

MSK Ultrasound Clinical Case Study

An indeterminate MRI for further assessment with Ultrasound

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Introduction

Post-operative tendon repairs can be notoriously difficult to image. Numerous complicating features and diagnostic pitfalls exist that render assessment of the structural integrity of the tendon difficult and makes differentiation of normal post-operative changes versus progressive disease challenging.

Traditionally, MRI has been considered the gold standard in such an evaluation. However, in the following

example, an MRI of a post-operative distal biceps tendon repair was indeterminate and it was US that provided the definitive diagnosis.

A 45-year-old male presented approximately 6 months post-distal biceps tendon repair. Initially, recovery and rehab were progressing well however this had recently plateaued and an increase in pain was noted. This prompted the surgeon to assess the tendon repair with an XR and MRI.



Figure 1 AP XR demonstrating the surgical clip at the radial tuberosity.

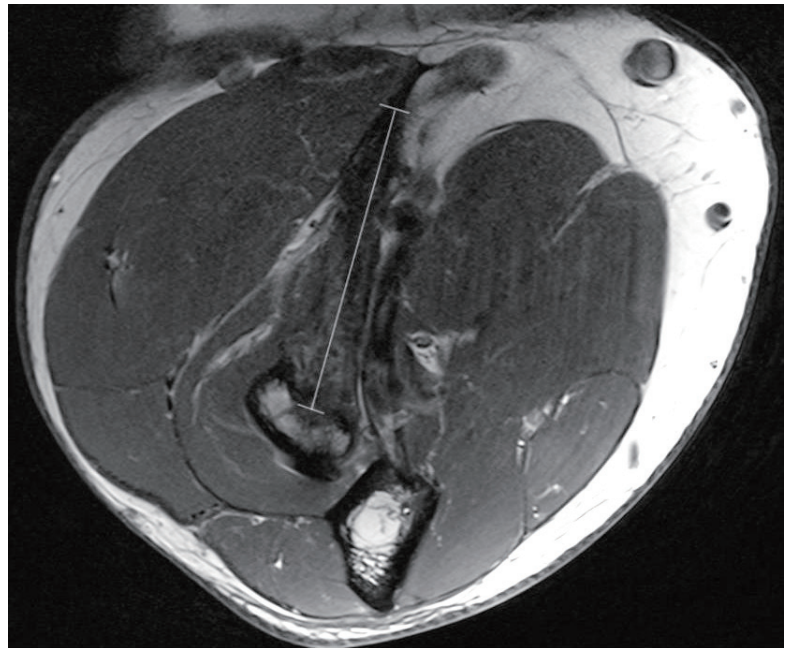


Figure 2 MRI PD FABS view demonstrating marked altered signal intensity in the distal tendon over a length of approximately 35 mm (post-surgical change) recurrent tear. An ultrasound was suggested for correlation and further assessment of the integrity of the tendon repair.

The following images were obtained on the Canon Aplio i800 Ultrasound system with a linear PLI-1205BX transducer demonstrating exquisite detail and definition of the post-operative distal biceps tendon.

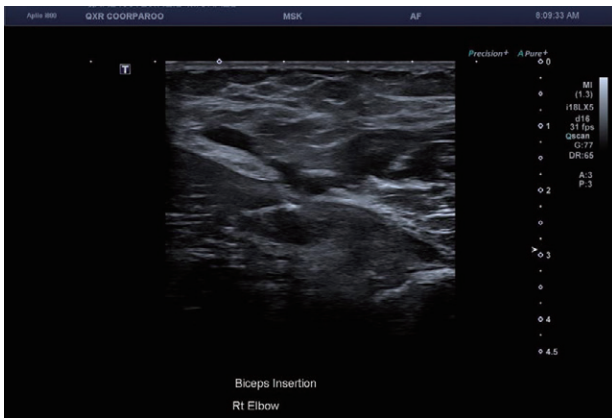


Figure 3 Using a medial approach with the pronator teres as an acoustic window the distal biceps insertion is demonstrated. Suture material is noted within the distal tendon. The tendon appears intact at the radial tuberosity although images are somewhat equivocal. As such alternative methods to image the biceps were employed with utilisation of ultrasound's dynamic capabilities.

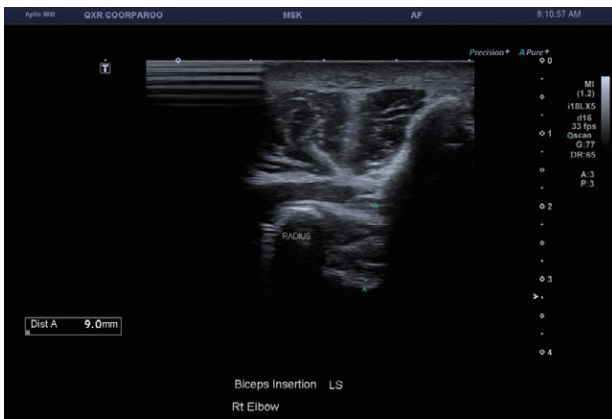


Figure 4 In an attempt to better illustrate the distal insertion a transverse approach with the forearm in the cobra position was utilised. Dynamic assessment can also be made. The distal insertion is shown to be intact.

