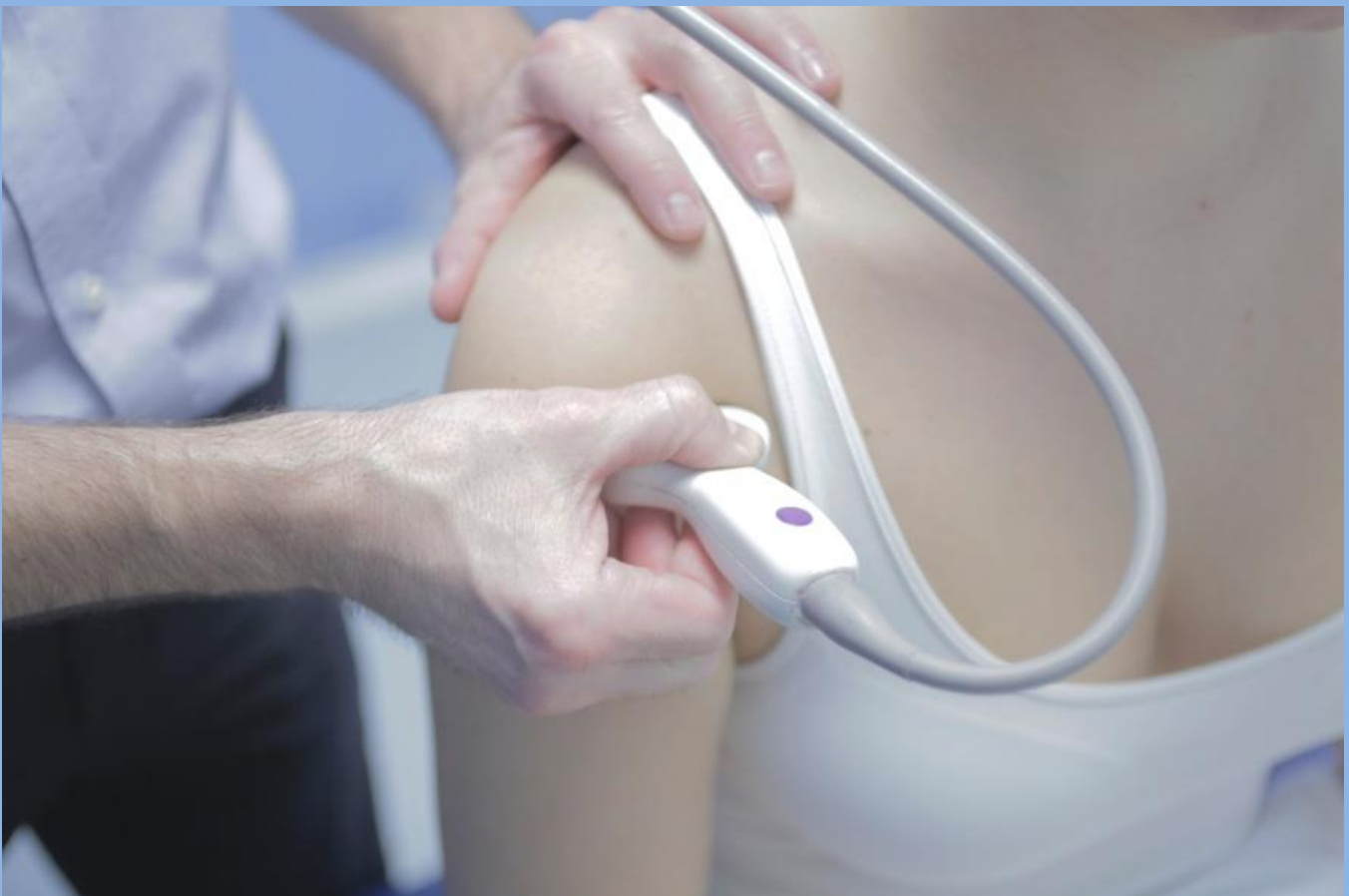


## The Shoulder – Scanning Protocol



## **Diagnostic Imaging of the Shoulder**

The shoulder joint should be considered as a whole given the interplay between the tendons of the rotator cuff, the bursae, the tendon of the long head of biceps and the acromioclavicular joint. In particular ultrasound of the shoulder should include dynamic scanning of structures to assess for impingement syndromes.

