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**Search details**

Shoulder pathology and imaging

**Resources searched**

Medline, Embase, Cinahl, Cochrane Library, TRIP

*Database search terms*: shoulder, shoulder joint, imaging, diagnostic imaging, MRI, CT, ultrasound

*Google search string* :

**Summary**

Range of resources covering the last 5 years found.

**Guidelines**

None found

**Evidence-based reviews**

None found

**Published research**

1. Ultrasound-guided gadolinium joint injections for magnetic resonance arthrography.

   *Author(s)*: Choudur HN, Ellins ML
**Citation**: Journal of Clinical Ultrasound, January 2011, vol./is. 39/1(6-11), 0091-2751;1097-0096 (2011 Jan)

**Publication Date**: January 2011

**Abstract**: PURPOSE: To determine the feasibility and accuracy of ultrasound (US) -guided gadolinium injection for MR arthrography of shoulders, wrists, hips, and knee joints as an alternate technique to fluoroscopy.METHODS: One hundred patients referred to our center for an MR arthrogram of shoulders, wrists, hips, and knees were included in the study. There were 53 males and 47 females and ages ranged from 17 to 63 years (mean age, 37). US was used to guide the needle tip into the joint. The intra-articular location of the needle tip was confirmed by fluoroscopic visualization of injected iodinated contrast medium, prior to gadolinium injection. The patients then proceeded for the MRI examination.RESULTS: Ninety-nine of the 100 patients were successfully injected with gadolinium under US guidance. One patient had a vasovagal reaction after local anesthetic injection and the procedure was aborted.CONCLUSION: US is an effective alternate guidance technique for the injection of gadolinium into shoulder, hip, knee, and wrist joints for MR arthrography. Its advantages are cost effectiveness, ease of performance, and lack of radiation.

**Source**: MEDLINE

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2. **US anatomy of the shoulder: Pictorial essay**

**Author(s)**: Precerutti M., Garioni E., Madonia L., Draghi F.

**Citation**: Journal of Ultrasound, December 2010, vol./is. 13/4(179-187), 1971-3495 (December 2010)

**Publication Date**: December 2010

**Abstract**: A thorough knowledge of the anatomy of the shoulder is essential for the assessment of its condition. The purpose of this article is to provide a useful tool for the ultrasound (US) study of this joint. The shoulder girdle and upper arm are made up of a number of muscles and tendons: rotator cuff (supraspinatus, infraspinatus, teres minor and subscapularis), humeral biceps, deltoid and pectoral muscles, which can all be evaluated at US examination. Various and complex capsular ligamentous structures contribute to the stability of the shoulder, but only a few can be adequately evaluated by US and will therefore receive particular attention. Numerous serous bursae are situated among muscles, skin, subcutaneous tissues, joint capsule structures and bones to prevent friction and they can be evaluated by US only in the presence of pathologies. Subacromial-subdeltoid and subcoracoid bursa are most frequently involved and will therefore be described in detail. There are furthermore nerves and vessels providing the various components of the shoulder with innervation and vascularization, and they can also be studied by US. The shoulder girdle (humerus, scapula, clavicle and sternal manubrium) is situated in the deep layers; only the cortex of the bone can be seen at US as a continuous hyperechoic line. For a better understanding of the location and relationship between the structures which can be studied by US, magnetic resonance imaging (MRI) can be carried out as this method provides a wider and more complete view of the structures. 2010.

**Source**: EMBASE
3. Overhead throwing injuries of the shoulder and elbow.

**Author(s):** Anderson MW, Alford BA

**Citation:** Radiologic Clinics of North America, November 2010, vol./is. 48/6(1137-54), 0033-8389;1557-8275 (2010 Nov)

**Publication Date:** November 2010

**Abstract:** Injuries to the shoulder and elbow are common in athletes involved in sporting activities that require overhead motion of the arm. An understanding of the forces involved in the throwing motion, the anatomic structures most at risk, and the magnetic resonance imaging appearances of the most common associated injuries can help to improve diagnostic accuracy when interpreting imaging studies in these patients. Copyright 2010 Elsevier Inc. All rights reserved.

**Source:** MEDLINE

4. Shoulder MR imaging normal variants and imaging artifacts

**Author(s):** Fitzpatrick D., Walz D.M.

**Citation:** Magnetic Resonance Imaging Clinics of North America, November 2010, vol./is. 18/4(615-632), 1064-9689 (November 2010)

**Publication Date:** November 2010

**Abstract:** The appearance of osseous, labral, hyaline cartilage, ligament, muscle, and tendon variants and pitfalls are discussed with attention to the keys to distinguishing each of the findings from pathologic lesions of the shoulder. 2010 Elsevier Inc.

**Source:** EMBASE

5. Magnetic resonance imaging findings of shoulders in Parkinson's disease.

**Author(s):** Yucel A, Kusbeci OY

**Citation:** Movement Disorders, November 2010, vol./is. 25/15(2524-30), 0885-3185;1531-8257 (2010 Nov 15)

**Publication Date:** November 2010

**Abstract:** The aim of this study is to evaluate shoulder disturbances in Parkinson's disease (PD) patients using magnetic resonance imaging (MRI) which is the best tool in the demonstration of complex shoulder pathologies; and to determine probable relations between shoulder pathologies and PD clinical features. Twenty-eight PD patients with a total of 56 shoulders were used as the study group while 13 age-matched cases with 26 shoulders were used as the control group (CG) in the study. Both patients with PD and the CG underwent shoulder MRI. The Hoehn and Yahr (H&Y) disability scale and Unified Parkinson's Disease Rated Scale (UPDRS) were used to determine the severity of the disease. Our results showed that patients with full-thickness supraspinatus (SSP) tear have statistically significant higher UPDRS (P = 0.012), tremor (P = 0.023), rigidity (P = 0.023), and total (P = 0.002) scores. Mild group patients (P = 0.045) showed significantly higher frequency resting tremor and subcoracoid effusion than those of severe
group patients (P = 0.002). Subcoracoid effusion was observed in patients with significantly higher UPDRS (P = 0.045) and rigidity (P = 0.022) scores. When the resting tremor and subcoracoid effusion groups were compared according to the severity of the resting tremor but not according to the H&Y, higher frequency of full-thickness tear in SSP tendon was detected in the group of resting tremor (P = 0.053). Longer duration of disease was also observed in patients with full-thickness SSP tear (P = 0.029) and acromioclavicular joint changes (P = 0.018). Higher UPDRS, tremor, rigidity and total scores and longer PD duration appear as the predisposing factors for the development of shoulder disturbances in PD in this study. Copyright 2010 Movement Disorder Society.

