

Pitfalls in Shoulder Ultrasound

Jon A. Jacobson, MD
FACR, FAIUM, FSRU, RMSK

1

Disclosures

- Consultant: Bioclinica
- Contractor: POCUS PRO
- Book Royalties: Elsevier
- Not relevant to this talk

*Note: all images from the textbook
Fundamentals of Musculoskeletal Ultrasound are copyrighted
by Elsevier Inc.*

2

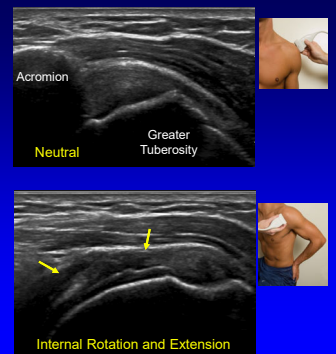
Outline: rotator cuff pitfalls

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

3

Improper Arm Position

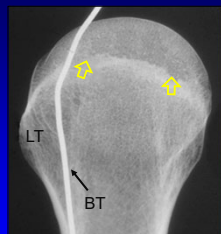
- Inadequate internal rotation/extension
- Supraspinatus is hidden beneath acromion
- Proximal tears not visualized



4

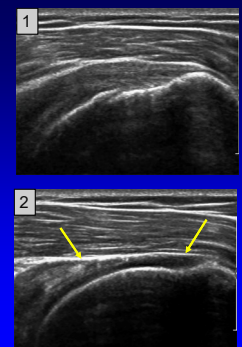
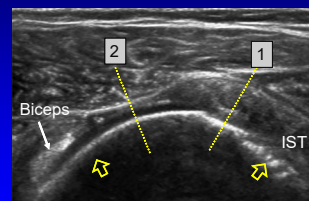
Incomplete Evaluation of Supraspinatus:

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

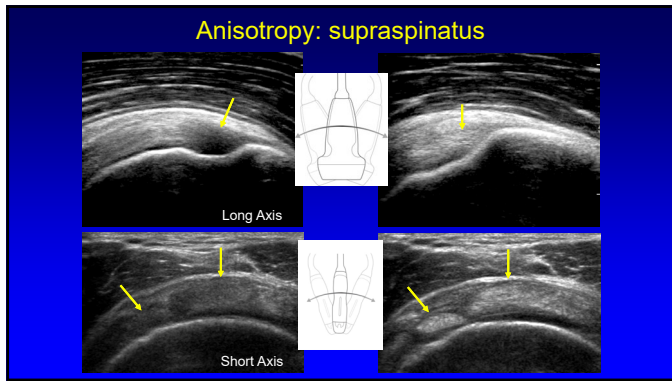


5

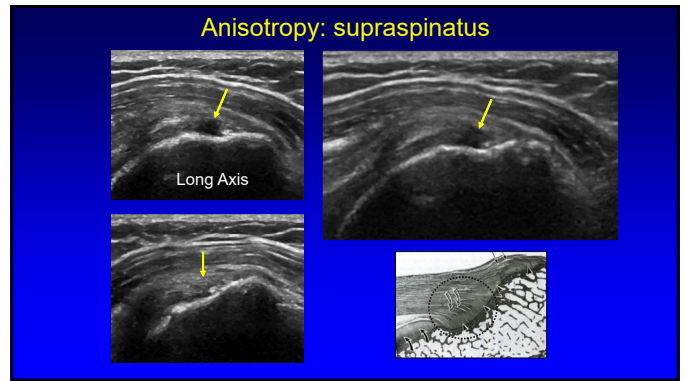
Incomplete Evaluation of Supraspinatus



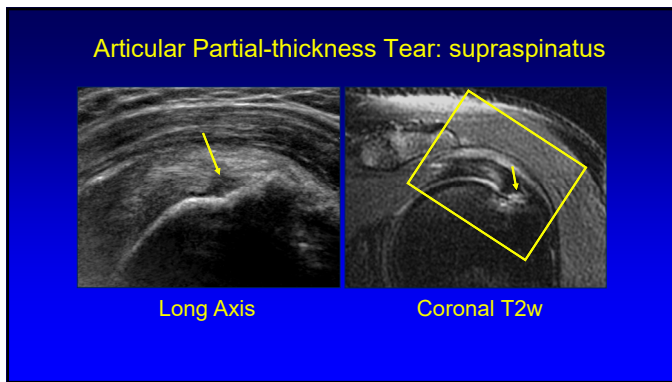
6



7



8



9

- ### Outline: rotator cuff pitfalls
- Technique
 - Misinterpretation of normal structures
 - Subacromial-subdeltoid bursa
 - Differentiating pathology

