

Ultrasound of Focal Tears to the Supraspinatus tendon : Does Patient Position affect tear size?

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Background

Ultrasound has become the choice modality in imaging of the shoulder rotator cuff tendons. In imaging of the Supraspinatus tendon two patient positions are routinely used to assess the tendon, the Crass and Modified Crass position. The use of these positions varies from operator to operator and can be interchangeable during an exam in assessing the Supraspinatus tendon.

Objective

The purpose of the study was to see if measurements of any focal tears within the Supraspinatus tendon vary in size between the two positions.

Introduction

Ultrasound is the first line imaging of the rotator cuff tendons, due to its easy accessibility, low costs in comparison to other imaging, patient comfort, and the benefit of real time and dynamic assessment. Ultrasound has a high sensitivity (>95%) and high specificity (90%), in the detection of full and partial thickness tears to the Supraspinatus tendon.² Accuracy of rotator cuff pathology is influenced by knowledge of anatomy and pathology, experience of the operator, technique used and patient position. The latter being what the study will evaluate.

Method

Thirty-Five patients had an ultrasound of their rotator cuff tendons on either the Right or Left shoulder on the GE Logiq E9 ultrasound machine using a ML 6-15MHZ Linear probe. When imaging and evaluating the Supraspinatus tendon, both the Crass and Modified Crass positions were used. Fig 1 The Crass Position – the arm is placed behind the back, and Fig 2 The Modified Crass position – palm of the hand is placed on the back pocket/buttock region with elbow pointed posteriorly.³

If a focal tear was diagnosed, measurements were taken in both the transverse and sagittal planes in both arm positions.



Fig 1



Fig 2

Results

15 patients from the cohort (42%) demonstrated either a complete full thickness focal tear or a partial thickness focal tear of the Supraspinatus tendon. Of this 42% no significant difference was seen in the size of tears measured in either the Crass or Modified Crass position in the transverse plane (fig 3). However a difference was noted in the measurements in the sagittal plane between both arm positions. In all cases, there was on average a 30% increase in size difference, between the Crass and Modified Crass position. (fig 4).