Source: MEDLINE

6. Shoulder MRI: what do we miss?.

Author(s): Polster JM, Schickendantz MS

Citation: AJR. American Journal of Roentgenology, September 2010, vol./is. 195/3(577-84), 0361-803X;1546-3141 (2010 Sep)

Publication Date: September 2010

Abstract: OBJECTIVE: Our aim is to review several shoulder abnormalities that are difficult to detect accurately on shoulder MRI, describe the technical reasons that limit their detection, and suggest imaging protocol modifications that may improve radiologists’ accuracy. CONCLUSION: Although MRI is an excellent tool for detecting some abnormalities, there are a number of subtler abnormalities of clinical significance that give radiologists greater difficulty. By understanding the reasons for limited detection and modifying protocols accordingly, radiologists may be able to improve identification, allowing more accurate clinical decision making.

Source: MEDLINE

Full Text:

Available in fulltext at Lincoln County Hospital Professional Library; Note: Username: ulhtlibrary/Password: library

7. The rotator interval: a review of anatomy, function, and normal and abnormal MRI appearance.

Author(s): Petchprapa CN, Beltran LS, Jazrawi LM, Kwon YW, Babb JS, Recht MP

Citation: AJR. American Journal of Roentgenology, September 2010, vol./is. 195/3(567-76), 0361-803X;1546-3141 (2010 Sep)

Publication Date: September 2010

Abstract: OBJECTIVE: The purpose of this article is to review imaging of the rotator interval, an anatomically complex region in the shoulder that plays an important role in the normal function of the shoulder joint. The rotator interval can be difficult to evaluate by imaging, and it is not routinely evaluated arthroscopically unless the clinical examination or imaging findings suggest an abnormality of the rotator interval. Rotator interval pathology is implicated in glenohumeral instability, biceps instability and adhesive capsulitis-entities which remain a challenge to diagnose and treat.
CONCLUSION: Imaging can play an important role in increasing suspicion for injury to the rotator interval so that this region can be evaluated and appropriate treatment can be initiated.

Source: MEDLINE

Full Text:
Available in fulltext at Lincoln County Hospital Professional Library; Note: Username: ulhtlibrary/Password: library

8. The abduction external rotation (ABER) view for MRI of the shoulder.

Author(s): Iyengar JJ, Burnett KR, Nottage WM, Harwin SF

Citation: Orthopedics, August 2010, vol./is. 33/8(562-5), 0147-7447;1938-2367 (2010 Aug)

Publication Date: August 2010

Source: MEDLINE

Full Text:
Available in fulltext at EBSCO Host


Author(s): Finnoff JT, Smith J, Peck ER

Citation: Physical Medicine & Rehabilitation Clinics of North America, 01 August 2010, vol./is. 21/3(481-507), 10479651

Publication Date: 01 August 2010

Abstract: The shoulder is the most common region to be evaluated with musculoskeletal ultrasound. The shoulder's complex anatomy enables an exceptional range of mobility at the expense of static stability. Consequently, the shoulder is susceptible to a multitude of traumatic and atraumatic injuries. This article presents an overview of shoulder anatomy, recommends a standardized approach to the sonographic shoulder evaluation, and discusses common sonographically apparent pathology of the shoulder.

Source: CINAHL

10. Improved CHESS imaging with the use of rice pads: Investigation in the neck, shoulder, and elbow.

Author(s): Moriya S, Miki Y, Yokobayashi T, Yamamoto A, Kanagaki M, Komori Y, Fujimoto K, Ishikawa M

Citation: Journal of Magnetic Resonance Imaging, June 2010, vol./is. 31/6(1504-7), 1053-1807;1522-2586 (2010 Jun)

Publication Date: June 2010
Abstract: PURPOSE: To investigate the feasibility of rice pads for improving nonuniform fat suppression in magnetic resonance imaging (MRI) of the neck, shoulder, and elbow using the chemical shift selective (CHESS) technique. MATERIALS AND METHODS: CHESS imaging of the neck, shoulder, and elbow was performed on 10 healthy volunteers with and without the use of rice pads. Images were visually assessed by one radiologist and one radiologic technologist using a four-point scale. Results were compared using Wilcoxon's signed rank sum test. RESULTS: Images with and without rice pads were rated 3.9 and 1.5 for the neck (P = 0.002), 3.85 and 2.5 for the shoulder (P = 0.002), and 3.4 and 2.45 for the elbow (P = 0.004). CONCLUSION: Fat-suppressed images obtained using the CHESS technique were significantly improved by rice pads for the neck, shoulder, and elbow, indicating that image deterioration with CHESS caused by magnetic field nonuniformity can be improved by rice pads in all body areas.

Source: MEDLINE

11. MR arthrographic assessment of suspected posteroinferior labral lesions using flexion, adduction, and internal rotation positioning of the arm: preliminary experience.

