

Biceps Brachii and Rotator Interval

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Syllabus PDF

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Disclosures

- Consultant: Bioclinica
- Contractor: POCUS PRO
- Advisory Board: Philips
- Book Royalties: Elsevier
- Not relevant to this lecture

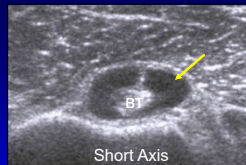
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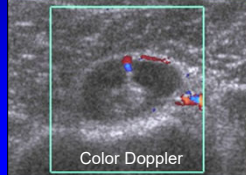
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Biceps Tendon:

- Glenohumeral joint effusion:
 - Collects around biceps tendon
 - Tendon sheath communication
 - Seen in 97% with joint effusion
 - Abnormal: > 1 mm¹



Short Axis



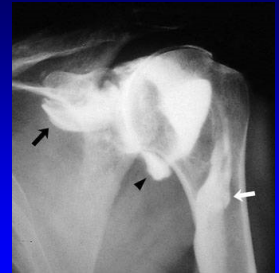
Color Doppler

¹Zubler et al. Eur Radiol 2011; 21:1858

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Shoulder Joint Recesses

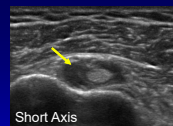
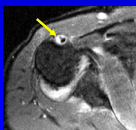
- Long head biceps tendon sheath
- Posterior recess:
 - Image with shoulder in external rotation
- Axillary recess
- Subscapularis recess



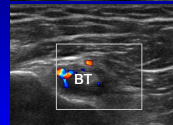
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Septic Joint

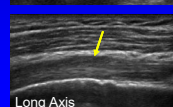
- Biceps tendon sheath distention
- Heterogeneous
- Increased blood flow
- Non-specific



Short Axis



BT



Long Axis

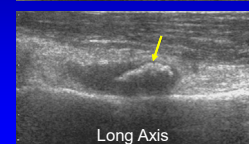
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Biceps Tendon Sheath

- Intra-articular body
 - Echogenic
 - Possible shadowing
 - Single or multiple
 - Associated with glenohumeral joint osteoarthritis



Short Axis

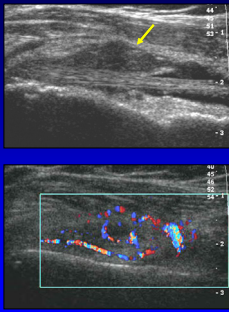


Long Axis

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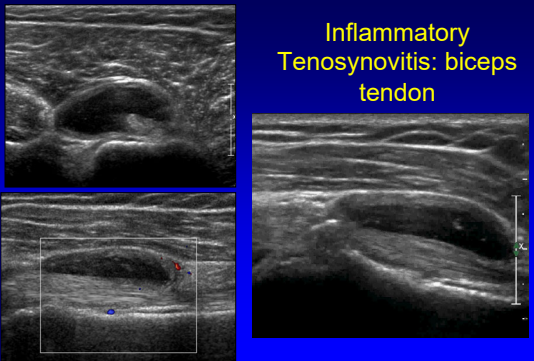
Biceps Tendon

- Tenosynovitis
 - Unlike joint effusion:
 - Focal distention
 - Hyperemia with color Doppler
 - Pain with transducer pressure
 - No effusion in posterior recess



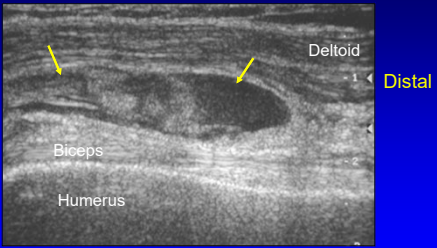
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Inflammatory Tenosynovitis: biceps tendon



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Subacromial-subdeltoid bursa: anterior

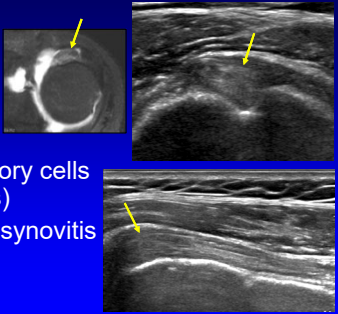


Sagittal

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Biceps Tendon

- Tendinosis:
 - Hypoechoic
 - Swollen
 - No inflammatory cells (not tendinitis)
 - Possible tenosynovitis




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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



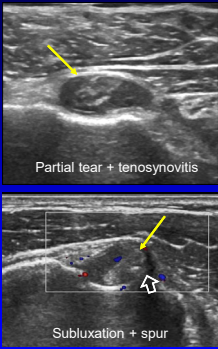
Biceps Brachii: short axis

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Biceps Tendon:

- Partial-thickness tear:
 - Hypoechoic /anechoic cleft
 - Tenosynovitis
 - Sensitivity: 27%
 - Accuracy: 88%
 - Subluxation / spur
 - Important secondary signs

Skendzel J, et al. AJR 2011; 197:942



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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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Biceps Tendon

- Full-thickness tear:
 - Non-visualization proximally
 - Bicipital groove filled with fluid / granulation tissue
 - Distal retracted tendon stump
 - Ultrasound: 88% sensitivity, 97% accuracy