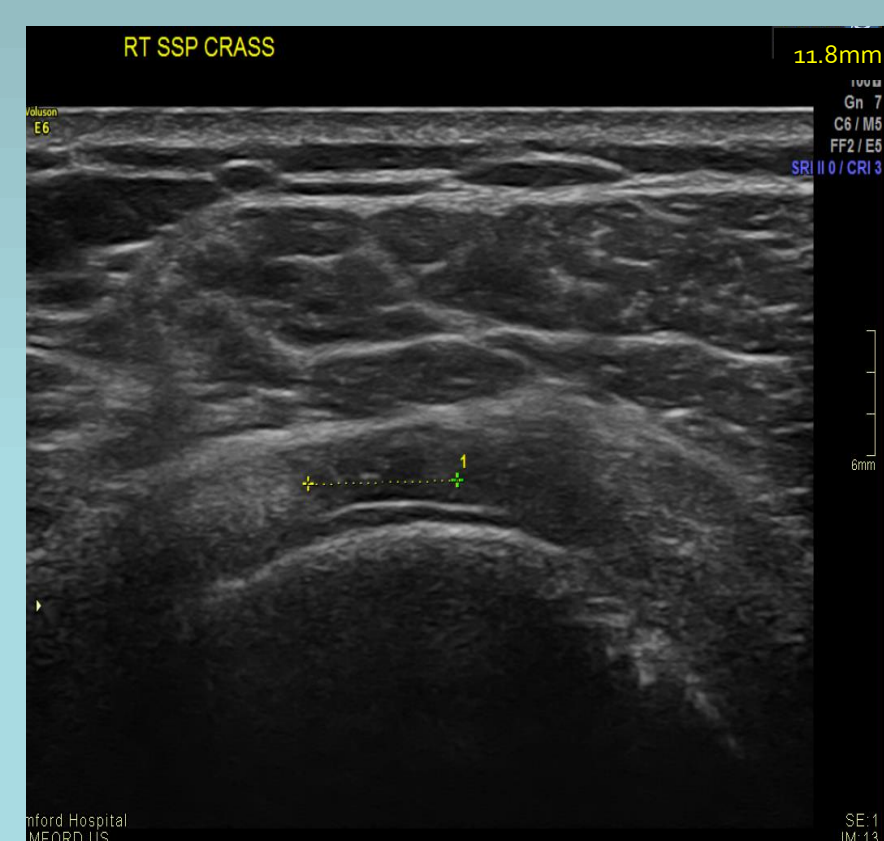


Fig 3

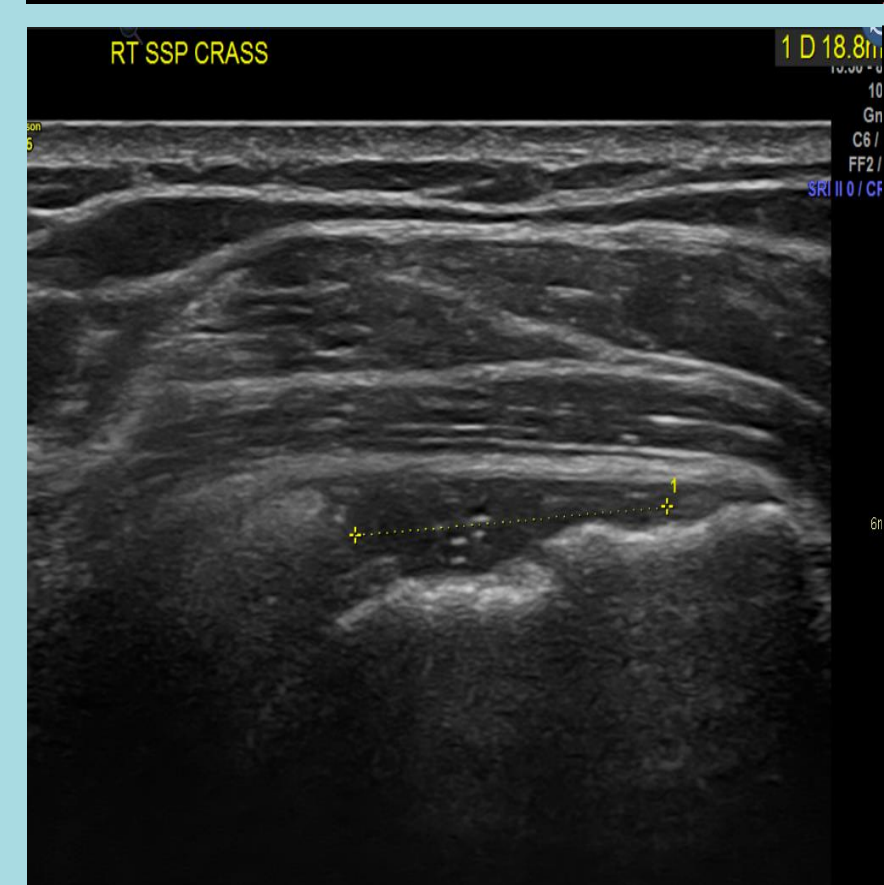
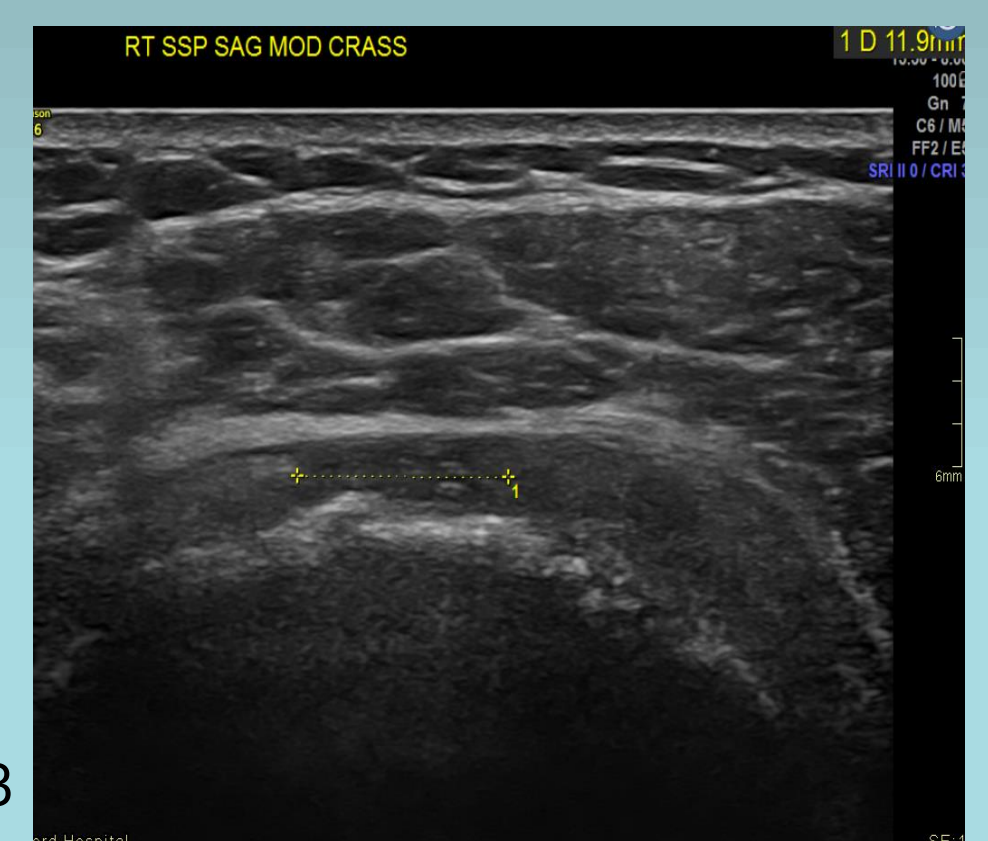


Fig 4



Conclusion

Ultrasound reliably detects Supraspinatus tears, and both the Crass and Modified Crass positions are used to assess the tendon. Most research values both positions.^{1 2 3} However with the Crass position, patients can overly internally rotate the shoulder, which can obscure the anterior portion of the tendon, where some smaller tears could be missed.³

At NWAFT, sonographers and radiologists have found that not only does the modified crass position improve our assessment of this area, but that it is more reproducible by the patients which ensures consistency and accuracy with the service we provide.

This study has shown that in patients with tears to the supraspinatus tendon, there is up to a 30% difference in the measurement of the tear between the Crass and Modified crass position, in the sagittal plane. No difference is noted in the transverse plane. A possible cause for this could be due to the external rotation with the modified crass position, causing an increase in tension along the length of the tendon fibres, causing an increased measurement in the sagittal plane.²

Recommendations

- Further studies would be to assess a larger population.
- Compare surgical findings with ultrasound findings to decipher which position gives the most accurate measurement.

References

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