Author(s): Chiavaras MM, Harish S, Burr J

Citation: Skeletal Radiology, May 2010, vol./is. 39/5(481-8), 0364-2348;1432-2161 (2010 May)

Publication Date: May 2010

Abstract: OBJECTIVE: Imaging the shoulder in the position of flexion, adduction, and internal rotation (FADIR) may be useful in characterizing lesions of the posteroinferior labrum. The purpose of this preliminary study is to illustrate the diagnostic utility of FADIR positioning in the assessment and characterization of posteroinferior labral tears. MATERIALS AND METHODS: In the FADIR position, the arm is placed across the chest, with the hand on the contralateral shoulder and palm facing outwards. FADIR positioning was performed if there was a subtle or equivocal abnormality of the posteroinferior labrum on conventional MR arthrography sequences. A retrospective review of the charts of 9 people who were imaged using FADIR positioning in addition to routine MR arthrographic sequences of the shoulder was performed. The review included the indication for the study, documentation of presence of clinical posterior instability, and surgical correlation, where available. RESULTS: In all 9 patients, FADIR positioning helped confirm, exclude, or better characterize a posteroinferior labral abnormality by increasing the diagnostic confidence. CONCLUSION: Flexion, adduction, and internal rotation positioning appears to be a useful adjunct in evaluating patients with equivocal or subtle posteroinferior labral abnormalities on conventional MR arthrography sequences.

Source: MEDLINE


Author(s): Dietrich TJ, Zanetti M, Sauer N, Pfirrmann CW, Fucentese SF, Hodler J

Citation: Skeletal Radiology, May 2010, vol./is. 39/5(473-80), 0364-
Abstract: OBJECTIVE: To evaluate the diagnostic performance of MR arthrography in the detection of articular cartilage and labral lesions of the glenohumeral joint using a transverse 3D water-excitation true fast imaging with steady-state precession (FISP) sequence. MATERIALS AND METHODS: Seventy-five shoulders were included retrospectively. Shoulder arthroscopy was performed within 6 months of MR arthrography. MR images were evaluated separately by two radiologists. They were blinded to clinical and arthroscopic information. Arthroscopy served as the reference standard. RESULTS: For the detection of humeral cartilage lesions, sensitivities and specificities were 86% (12/14)/89% (50/56) for observer 1 and 93%/86% for observer 2) for the transverse true FISP sequence and 64%/86% (50%/82% for observer 2) for the coronal intermediate-weighted spin-echo images. The corresponding values for the glenoidal cartilage were 60% (6/10)/88% (51/58) (80%/76% for observer 2) and 70%/86% (60%/74% for observer 2) respectively. For the detection of abnormalities of the anterior labrum (only assessed on true FISP images) the values were 94% (15/16)/84% (36/43) (88%/79% for observer 2). The corresponding values for the posterior labrum were 67% (8/12)/77% (36/47) (observer 2: 25%/74%). The kappa values for the grading of the humeral and glenoidal cartilage lesions were 0.81 and 0.55 for true FISP images compared with 0.49 and 0.43 for intermediate-weighted fast spin-echo images. Kappa values for true FISP evaluation of the anterior and posterior part of the labrum were 0.81 and 0.70. CONCLUSION: Transverse 3D true FISP MR arthrography images are useful for the difficult diagnosis of glenohumeral cartilage lesions and suitable for detecting labral abnormalities.

Source: MEDLINE

13. Superior-capsular elongation and its significance in atraumatic posteroinferior multidirectional shoulder instability in magnetic resonance arthrography.

Author(s): Hsu YC, Pan RY, Shih YY, Lee MS, Huang GS

Citation: Acta Radiologica, April 2010, vol./is. 51/3(302-8), 0284-1851;1600-0455 (2010 Apr)

Abstract: BACKGROUND: Redundancy of the capsule has been considered to be the main pathologic condition responsible for atraumatic posteroinferior multidirectional shoulder instability; however, there is a paucity of measurements providing quantitative diagnosis. PURPOSE: To determine the significance of superior-capsular elongation and its relevance to atraumatic posteroinferior multidirectional shoulder instability at magnetic resonance (MR) arthrography. MATERIAL AND METHODS: MR arthrography was performed in 21 patients with atraumatic posteroinferior multidirectional shoulder instability and 21 patients without shoulder instability. One observer made the measurements in duplicate and was blinded to the two groups. The superior-capsular measurements (linear distance and cross-sectional area) under the supraspinatus tendon, and the rotator interval were determined on MR arthrography and evaluated for each of the two groups. RESULTS: For the superior-capsular measurements, the linear distance under the supraspinatus tendon was significantly longer in patients with atraumatic posteroinferior...
multidirectional shoulder instability than in control subjects (P<0.001). The cross-sectional area under the supraspinatus tendon, and the rotator interval were significantly increased in patients with atraumatic posterosuperior multidirectional shoulder instability compared to control subjects (P<0.001 and P=0.01, respectively). Linear distance greater than 1.6 mm under the supraspinatus tendon had a specificity of 95% and a sensitivity of 90% for diagnosing atraumatic posterosuperior multidirectional shoulder instability. Cross-sectional area under the supraspinatus tendon greater than 0.3 cm(2), or an area under the rotator interval greater than 1.4 cm(2) had a specificity of more than 80% and a sensitivity of 90%. CONCLUSION: The superior-capsular elongation as well as its diagnostic criteria of measurements by MR arthrography revealed in the present study could serve as references for diagnosing atraumatic posterosuperior shoulder instability and offer insight into the spectrum of imaging findings corresponding to the pathologies encountered at clinical presentation.

Source: MEDLINE

Full Text:

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14. Inter- and intraobserver variability of MR arthrography in the detection and classification of superior labral anterior posterior (SLAP) lesions: evaluation in 78 cases with arthroscopic correlation.

