



# Relieving Shoulder Pain:

## Treatment Innovations for Rotator Cuff Injuries

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# The shoulder and the cuff: 100 years in one hour





UC  
IRVINE



Medicine



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# Tonight's Goals

- Highlight importance of the cuff
- Understand the normal shoulder and cuff
- Understand the abnormal cuff
- Treatment strategies
- Sprinkle in some science
- Recognize the controversies
- Take questions from online audience

# Why so important?

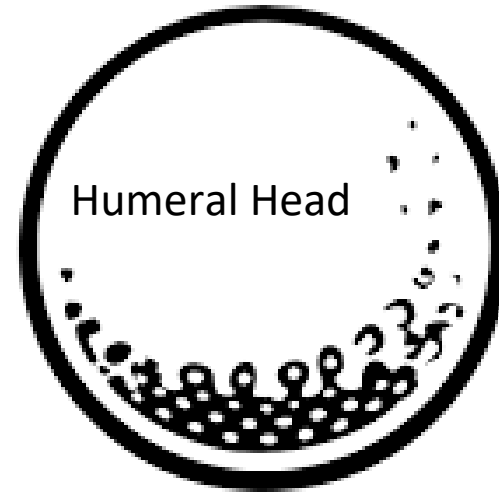
- Painful shoulder
- “Soft parts between the bones”
- Incidence of tears 40-60% between ages of 40-60
- Affects work, play, and sleep
- Affects activities of daily living (ADLs)