10

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

Sub

BT

SST

Humerus

Coracohumeral Ligament

Superior Glenohumeral Ligament

Sub

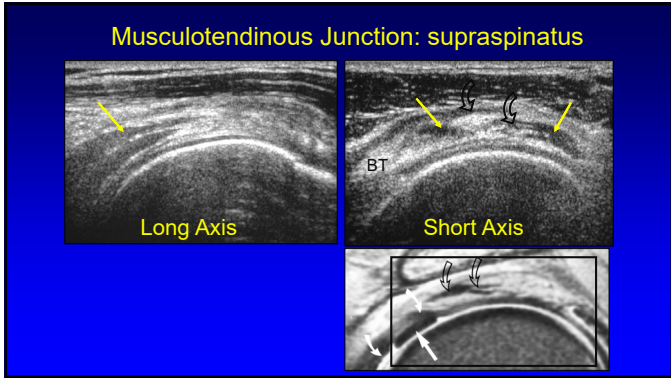
Glenoid

IST

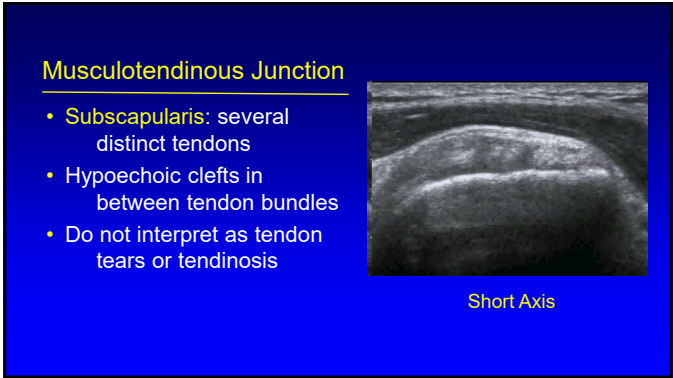
11

- ### 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

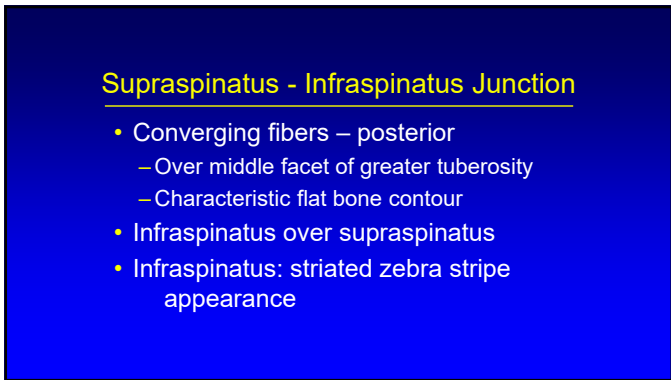
12



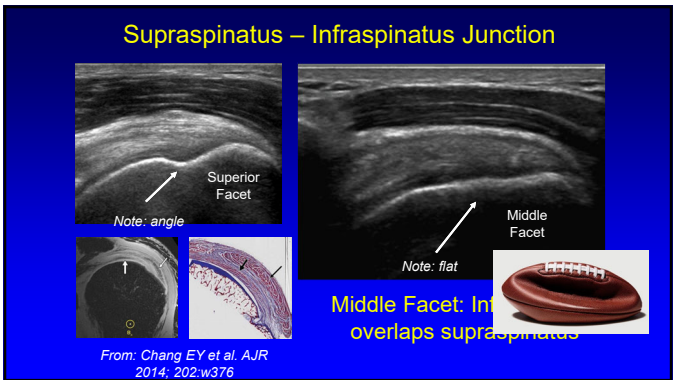
13



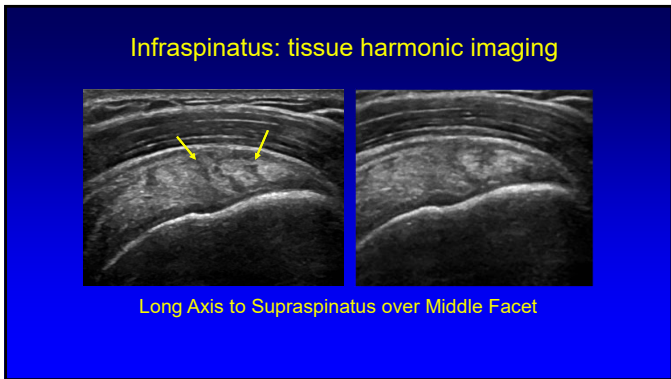
14



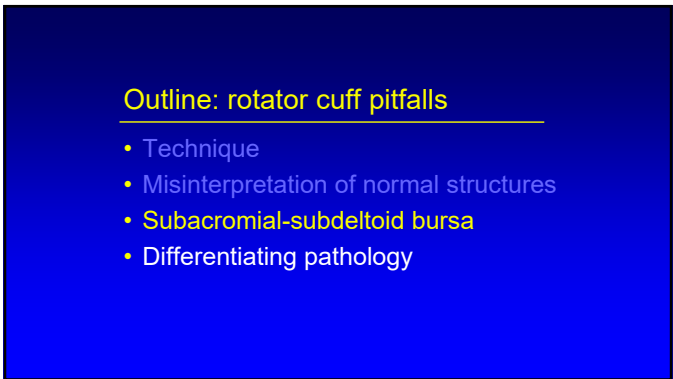
15



16



17



18

Subacromial-subdeltoid Bursa

- Hyperechoic synovium may appear similar to tendon fibers
- Hyperechoic thickness that extends beyond greater tuberosity is synovium and not cuff fibers

19

Pseudofibers with full-thickness tear

- Hyperechoic and fibrillar