Author(s): Holzapfel K, Waldt S, Bruegel M, Paul J, Heinrich P, Imhoff AB, Rummeny EJ, Woertler K

Citation: European Radiology, March 2010, vol./is. 20/3(666-73), 0938-7994;1432-1084 (2010 Mar)

Publication Date: March 2010

Abstract: PURPOSE: The purpose of this study was to determine inter- and intraobserver variability of MR arthrography of the shoulder in the detection and classification of superior labral anterior posterior (SLAP) lesions. METHODS: MR arthograms of 78 patients who underwent MR arthrography before arthroscopy were retrospectively analysed by three blinded readers for the presence and type of SLAP lesions. MR arthograms were reviewed twice by each reader with a time interval of 4 months between the two readings. Inter- and intraobserver agreement for detection and classification of SLAP lesions were calculated using kappa coefficients. RESULTS: Arthroscopy confirmed 48 SLAP lesions: type I (n = 4), type II (n = 37), type III (n = 3), type IV (n = 4). Sensitivity and specificity for detecting SLAP lesions with MR arthrography for each reader were 88.6%/93.3%, 90.9%/80.0% and 86.4%/76.7%. MR arthographic and arthroscopic grading were concurrent for 72.7%, 68.2% and 70.5% of SLAP lesions for readers 1-3, respectively. Interobserver agreement was excellent (kappa = 0.82) for detection and substantial (kappa = 0.63) for classification of SLAP lesions. For each reader intraobserver agreement was excellent for detection (kappa = 0.93, kappa = 0.97, kappa = 0.97) and classification (kappa = 0.94, kappa = 0.84, kappa = 0.93) of SLAP lesions. CONCLUSION: MR arthrography allows reliable and accurate detection of SLAP lesions. In addition, SLAP lesions can be diagnosed and classified with substantial to excellent inter- and intraobserver agreement.

Source: MEDLINE
15. Abnormal translation in SLAP lesions on magnetic resonance imaging abducted externally rotated view.

Author(s): Chhadia AM, Goldberg BA, Hutchinson MR

Citation: Arthroscopy, January 2010, vol./is. 26/1(19-25), 0749-8063;1526-3231 (2010 Jan)

Abstract: PURPOSE: The purpose of this study was to measure in vivo axial-plane translation of the glenohumeral joint by use of magnetic resonance imaging in patients with and without SLAP lesions between the conventional adducted neutral rotation (AD) view and an abducted externally rotated (ABER) view. METHODS: Seven patients with an intraoperative SLAP lesion that was unstable and required repair were selected into the SLAP group. Although they did not have normal shoulders, 15 patients were selected into the control or comparison group, most of whom had rotator cuff pathology. The glenohumeral contact point (CP) and humeral head center (HHC) were calculated and compared with the glenoid surface as a relative anterior or posterior translation. The relative posterior translation between the ABER and AD views for each patient was calculated as Delta CP and Delta HHC. These values were compared between the SLAP and control groups. RESULTS: There was a significant difference in Delta CP between the SLAP and control groups (3.62 v 0.79 mm of relative posterior translation, P = .005). There was not a similar significant difference found in Delta HHC between the SLAP and control groups (3.19 mm v 1.48 mm of relative posterior translation, P = .14). There was a significant difference between the mean translations of the SLAP-ABER group and the SLAP-AD group for both CP (-3.65 mm v -0.04 mm, P = .008) and HHC (-2.22 mm v +0.97 mm, P = .03). The difference between the control-ABER group and the control-AD group was not as pronounced. CONCLUSIONS: The magnetic resonance imaging ABER view in patients with unstable SLAP lesions requiring repair showed in vivo glenohumeral posterior translation relative to the adducted neutral rotation view of greater than 3 mm. CLINICAL RELEVANCE: This finding furthers the understanding of the pathokinematics in SLAP lesions. (c) 2010 Arthroscopy Association of North America. Published by Elsevier Inc. All rights reserved.

Source: MEDLINE

16. Effectiveness of multidetector computed tomography arthrography for the diagnosis of shoulder pathology: comparison with magnetic resonance imaging with arthroscopic correlation.

Author(s): Oh JH, Kim JY, Choi JA, Kim WS

Citation: Journal of Shoulder & Elbow Surgery, January 2010, vol./is. 19/1(14-20), 1058-2746;1532-6500 (2010 Jan)

Abstract: HYPOTHESIS: This study evaluated the diagnostic efficacy of
computed tomography arthrography (CTA) in the assessment of various shoulder pathologies with arthroscopic correlation. We hypothesized that CTA would be cost-effective and effectively comparable with magnetic resonance arthrography (MRA) for assessing labral detachments and full-thickness rotator cuff tears.

**MATERIALS AND METHODS:** A musculoskeletal radiologist interpreted CTAs for 78 patients and MRAs for 70 patients. Each imaging study was evaluated for the presence of bony (Hill-Sachs) or labral (Bankart or superior labrum anteroposterior [SLAP]) lesions, and rotator cuff disorder (full- or partial-thickness tears). All patients subsequently underwent arthroscopic surgery. Detailed arthroscopic findings were reported and compared with CTA and MRA findings. The sensitivity, specificity, kappa coefficients, and the area under the receiver operating characteristic (AUROC) curve were calculated.

**RESULTS:** The sensitivity, specificity, and agreement were comparable in each imaging study for Bankart, SLAP, and Hill-Sachs lesions, and full-thickness rotator cuff tears, but those of CTA were significantly lower than MRA for partial-thickness cuff tears. The AUROC curve for CTA and MRA were not significantly different for any of the pathologies, except partial-thickness cuff tears.

**CONCLUSIONS:** Our data suggest that CTA is a cost-effective, useful method in the preoperative evaluation of labral abnormalities, such as Bankart and SLAP lesions. It may also be useful for the detection of full-thickness rotator cuff tears.

