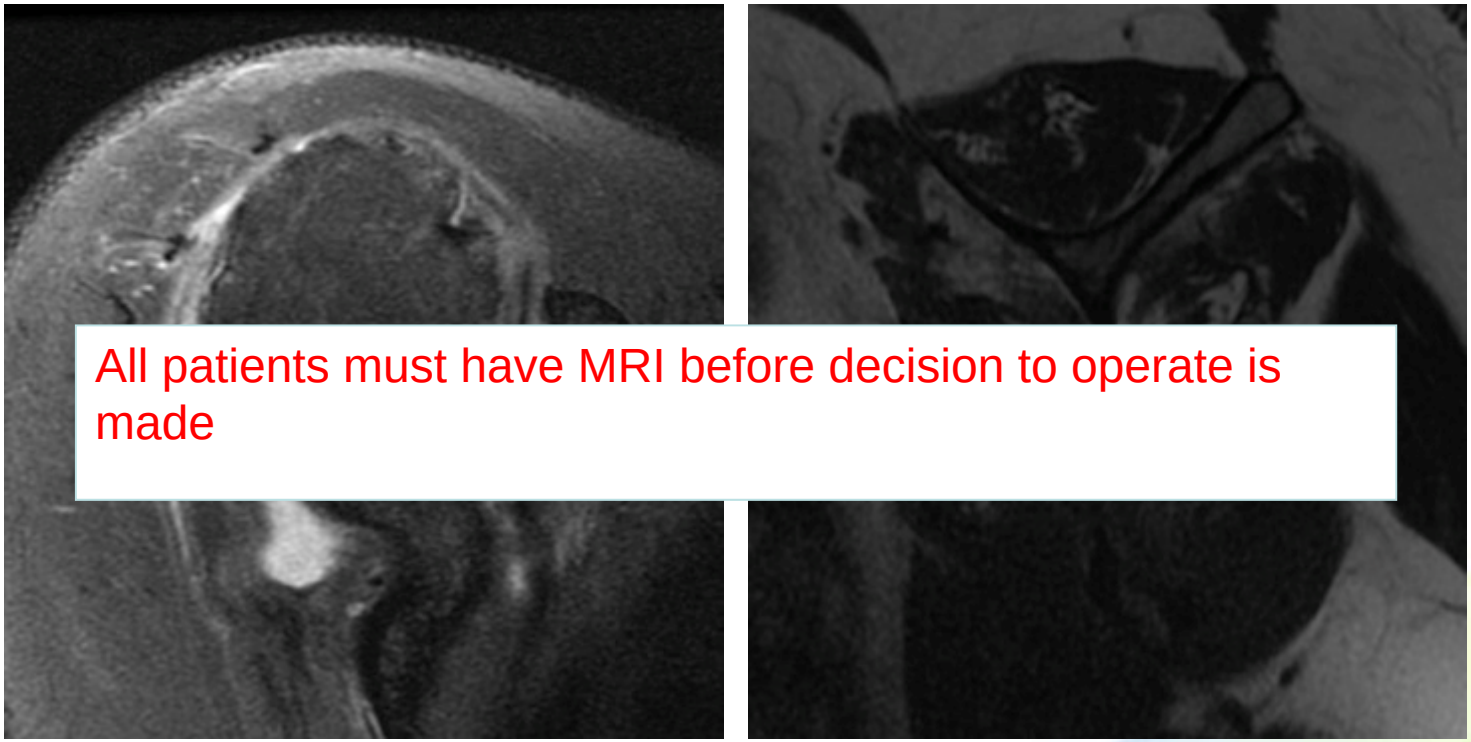

All patients must have MRI before decision to operate is made

Advantage of Double Row Over Single Row: Surface Area of Healing

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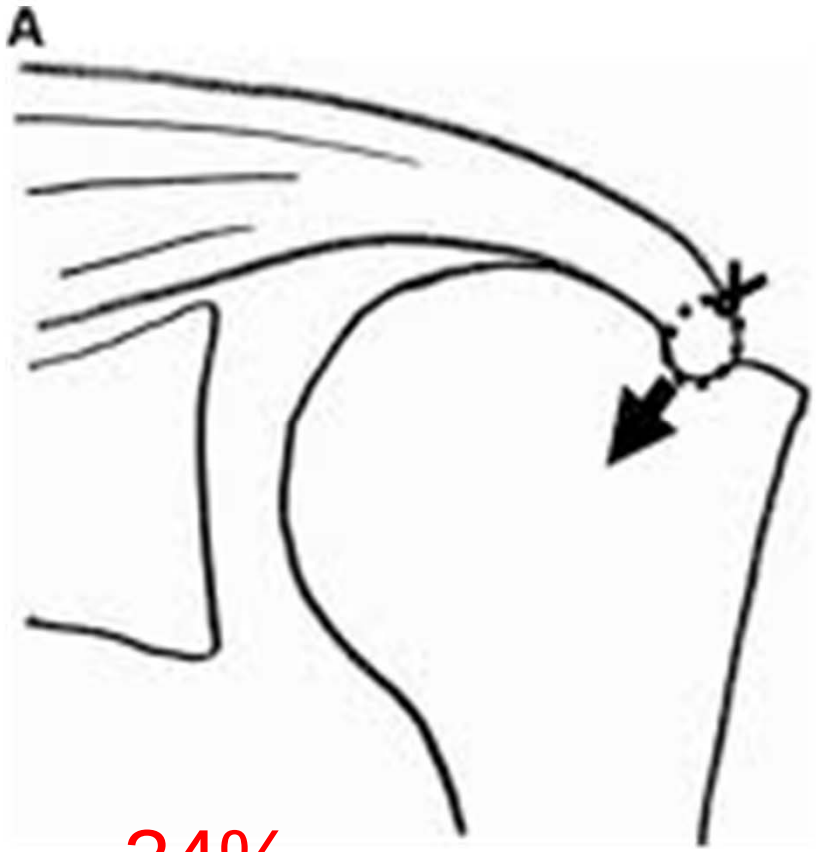

