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Musculoskeletal ultrasound protocol

The Shoulder

@mskultrasound www.theultrasoundsite.co.uk

The Shoulder - Stage 1

Long head of biceps tendon

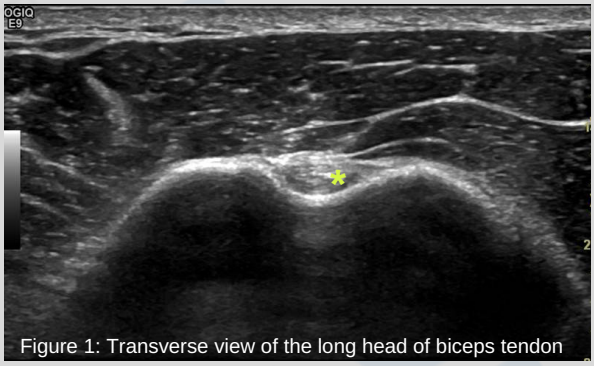


Figure 1: Transverse view of the long head of biceps tendon

Figure 2: Long axis view of the long head of biceps tendon

Place the ultrasound probe on the front of the shoulder in a transverse plane, and you will visualise the distinct bony outline of the bicipital groove and view the bright hyperechoic biceps tendon sitting within it (*,Figure 1). Consider the anatomy of the long head of biceps and the bony contour of the humeral head and angle your probe in a slightly cephlad direction to ensure you can clearly see the long head of biceps tendon. Move the probe proximally and distally following the biceps tendon to the musculotendinous junction and proximal to the groove.

Ensure you also visualise in long axis as well (Figure 2) and interrogate the tendon from its proximal origin to its distal insertion.

The Shoulder - Stage 2

Subscapularis tendon

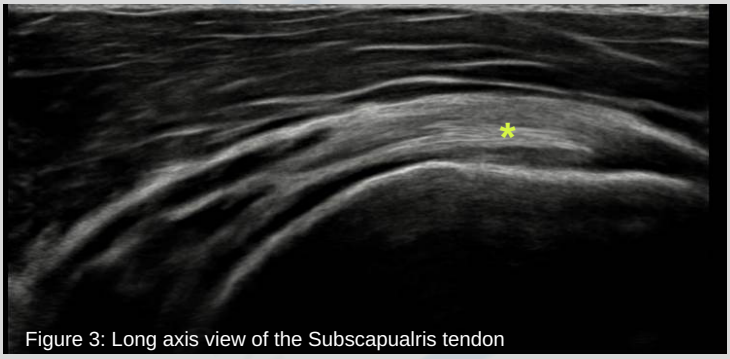
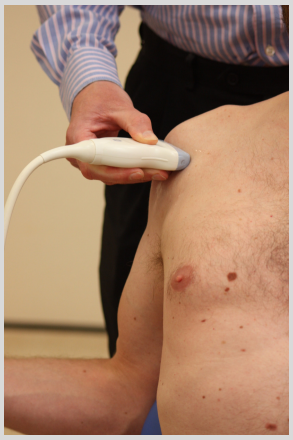


Figure 3: Long axis view of the Subscapualris tendon



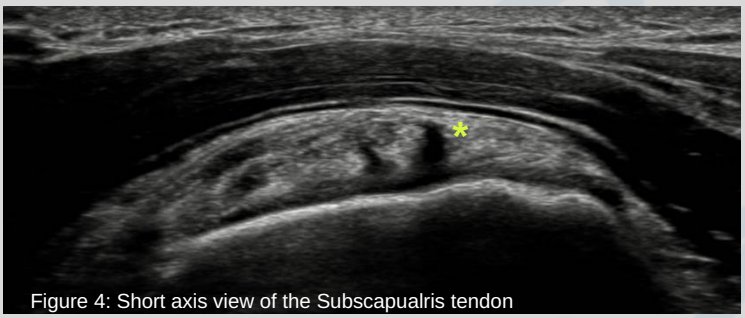


Figure 4: Short axis view of the Subscapualris tendon

The patient is in sitting with the shoulder externally rotated. The ultrasound probe moves from the bicipital groove medially over the lesser tuberosity. This is the insertion of the subscapularis tendon. Appreciate the fibres inserting onto the lesser tuberosity (*) towards the edge of the bicipital groove.

In short axis, the tendon bundles are clearly visible(*). The areas in between the bundles show as hypoechoic fissures which gives the impression of tiger striping. Appreciate that this is a wide tendon (approximately 2 cm) . Make sure to scan the entire with of it.