**LEVEL OF EVIDENCE:** Level I; Diagnostic study.

**Source:** MEDLINE

17. **Loss of the sclerotic line of the glenoid on anteroposterior radiographs of the shoulder: a diagnostic sign for an osseous defect of the anterior glenoid rim.**

**Author(s):** Jankauskas L, Rudiger HA, Pfirrmann CW, Jost B, Gerber C

**Citation:** Journal of Shoulder & Elbow Surgery, January 2010, vol./is. 19/1(151-6), 1058-2746;1532-6500 (2010 Jan)

**Publication Date:** January 2010

**Abstract:** BACKGROUND: The integrity of the glenoid defines the surgical treatment in anterior shoulder instabilities. The reliability of plain radiographs to detect anterior glenoid rim deficiencies was determined. MATERIALS AND METHODS: The anterior sclerotic glenoid line (SGL) was assessed on anteroposterior radiographs of 86 shoulders (34 anterior instabilities, 15 posterior instabilities, 37 stable) and compared with computed tomography (CT) scans (gold standard). A loss of the SGL (LSGL) was defined as a positive LSGL sign. RESULTS: On CT scans, 25 of 34 shoulders (74%) with anterior instabilities showed a defect of the anterior glenoid rim. No defects were found in shoulders without anterior instabilities. LSGL correctly predicted an anterior glenoid rim lesion in 16 (examiner A) or 14 (examiner B) of the 25 anterior instabilities (sensitivity, 64% and 56%), without a false-positive diagnosis (specificity, 100%). CONCLUSION: The LSGL on anteroposterior radiographs is a moderately sensitive but highly specific finding for anterior glenoid rim defects. LEVEL OF EVIDENCE: Level 4; Diagnostic study, case control study.

**Source:** MEDLINE

18. **Tears of the supraspinatus tendon: assessment with indirect magnetic resonance arthrography in 67 patients with arthroscopic**
Correlation.

Author(s): Van Dyck P, Gielen JL, Veryser J, Weyler J, Vanhoenacker FM, Van Glabbeek F, De Weerdt W, Maas M, van der Woude HJ, Parizel PM

Citation: Acta Radiologica, November 2009, vol./is. 50/9(1057-63), 0284-1851;1600-0455 (2009 Nov)

Publication Date: November 2009

Abstract: BACKGROUND: Magnetic resonance (MR) arthrography is generally regarded as the gold standard for shoulder imaging. As an alternative to direct MR arthrography, the less invasive indirect MR arthrography technique was proposed, offering logistic advantages because fluoroscopic or ultrasonographic guidance for joint injection is not required. PURPOSE: To assess the diagnostic performance of indirect MR arthrography in the diagnosis of full- and partial-thickness supraspinatus tears in a symptomatic population. MATERIAL AND METHODS: Two radiologists with different levels of experience independently and retrospectively interpreted indirect MR (1.5T) arthograms of the shoulder obtained in 67 symptomatic patients who underwent subsequent arthroscopy. On MR, the supraspinatus tendon was evaluated for full- or partial-thickness tear. With arthroscopy as the standard of reference, sensitivity, specificity, and diagnostic accuracy of indirect MR arthrography in the detection of full- and partial-thickness tears of the supraspinatus tendon was calculated. Kappa (kappa) statistics were used for the assessment of the agreement between arthroscopic and imaging findings and for the assessment of interobserver agreement. RESULTS: For full-thickness tears of the supraspinatus tendon, sensitivities, specificities, and accuracies exceeded 90% for both observers, with excellent interobserver agreement (kappa = 0.910). For partial-thickness tears, sensitivities (38-50%) and accuracies (76-78%) were poor for both reviewers, and interobserver agreement was moderate (kappa = 0.491). Discrepancies between MR diagnosis and arthroscopy were predominantly observed with small partial-thickness tears. CONCLUSION: Indirect MR arthrography is highly accurate in the diagnosis of full-thickness rotator cuff tears. However, the diagnosis of partial-thickness tears with indirect MR arthrography remains faulty, because exact demarcation of degenerative change and partial rupture is difficult. On the basis of the above findings, we do not recommend indirect MR arthrography on patients for whom rotator cuff disease is suspected clinically.

Source: MEDLINE

Full Text:

Available in fulltext at EBSCO Host


Author(s): Kang CH, Kim SS, Kim JH, Chung KB, Kim YH, Oh YW, Jeong WK, Kim BH

Citation: Skeletal Radiology, November 2009, vol./is. 38/11(1063-9), 0364-2348;1432-2161 (2009 Nov)

Publication Date: November 2009

Abstract: OBJECTIVE: The objective of the study was to compare the
diagnostic reliability of 3D US with MR arthrography in diagnosing supraspinatus tendon tears, with arthroscopic findings used as the standard.MATERIALS AND METHODS: In a prospective study 50 patients who later underwent arthroscopic surgery of the rotator cuff were examined pre-operatively by 3D US with MR arthrography. The presence or absence of a full- or partial-thickness supraspinatus tendon tear and the tear size as demonstrated by each imaging and arthroscopy was recorded. The tear size was divided into three grades: small (<1 cm), medium (1-3 cm), and large (>3 cm).RESULTS: The arthroscopic diagnosis was a full-thickness tear in 40 patients, partial-thickness tears in 5, and intact supraspinatus tendon in 5. 3D US correctly diagnosed 35 out of 40 full-thickness tears and MR arthrography 39 out of 40 full-thickness tears. Regarding partial-thickness tears, 3D US underestimated 2 cases as no tear and overestimated 1 case as a full-thickness tear. MR arthrography underestimated 1 case as a partial-thickness tear and overestimated 2 cases as full-thickness and partial-thickness tears respectively. 3D US and MR arthrography yield a sensitivity for full-thickness tears of 87.5% and 97.5% with specificity of 90.0% and 90.0%. Based on the grading system, 3D US measurements correctly predicted the tear size of 23 (65.7%) of the 35 full-thickness tears and MR arthrography 30 (75.0%) of the 39 full-thickness tears.CONCLUSION: Three-dimensional ultrasound seems to be a promising imaging modality comparable to MR arthrography for the assessment of the supraspinatus tendon tears.