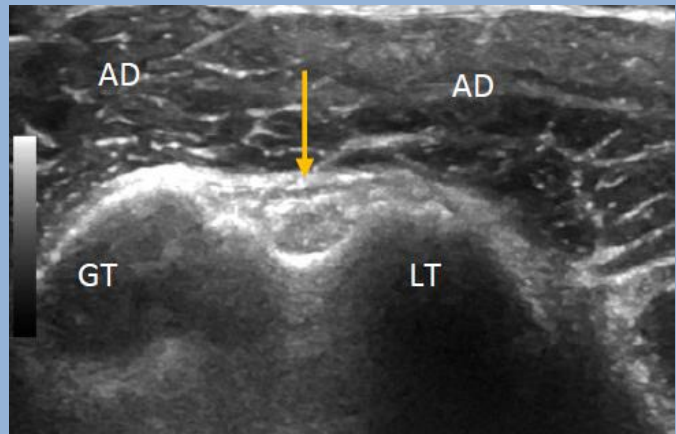
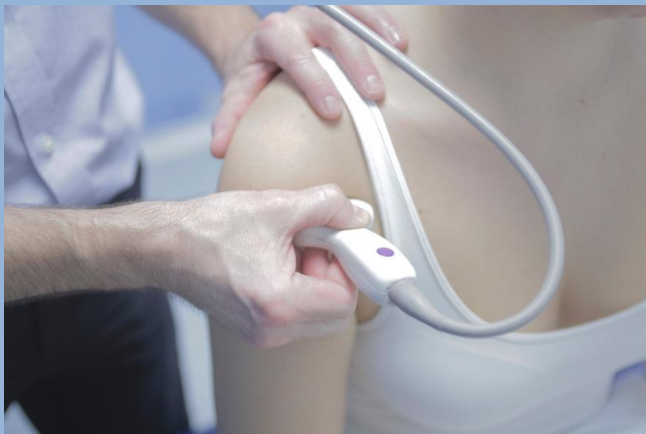
Imaging includes:

- Long head of biceps tendon
- Subscapularis tendon
- Dynamic assessment for long head of biceps subluxation and subcoracoid / anterior impingement
- Supraspinatus tendon and subacromial bursa
- Infraspinatus tendon and posterior glenohumeral joint
- Suprascapular notch and suprascapular nerve
- Acromioclavicular joint
- Sternoclavicular joint

# 1. Long Head of Biceps tendon

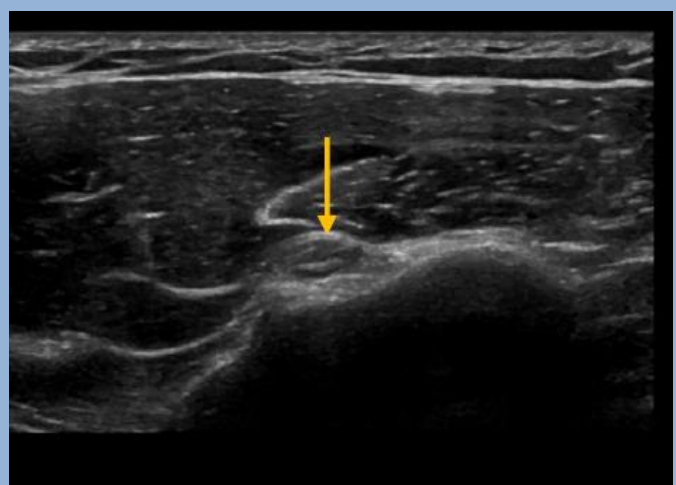
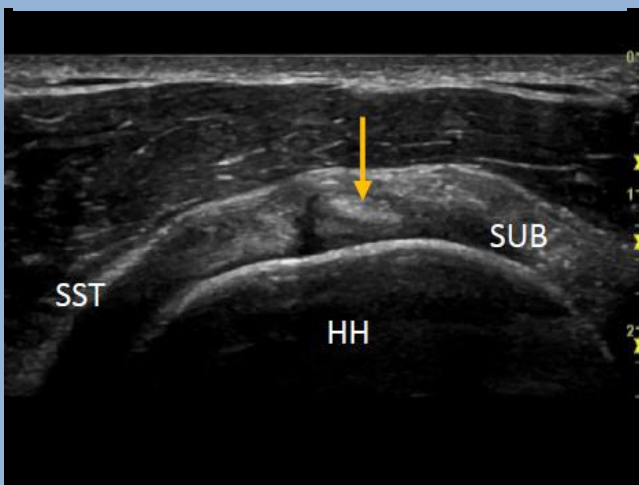
## Transverse Scan

