

Pitfalls in Shoulder Ultrasound

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Disclosures

- Consultant: Bioclinica
- Contractor: POCUS PRO
- Book Royalties: Elsevier
- I no longer follow Nicki Minaj on Twitter

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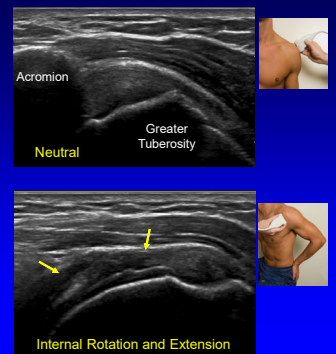
Outline: rotator cuff pitfalls

- Technique
- Misinterpretation of normal structures
- Subacromial-subdeltoid bursa
- Differentiating pathology

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Improper Arm Position

- Inadequate internal rotation/extension
- Supraspinatus is hidden beneath acromion
- Proximal tears not visualized



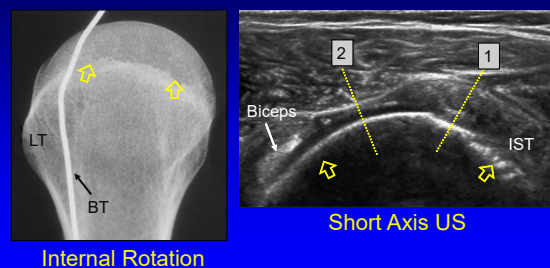
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Incomplete Evaluation of Supraspinatus:

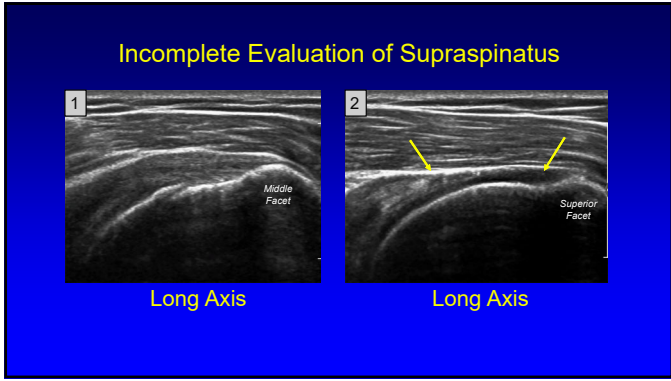
- Scan entire width of greater tuberosity
- Many tears occur anteriorly over superior facet
- Include biceps on transverse image as landmark

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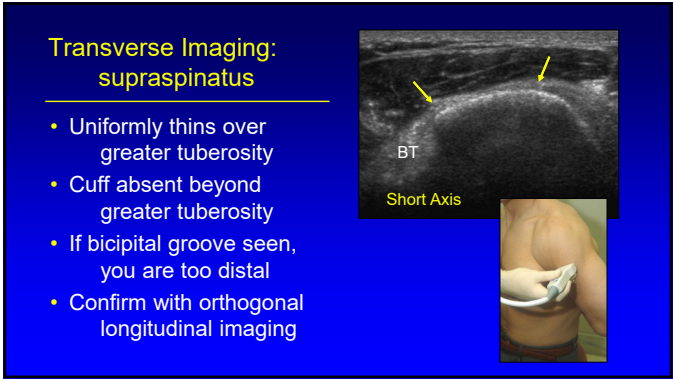
Incomplete Evaluation of Supraspinatus