The Shoulder - Stage 3

Supraspinatus tendon

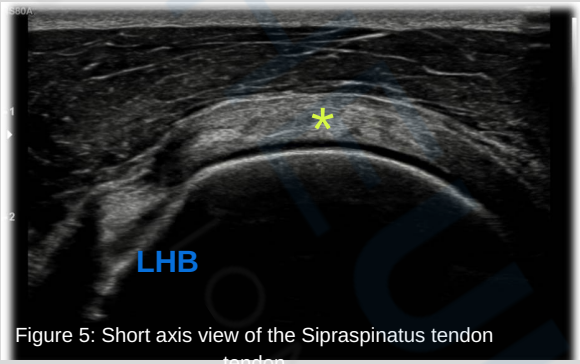


Figure 5: Short axis view of the Sipraspinatus tendon

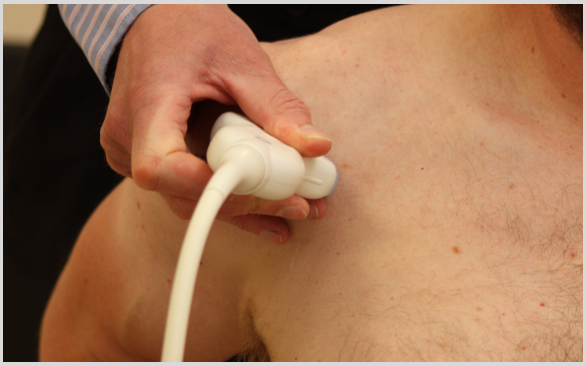
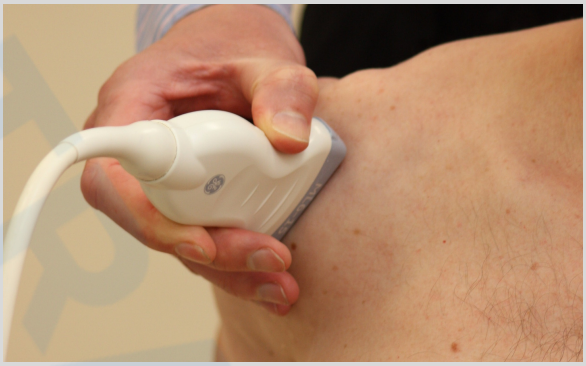

tendon

Figure 6: Long axis view of the Sipraspinatus tendon

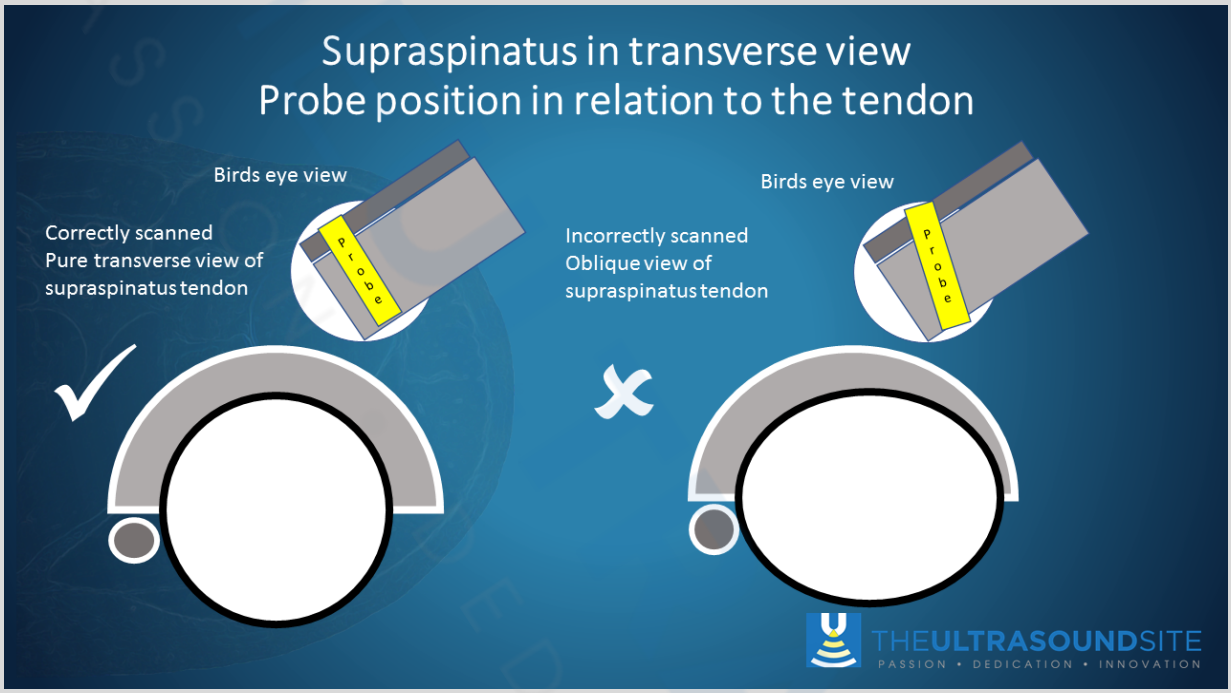


In short axis, starting from the bicipital groove the probe moves laterally over the greater tuberosity making sure that the long head of biceps can still be seen in the corner of the image (Figure 5). The probe now moves upward over the greater tuberosity and the Supraspinatus should appear in its short axis appearance (*). The greater tuberosity should now be seen as a symmetrical spherical shape and the overlying supraspinatus tendon is of equal thickness throughout.

