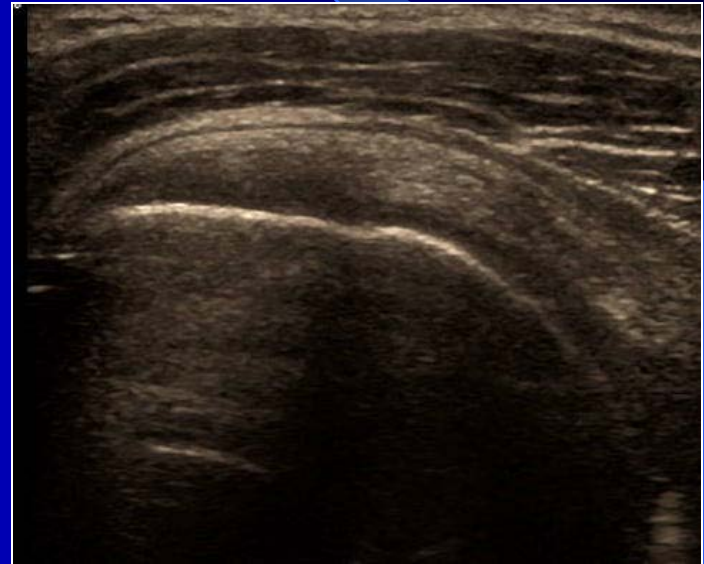
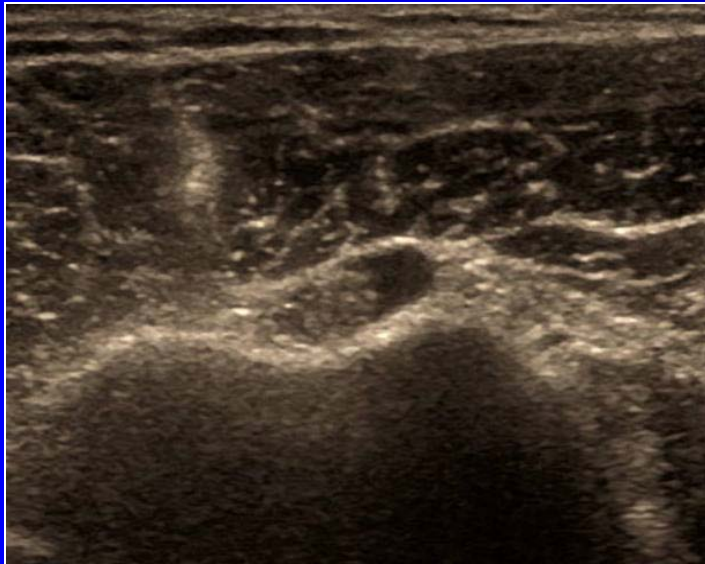


# ADVANCED ULTRASOUND TECHNIQUES



**Benjamin DuBois, M.D.**

**San Diego, CA**

**[www.shoulderultrasound.com](http://www.shoulderultrasound.com)**

# **Benjamin DuBois, MD**

- **Private Practice Orthopaedic Surgeon**
- **Matsen Fellowship Trained 2003-2004**
- **Courses, Training, etc**
- **Over 1000 US Exams and Injections**

# TODAY'S OBJECTIVES

- **Identify indications for US and how to integrate it into your practice**
- **Identify normal anatomy**
- **Identify abnormal anatomy**
- **Understand role of US in injections**
- **Cadaver lab for injections**

# OVERVIEW

- **TECHNIQUE IS IMPORTANT**
- **REPETITION IS IMPORTANT**
- **OPERATOR DEPENDENT**
- **LEARNING CURVE**
- **GETS EASIER**
- **GET GOOD TRAINING**

# TRAINING: BASICS

- **EXPOSURE**
- **POSITION**
- **DARK ROOM**
- **BILATERAL  
EXAM**
- **REPETITION**

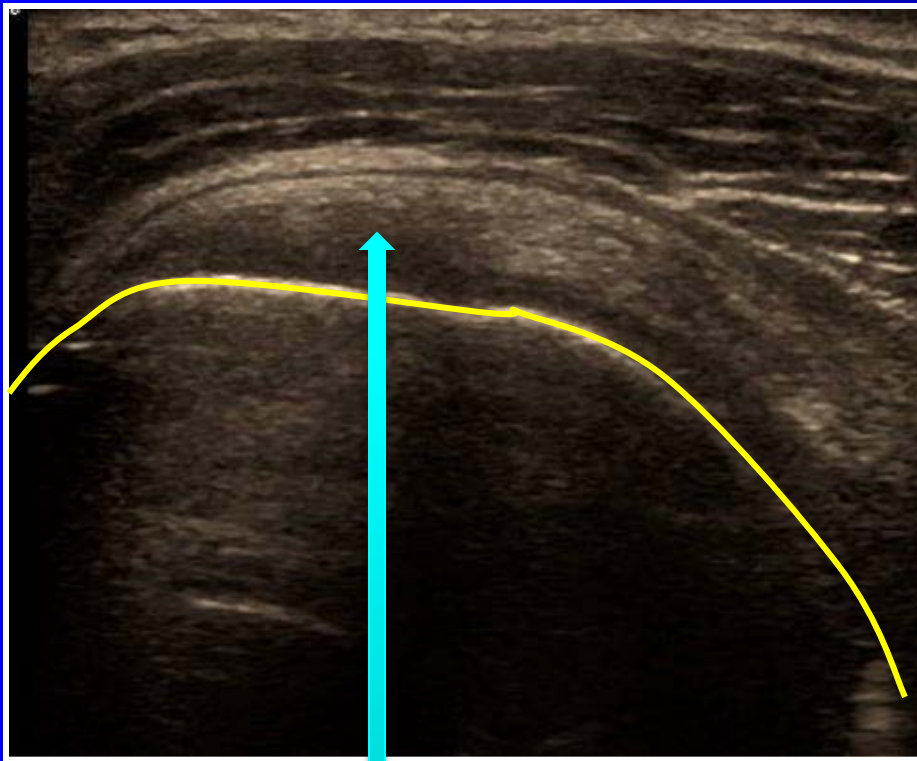


# TRAINING: BASICS

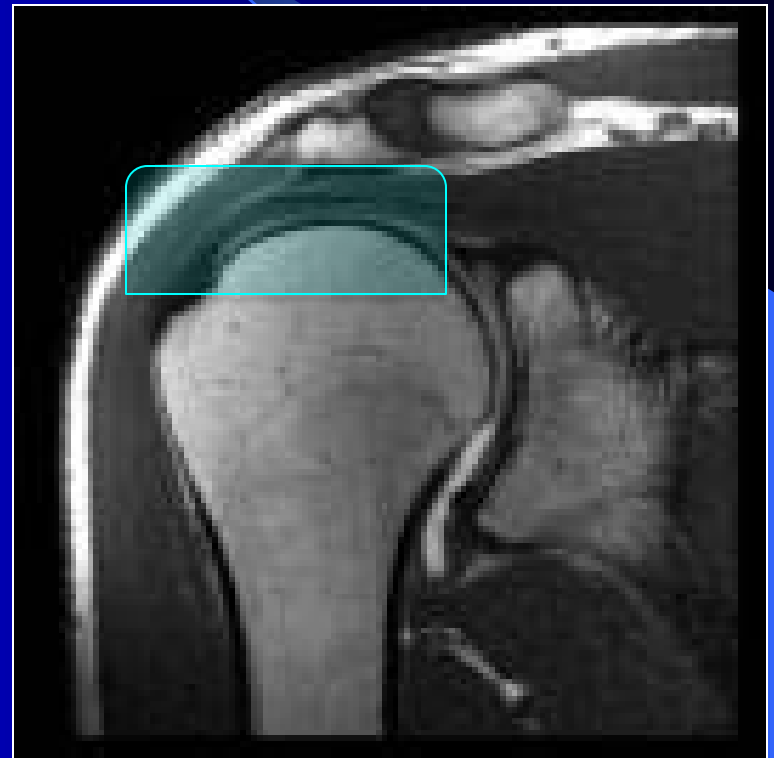
- **ALWAYS VISUALIZE THE ANATOMIC STRUCTURE FROM THE POINT OF VIEW AS IF YOU ARE LOOKING AT THE BROAD FACE OF THE PROBE**