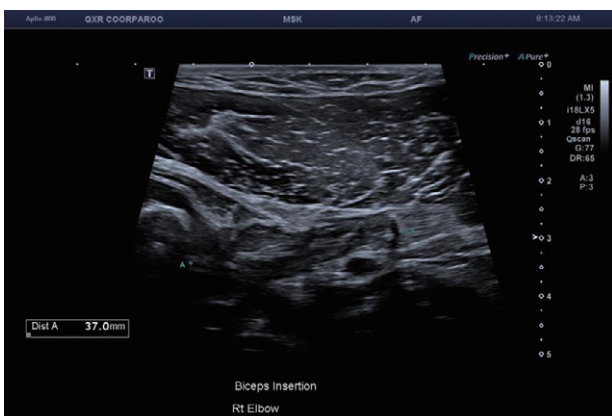


Figure 5 Image from a lateral coronal approach using the extensors as an acoustic window. Although the very distal fibers are not visualised, this position allows dynamic assessment of the distal biceps tendon with supination and pronation. The 37 mm indeterminate area from MRI is shown to demonstrate an intact post-operative tendon with suture material accounting for the confounding MRI findings.

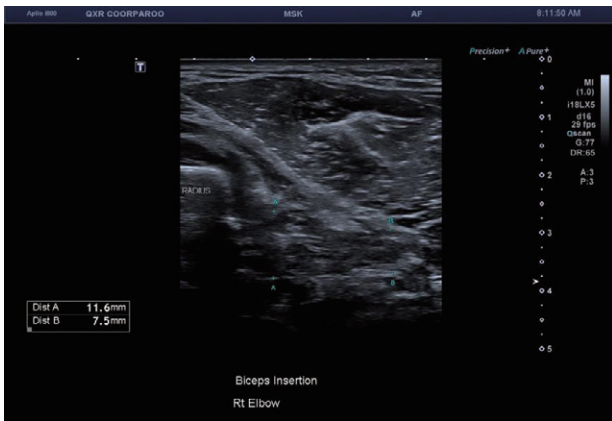


Figure 6 The PLI-1205BX transducer provides crystal-clear images with enhanced resolution and penetration. Calipers denote biceps tendon.

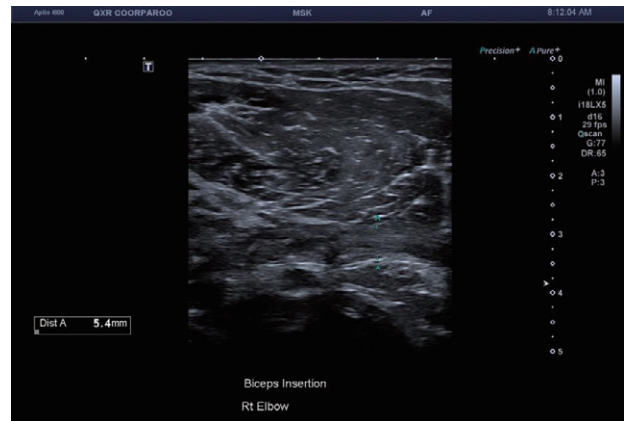


Figure 7 The Biceps tendon slightly proximal to the insertion is demonstrated.

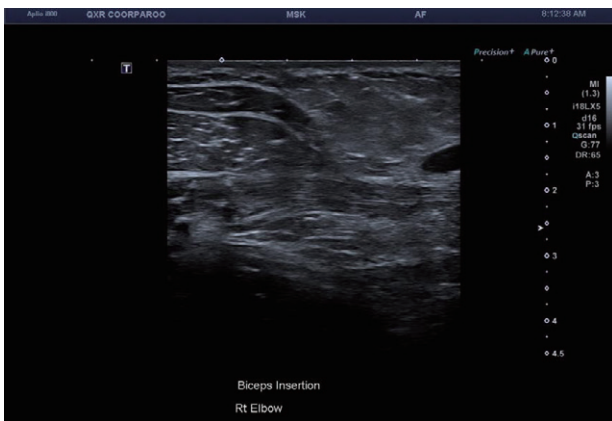


Figure 8 The myotendinous junction shown to be intact and normal with no haematoma or collection.

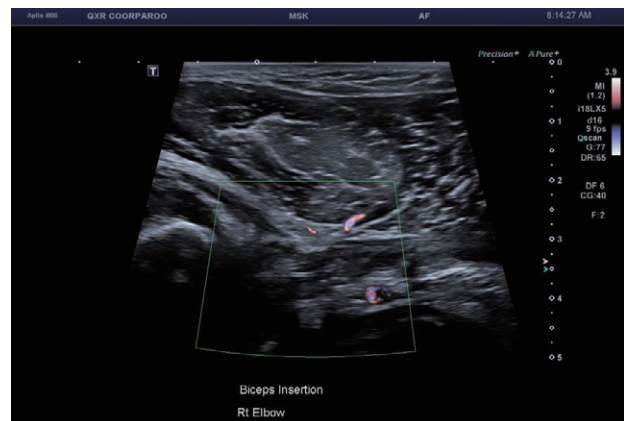


Figure 9 Canon Advanced Dynamic Flow (ADF) offers high-resolution at high frame rates to accurately depict flow. In this case no flow and no active tendinosis is demonstrated within the repaired tendon.

Conclusion

The Canon Aplio i800 system coupled with the linear PLI-1205BX transducer provides superb image quality with excellent contrast and spatial resolution. Previously difficult post-operative tendon repair examinations, thought to be beyond the realm and capabilities of ultrasound and an exclusive MRI entity are now well within the ultrasound domain.

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