# Normal shoulder

Synovial Joint/Ball Socket



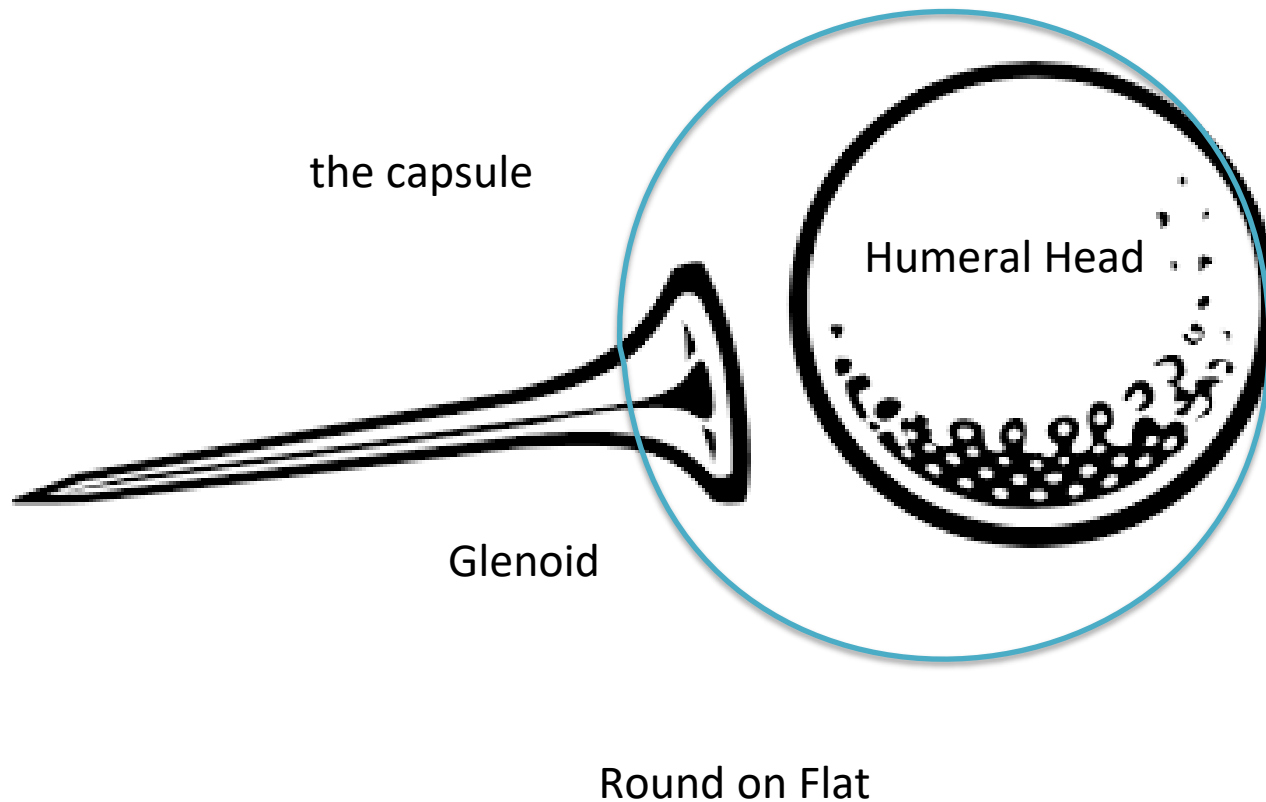
Glenoid



Humeral Head

Not the HIP

# Normal shoulder is balanced



# The Musculature





# Tendons

- Outside the capsule are the tendons of the rotator cuff.
- Tendons are where muscles attach to bone.
- Muscle pulling on bones through tendons produces movement at joints.



# Shoulder: Coupled Forces

- Forward Flexion matches Extension
- Abduction matches Adduction
- External Rotation matches Internal Rotation
- The cuff balances the shoulder
- Keeps the golf ball on the tee