The patient is seated with the elbow flexed to 90° and the arm supported on a pillow. The arm maybe placed in slight internal rotation. The probe is placed in the anatomical coronal plane so that is positioned transversely over the long biceps tendon found in the bicipital groove between the greater and lesser tuberosities. Scan proximally as far as possible before the tendon passes form view below the acromium and distally to the musculotendinous junction at the level of the pectoralis major tendon.



Long head of biceps proximal to the bicipital groove. Note the tendon is oval in appearance as it turns medially to run over the humeral head.

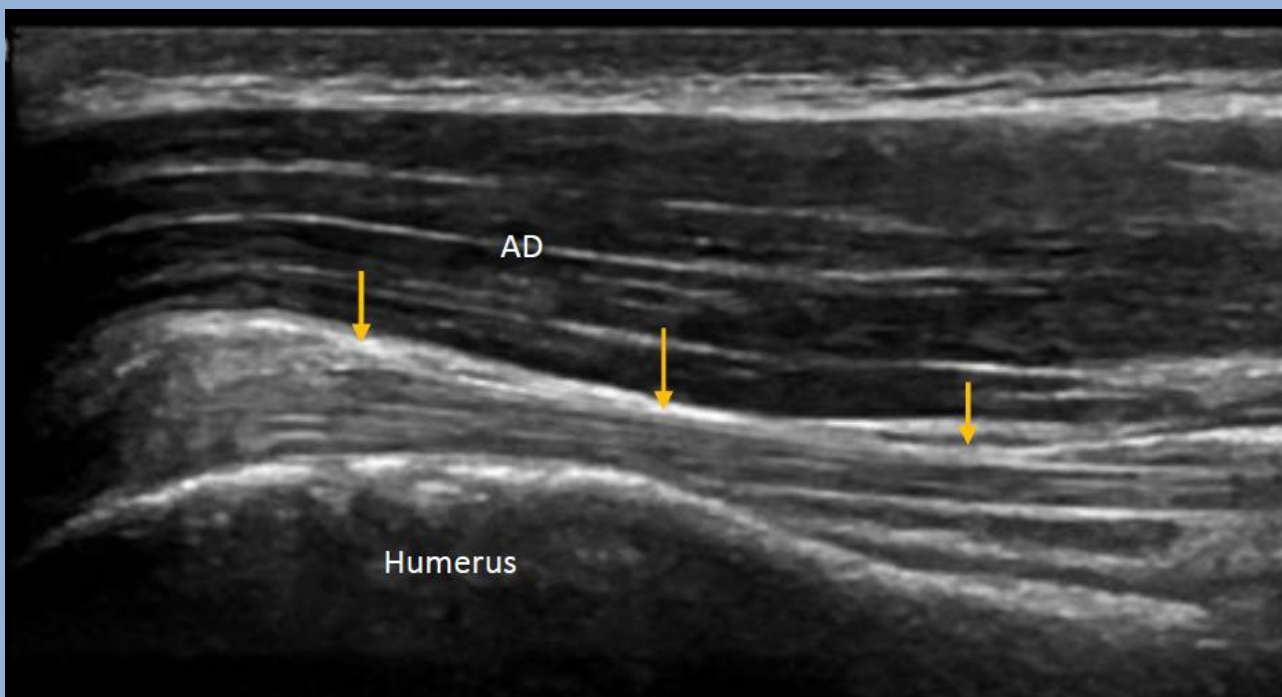
Long head of biceps distal to the bicipital groove at the level of the pectoralis major tendon