# TRAINING: GETTING ORIENTED

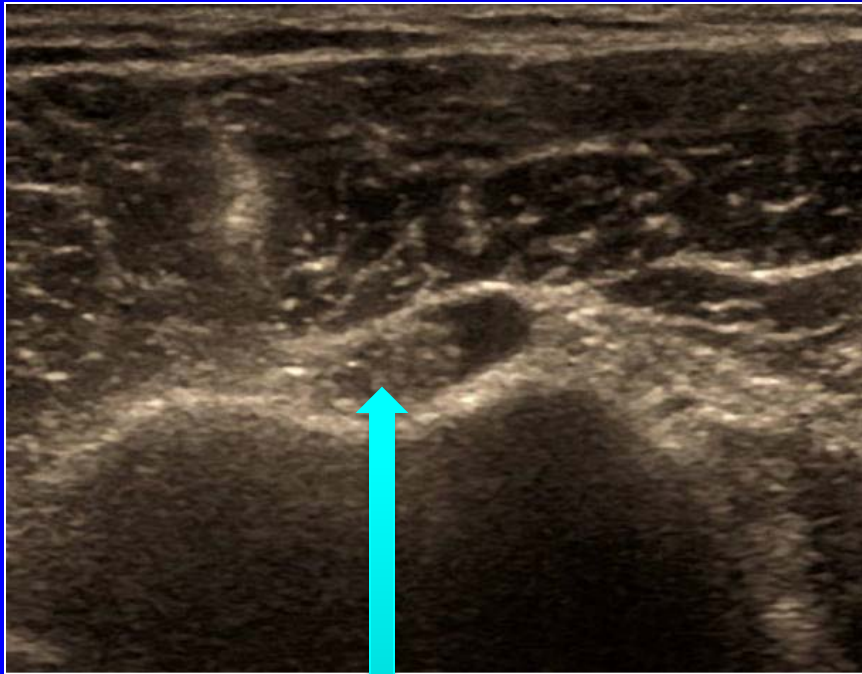


Supraspinatus



Coronal Image, Right Shoulder

# TRAINING: GETTING ORIENTED



Biceps Tendon



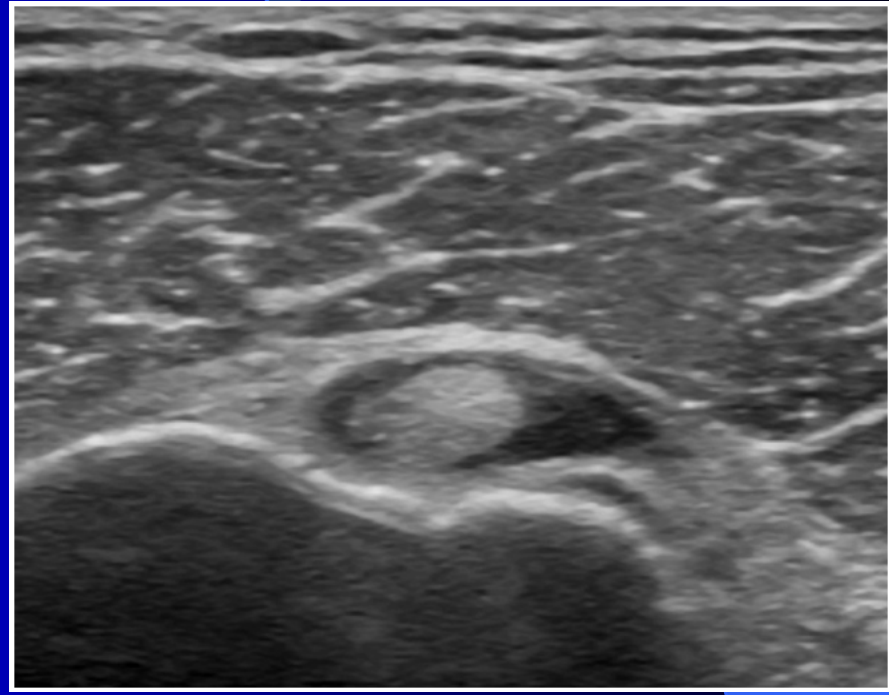
Axial Image, Right Shoulder



# The 13 Point Exam Summary

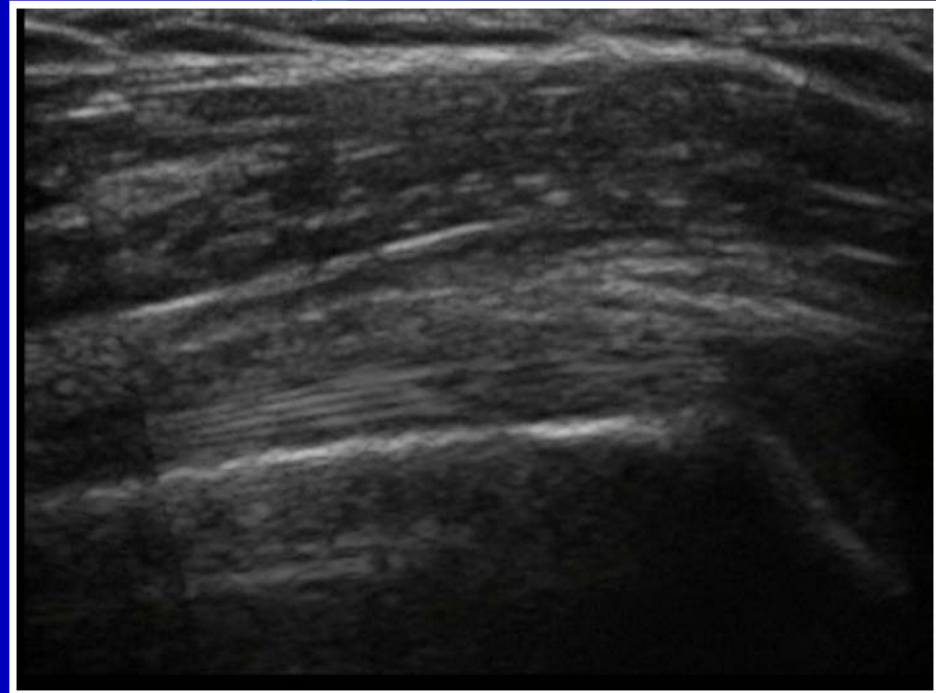
- 5 points for anterior shoulder
- 4 points for supraspinatus
- 3 points for posterior shoulder
- One point for AC joint