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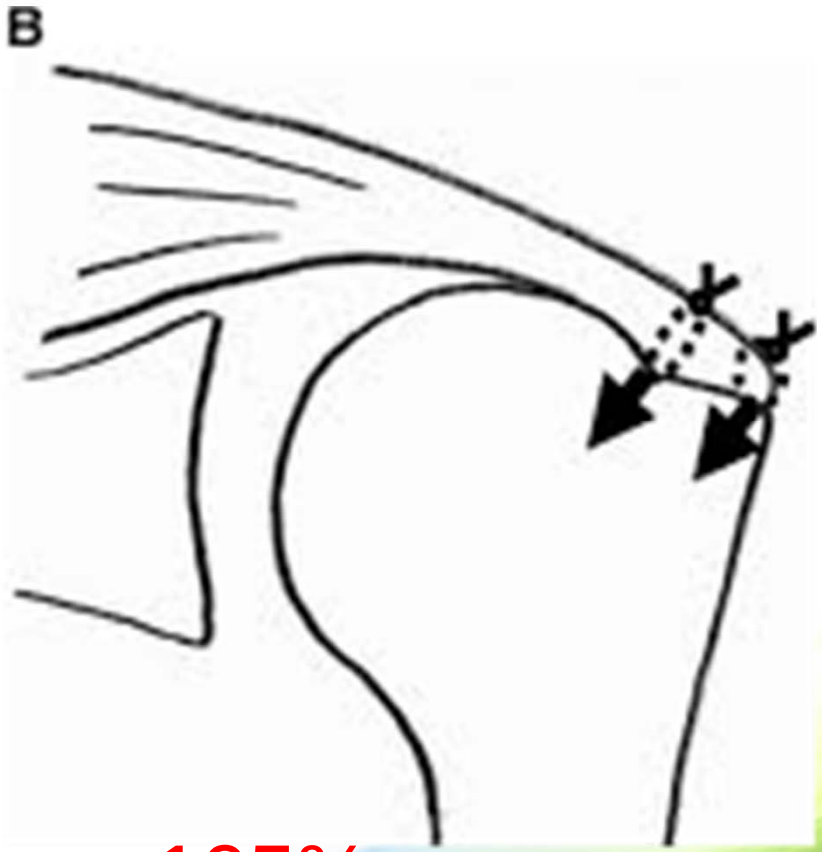

105%

Arthroscopic versus Open Shoulder Surgery

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- Arthroscopy more technically demanding
- Less Pain
- Lower Infection Rate
- You cannot do interval slides with open Surgery