**Legend:** AD- anterior deltoid; GT- greater tuberosity; LT- lesser tuberosity; SST- supraspinatus tendon; SUB- subscapularis tendon; HH- humeral head; Yellow arrow- long head of biceps

### Longitudinal Scan

The probe is returned to the level of the bicipital groove and turned through 90° so that is positioned in the anatomical sagittal plane to view the tendon longitudinally.

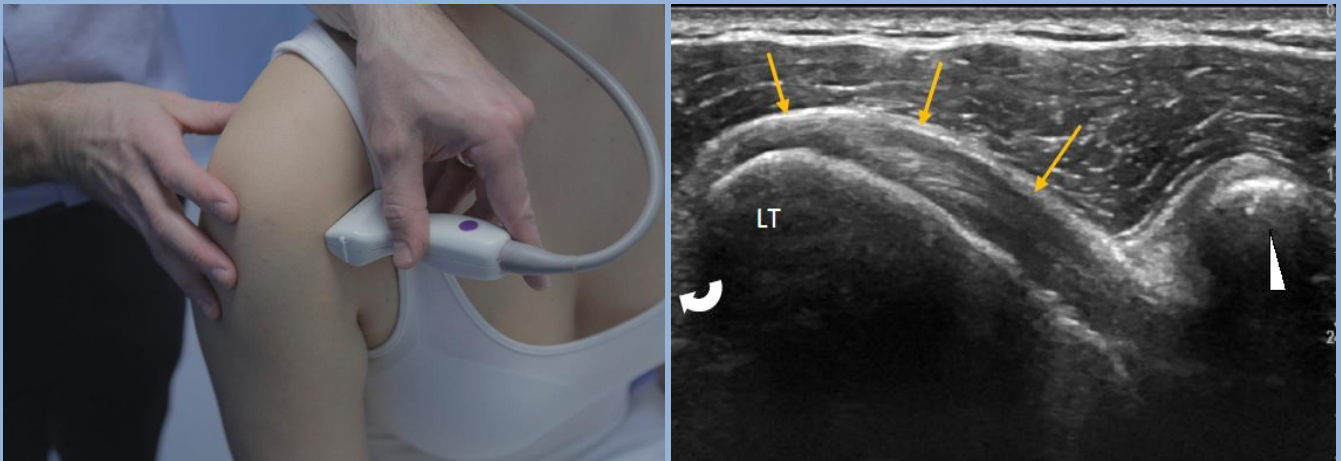


*Legend: AD-anterior deltoid; Yellow arrow-long head of biceps.*

## 2. Subscapularis tendon

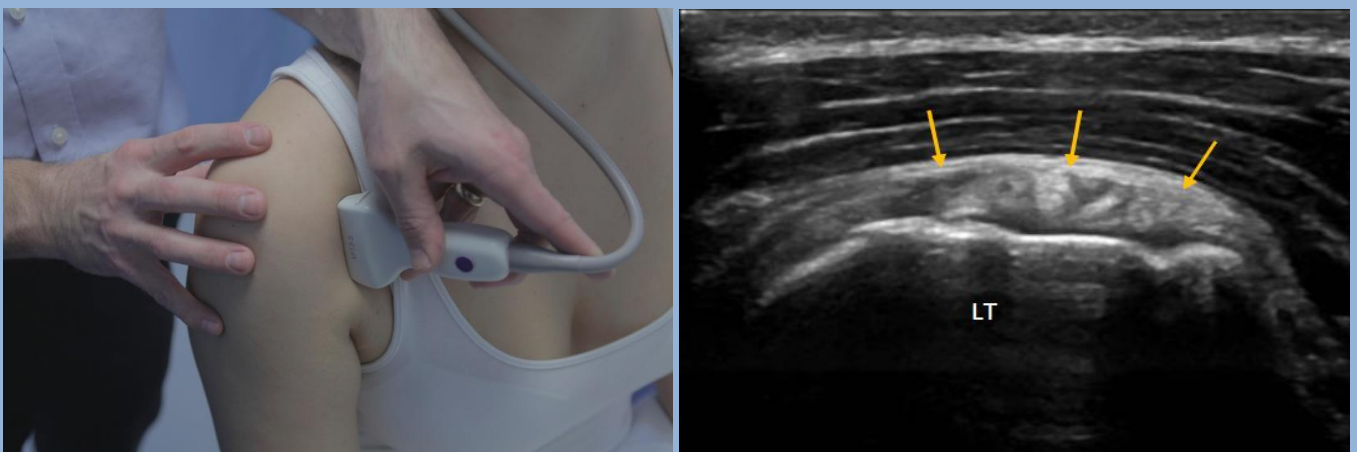
### Longitudinal Scan

The patient is seated with the elbow flexed to 90° and the arm supported on a pillow. The arm should be placed in slight external rotation. The long head of the biceps may be used