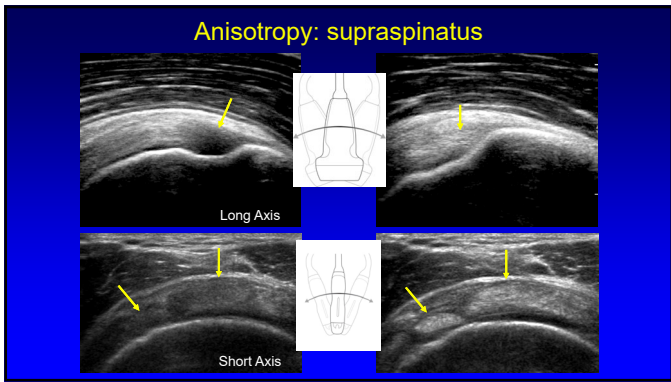
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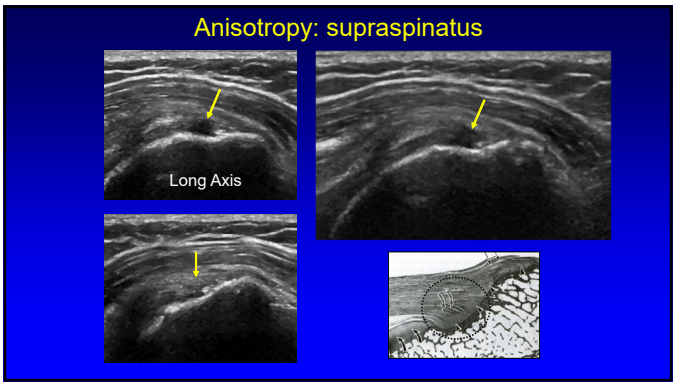
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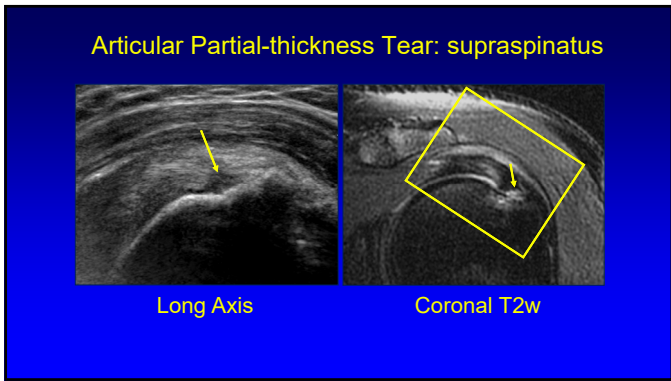
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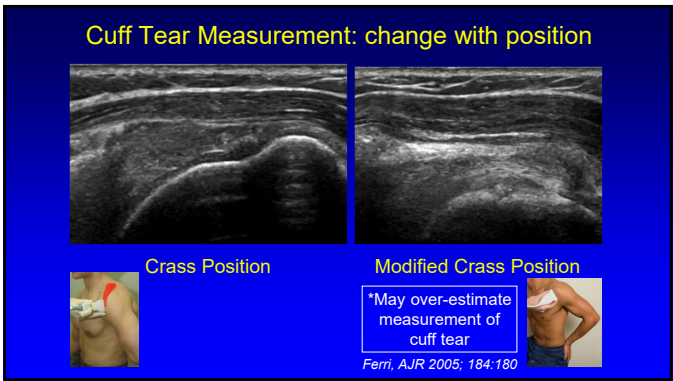
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Misinterpretation of Rotator Interval

- Space between supraspinatus and subscapular tendons
- Intra-articular portion of biceps tendon
- Bicipital pulley: ligaments
- Adjacent hypoechoic gap
- May simulate tear

Middleton et al. AJR 1986; 146:555

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Musculotendinous Junction:

- **Supraspinatus:** several distinct tendons
- Appears as hypoechoic area extending into tendon
- Usually terminates by mid-tendon
- Characteristic tapering from proximal to distal

Turrin et al. Skeletal Radiology 1997; 26:89

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Musculotendinous Junction: supraspinatus

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Musculotendinous Junction

- **Subscapularis:** several distinct tendons
- Hypoechoic clefts in between tendon bundles
- Do not interpret as tendon tears or tendinosis

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Supraspinatus - Infraspinatus Junction

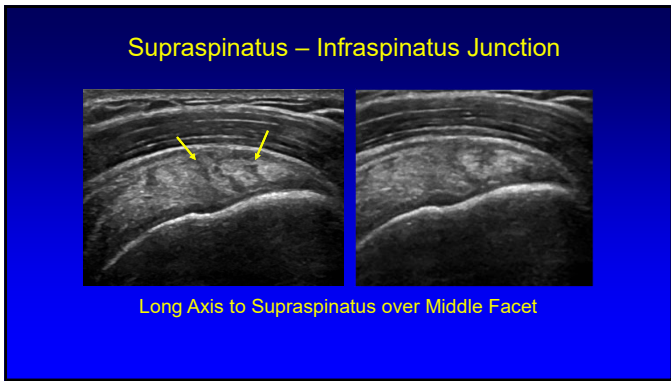
- Converging fibers – posterior
- Over middle facet of greater tuberosity
- Hypoechoic fibers: anisotropy
- Regular intervals

