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Ultrasound of the shoulder

Learning Objectives:

1. To learn a standardised protocol for ultrasound of the shoulder.

2. To understand the anatomy and scanning pitfalls.

3. To demonstrate the standard ultrasound procedure.

Ultrasound has become of increasing importance in the evaluation of the shoulder. It is a cheap and quick technique and it is as accurate as magnetic resonance imaging (MRI) in the diagnosis of rotator cuff tears [1]. It is an ideal method for shoulder evaluation, also described as a “one-stop shop” approach or “point of care” ultrasound.

The anatomy and examination technique is illustrated on the website of the European Society of MusculoSkeletal Radiology [2]. This technique will be used as a guideline for this lecture. It is recommended to examine the patient while seated on a swivel chair, adjusted to a comfortable level for the examiner. This position allows the examiner to reach the anterior, lateral and posterior aspects of the shoulder with the probe by simply asking the patient to rotate on the chair. The different tendons are examined in preferred positions in order to have an accurate evaluation. The tendons of the four muscles contributing to the rotator cuff consist of subscapularis, supraspinatus, infraspinatus and teres minor and insert on the greater and lesser tuberosities of the humerus. The biceps tendon is not part of the rotator cuff but is an important anatomical landmark [3].

Transducers

A linear transducers is the preferred choice for the shoulder, a 9–12 MHz transducer is sufficient, although a higher frequency transducer (12–18MHz) is used.

Imaging technique

Ultrasound of the shoulder is usually a whole joint examination and performed in a routine sequence. This is in contrast to most other joints targeting on a specific problem of the joint.[3]. It is important to understand bone surface anatomy in order to identify the orientation of the tendons. Knowledge of anisotropy, a characteristic feature of tendons, is necessary in order to avoid misinterpretation. Therefore, imaging of each tendon should be performed in two perpendicular directions [2-4]. The identification of different layers from superficial to deep helps in diagnosing pathology. The three layers when examining the supraspinatus include deltoid, bursa and supraspinatus. The presence of fluid in the bursa

maybe an important clue to pathology [3]. Dynamic assessment is an advantage of ultrasound.

Conclusion

A standardized protocol, with knowledge of anatomy and artefacts, are key to an efficient evaluation of the rotator cuff.

References

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