In a longitudinal view (Figure 6), distally the bone contour should show a steep slope (*) ,likened to a parott beak. Here you should be able to see the tendon fibres insert on the greater tuberosity. Move through the tendon, visualising the anterior, middle and posterior fibres.

The Shoulder - Stage 3

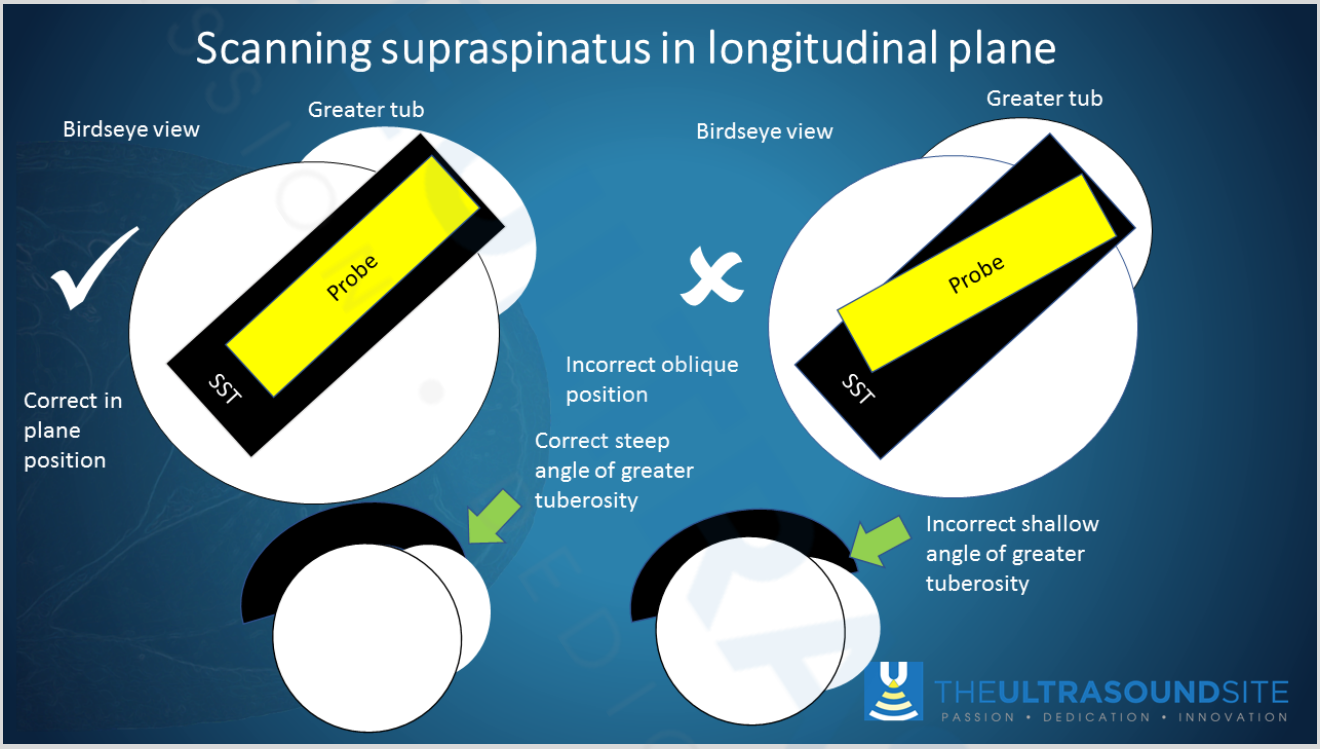
Supraspinatus tendon 'Technique tips'



The illustration above serves as a reminder to ensure you are always absolutely perpendicular to the tendon whilst visualising it in a transverse view. The greater tuberosity should appear as a smooth rounded hyperechoic dome, and the Supraspinatus tendon superficial to this should be equal across the greater tuberosity. as in Figure 5, in Stage 3. If the probe is oblique to the tendon, then the depth will vary, highlighting that the probe is oblique.