# POINT 1



**AXIAL BICEPS**

# POINT 2



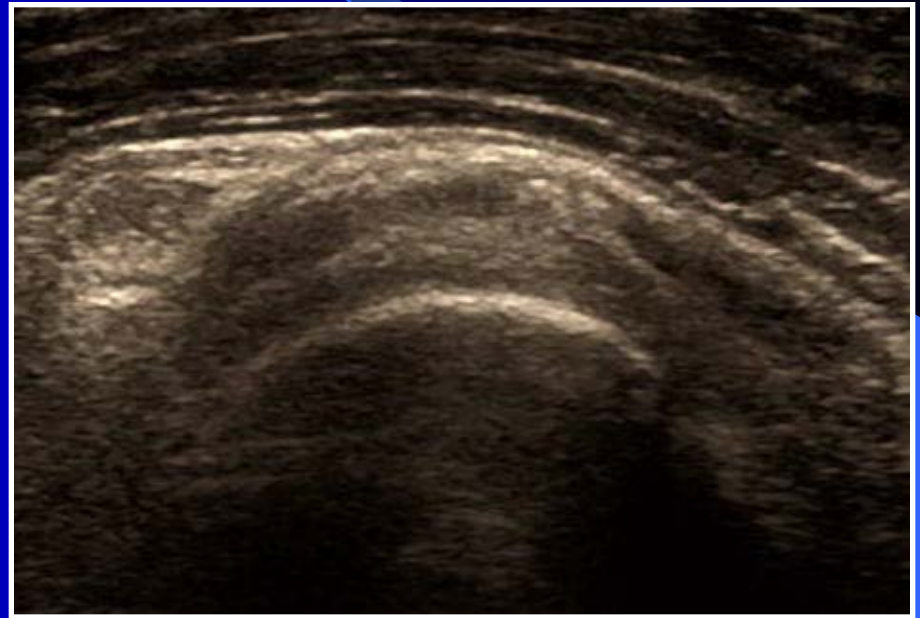
**SAGITTAL BICEPS**

# POINT 3



**AXIAL SUBSCAP**

# POINT 4



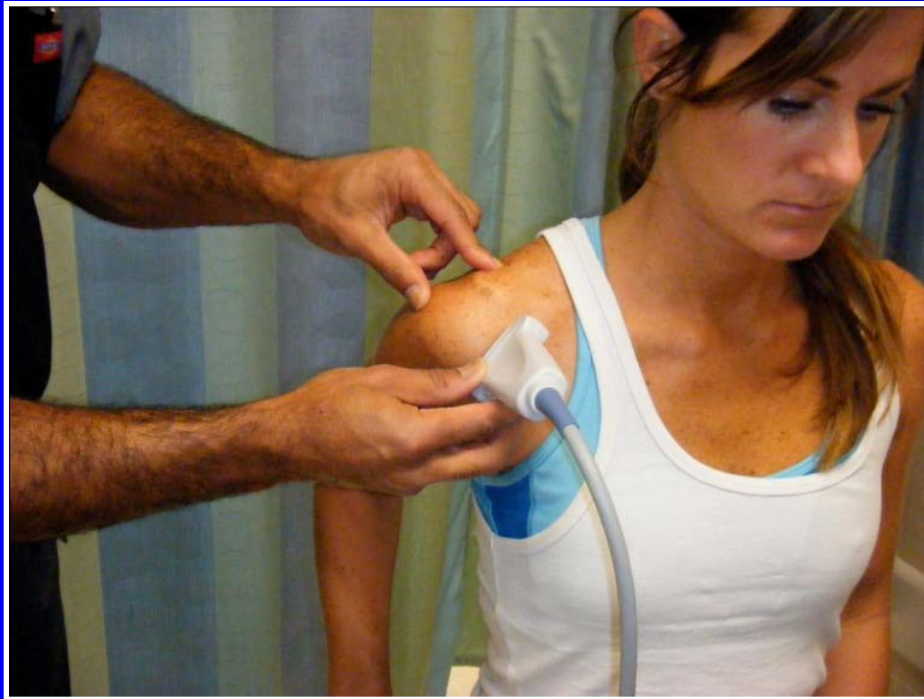
**SAGITTAL SUBSCAP**

# POINT 5



**AXIAL SUBSCAP/COROCOID**

# POINT 6



**CORONAL ANTERIOR SUPRASPINATUS**

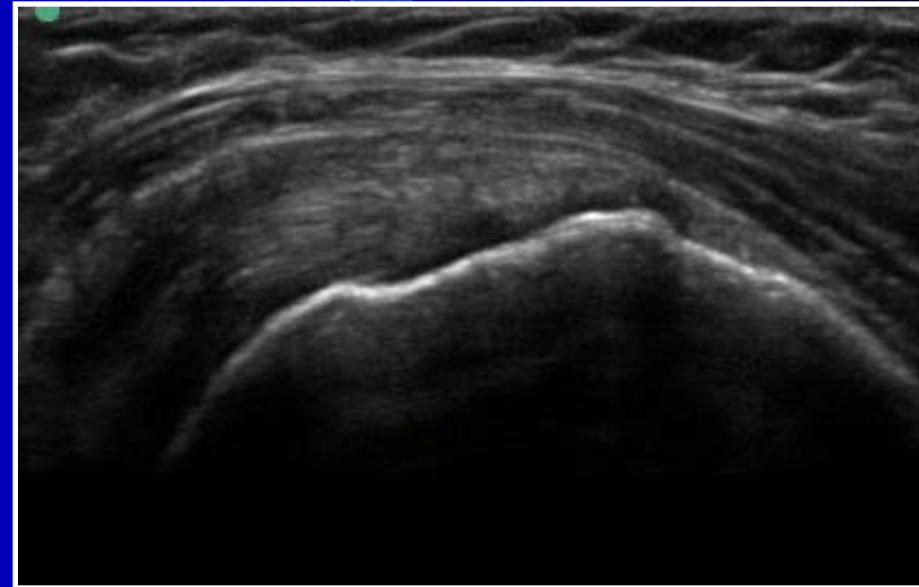
# POINT 6



**DYNAMIC SUPRASPINATUS CONTRACTION TEST**



# POINT 7



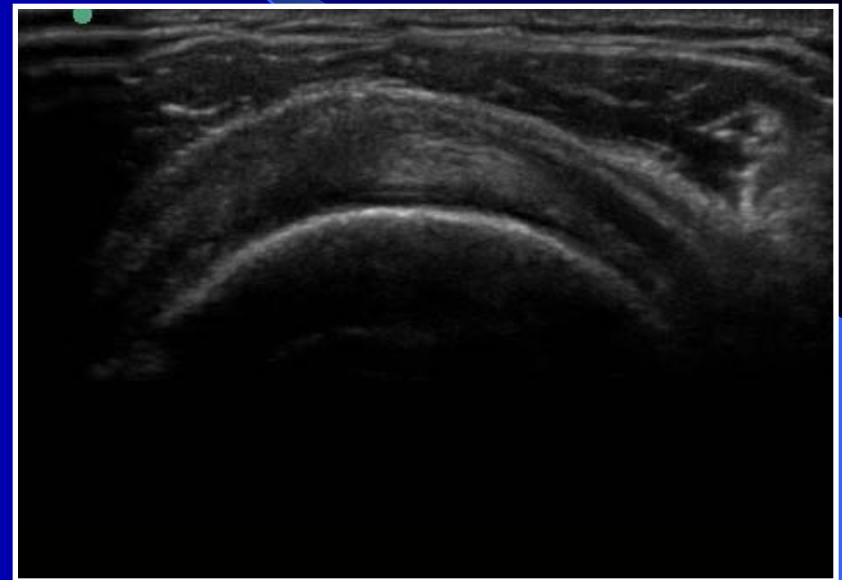
**CORONAL POSTERIOR SUPRASPINATUS**

# POINT 8



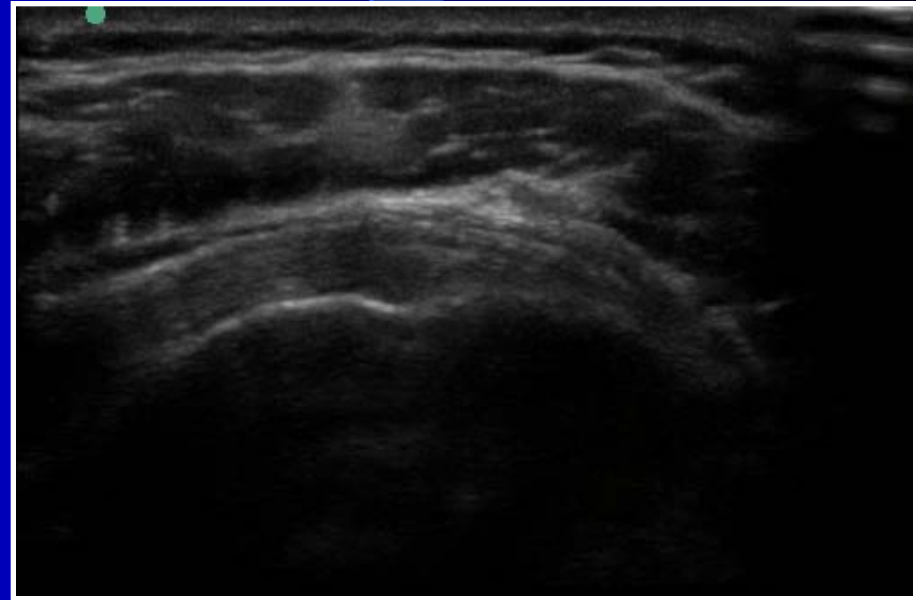
**SAGITTAL ANTERIOR SUPRASPINATUS**

# POINT 9



**SAGITTAL POSTERIOR SUPRASPINATUS**

# POINT 10



**AXIAL INFRASPINATUS**

# POINT 11



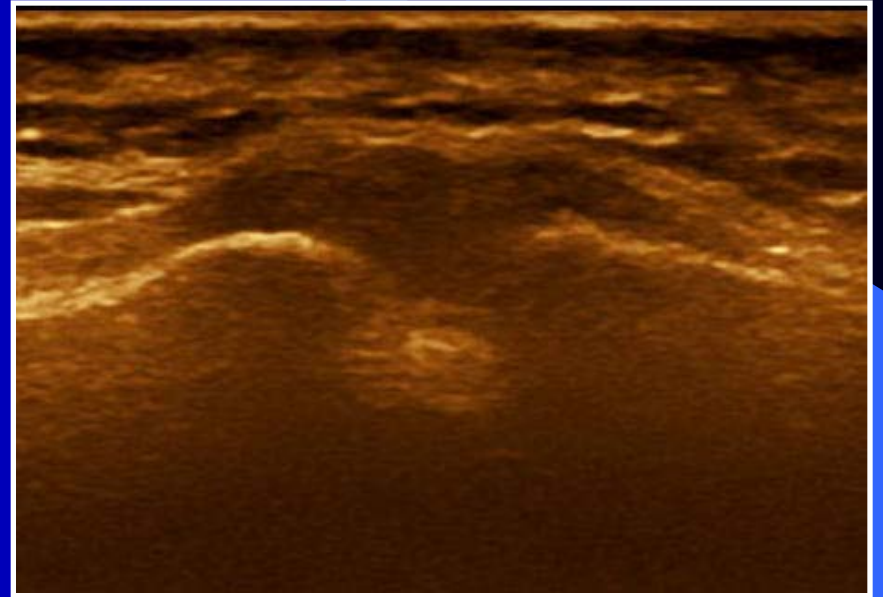
**SAGITTAL INFRASPINATUS**

# POINT 12



**AXIAL POSTERIOR JOINT**

# POINT 13



**CORONAL AC JOINT**

# ANISOTROPY

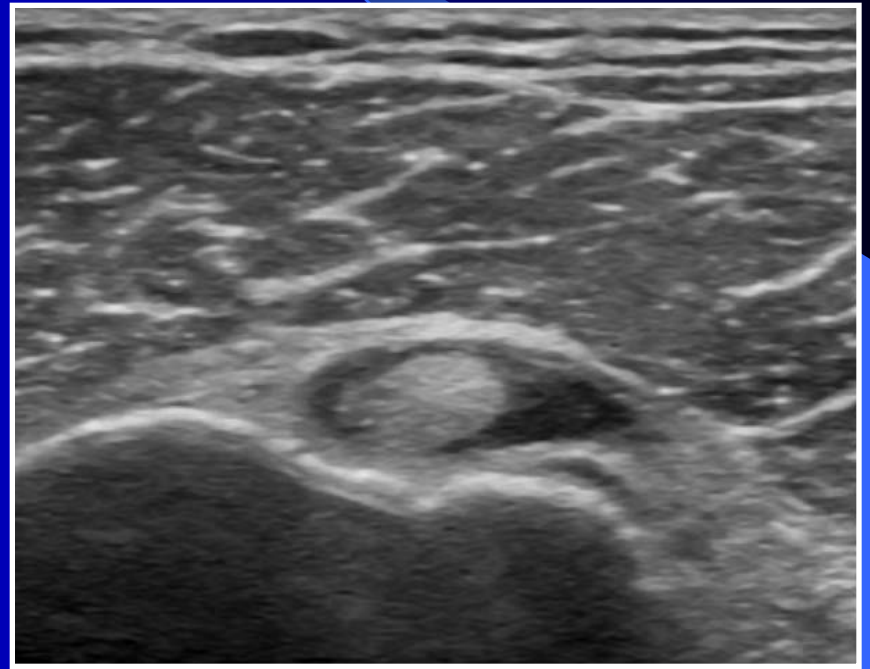
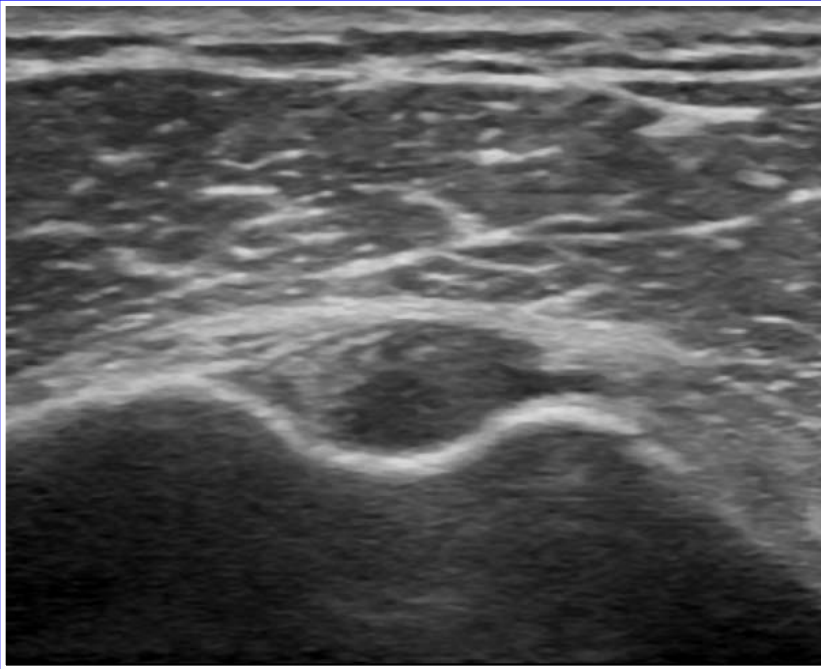
\*An “artifact” found on sonograms of tendons\*

