**An audit of the accuracy of MRI shoulder arthrography reports**

**Descriptor:**

An audit to assess the accuracy of MRI shoulder arthrograms when compared to shoulder arthroscopy findings.

**Background:**

The shoulder has the greatest range of motion out of all the major joints in the body. As a consequence, it is prone to dislocations, and once dislocated, possible recurrent instability [1,2].

A number of different bone and soft tissue lesions may be encountered following shoulder dislocation and contribute to ongoing instability [3] - failure to address these intra-operatively may lead to recurrent instability.  Although shoulder arthroscopy is deemed the gold standard [3], MRI shoulder arthrography is a useful and less invasive technique to diagnose these lesions, the demonstration of which may help influence the decision to go for surgical intervention over conservative management.  Additionally, MRI shoulder arthrography plays a vital role in surgical planning prior to arthroscopic repair.

## The Cycle

**The standard:**

MRI shoulder arthrography should be reasonably accurate (in terms of sensitivity and specificity) in the diagnosis of the following lesions which may be encountered following shoulder dislocation/recurrent instability:

1. Antero-inferior labral tear \*

2. Superior labral tear \*

3. Posterior labral tear \*

4. Bony Bankart lesion

5. Hill-Sachs lesion

6. Rotator cuff tear

7. Humeral avulsion of inferior glenohumeral ligament (HAGL) injury

\* Differentiation between different locations of labral tears is important not only from a surgical planning perspective but also the reported sensitivities and specificities of labral injuries vary depending on the location.

**Target:**

Based on published literature [4-9], the following targets should be reached:

1. Antero-inferior labral tear - sensitivity 92%, specificity 92%

2. Superior labral tear - sensitivity 80%, specificity 67%

3. Posterior labral tear - sensitivity 57%, specificity 96%

4. Bony Bankart lesion - sensitivity 90%, specificity 90%

5. Hill-Sachs lesion - sensitivity 96%, specificity 90%

6. Rotator cuff tear - sensitivity 92%, specificity 97%

7. Humeral avulsion of inferior glenohumeral ligament (HAGL) injury - sensitivity 88%, specificity 100%

## Assess local practice

**Indicators:**

Sensitivity and specificity of:

1. Antero-inferior labral tear

2. Superior labral tear

3. Posterior labral tear

4. Bony Bankart lesion

5. Hill-Sachs lesion

6. Rotator cuff tear

7. Humeral avulsion of inferior glenohumeral ligament (HAGL) injury

**Data items to be collected:**

1. List of patients who have had shoulder arthroscopic stabilization procedures performed.

2. Whether or not these patients have had MRI shoulder arthrograms performed.

3. Whether or not these patients have had previous surgery (if previous surgery has been performed, these should be excluded from the audit as the anatomical distortion can make interpretation difficult).

4. Presence / absence of the above listed lesions on the operation note.

5. Comparing the MRI shoulder arthrogram report with data from the operation note in order to determine the true positive, false positive, true negative and false negative findings of the above listed lesions.

6. Calculation of the sensitivities and specificities of the above listed lesions using data collected above (sensitivity = true positive / true positive + false negative;  specificity = true negative / true negative + false positive).

**Suggested number:**

-In high volume specialist centre, all patients who had had arthroscopic shoulder stabilization procedures in the last 6 months.

-Otherwise, a 12 month period is suggested.

**Suggestions for change if target not met:**

1. Discuss possible technical reasons for reduced accuracy amongst radiologists and radiographers. For example, if image quality was reduced by contrast extravasation, the arthrogram procedural technique should be examined to see if this could be improved upon.

2. Additionally, discuss whether an abduction external rotation (ABER) view, if not already performed, would have helped improve the accuracy of the scan, and if so, consideration of implementing this routinely in the scan protocol if possible.  It is believed that an ABER view may improve the detection of certain labral lesions and rotator cuff tears [10] though it may not be possible to perform this in all cases due to patient intolerance and time constraints.

2. Retrospectively, with the intra-operative results known, radiologists should review the scans with the false positive and false negative findings in order to learn from any discrepancies.

**Resources:**

Suggested resources:

1. Local orthopaedic surgical database (e.g. Bluespier) to search for previously operated cases and operation notes.

2. Local RIS/PACS for MRI reports.

**References:**

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