Source: MEDLINE

20. Long-term clinical and MRI results of open repair of the supraspinatus tendon.

Author(s): Nich C, Mutschler C, Vandenbussche E, Augereau B

Citation: Clinical Orthopaedics & Related Research, October 2009, vol./is. 467/10(2613-22), 0009-921X;1528-1132 (2009 Oct)

Publication Date: October 2009

Abstract: Open repair of full-thickness tears of the rotator cuff generally improves function, although anatomic failures are not uncommon. We asked whether the presence or absence of an anatomic repair influenced outcomes. We retrospectively analyzed 47 patients (49 shoulders) treated by open proximalized reinsertion of the supraspinatus tendon for chronic retracted detachment. The mean age of the patients at the time of surgery was 59 years. At a minimum 60-month followup (mean, 87 months; range, 60-133 months), we observed an improvement in the age- and gender-adjusted Constant-Murley score from 67% preoperatively to 95% postoperatively and in the pain score. With the last followup MRI, the supraspinatus tendon had reruptured in five patients (12%); the presence of a rerupture did not negatively influence the functional result. Once healing of the repaired tendons was achieved, supraspinatus muscle atrophy never worsened. However, on MRI, fatty infiltration of the supraspinatus, infraspinatus, and subscapularis muscles increased postoperatively despite tendon healing. Radiographic centering of the humeral head was preserved and glenohumeral arthritis remained stable. Functional results were better when the standardized supraspinatus muscle area was greater than 0.5 at the final evaluation. Level of Evidence: Level IV, therapeutic study. See Guidelines for Authors for a complete description of levels of evidence.

Source: MEDLINE

**Author(s):** McFarland EG, Tanaka MJ, Garzon-Muvdi J, Jia X, Petersen SA

**Citation:** Current Sports Medicine Reports, September 2009, vol./is. 8/5(234-9), 1537-890X;1537-8918 (2009 Sep-Oct)

**Publication Date:** September 2009

**Abstract:** In the evaluation of the painful shoulder, especially in the overhead athlete, diagnosing superior labrum anterior and posterior (SLAP) lesions continues to challenge the clinician because of 1) the lack of specificity of examination tests for SLAP; 2) a paucity of well-controlled studies of those tests; and 3) the presence of coexisting confounding abnormalities. Some evidence indicates that multiple positive tests increase the likelihood that a SLAP lesion is present, but no one physical examination finding conclusively makes that diagnosis. The goals of this article were to review the physical examination techniques for making the diagnosis of SLAP lesions, to evaluate the clinical usefulness of those examinations, and to review the role of magnetic resonance imaging in making the diagnosis.

**Source:** MEDLINE

**Full Text:**

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22. Transverse thickening along the articular surface of the rotator cuff consistent with the rotator cable: Identification with MR arthrography and relevance in rotator cuff evaluation

**Author(s):** Sheah K., Bredella M.A., Warner J.J.P., Halpern E.F., Palmer W.E.

**Citation:** American Journal of Roentgenology, September 2009, vol./is. 193/3(679-686), 0361-803X (September 2009)

**Publication Date:** September 2009

**Abstract:** OBJECTIVE. The purposes of this study were to describe the imaging appearance of transverse thickening along the articular surface of the supraspinatus and infraspinatus tendons presumed to represent the rotator cable on MR arthrographic images obtained with the shoulder in abduction and external rotation (ABER) and in the non-ABER position and to assess the role of the rotator cable in the diagnosis of rotator cuff tears. MATERIALS AND METHODS. The study group comprised 54 patients who underwent arthroscopy of the shoulder and preoperative MR arthrography in which ABER images were obtained. Two blinded reviewers independently examined the ABER and non-ABER images for the presence of the rotator cable and rotator cuff tears. RESULTS. In intact rotator cuffs, the presumed rotator cable was not well visualized on non-ABER images.
In one case of prominent rotator cable, MR arthrography showed no tear on non-ABER images, but at arthroscopy, a partial-thickness undersurface tear was found. On non-ABER images, both readers readily visualized the rotator cable in eight and 10 of 18 cases (44% and 56%) of partial-thickness undersurface tear and four of five cases (80%) of full-thickness tear. On ABER images, both readers readily visualized the rotator cable in 15 and 17 of 31 cases (48% and 55%) of intact cuff, 14 and 15 of 18 cases (78% and 83%) of undersurface tear, and four and five cases (80% and 100%) of full-thickness tear. Interobserver agreement on cable visualization was almost perfect (κ = 0.86). CONCLUSION. On non-ABER MR arthographic images, thickening along the articular side of the supraspinatus and infraspinatus tendons presumed to represent the rotator cable suggests the presence of a partial-thickness rotator cuff tear. On ABER images, the cable is well defined in intact and torn rotator cuffs. American Roentgen Ray Society.

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23. Ultrasound and magnetic resonance imaging in rheumatoid arthritis: The early changes of shoulder joint

Author(s): Peri P., Potoki K., Prutki M., urkovic B., Babi-Nagli D., Pervan M., agar I., Durmi K.K., erjavi N.L.

Citation: Clinical and Experimental Rheumatology, 2009, vol./is. 27/5(711), 0392-856X (2009)

Publication Date: 2009

Abstract: Objectives: To determine the role of ultrasound and magnetic resonance imaging (MRI) in the detection of inflammatory changes of shoulder joint in the patients with rheumatoid arthritis. Methods: Sixteen patients with established diagnosis of RA prospectively underwent clinical examination, radiography, ultrasound and MRI of shoulder joint. Evaluating parameters were as follows: measurements of shoulder mobility, functional shoulder index (Constant score), the erythrocyte sedimentation rate and C-reactive protein level. Conventional radiography was standardized and performed in one plane. Ultrasound was performed in 10 standard planes using 7.5 MHz linear transducer (Hitachi-EUB 315). MRI at 3 T comprised transverse, sagittal and oblique coronal T1- and T2-weighted test spin-echo, gradient-echo and inversion-recovery sequences. Results: Synovitis was demonstrated in six patients (37%) by ultrasound and in eight patients (50%) by MRI. Bursitis was detected in 5 patients (32%) by US and 8 patients (50%) by MRI. Rotator cuff tears were detected in 3 patients (18%) both in US and MRI group. Conclusion: US and MRI are useful tools in evaluating patients with early changes of shoulder joints in RA. Although conventional radiography can be used in assessment the shoulder joint as a sole method, ultrasound and especially MRI are recommended as additional method in the early diagnosis of inflammatory changes of shoulder in patients with RA.
24. The relationship of pain intensity, physical impairment, and pain-related fear to function in patients with shoulder pathology.