- Typically thinner than normal cuff
- Extends beyond greater tuberosity

20

Outline: rotator cuff pitfalls

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

21

Tendon Tear versus Tendinosis

**both may appear hypoechoic*

Tear	Tendinosis
• Anechoic	• Hypoechoic
• Well-defined	• Ill-defined
• Homogeneous	• Heterogeneous
• Thinned	• Swollen
• Bone irregularity*	• Smooth cortex

*At supraspinatus tendon footprint in patients over 40 years old

22

Tendon Tear vs. Tendinosis

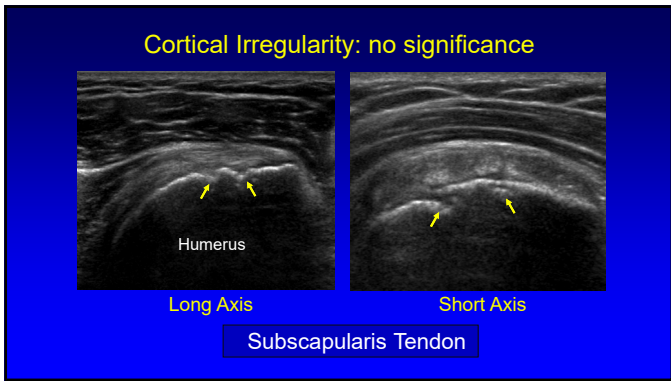
23

Cortical Irregularity:

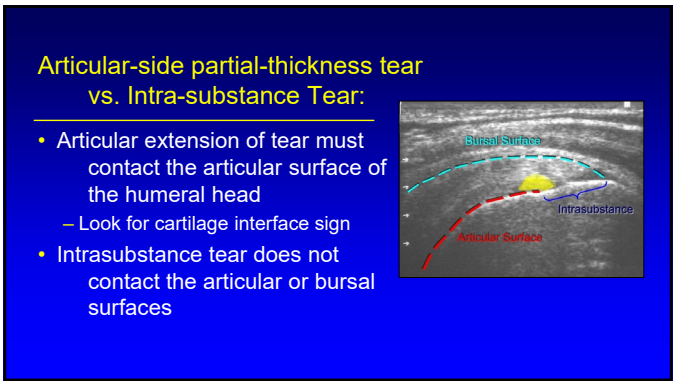
- Greater tuberosity: at supraspinatus insertion
- When present: 75% have rotator cuff tears
 - Patient over 40 years old
- When absent: 96% normal cuffs by sonography

