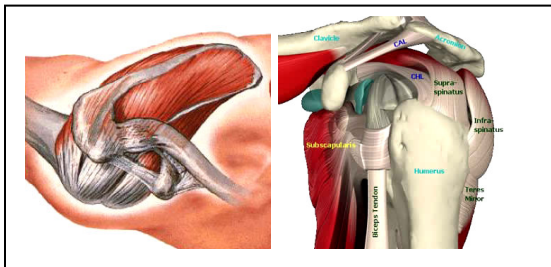


DYNAMIC HIGH RESOLUTION SHOULDER SONOGRAPHY

**Part 1 in our series of
The Sound Of Bones**

In this series & subsequently our intent at **Vital Imaging** is to review currently accepted clinical applications of Musculoskeletal (MSK) Sonography and generate interest in what we believe to be a highly underused technique.



Why Do Shoulder Ultrasound?

Dynamic shoulder ultrasonography is a noninvasive, accurate method used to assess the rotator cuff tendons. The low cost, convenience & lack of risk make dynamic sonography an excellent imaging tool for evaluating rotator cuff.

Arthrography originally was the modality of choice for evaluating rotator cuff continuity, but this invasive technique largely has been replaced by MRI.

MRI provides a global view of the shoulder & is a very sensitive modality. However, it is expensive & may be time-consuming.

US Shoulder a highly underused technique is equivalent to both arthrography and MRI in the evaluation of full-thickness tears. A useful adjunct in the diagnosis of partial thickness tears.

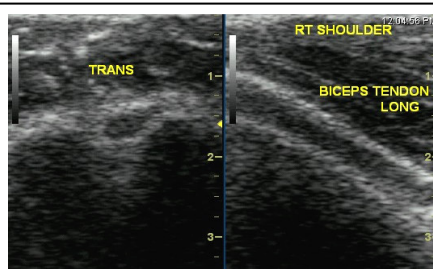
**ADVANCEMENTS IN QUALITY, PORTABILITY, & ECONOMY
HAVE MADE DYNAMIC HIGH RESOLUTION SONOGRAPHY
A PRACTICAL METHOD FOR IMAGING THE ROTATOR CUFF**

Indications:

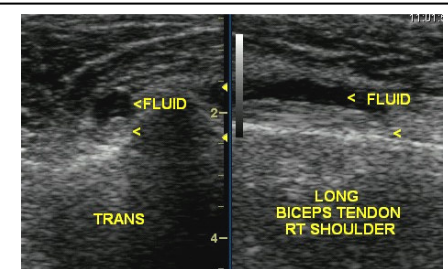
- Rotator cuff tears
- Subacromial-subdeltoid bursitis
- Biceps tendonitis / Subluxation
- Calcific tendinitis
- Glenohumeral effusion
- Muscle atrophy

Technique:

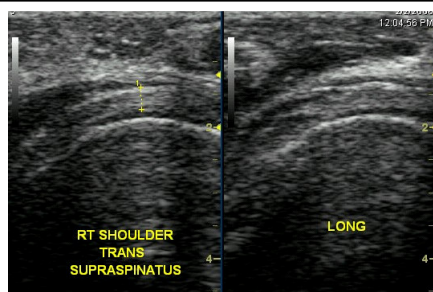
- > *Vital Imaging* - Systematic comprehensive protocol for dynamic shoulder sonography
- > *American Institute of Ultrasound in Medicine Practice* - Guideline for the performance of shoulder ultrasound examination
- > *European Society Of MSK Radiology* - Technical guidelines



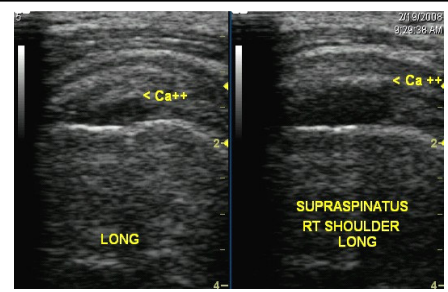
Normal – Biceps Tendon



Fluid along the Biceps Tendon



Normal – Supraspinatus Tendon



Calcific Supraspinatus Tendinitis

Sonographic Subluxation Test > Dynamic scanning of the shoulder in maximal external rotation to evaluate medial displacement of the biceps tendon.

DYNAMIC HIGH RESOLUTION SHOULDER SONOGRAPHY

Dynamic HR Shoulder USG Advantages:

- Accurate
- Non-invasive
- Economical, fraction of a cost to that of MRI
- Dynamic (Real time evaluation)
- Comparison with asymptomatic side
- Only imaging option for patients with dye allergy, claustrophobia, metallic implants or pacemakers

Dynamic HR Shoulder USG Limitations:

- Limited ability to accurately assess labral & articular pathology
- Anisotropy, sonographic drop-out artifact due to poor angulation of the transducer with respect to the tendon.
- Highly underused (lack of awareness)
- Needs highly skilled radiologists following dedicated protocols

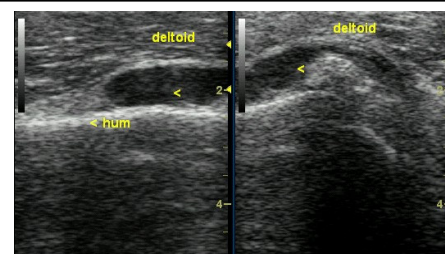
Specific USG criteria for diagnosis of rotator cuff tears include
Full thickness tear - Nonvisualization of the rotator cuff or focal defect
Bursal side partial-thickness tear - Flattening of the bursal surface
Articular side partial-thickness tear - Distinct hypoechoic or mixed hyper & hypoechoic defect at the articular surface

Secondary signs include

Greater tuberosity cortical irregularity

Fluid within the subacromial-subdeltoid bursa & Joint effusion

Sonography should be used wherever possible to improve diagnosis & treatment of painful shoulder



Subacromial – subdeltoid Bursitis



Supra-spinatus Tear

Sonography, with over 90% sensitivity & specificity can help confirm the diagnosis in clinically or radiographically equivocal cases. US can also reveal the presence of other abnormalities that may mimic rotator cuff tear at clinical examination, including tendinosis, calcific tendinitis, subacromial subdeltoid bursitis, greater tuberosity fracture & adhesive capsulitis

Muscle atrophy – Diffuse increased echogenicity with reduced muscle bulk is a reliable indicator of muscle atrophy. Most cases are detected in the setting of a full thickness rotator cuff tear

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Add Sonography to your musculoskeletal diagnostic armamentarium. It is quick and the results are immediate

We hope to inspire physicians to consider MSK Sonography as a viable & frequently primary option in the assessment of joint and soft-tissue disorders