as a landmark. The probe is placed in the anatomical coronal plane to image the subscapularis tendon longitudinally. The arm should be externally and internally rotated to view the greatest extent of the tendon possible and to assess for anterior impingement.



### Transverse Scan

To view the subscapularis tendon transversely the probe is turned through 90° to be positioned in the sagittal plane. If the probe is angled in a slight posterolateral alignment a better image maybe obtained.



Note the fascicular pattern of the subscapularis tendon in transverse view which is entirely normal

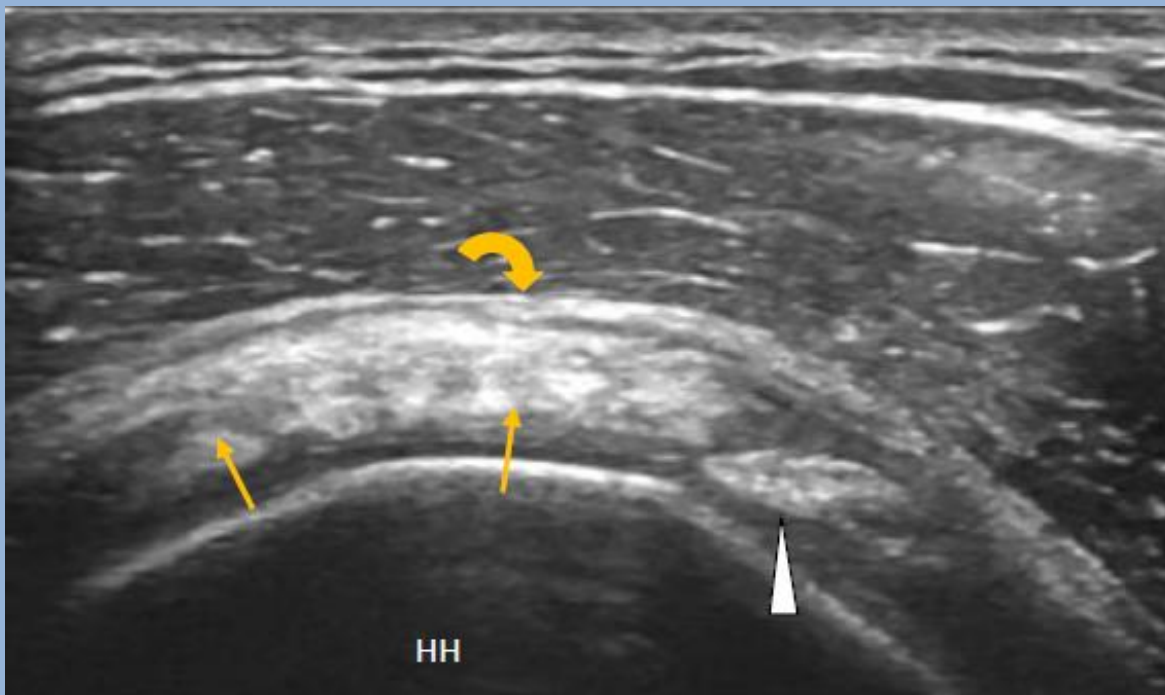
**Legend:** Yellow arrow-subscapularis tendon; White arrowhead-coracoid; LT-Lesser tuberosity; Curved arrow-bicipital groove.



