Dynamic Musculoskeletal Ultrasound

Jon A. Jacobson, MD
FACR, FSRU, FAIUM, RMSK
Professor of Radiology
Lenox Hill Radiology, NYC
University of California, San Diego

Syllabus PDF

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Disclosures

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

See www.jacobsonmskus.com for syllabus other educational material

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Shoulder:

- Biceps brachii tendon dislocation
- Impingement
- Adhesive capsulitis
- Acromioclavicular joint subluxation
- Paralabral cyst assessment
- Intra-articular bone fragment

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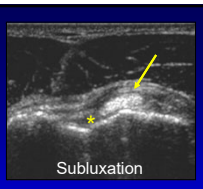
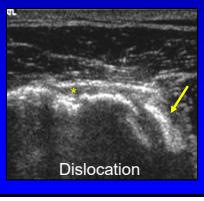
Shoulder: biceps tendon

- 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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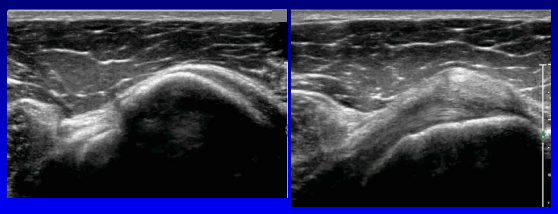
Biceps Tendon Dislocation



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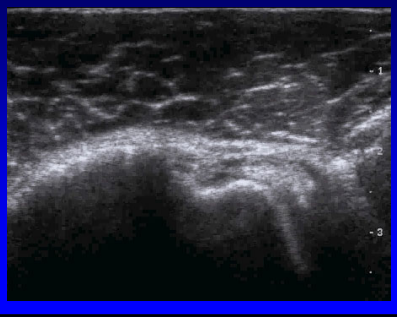

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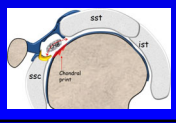
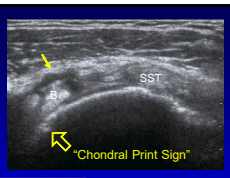
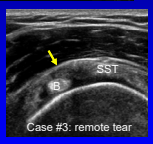
Rotator Interval Tear

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







Yellow Arrow = coracohumeral ligament

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

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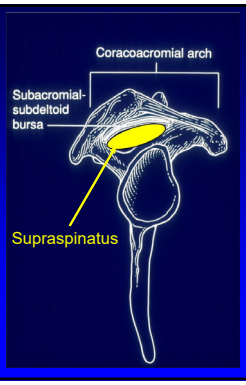
Impingement Syndrome

- Cuff impingement
- Subacromial enthesophyte or acromioclavicular joint osteophyte
- Associated tendon degeneration and tear



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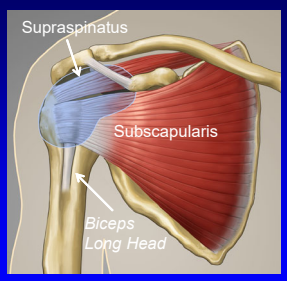
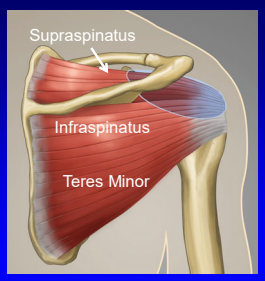
Subacromial-subdeltoid Bursa (blue)





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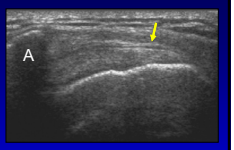
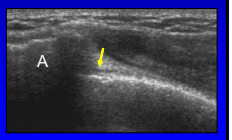
Impingement: bursal fluid

- Abnormal pooling of subacromial-subdeltoid bursal fluid
- Lateral acromion[1]:
  - Coronal plane, active arm elevation
  - Not visible in neutral position, no cuff tear
- At coracoid[2]:
  - Axial plane, active elevation internal rotation

[1]Farin et al. Radiology 1990; 176:845
[2]Stallenberg et al. AJR 2006; 187:894





Normal

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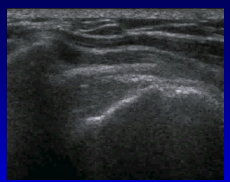
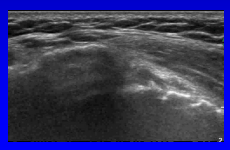
Subacromial Impingement

- Thickened tendon or bursa
  - Possible snapping of thickened bursa
  - "Gathering" of bursa: may be asymptomatic[1]
- Superior movement of humeral head
  - Possible contact between humerus and acromion[2]

[1]Daghir A et al. Skeletal Radiol 2012; 41:1047
[2]Bureau N et al. AJR 2006; 187:216





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Subacromial Impingement: anterior

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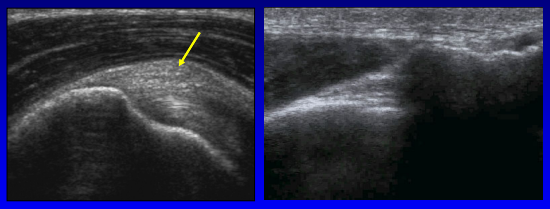
Impingement: supraspinatus



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Adhesive Capsulitis:

- Frozen shoulder
- Gradual limitation in motion
- Incidence 2 – 5%
- Diabetic (insulin dependent): 30%
- Associations: female, trauma, >40 years old, diabetes, immobilization, thyroid disease, stroke, MI, autoimmune disease

Griesser, et al, JBJS 2011; 93:1727

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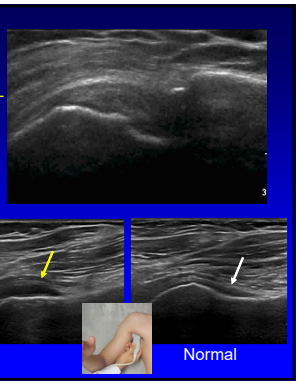
Adhesive Capsulitis

- Supraspinatus tendon does not slide beneath acromion with lateral elevation of arm
- Sensitivity 91%, specificity 100%, accuracy 92%
- Axillary recess capsule thickness >3 mm

Ryu et al. J Ultrasound Med 1993; 12:445
Kim DH et al. Skeletal Radiol 2018; 47:1491



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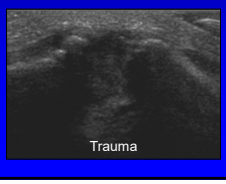
Acromioclavicular Joint

- Dynamic evaluation: clinical sign "cross-arm"
  - Ipsilateral hand to opposite shoulder: pain
- Normal:
  - Maneuver: ACJ narrows, <1 mm, no pain
  - Rest: widens back to normal (up to 5 mm)
- Abnormal:
  - Maneuver: ACJ narrows, > 1 mm, extruded capsule and disc: osteoarthritis
  - Rest: ACJ widens > 5 mm: trauma



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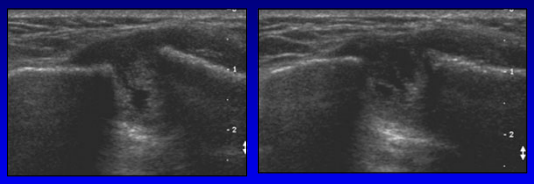
AC joint: subluxation



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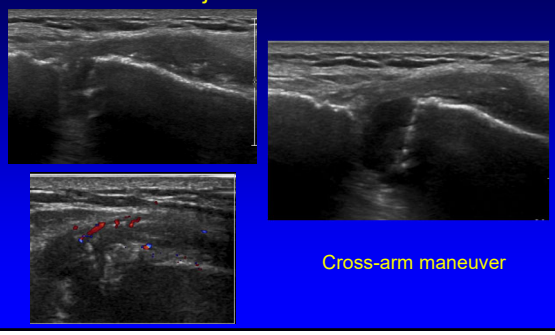
AC joint: subluxation



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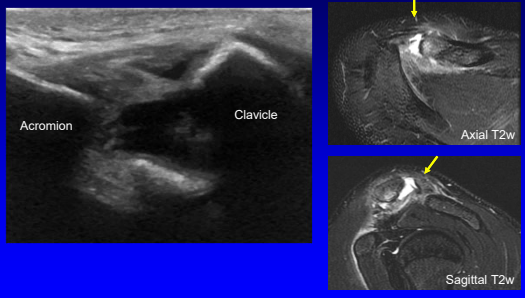
AC joint: subluxation



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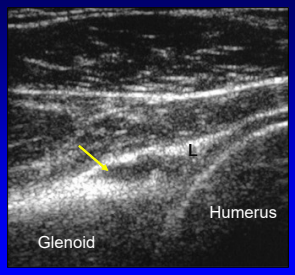
Posterior Labral Tear and Cyst



Axial

Axial T1w post-gado

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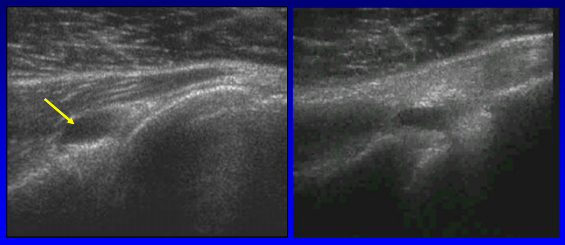
Labral Tear and Labral Cyst



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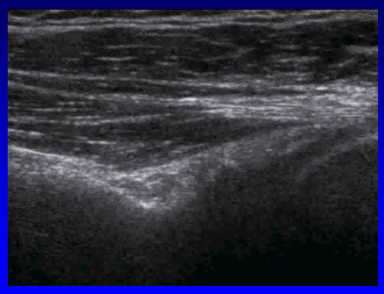
Pitfall: suprascapular vein dilation



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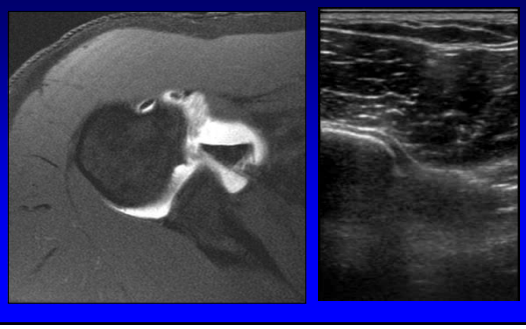
Snapping Lesser Tuberosity Fragment



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Dynamic Imaging: summary

- Dynamic pathologic conditions
  - Limited number
  - Involve specific structures
- Consider ultrasound for any snapping or painful dynamic situation

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Thank you!

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

Twitter handle: @jjacobsn

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