# Rotator Cuff Function

- Supraspinatus=abduction
- Infraspinatus=external rotation
- Teres Minor=external rotation
- Subscapularis=internal rotation
- S.I.T.S. balances the shoulder



# Cuff: Injury Types

- Strain
- Cuff tendinitis
- Cuff bursitis
- Partial tear
- Full Thickness tear
- Massive +/- fatty atrophy and infiltration
- Calcium deposits

# Causes of Cuff injury



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# Life Miles



# Accidents or Trauma



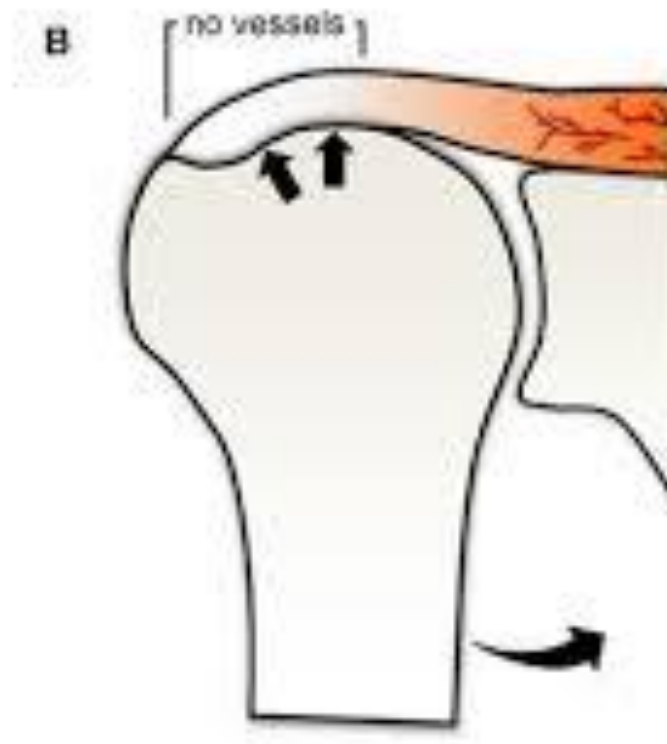
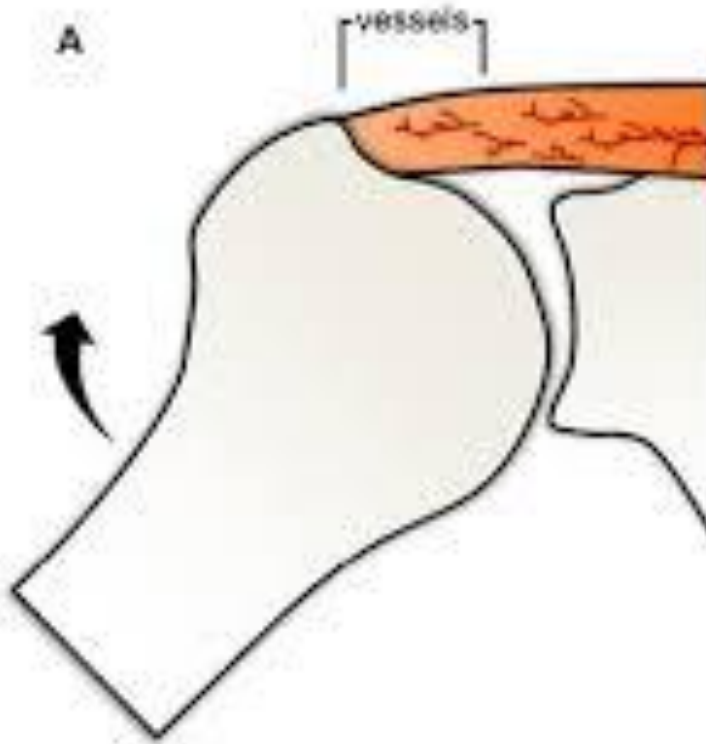
# Impingement of the Shoulder