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

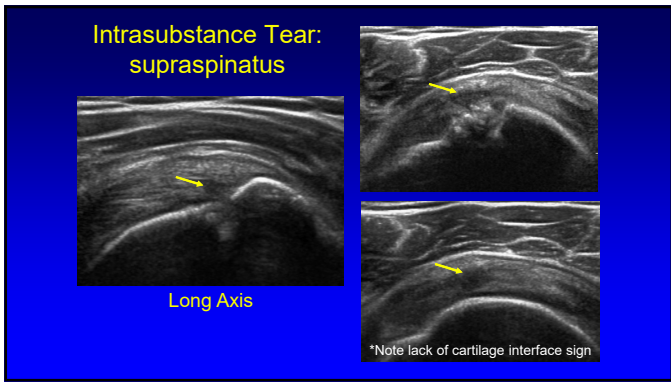
24



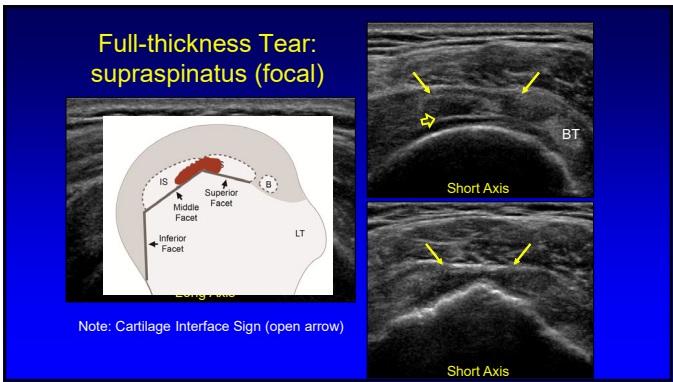
25



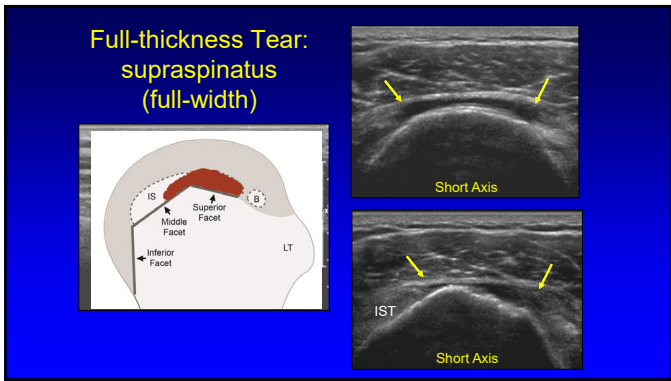
26



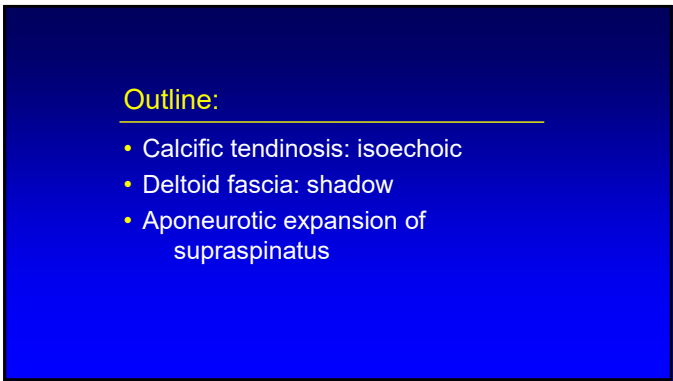
27



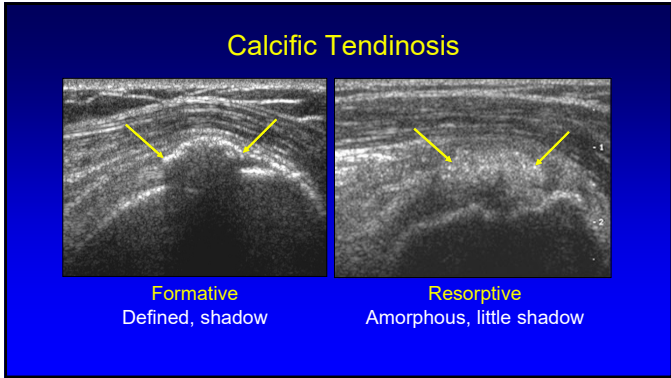
28



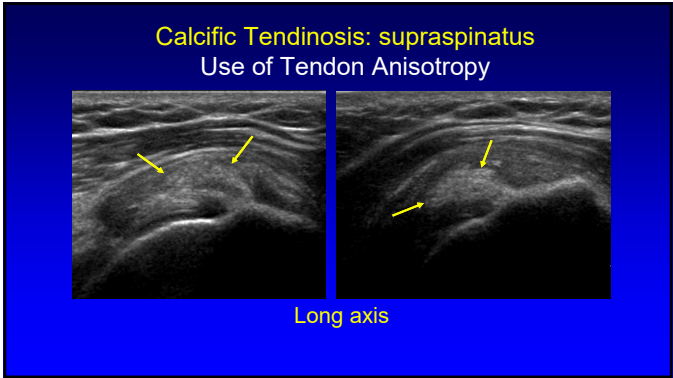