What can we do if the horse has well and truly bolted? (Cuff Tear Arthropathy)

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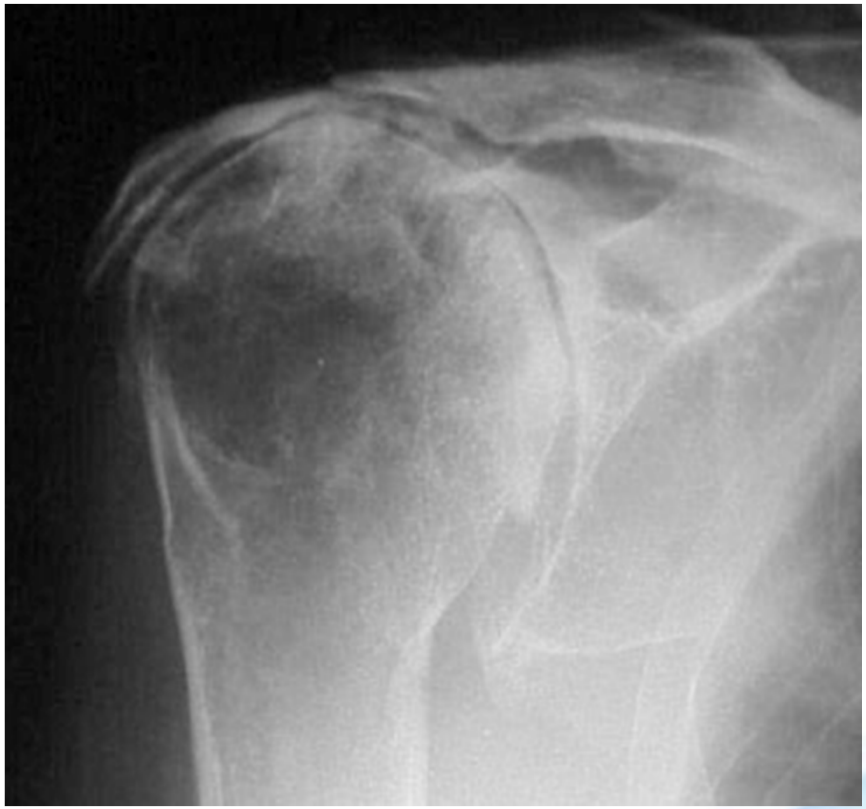

Joint Replacement in Cuff Tear Arthropathy

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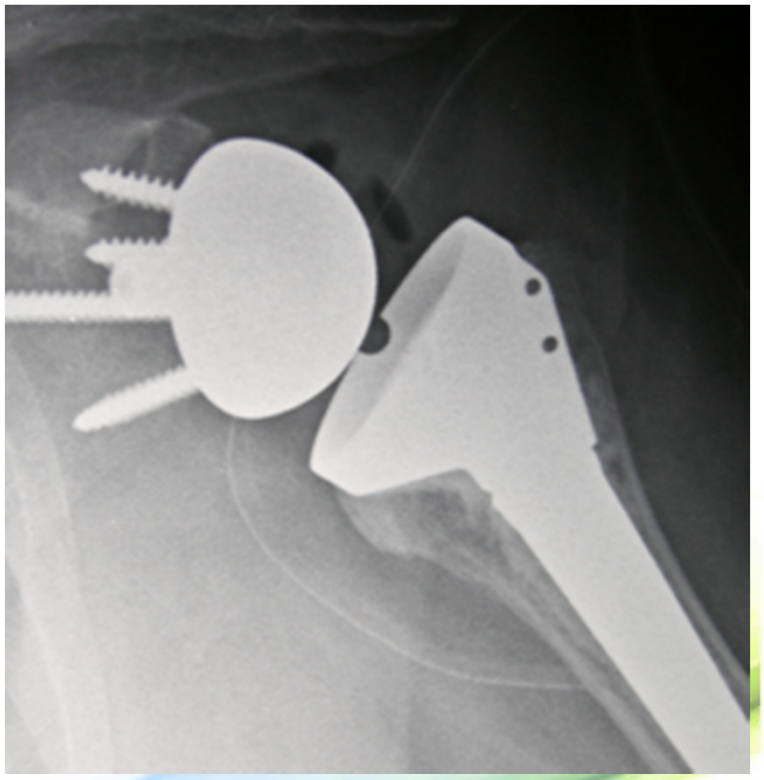
- Reverse Total Shoulder Replacement