The Shoulder - Stage 3

Supraspinatus tendon 'Technique tips'



When visualising the Supraspinatus tendon in a longitudinal view, the same important rule of staying perpendicular to the structure applies. If the probe is oblique then the footprint at the insertion to the greater tuberosity will not be correct

The Shoulder - Stage 4

Infraspinatus tendon

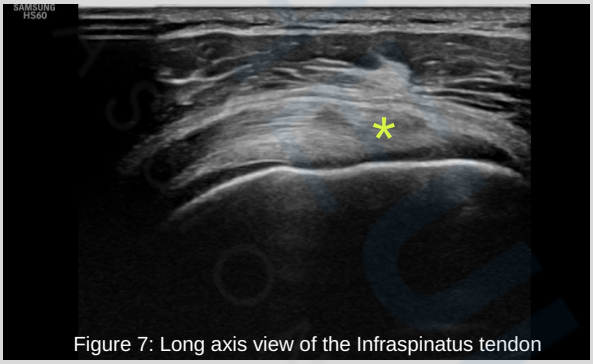


Figure 7: Long axis view of the Infraspinatus tendon

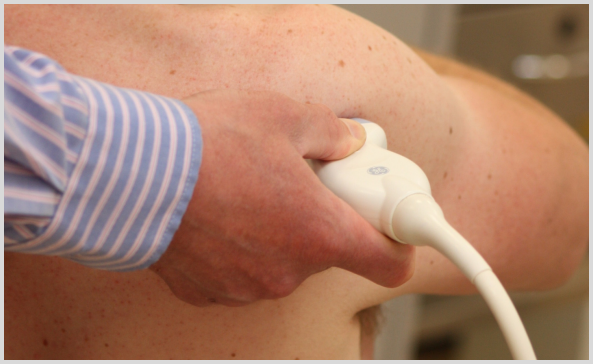


Figure 8: Long axis view of the Infraspinatus tendon

When visualising the Infraspinatus tendon, place you probe on the posterior aspect of the joint and initially try to visualise the smooth outline of the humeral head. You will then see the bright, thick and hyperechoic tendon of Infraspinatus (* in Figure 8) attaching onto the greater tuberosity (* in Figure 7)

The Shoulder - Stage 5

Glenohumeral joint

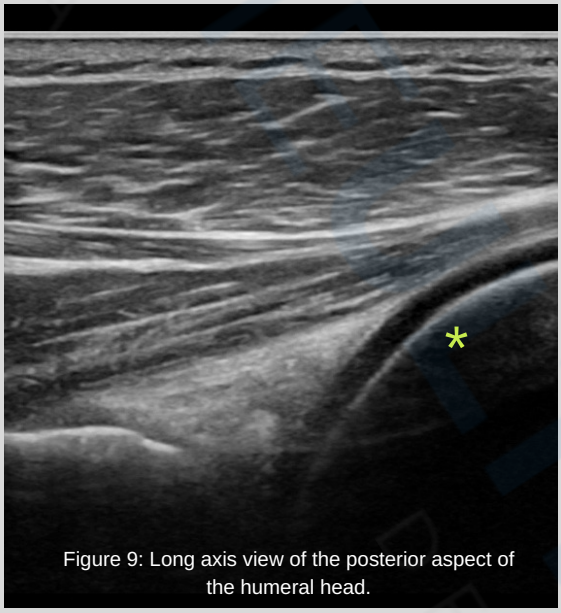
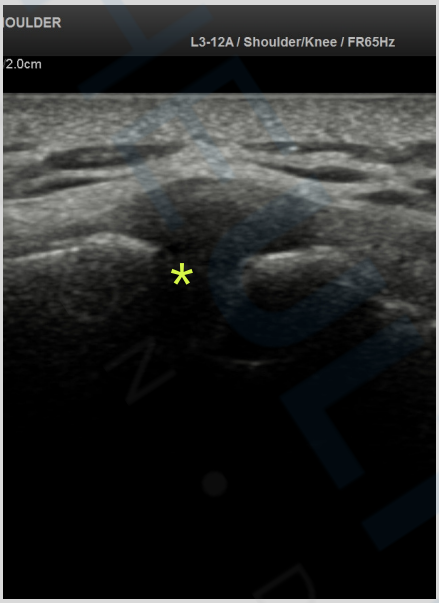


Figure 9: Long axis view of the posterior aspect of the humeral head.

Placing the probe on the back of the shoulder visualise the bright cortical outline of the posterior aspect of the humeral head (*). Interrogate the posterior labrum and the recess of the glenohumeral joint for effusion. You may need to 'toe in' the probe to visualise this region clearly and also optimise your depth, frequency and focal zone.

The Shoulder - Stage 6

Acromioclavicular joint



Placing the probe on the top of the shoulder joint, highlight the acromion process and move the probe medially until you visualise the distinct appearance of the aromioclavicular joint (*).