Author(s): Lentz TA, Barabas JA, Day T, Bishop MD, George SZ

Citation: Journal of Orthopaedic & Sports Physical Therapy, 01 April 2009, vol./is. 39/4(270-277), 01906011

Abstract: STUDY DESIGN: Cross-sectional. OBJECTIVES: This study examined the baseline relationship of pain intensity, physical impairment, and pain-related fear to shoulder function. BACKGROUND: There is no consensus regarding the influence psychological variable have on function and recovery in individuals with shoulder pathologies. While pain-related fear has been shown to predict disability for patients with low-back and cervical pain, this relationship has not been consistently reported for patients with shoulder pain. METHODS AND MEASURES: One hundred forty-two subjects (78 male, 64 female; mean age, 41.4 years) with nonoperative unilateral shoulder disorders were identified from a clinical database of impairment and outcome measures. Demographic information, duration of symptoms, mechanism of injury, pain intensity, pain-related fear, and range-of-motion (ROM) measures were collected. Self-report of function was measured with the Shoulder Pain and Disability Index (SPADI). Hierarchical regression analysis determined the proportions of explained variance in function. RESULTS: Demographic variables (duration of symptoms, sex, age, and mechanism of injury) collectively contributed approximately 9% (P = .003) of the variance in function scores. Average pain intensity and flexion ROM contributed an additional 22% (P<.001) of the variance, and Tampa Scale of Kinesiophobia (TSK-11) scores contributed an additional 3% (P<.001). In the final parsimonious model, presence of symptoms longer than 3 months (ss = .23, P = .003), pain intensity (ss = .25, P = .002), shoulder flexion ROM index (ss = -.35, P = .001), and kinesiophobia (ss = .17, P = .026) explained 33% of the variance in SPADI function score (P<.001). CONCLUSIONS: Presence of symptoms longer than 3 months, average pain intensity, flexion ROM index (strongest contributor in multivariate model), and fear-of-pain scores all contributed to baseline shoulder function. The immediate clinical relevance of these findings is unclear but they do provide direction for prospective studies. LEVEL OF EVIDENCE: Prognosis, level 2b. J Orthop Sports Phys Ther 2009;39(4):270-277, Epub 15 December 2008. doi:10.2519/jospt.2009.2879.

Source: CINAHL

25. The validity and accuracy of clinical tests used to detect labral pathology of the shoulder--a systematic review.

Author(s): Munro W, Healy R

Citation: Manual Therapy, April 2009, vol./is. 14/2(119-30), 1356-689X;1532-2769 (2009 Apr)

Abstract: Labral tears frequently require repair [Kim S, Ha K, Han K.
Biceps Load test: a clinical test for superior labrum anterior and posterior lesions in shoulders with recurrent anterior dislocations. The American Journal of Sports Medicine 1999;27(3):300-3. Physiotherapists need confidence in clinical tests used to detect labral pathology to accurately identify this condition. This review systematically evaluates the evidence for the accuracy of these tests with reference to study quality and key biases. Cochrane, Medline, Cinahl, AMED, DARE and HTA databases were searched to identify 15 studies evaluating 15 clinical tests for labral pathology against Magnetic Resonance Imaging MRI or surgery. Two independent reviewers assessed methodological quality using Quality Assessment of Diagnostic Accuracy Studies (QUADAS). Meta Disc calculated likelihood ratios (positive LR>10, providing convincing diagnostic evidence of ruling a condition in; negative LR<0.2 providing large to moderate evidence of ruling the condition out) and true positive rates (TPRs) against false positive rates (FPRs) in receiver operator characteristic (ROC) plots and summary receiver operator curves (SROCs). Probable overestimation of accuracy was caused by use of case control design, verification bias and use of a lesser reference standard. Six accurate tests; Biceps Load I (+LR: 29.09; -LR: 0.09) Biceps Load II (+LR: 26.32; -LR: 0.11), Internal Rotation Resistance (IRRT) (+LR: 24.77; -LR: 0.12), Crank (+LR: 13.59 and 6.46; -LR: 0.1 and 0.22), Kim (+LR: 12.62; -LR:0.21) and Jerk (+LR: 34.71; -LR: 0.27) tests were identified from high quality single studies in selected populations. Subgroup analysis identified varying results of accuracy in the Crank test and the Active Compression (AC) test when evaluated in more than one study. Further evaluation is needed before these tests can be used with confidence.

Source: MEDLINE


Author(s): Murray PJ, Shaffer BS

Citation: Sports Medicine & Arthroscopy Review, March 2009, vol./is. 17/1(40-8), 1062-8592;1538-1951 (2009 Mar)

Publication Date: March 2009

Abstract: Magnetic resonance imaging has become an important diagnostic adjunct in the evaluation of shoulder conditions, and the technology continues to evolve. Direct magnetic resonance arthrography can improve detection of labral and rotator cuff pathology, especially partial thickness tears of the rotator cuff. Special positioning, such as abducted-externally rotated views, improves visualization of the rotator cuff and posterior superior labrum in throwing athletes. Diagnosis-specific sequencing such as fat suppression, spin-echo and proton-density techniques, and higher power magnets (3.0 T) allow for an unprecedented level of soft tissue detail. Clinical expertise is required to differentiate between normal anatomic variants, incidental findings, and true pathology. Although magnetic resonance imaging findings may be diagnostic in some cases, clinical correlation with history and physical examination findings is critical.