Skendzel J, et al. AJR 2000; 197:942

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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

SST

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Shoulder: biceps tendon

- Subluxation
 - Partial medial displacement
- Dislocation
 - Complete out of groove
 - Possibly located within subscapularis or glenohumeral joint
- Evaluate dynamically

*Farin et al. Radiology 1995; 195:845

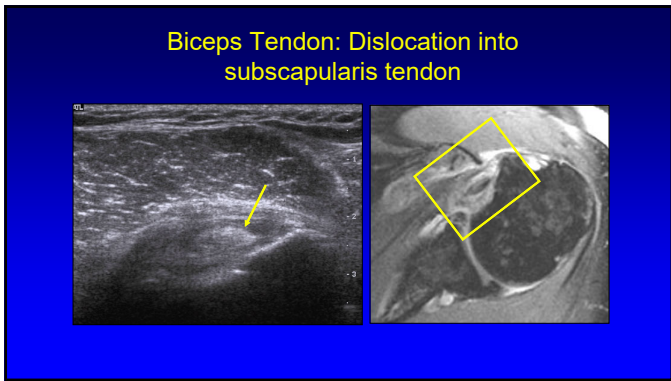
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Biceps Tendon Subluxation

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Biceps Tendon Dislocation

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Biceps Brachii: anatomy

- Origin: supraglenoid tubercle of scapula and labrum
- Reflection pulley: stability
 - Coracohumeral ligament
 - Superior glenohumeral ligament
 - Superior aspect of subscapularis

From: Ding et al. JBJS 2015; 96:E176

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Rotator Interval Tear

- Abnormal hypoechoogenicity, non-visualization
- Abnormal supraspinatus, superior glenohumeral ligament, subscapularis
- Biceps instability
 - "Chondral Print Sign"*
 - Intracapsular instability

Case #2: instability Case #3: remote tear

Yellow Arrow = coracohumeral ligament

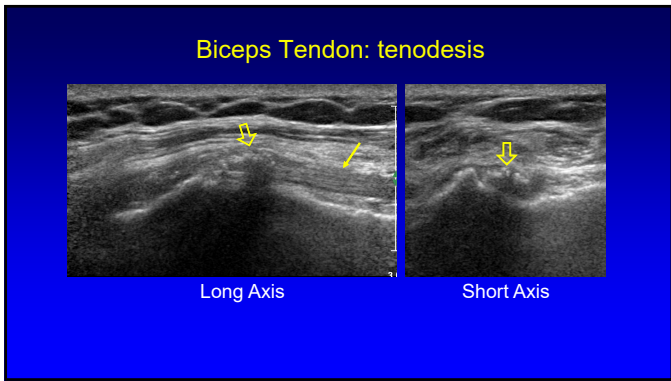
*Zappia M et al. Skel Radiol 2016; 45:35

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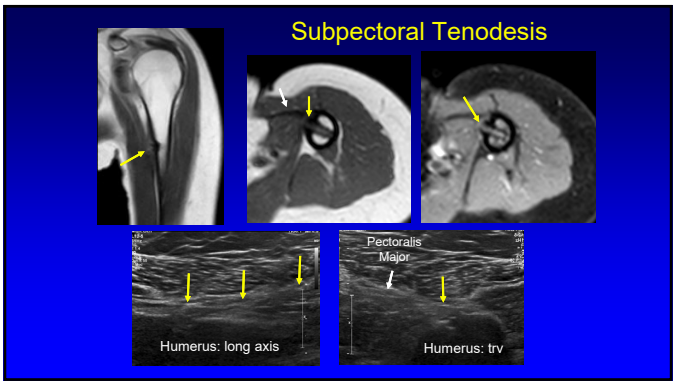
Biceps Tendon:

- Tenotomy: surgical transection of intra-articular aspect of long head biceps brachii tendon
- Tenodesis: surgical transection + fixation of proximal stump to intertubercular groove or subpectoral

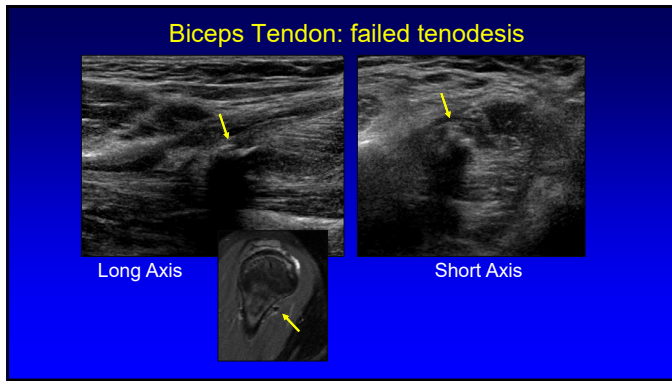
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Take-home Points

- Don't overcall tenosynovitis
- If you have to convince yourself that you are seeing the biceps tendon, it is not there
- Empty groove:
 - Full-thickness tear
 - Medial dislocation

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Thank you!

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Syllabus on line and other educational material:
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