# Watershed Zone

## Intrinsic Factors



# Causes of Cuff Injury: Recap

- Age
- Trauma
- Mechanical impingement
- Intrinsic biology



# How do cuff tears cause pain?



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# Pain

- General inflammation
- Bursitis
- Capsulitis
- Imbalance of the shoulder. Spasms.
- 40% of cuff tears can have NO symptoms
- 90% surgical success rates with 40% re-tears on imaging



How do I know that I have a  
cuff tear?

# History

- Provider interview
- Detailed story
- When do you have pain
- Where do you have pain
- Age
- Occupation
- Sports
- History of accumulated trauma

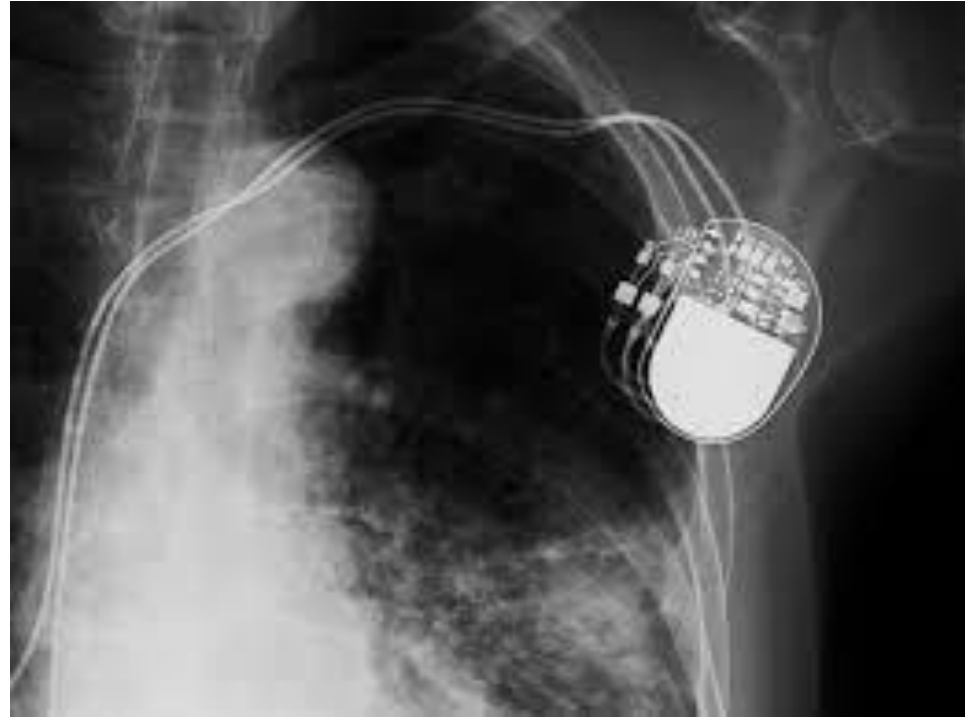
# Physical Examination

- Postural exam
- Muscle development
- Shoulder examination
- Provocative tests
  - Empty can, Jobe, Belly press, Bear hug, Lift off, Lag



# Imaging

- Xrays
- Ultrasound
- MRI
- Needle scopes
- CT arthrograms



# Xrays

- Often normal
- Acromial spur

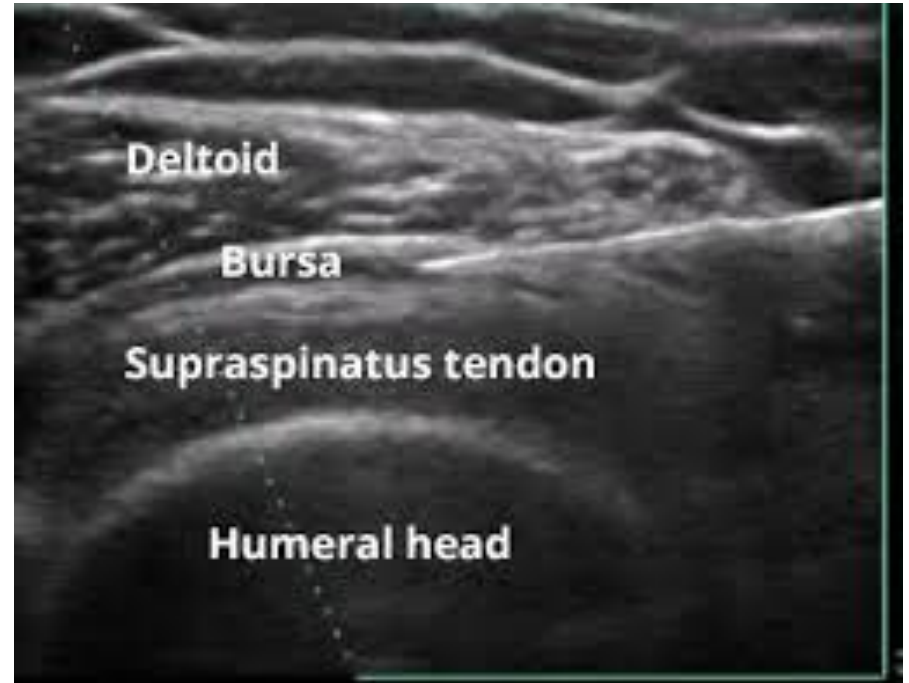


Subacromial spur



# Ultrasound

- Gaining acceptance in United States
- Popular in Europe
- Comparable to MRI



# MRI

- Amazing images
- Accurate
- Comparable to Ultrasound



# Now What?

- Detailed story
- Thorough physical exam
- Complete imaging
- Diagnostic accuracy
- I have a cuff tear

# As a patient....

## What to ask your provider

- Natural history of cuff tear
- Partial or Full thickness? Severity?
- Common interventions
- Treatment outcomes
- What would you do if this were your shoulder?
- Am I affected by pain or dysfunction?
- S.A.N.E

# Treatment Strategies

- Treat the pain OR treat the dysfunction
- What are my goals? short, mid, long term
- Do I have 6 months to rehab?
- Can I be in a sling for 6-8 weeks?