29



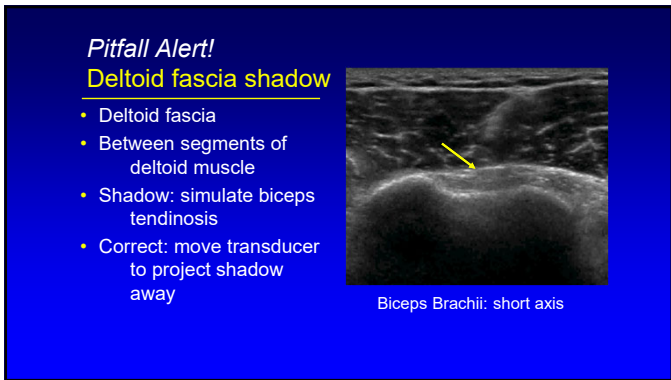
30



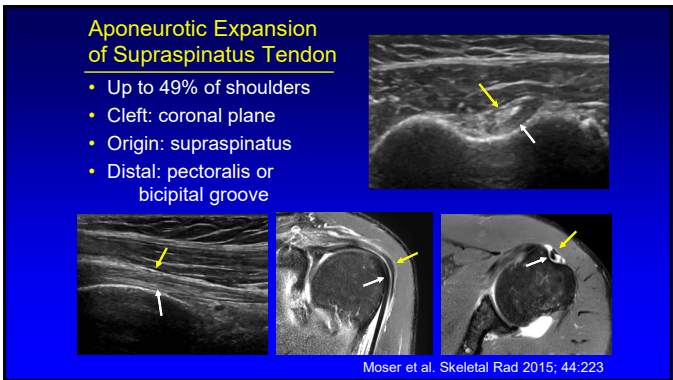
31



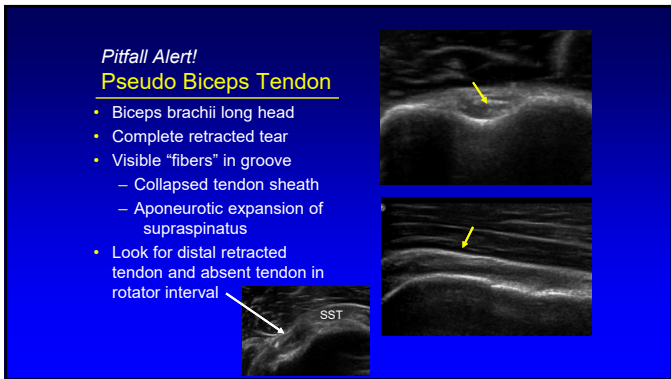
32



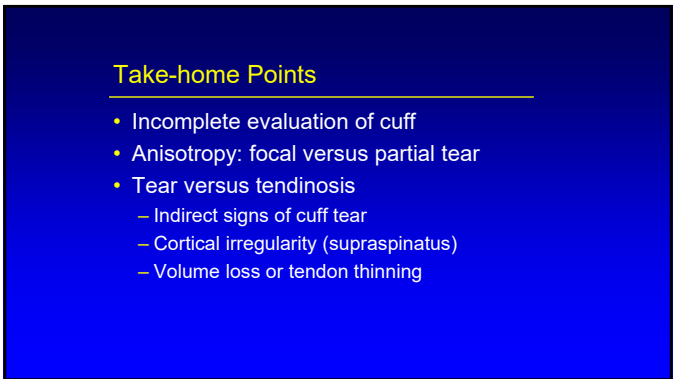
33



34



35



36

Thank you!

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

Twitter handle: @jjacobsn