If the probe is not held with the surface parallel to the tendon, US reflection is not back towards the probe and the tendon appears falsely hypoechoic.

This hypoechoic appearance is eliminated with proper transducer orientation (realignment)



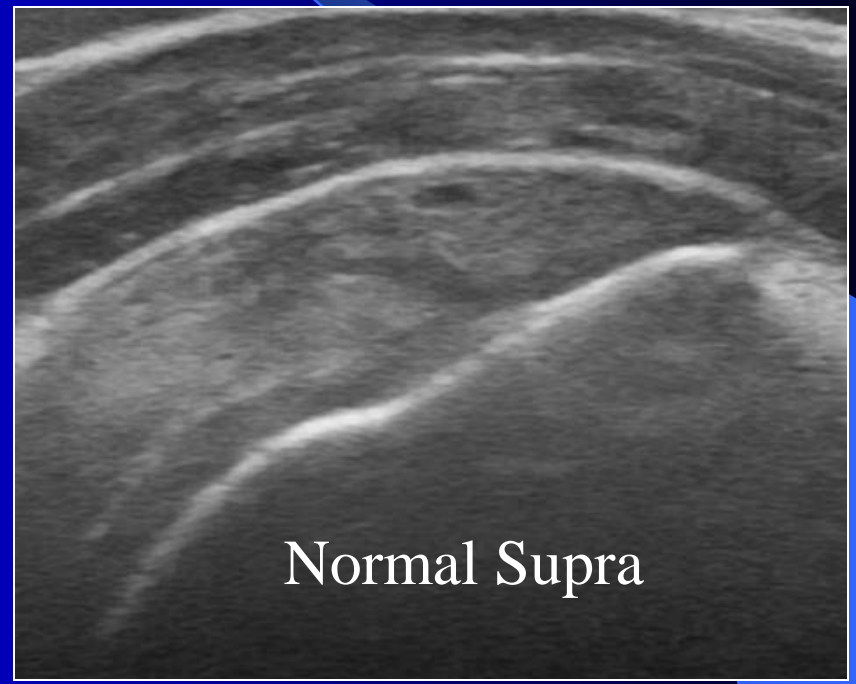
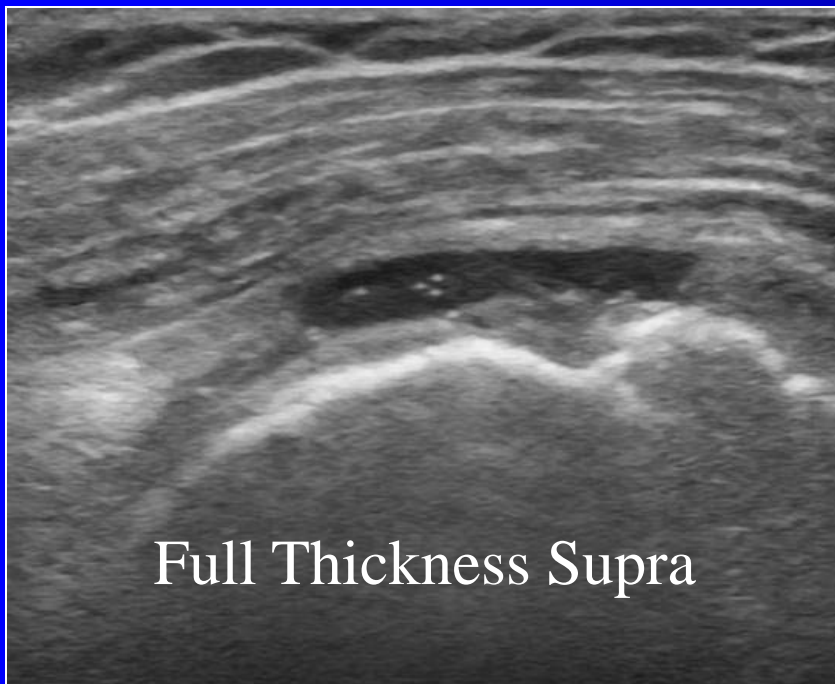
# ANISOTROPY



# PATHOLOGY

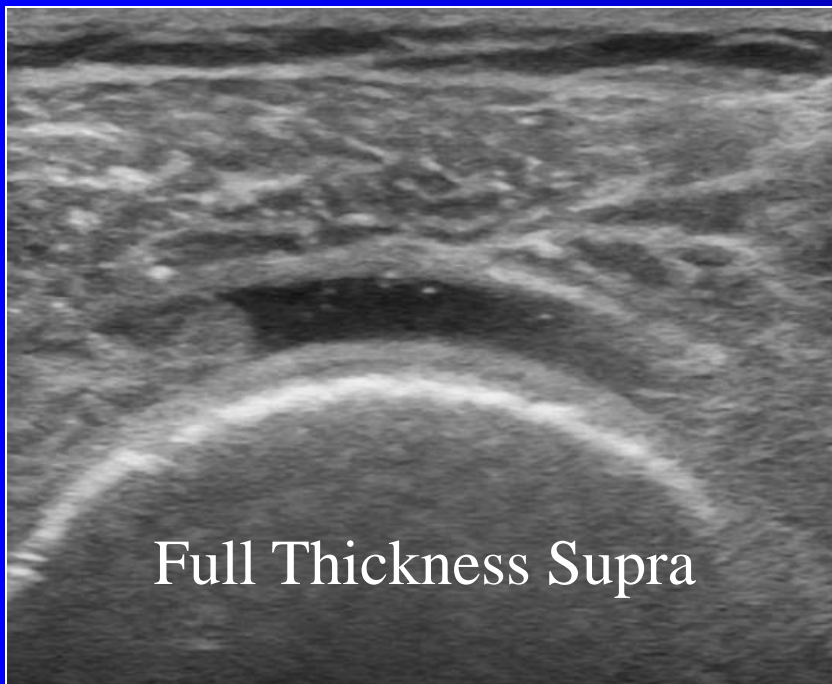
- **FULL THICKNESS**
- **PARTIAL THICKNESS**
- **CALCIFIC TENDONITIS**
- **BICEPS PATHOLGY**
- **FLUID COLLECTIONS**
- **POSTOP**