### 3. Supraspinatus tendon and subacromial bursa (including dynamic imaging as indicated)

#### Transverse Scan

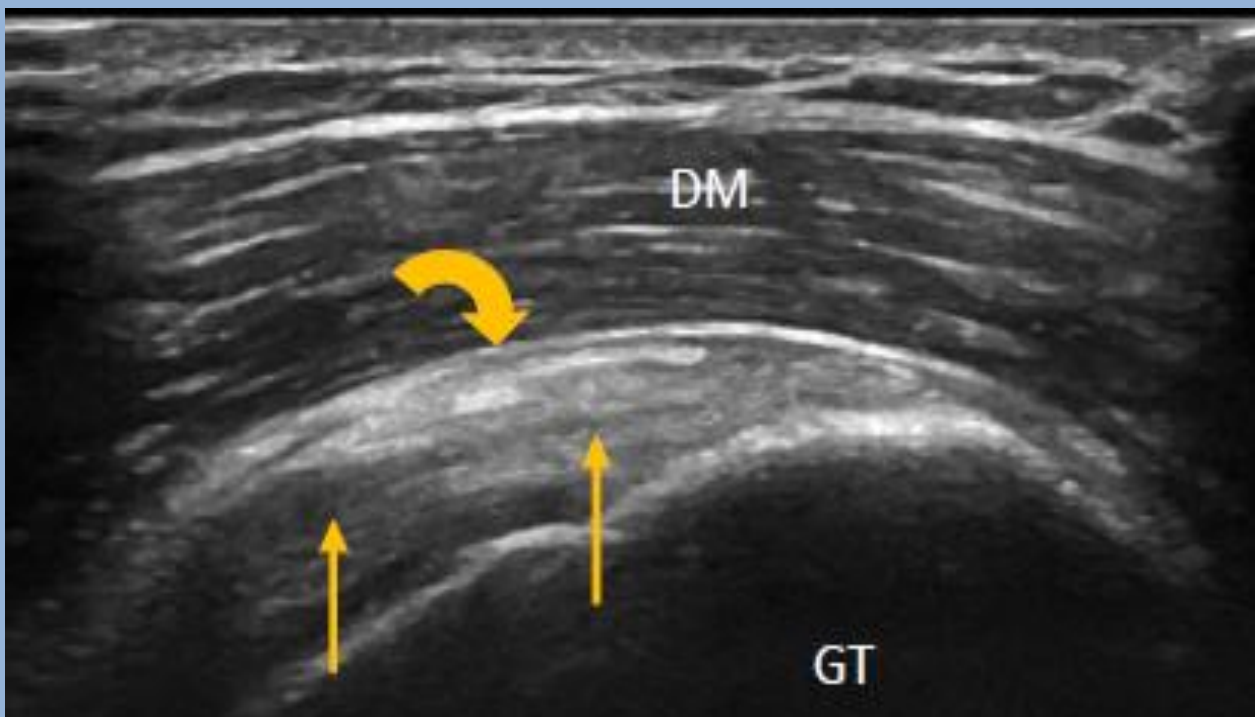
The patient is asked to place their hand on the posterior aspect of their hip while keeping the elbow tucked in. Find the long head of the biceps in transverse view and then move the probe posteriorly to view the supraspinatus tendon in transverse section. It is important to scan distally as far as the greater tuberosity and proximally following the tendon of supraspinatus until it disappears below the acromium.



*Legend: Yellow arrows-supraspinatus tendon; Curved arrow -subacromial bursa; White arrowhead-long head of biceps; HH-humeral head.*

### Longitudinal Scan

The probe is turned through 90 degrees to find the long head of biceps running longitudinally through the rotator interval. Moving the probe in a superolateral direction allows the full visualisation of the supraspinatus tendon from its anterior free edge through its midsubstance to the tendon of infraspinatus posteriorly.