- Good for improving pain AND active motion



Either Frozen Shoulder or Osteoarthritis…. Need proper xray

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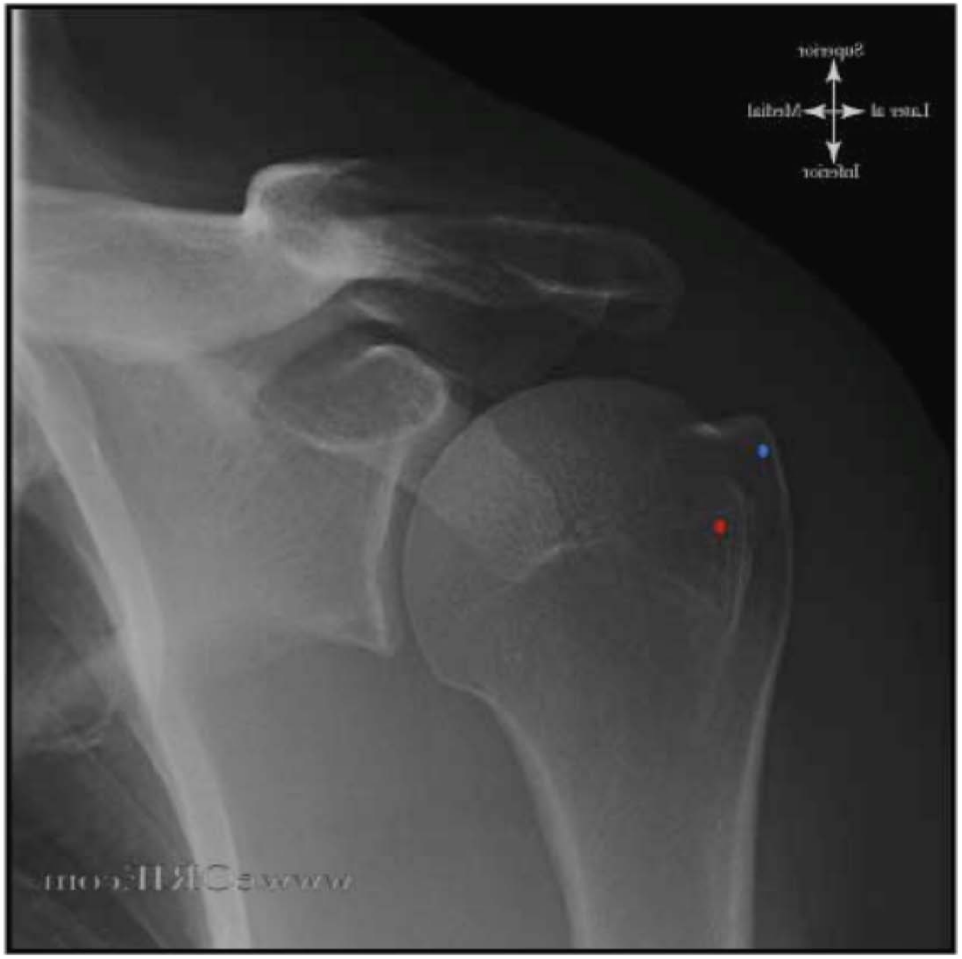