# FTRCT



**CORONAL VIEW**

# FTRCT

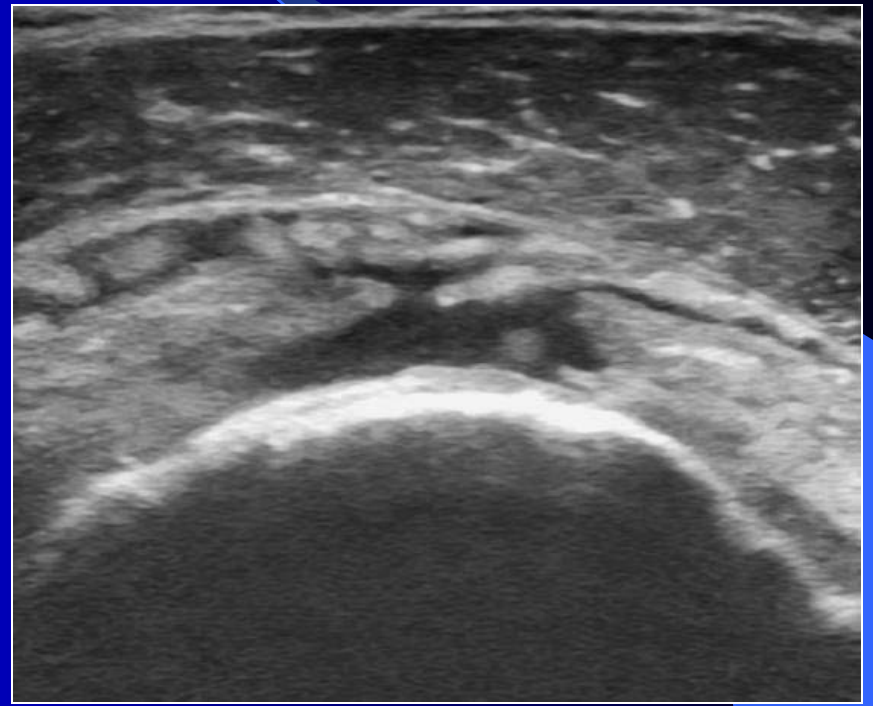
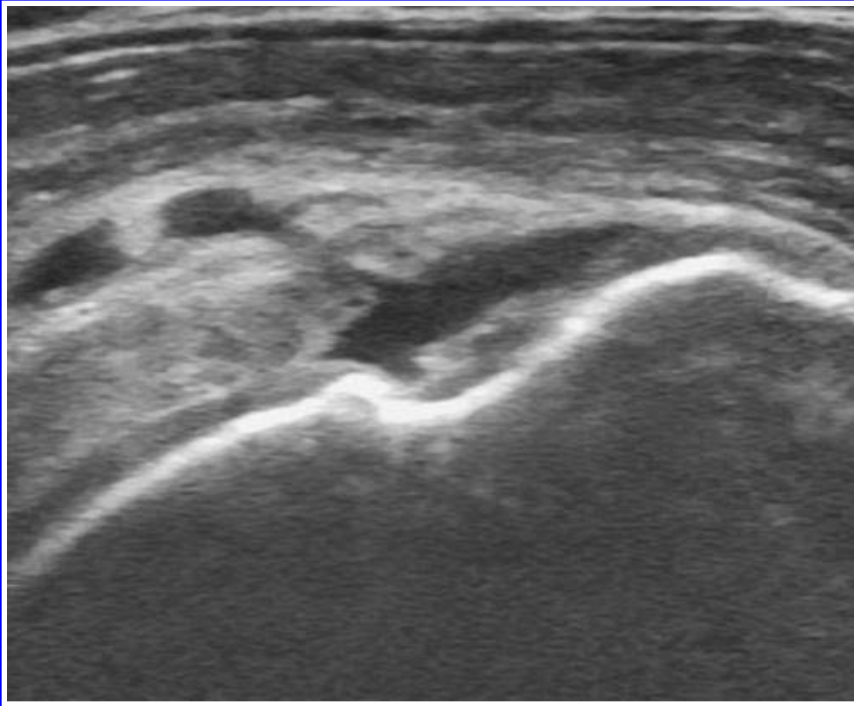