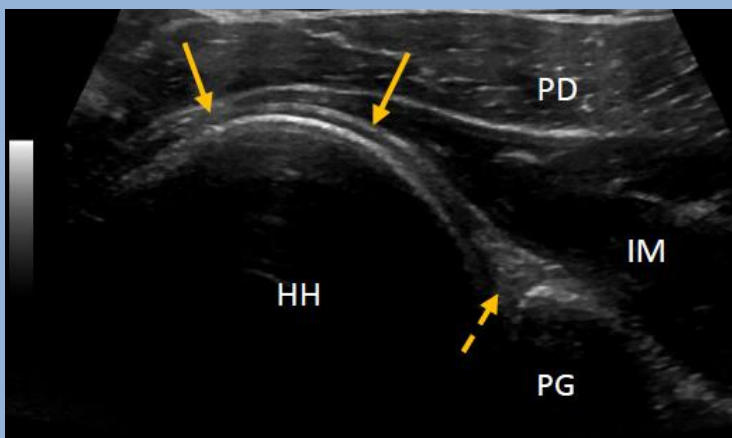


*Legend: DM-deltoid muscle; GT-greater tuberosity; Yellow arrow-supraspinatus tendon; Curved arrow - subacromial bursa.*

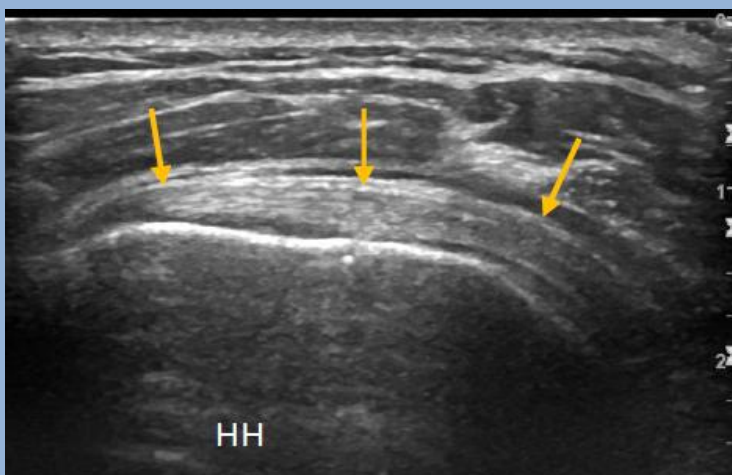
#### 4. Infraspinatus tendon

##### Longitudinal Scan

The patient is asked to place the hand of the shoulder to be imaged on the opposite shoulder with the elbow resting on the chest. In this position the tendon of infraspinatus runs horizontally and is parallel to and immediately below the spine of the scapula. Scan from the musculotendinous junction posterior to the humeral head to the insertion of the tendon onto the greater tuberosity which is situated relatively laterally.



Posterior glenohumeral joint demonstrating the posterior aspect of the humeral head, posterior glenoid and labrum and the overlying infraspinatus muscle and tendon deep to the posterior deltoid muscle.