Normal Glenohumeral joint space→

Frozen Shoulder

A good and bad xray

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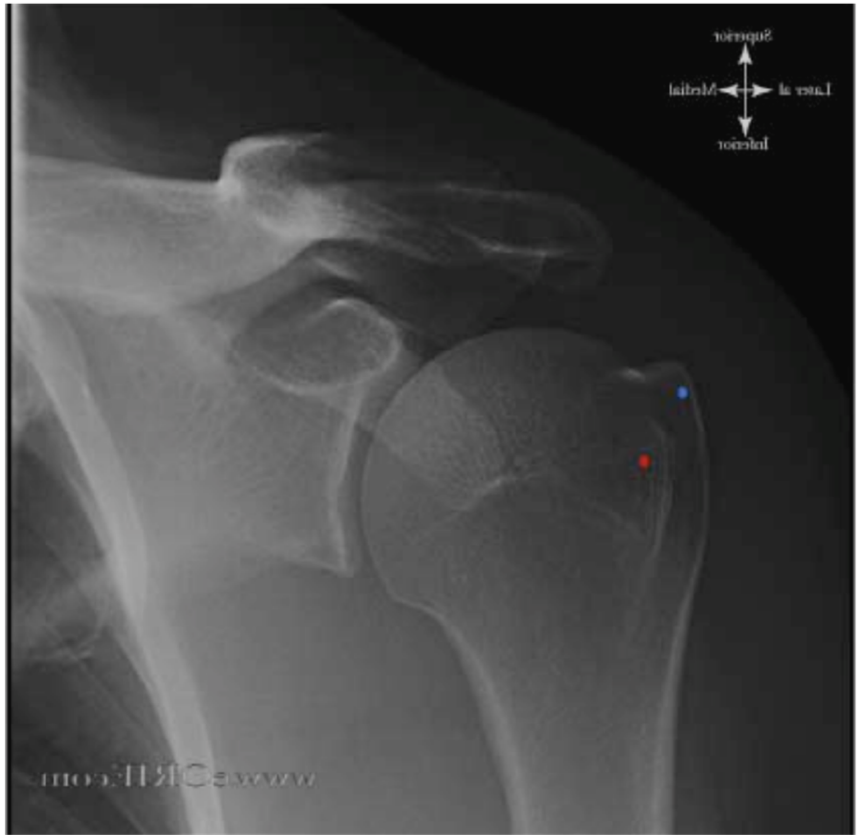
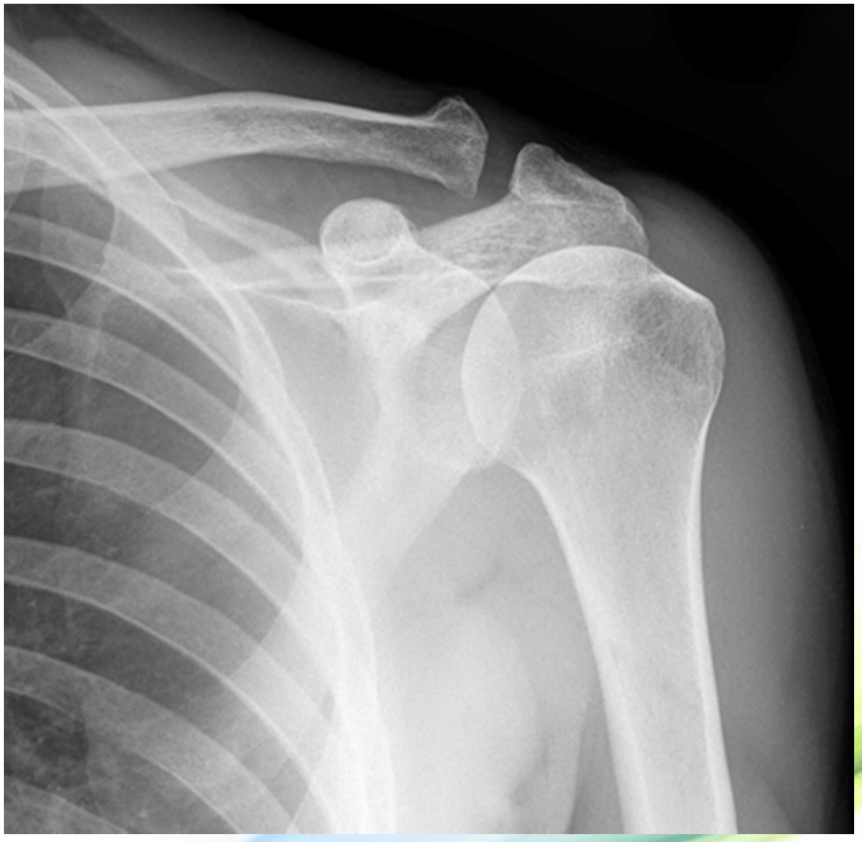
Good Xray of GH jt