**SAGITTAL VIEW**

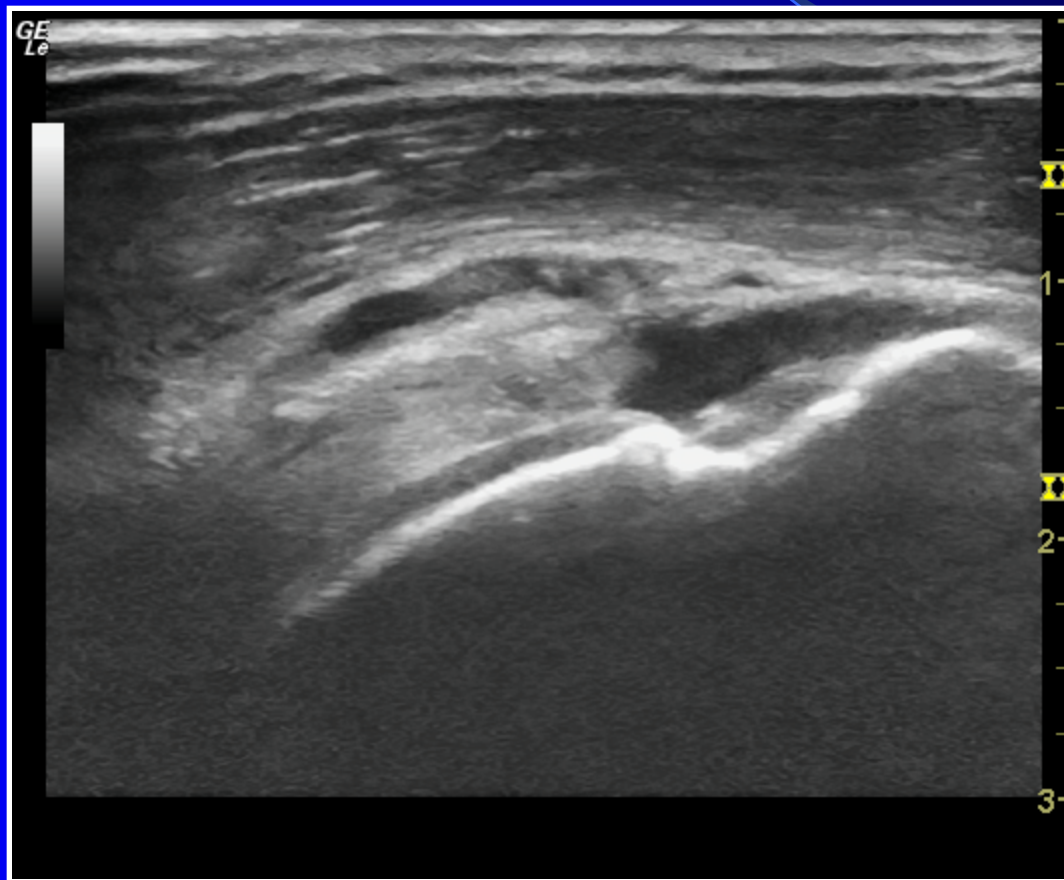
# FTRCT



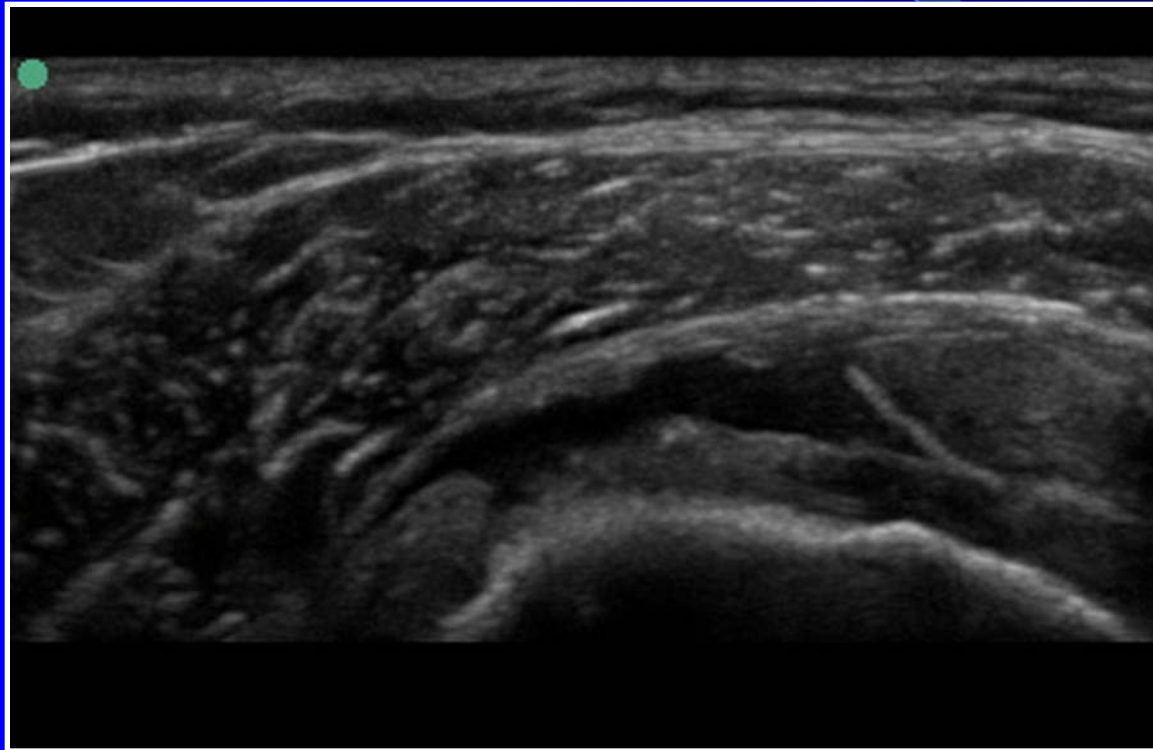
# FTRCT



# FTRCT

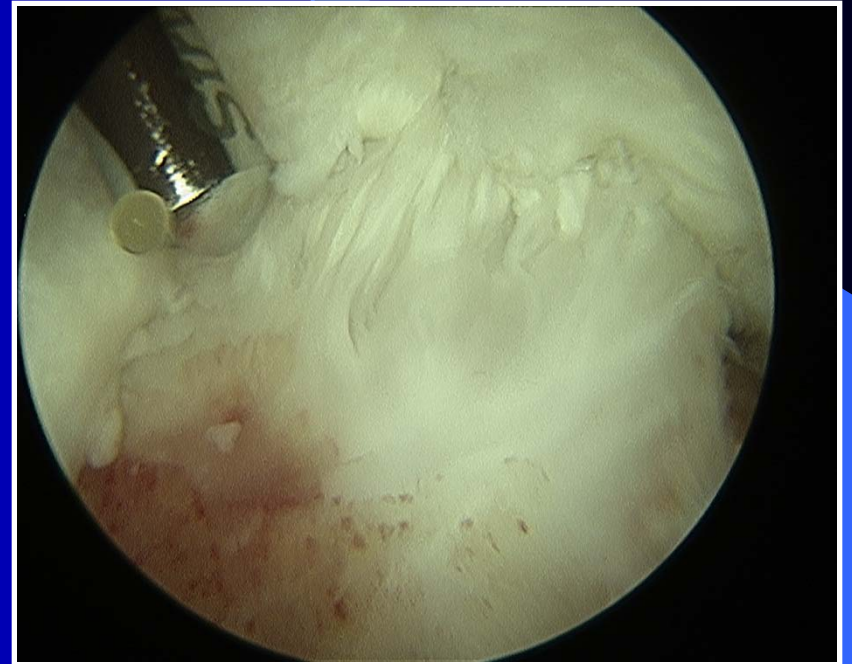
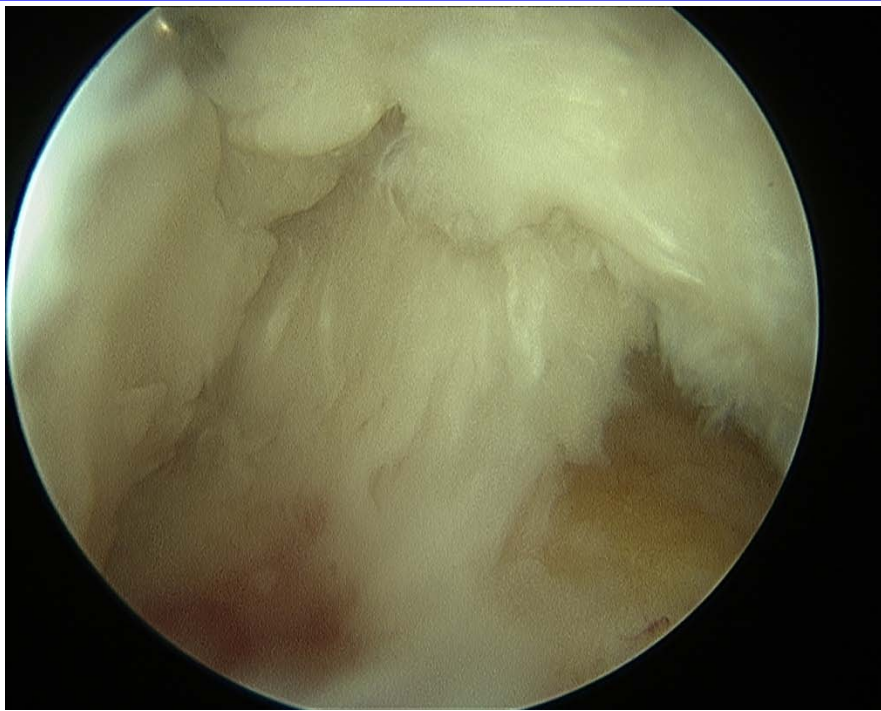


# FTRCT





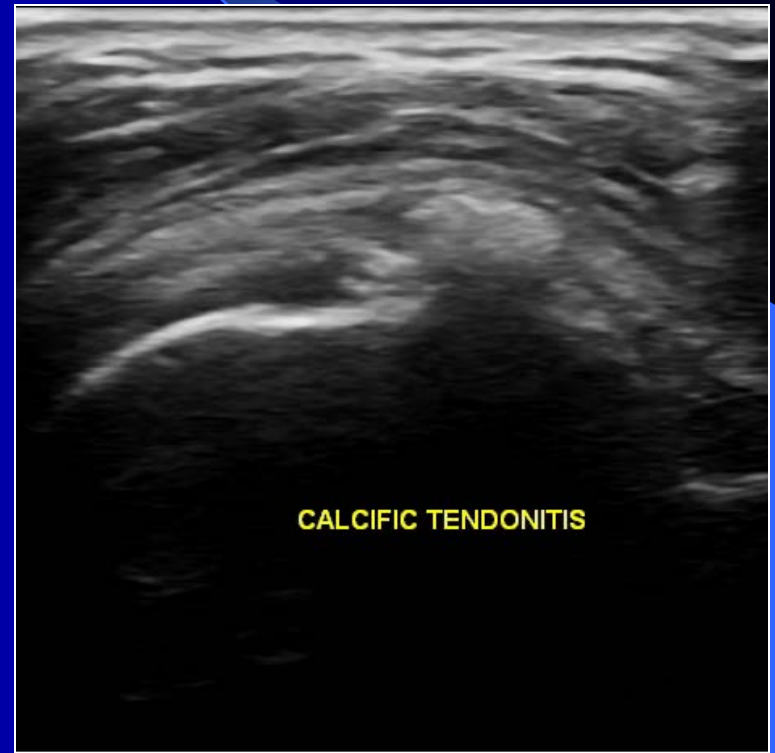
# FTRCT



# FTRCT



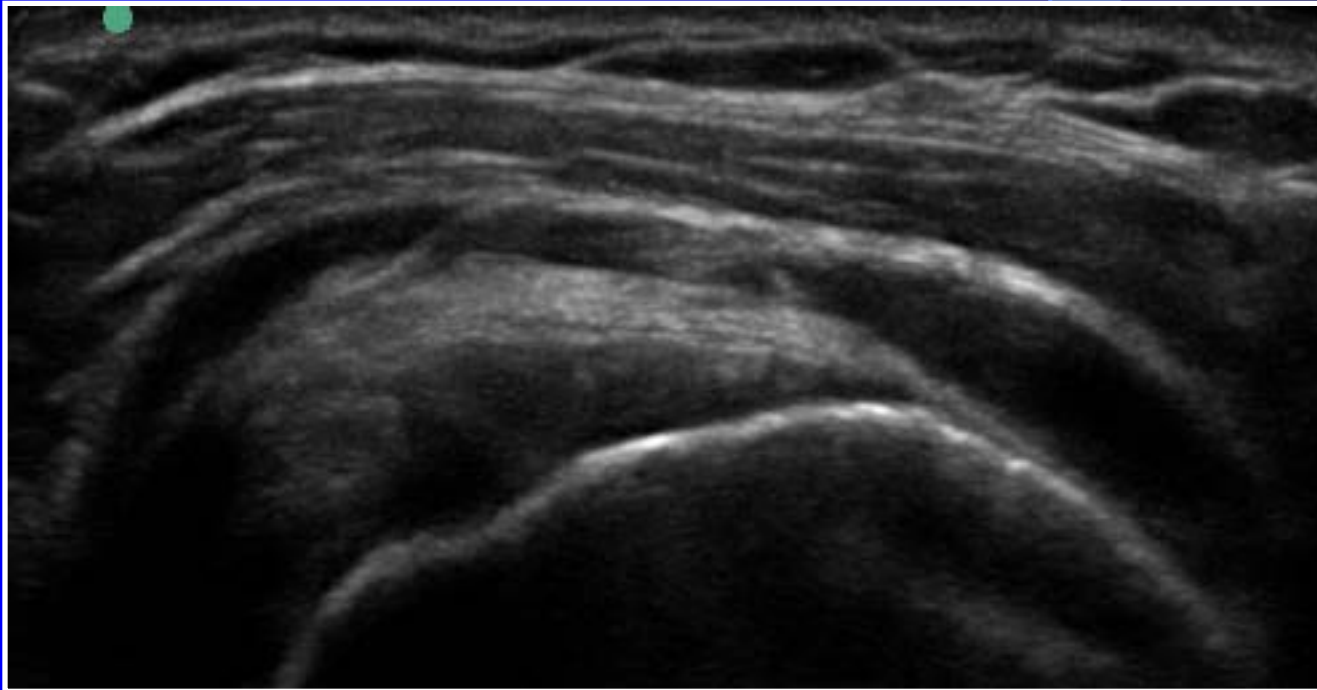
# CALCIFIC TENDINITIS



# BICEPS



# SUBACROMIAL FLUID



# SUBACROMIAL FLUID



# POSTOPERATIVE CUFF REPAIR



# ULTRASOUND GUIDED INJECTIONS

- **Subacromial**
- **Glenohumeral**
- **Biceps Sheath**
- **AC Joint**



# ULTRASOUND GUIDED INJECTIONS

- **Gel**
- **Betadine**
- **Needle**
- **Ethyl Chloride Spray**
- **Probe Cover**
- **Needles**