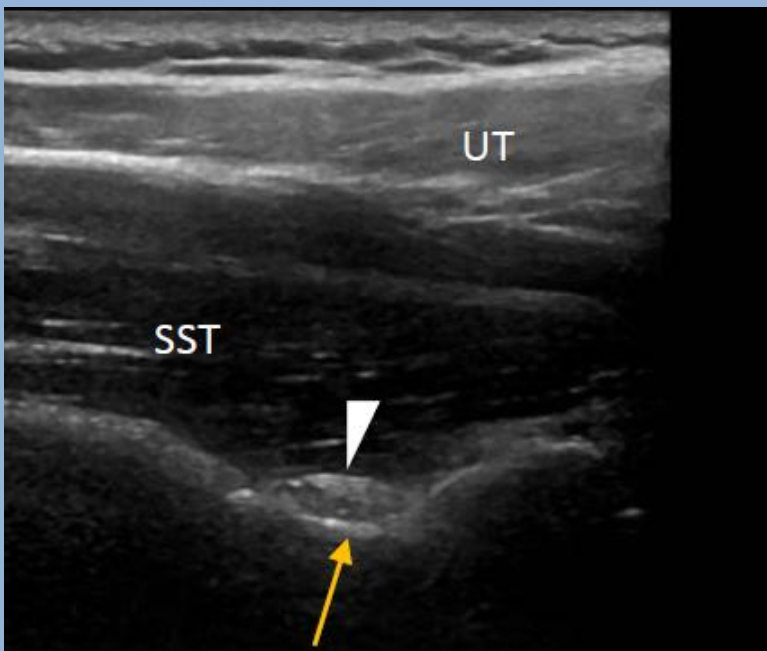
**Legend:** HH-humeral head; PG-posterior glenoid; PD-posterior deltoid; IM-infraspinatus muscle; Yellow arrow-infraspinatus tendon; Yellow arrow dashed-posterior glenoid labrum



## 5. Suprascapular notch and Suprascapular nerve

### Suprascapular notch and nerve

The patient sits with their arm by their side. The probe is placed in a coronal-oblique plane over the supraspinous fossa. The suprascapular notch and nerve may be seen in longitudinal view immediately medial to the acromioclavicular joint deep to the upper trapezius and supraspinatus muscle.

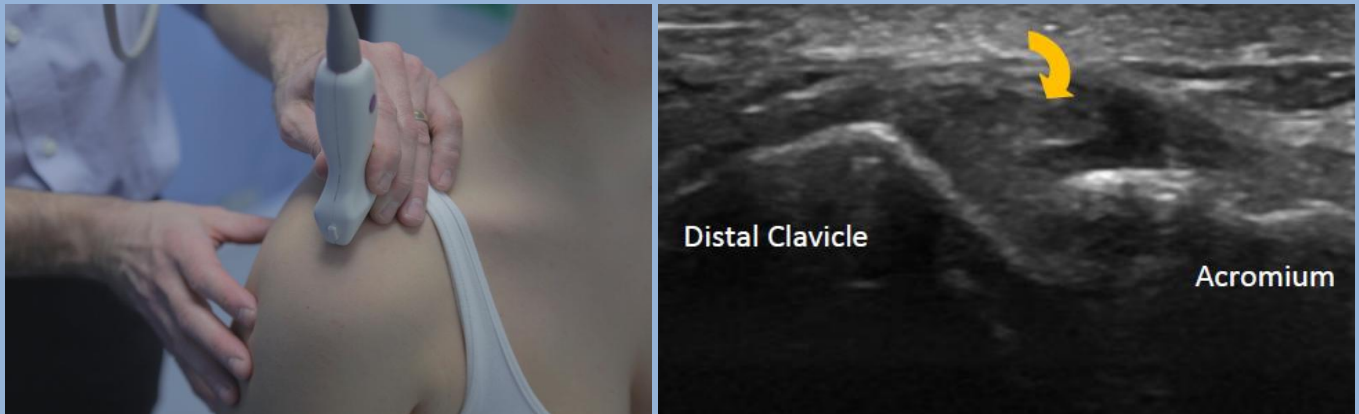


*Legend: Yellow arrow-suprascapular notch; UT-upper trapezius muscle; SST-supraspinatus muscle; White arrowhead-suprascapular nerve.*

## 6. The Acromioclavicular joint

### The Acromioclavicular joint

The patient is positioned with the arm by their side. The acromioclavicular joint is viewed longitudinally with the probe placed in a coronal-oblique plane.



*Legend: Curved arrow-acromioclavicular joint capsule.*

## 7. Sternoclavicular joint

### Sternoclavicular joint

The patient is positioned in supine lying with the arms resting on the abdomen. The probe is placed longitudinally over the sternoclavicular joint.



*Legend: Curved arrow-sternoclavicular joint; White crosses-normal relationship between sternum and proximal clavicle.*