Poor Xray of GH jt



OA in GH joint

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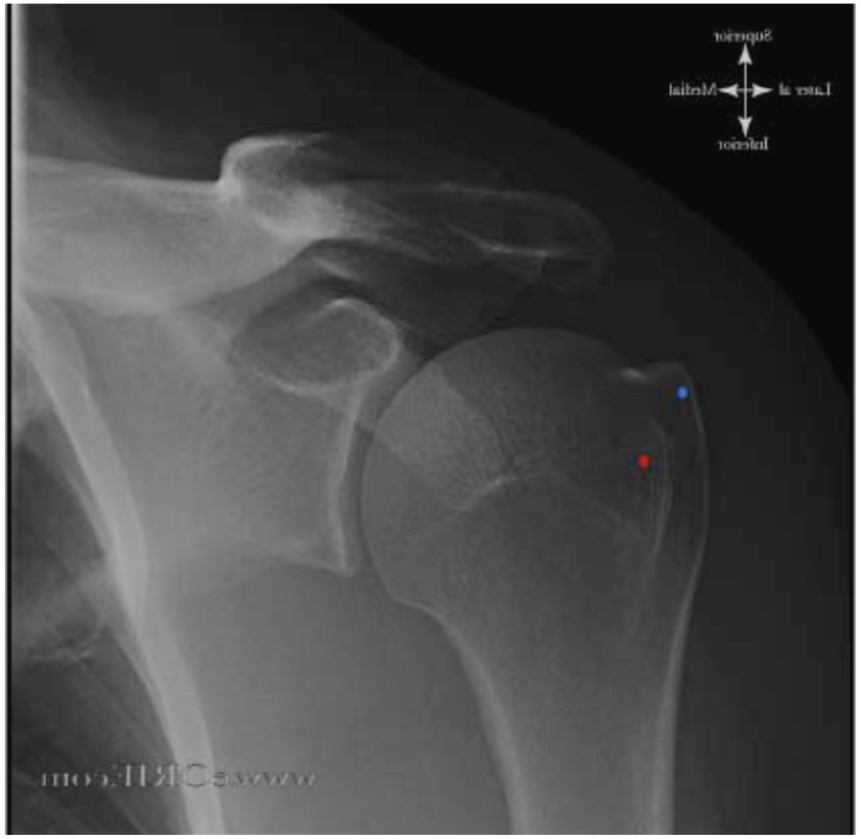
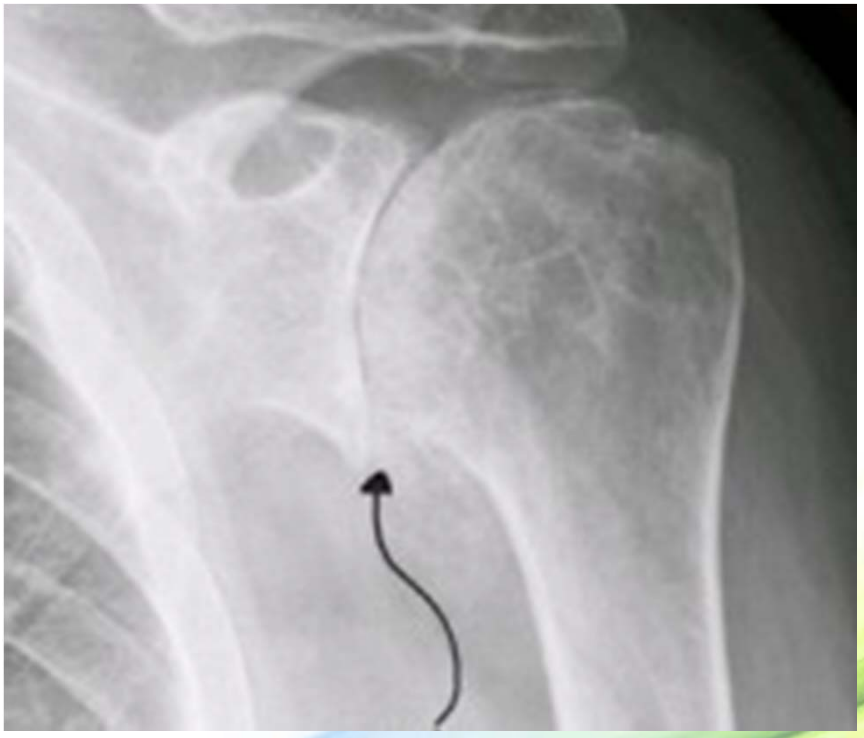
No OA



OA of GH jt




Lake Louise,
Alberta, Canada
Thank You