# **ULTRASOUND GUIDED INJECTIONS**

## **BASIC US GUIDED INJECTION PRINCIPLE**

**INJECT IN LINE WITH THE LONG  
AXIS OF THE TRANSDUCER**

# ULTRASOUND GUIDED INJECTIONS



# ULTRASOUND GUIDED INJECTIONS



# ULTRASOUND GUIDED INJECTIONS



# ULTRASOUND GUIDED INJECTIONS



# ULTRASOUND GUIDED INJECTIONS



# ULTRASOUND GUIDED INJECTIONS



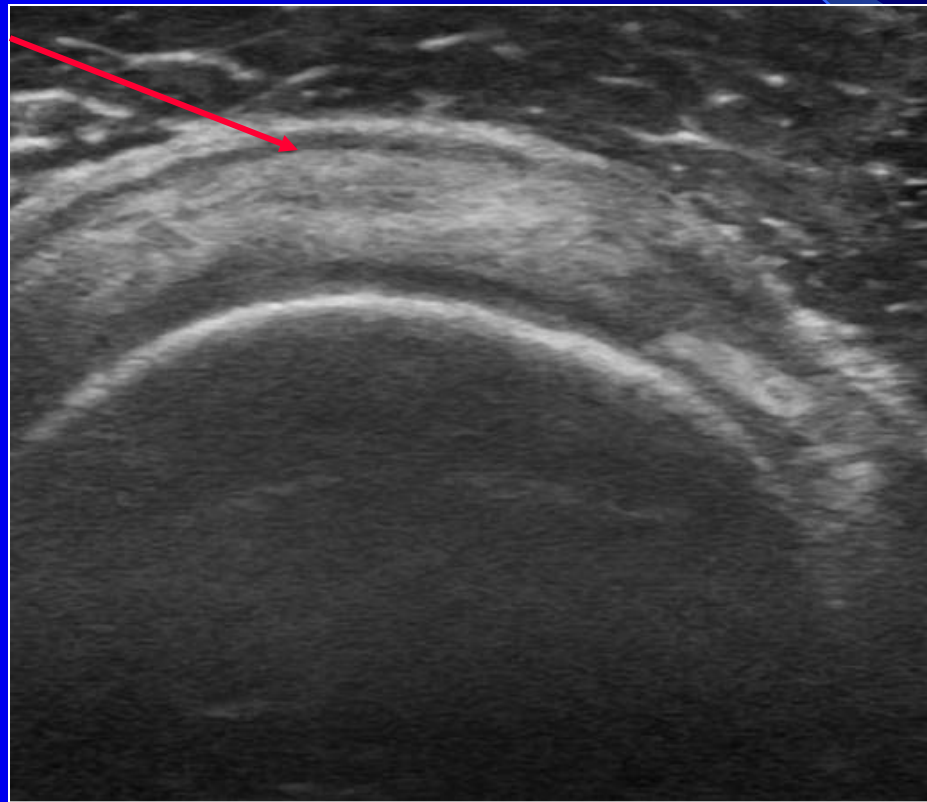


# SUBACROMIAL



POSTERIOR SUBACROMIAL

# SUBACROMIAL



POSTERIOR

ANTERIOR

# SUBACROMIAL



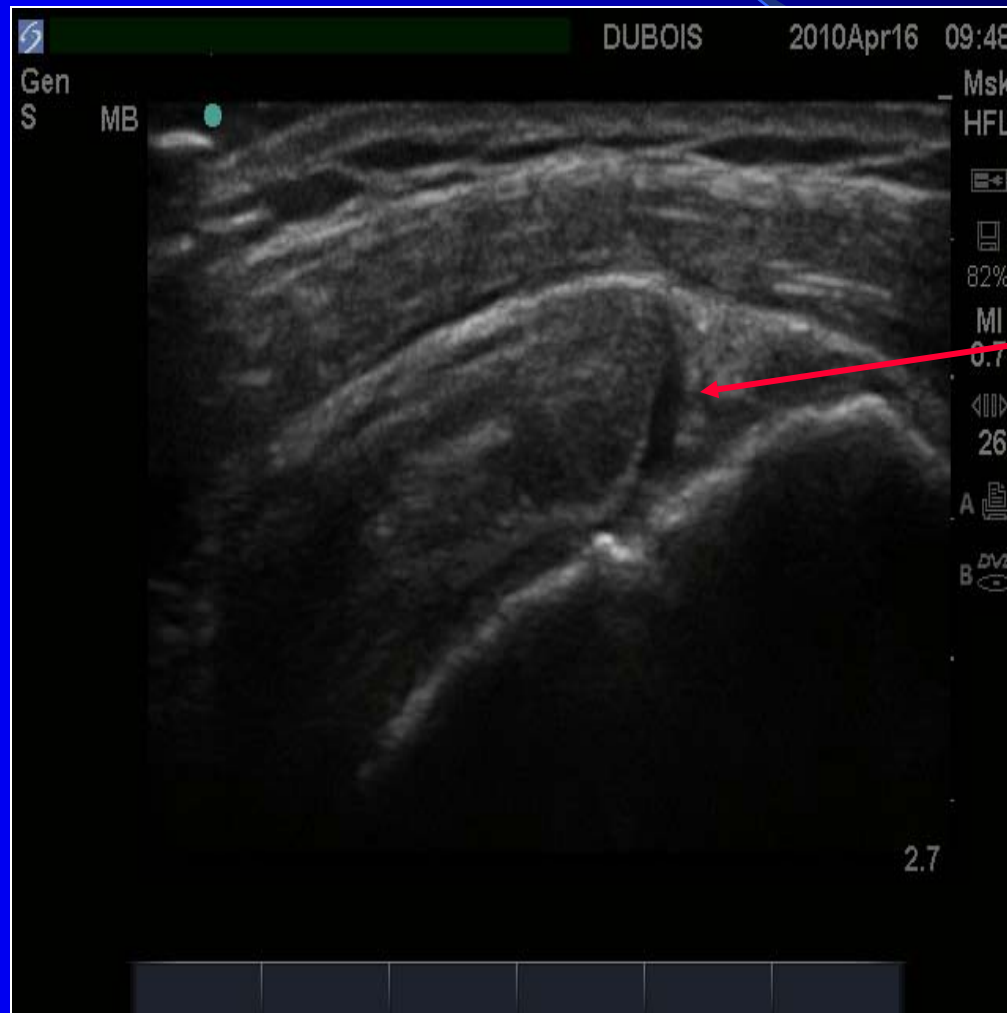
# SUBACROMIAL



LATERAL SUBACROMIAL

# SUBACROMIAL

MEDIAL



LATERAL