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# Treatment

- Tincture of time
- Physical therapy
- Injection- Steroids, PRP, Prolo, Stem cells
- Surgery- smooth or fix
- Revision surgery- re-fix, SCR, In-Space
- Patient education and understanding

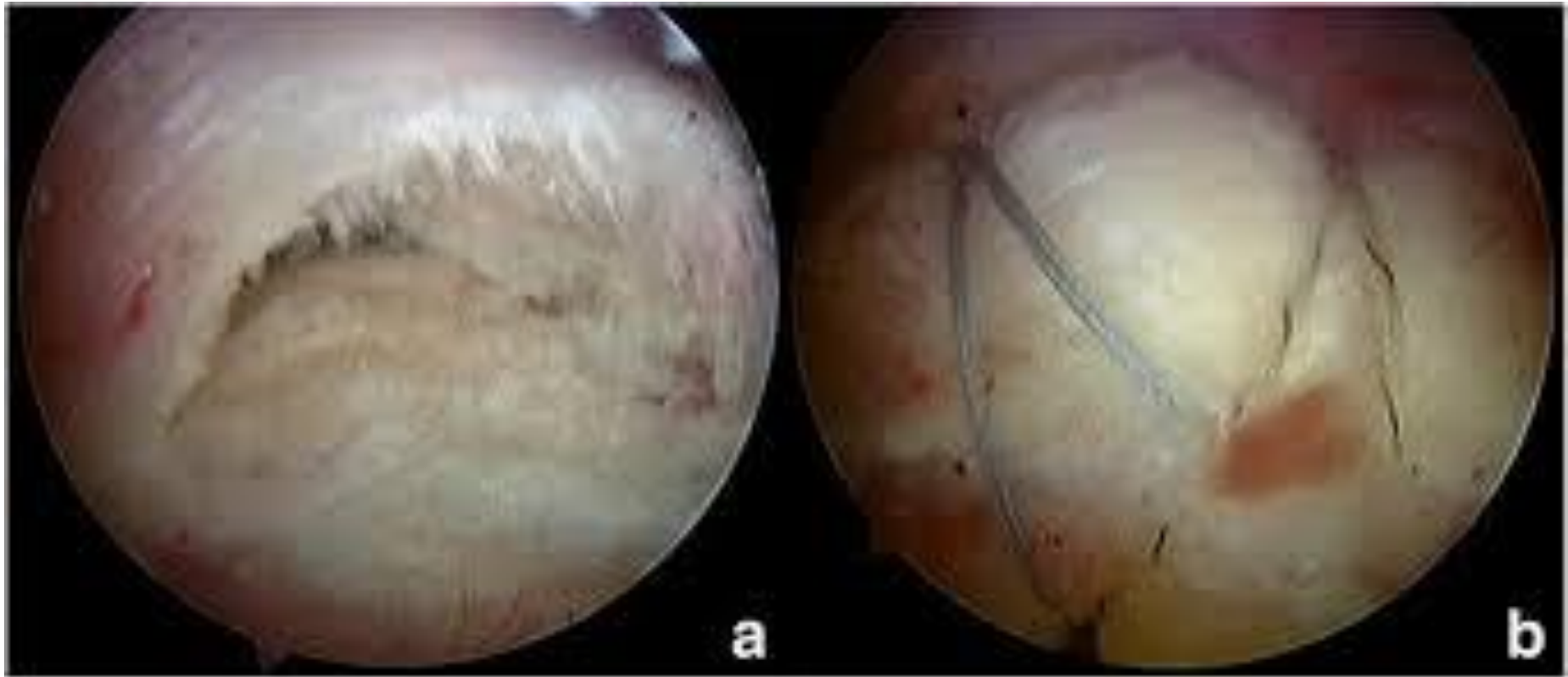




# Treatment Innovations

- Arthroscopy
- Superior Capsular Reconstruction
- In Space
- Reverse total shoulder
- Regenerative Medicine

# Arthroscopic images of cuff tear and repair



# Irreparable tear: We sew a patch to recreate the capsule



# In Space Balloon: to treat pain



cuff intact

massive cuff tear



# Inject healing fluid into cuff tear



# Thank you



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