An audit to assess the accuracy of MRI shoulder direct arthrogram for Bankart lesion when compared to arthroscopic findings in a regional hospital in Hong Kong

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Objective

The shoulder is vulnerable to dislocations, and prone to instability once dislocated. It is important to detect common soft tissue injuries such as Bankart lesions and intervene accordingly to prevent future dislocations. Although shoulder arthroscopy is established as the gold standard, MRI shoulder arthrogram is an informative and less invasive alternative for initial assessment. MRI shoulder arthrogram also plays a significant role in surgical planning before arthroscopic repair. The objective of this study is to assess the accuracy of MRI shoulder direct arthrogram for Bankart lesion when compared to shoulder arthroscopic findings from January 2017-December 2019.

Materials and methods

10 patients (M:F=9:1,mean age=26.4 years old) referred for MRI shoulder direct arthrogram for suspected labral injury following shoulder dislocation who had subsequent arthroscopy from 1 January2017-31 December2019 were included. The arthrogram approach, presence of contrast extravasation, adequacy of joint distension, MRI findings and subsequent operative records were reviewed by two independent radiologists. For each case, 12-15ml of diluted Gadolinium was injected into the shoulder joint under fluoroscopic or sonographic guidance using a 22 or 23G spinal needle. The MR images were obtained using a 1.5T MR scanner. Routine imaging sequences were: COR: T1 TSE FS, COR T2 TSE FS, COR T1 VIBE; TRA T1 TSE FS; SAG: T1 TSE; ABER: T1 TSE FS

Recommendations

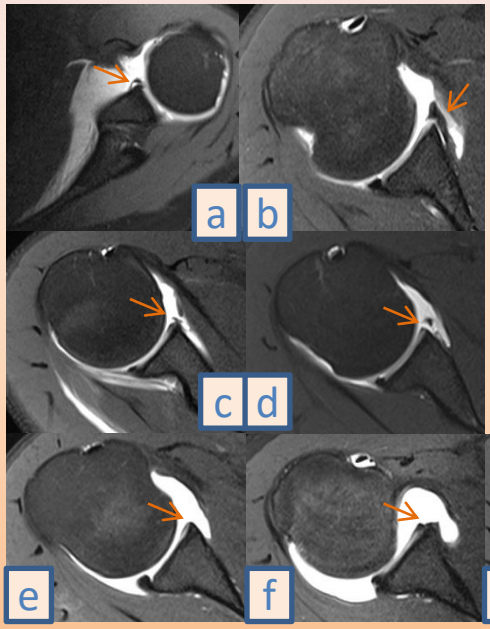
Retrospectively, with the intra-operative results known, radiologists should review the scans with nonconcurrent findings in order to learn from any discrepancies. Continuous quality control programme in our centre will be conducted to sustain accurate reporting in MRI shoulder arthrography, aiming at higher volume of cases for assessment of sensitivity and specificity.

Results

Rotator interval approach and posterior approach under fluoroscopic guidance were used in 6 and 2 patients respectively, and posterior approach under ultrasound guidance in 2 patients. 1 patient had contrast extravasation after injection, but did not jeopardize image evaluation. All the patients have adequate joint distension. 7 Bankart lesions, 2 Perthes lesions and 1 reverse Bankart lesion were diagnosed in pre-operative MRI arthrogram. These were all concurrent with subsequent arthroscopic findings, except for the 2 Perthes lesions which were shown to be Bankart lesions in subsequent arthroscopy.

Conclusion

Overall, we have high accuracy in the detection of Bankart lesions using MRI shoulder direct arthrogram.



Cases (a) and (b) T1 fat saturated axial sequences: reported as Perthes lesions in MRI; subsequent arthroscopic findings showed these to be Bankart lesions.

Cases (c) – (f) T1 fat saturated axial sequences: reported as Bankart lesions; concurrent with arthroscopic findings.
Case (g) T1 fat saturated axial sequence: reported as reverse Bankart lesion; concurrent with arthroscopic finding.

Reference:
RCR: An audit of the accuracy of MRI shoulder arthrography reports. (https://www.rcr.ac.uk/audit/audit-accuracy-mri-shoulder-arthrography-reports)