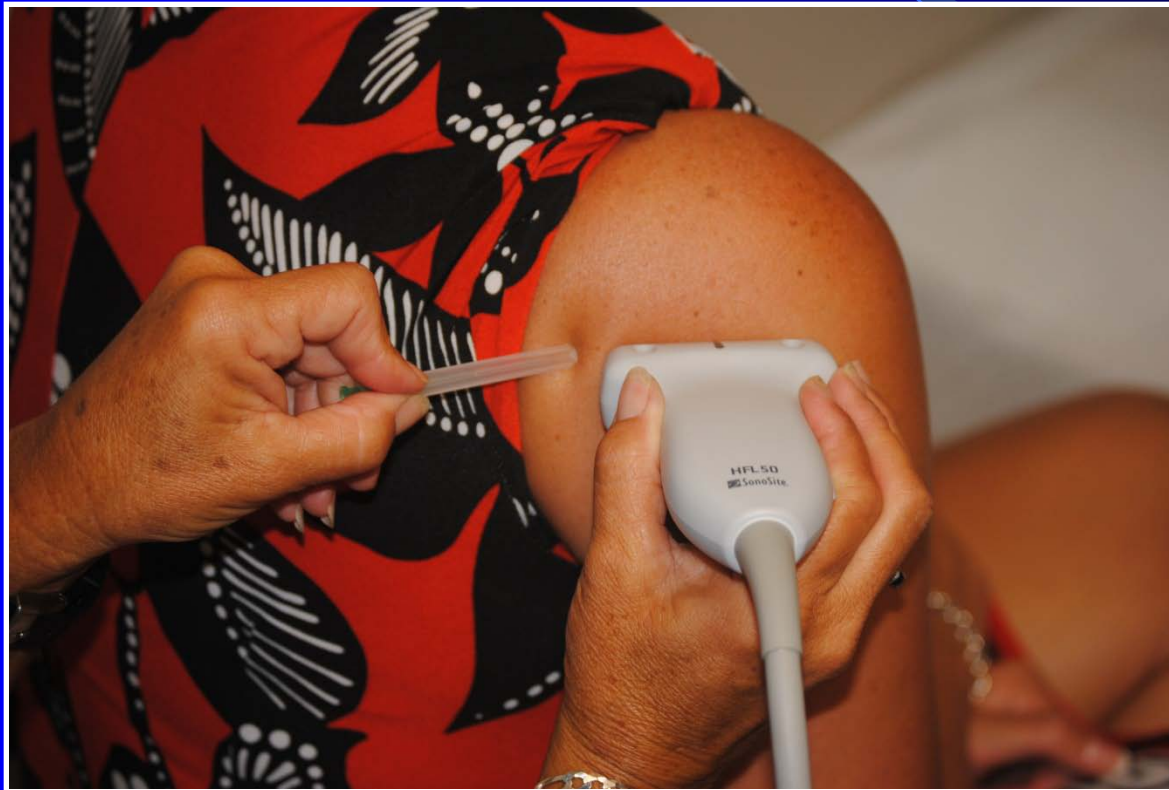
# SUBACROMIAL



# SUBACROMIAL



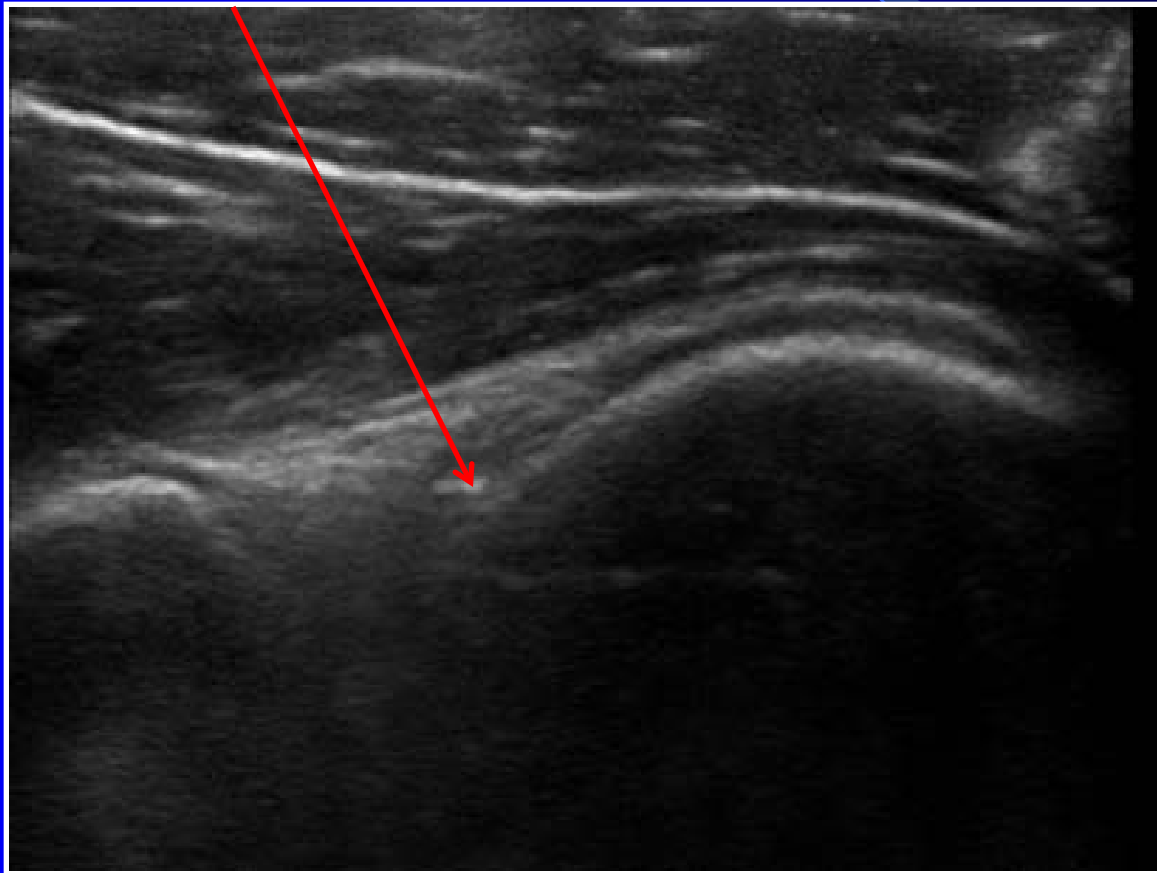
# GLENOHUMERAL



POSTERIOR GLENOHUMERAL



# GLENOHUMERAL



# GLENOHUMERAL



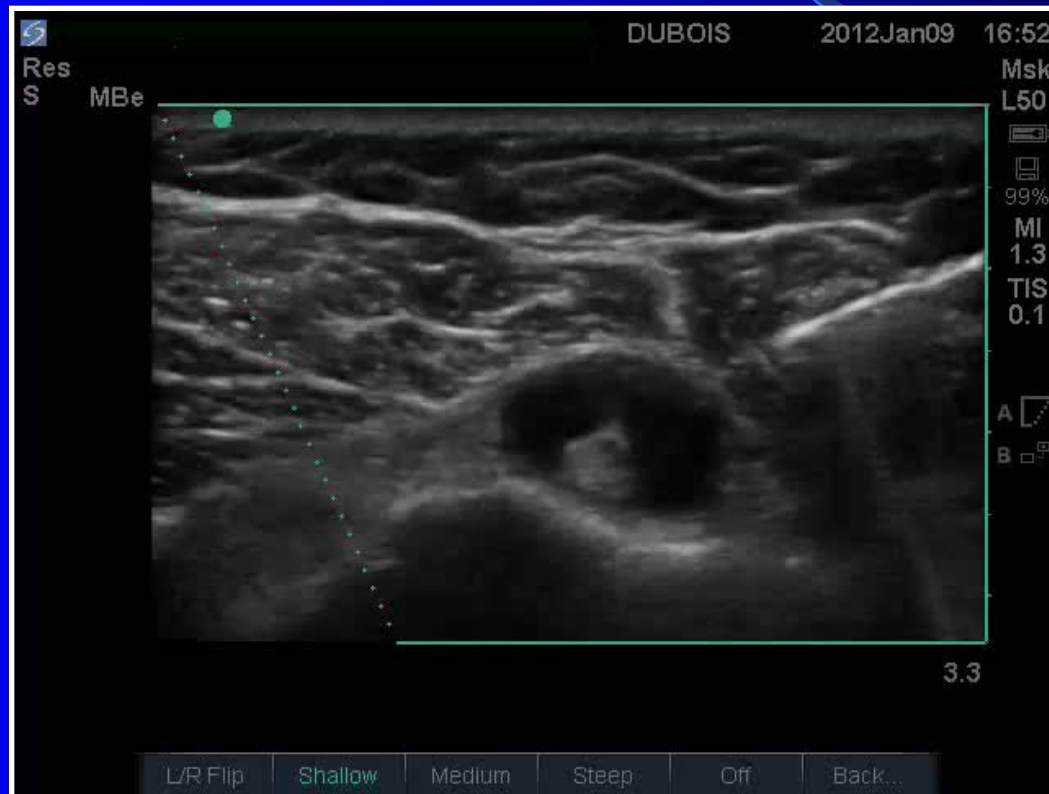
# GLENOHUMERAL



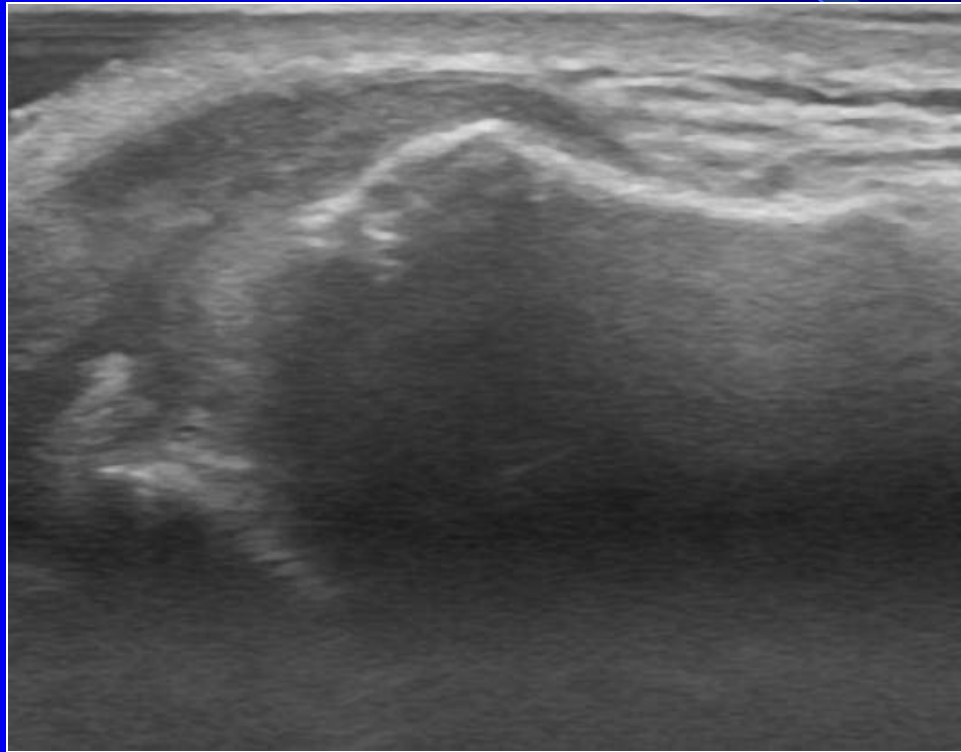
# BICEPS SHEATH



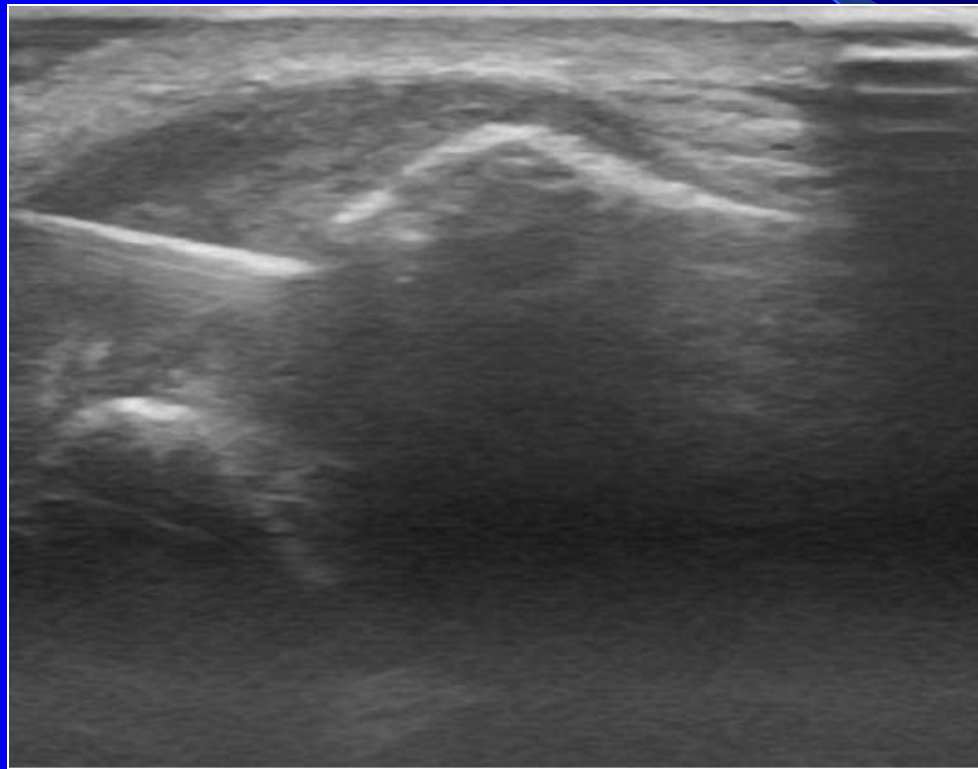
# BICEPS SHEATH



# AC JOINT



# AC JOINT



# SUMMARY

- **GET ORIENTED**
- **GET TRAINED**
- **HAVE A SYSTEM**
- **PRACTICE**
- **HAVE FUN**



# THANK YOU



**LAS VEGAS MSK ULTRASOUND COURSE**  
**JULY 27-28, 2012**  
**ORTHOSONO.COM**