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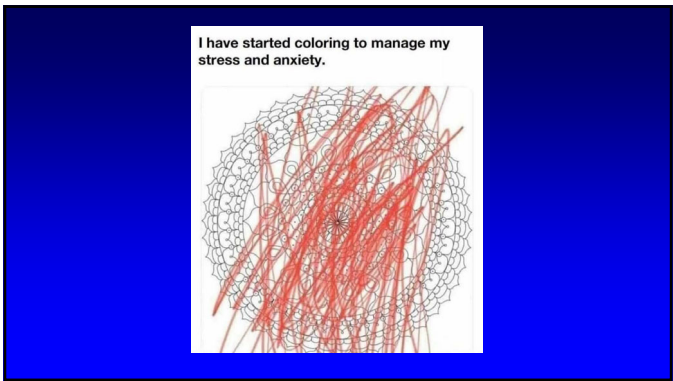
Supraspinatus – Infraspinatus Junction

From: Chang EY et al. AJR 2014; 202:w376

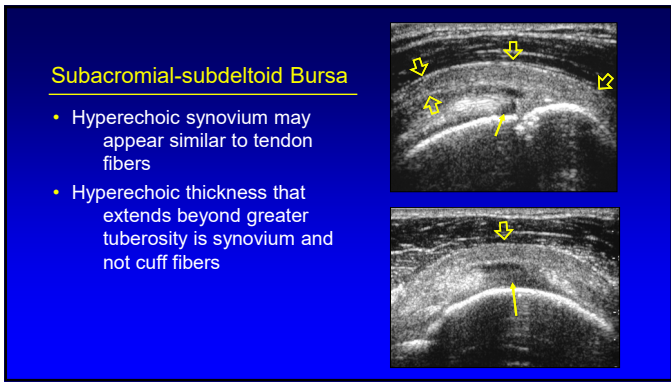
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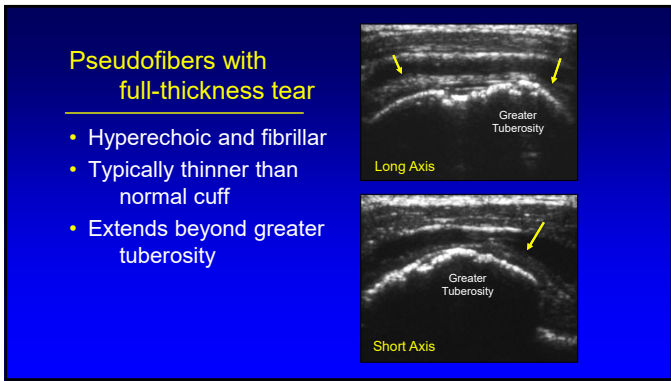
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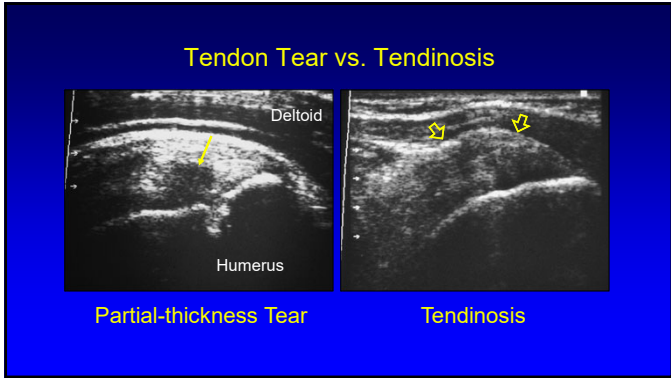
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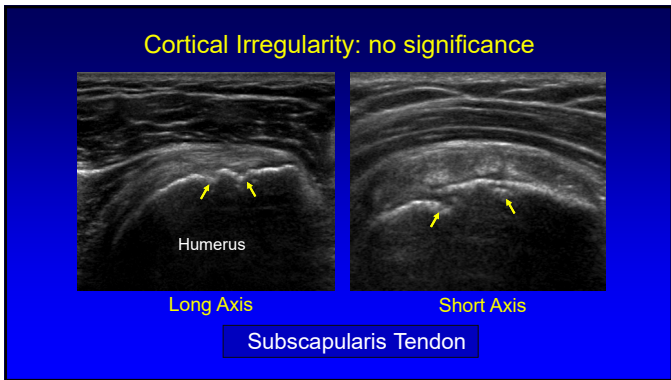
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Cortical Irregularity:

- Greater tuberosity: at **supraspinatus** insertion
- When present: 75% have rotator cuff tears
 - Patient over 40 years old
- When absent: 96% normal cuffs by sonography

AJR 1998; 171:229
Radiology 2004; 230:234

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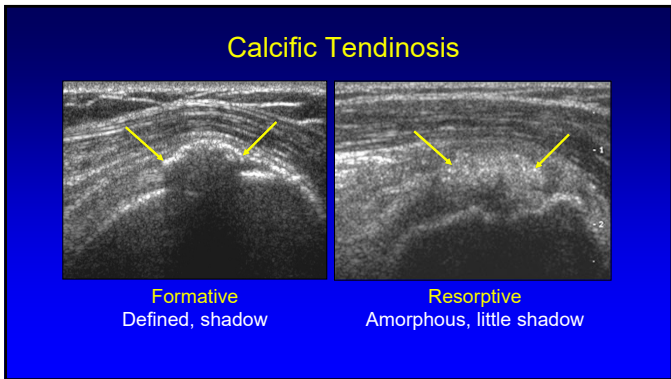


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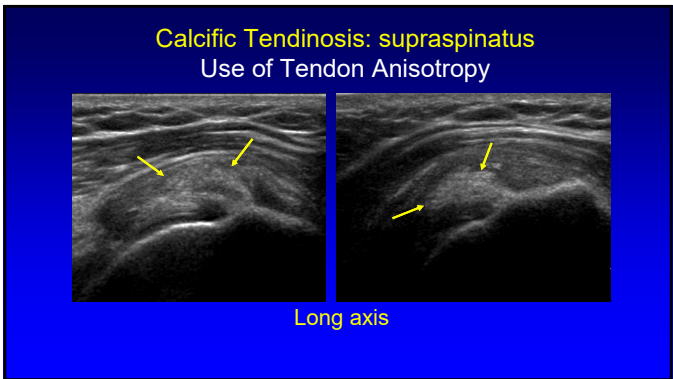
Outline:

- Calcific tendinosis: isoechoic
- Deltoid fascia: shadow
- Aponeurotic expansion of supraspinatus

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Pitfall Alert!
Deltoid fascia shadow

- Deltoid fascia
- Between segments of deltoid muscle
- Shadow: simulate biceps tendinosis
- Correct: move transducer to project shadow away

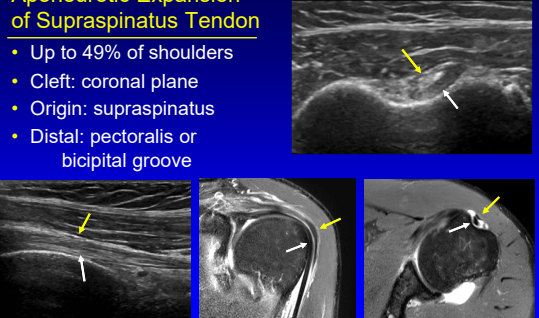


Biceps Brachii: short axis

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Aponeurotic Expansion of Supraspinatus Tendon

- Up to 49% of shoulders
- Cleft: coronal plane
- Origin: supraspinatus
- Distal: pectoralis or bicipital groove

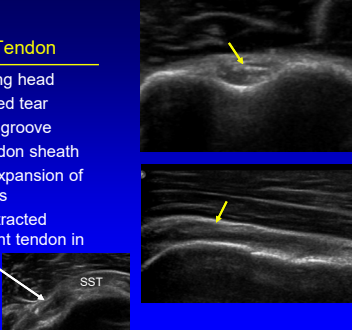


Moser et al. Skeletal Rad 2015; 44:223

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Pitfall Alert!
Pseudo Biceps Tendon

- Biceps brachii long head
- Complete retracted tear
- Visible "fibers" in groove
 - Collapsed tendon sheath
 - Aponeurotic expansion of supraspinatus
- Look for distal retracted tendon and absent tendon in rotator interval



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Take-home Points

- Incomplete evaluation of cuff
- Anisotropy: focal versus partial tear
- Tear versus tendinosis
 - Indirect signs of cuff tear
 - Cortical irregularity (supraspinatus)
 - Volume loss or tendon thinning

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Syllabus on line and other educational material:
www.jacobsonmskus.com

Twitter handle: @jjacobsn

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