Source: MEDLINE

OBJECTIVE: The purpose of our study was to prospectively compare the diagnostic accuracy of 3D isotropic indirect MR arthrography with conventional sequences of indirect MR arthrography for the diagnosis of labral and rotator cuff lesions on a 3-T MR unit. SUBJECTS AND METHODS: Thirty-six consecutive patients who were scheduled for shoulder arthroscopic surgery at our institution underwent indirect MR arthrography. Both conventional sequences and an additional 3D isotropic sequence were obtained 1 day before arthroscopic surgery. Two musculoskeletal radiologists prospectively evaluated the images in consensus for the presence of superior and anterior labral lesions and subscapularis and supraspinatus-infraspinatus tendon tears using the conventional sequences and the 3D isotropic sequence. We analyzed the statistical difference between the sensitivities and specificities of both methods using arthroscopic findings as the reference standard. RESULTS: Surgical findings confirmed the presence of 23 superior labral lesions, eight anterior labral lesions, 21 subscapularis tears, and 24 supraspinatus-infraspinatus tears. The sensitivity and specificity of the conventional sequences were 74% and 54% for superior labral lesions, 88% and 96% for anterior labral lesions, 67% and 85% for subscapularis tendon tears, and 96% and 75% for supraspinatus-infraspinatus tendon tears. The sensitivity and specificity of the 3D isotropic sequence were 70% and 85% for superior labral lesions, 100% and 100% for anterior labral lesions, 67% and 85% for subscapularis tendon tears, and 96% and 67% for supraspinatus-infraspinatus tendon tears. No statistically significant difference was seen in sensitivities and specificities for both methods. CONCLUSION: Three-dimensional isotropic MR arthrography sequences with multiplanar reconstruction can provide a similar capability for the diagnosis of labral and rotator cuff lesions as conventional MR arthrography sequences but in a shorter imaging time.

Source: MEDLINE

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Available in fulltext at Lincoln County Hospital Professional Library; Note: Username: ulhtlibrary/Password: library

28. MR arthrography of the shoulder: glenohumeral ligaments.

Author(s): Reijnierse M

Citation: Jbr-Btr: Organe de la Societe Royale Belge de Radiologie, January 2009, vol./is. 92/1(48-53), 0302-7430;0302-7430 (2009 Jan-Feb)

Publication Date: January 2009

Abstract: Knowledge of the anatomy of the glenohumeral ligaments is useful in detecting pathology. These ligaments are variable in number and variable in size. Stability of the glenohumeral joint is based on multiple
factors. Therefore glenohumeral ligament lesions are associated with coexisting structural abnormalities including capsule, labrum, rotator cuff, coracoacromial arch and bone. Magnetic resonance (MR) arthrography is the method of choice to visualize intraarticular pathology.

Source: MEDLINE

29. Normal anatomy, variants and pitfalls on shoulder MRI.

Author(s): Rudez J, Zanetti M

Citation: European Journal of Radiology, October 2008, vol./is. 68/1(25-35), 0720-048X;0720-048X (2008 Oct)

Publication Date: October 2008

Abstract: MR imaging of the shoulder is widely used for assessment of impingement and instability-related clinical conditions. The following review article demonstrates the normal anatomy, variations and classical pitfalls. In addition to classical pitfalls (sublabral hole, sublabral recess, Buford complex) the authors focus on a number of normal, bony, cartilaginous, ligamentous and tendinous structures that can simulate disease at the shoulder. In addition, ways to distinguish these pitfalls from true shoulder abnormalities are shown.

Source: MEDLINE

30. MRI of shoulder instability.

Author(s): Steinbach LS

Citation: European Journal of Radiology, October 2008, vol./is. 68/1(57-71), 0720-048X;0720-048X (2008 Oct)

Publication Date: October 2008

Abstract: The most unstable joint in the body, the glenohumeral joint is subject to many insults including microinstability, subluxation and dislocation. During the last two decades, MRI has allowed for direct visualization of many of the lesions related to instability, aiding in diagnosis as well as therapeutic planning and follow-up. This article reviews the use of MRI for shoulder instability and describes the different types of lesions associated with this disorder. Topics include technical considerations, the use of MR arthrography, normal anatomy and variants, labral and glenohumeral ligament pathology, and osseous lesions related to instability.

Source: MEDLINE

31. All-in-one magnetic resonance arthrography of the shoulder in a vertically open magnetic resonance unit.

Author(s): Vandevenne JE, Vanhoenacker F, Beaulieu CF, Bergman AG, Butts Pauly K, Dillingham MF, Lang PK

Citation: Acta Radiologica, October 2008, vol./is. 49/8(918-27), 0284-1851;1600-0455 (2008 Oct)

Publication Date: October 2008
**Abstract:** BACKGROUND: Magnetic resonance (MR) arthrography frequently involves joint injection under imaging guidance followed by MR imaging in static positions. PURPOSE: To evaluate if MR arthrography of the shoulder joint can be performed in a comprehensive fashion combining the MR-guided injection procedure, static MR imaging, and dynamic motion MR imaging in a single test. MATERIAL AND METHODS: Twenty-three shoulder joints were injected with Gd-DTPA2 under MR guidance. Static MR imaging was performed and included a three-point Dixon method to achieve water-selective images. Dynamic motion MR imaging with and without applying pressure to the upper arm was used to evaluate glenohumeral joint instability. In 10 cases, surgical correlation was available. RESULTS: The all-in-one MR arthrography technique was successful in all patients, and took an average time of 65 min. All but one glenohumeral injection procedure were performed with a single needle pass, and no complications were observed. Out of eight labrum tears seen with static MR imaging, seven were confirmed at surgery. In 10 cases, dynamic motion MR imaging correlated well with the surgeon’s intraoperative evaluation for presence and direction of instability. CONCLUSION: MR arthrography of the shoulder joint using a vertically open magnet can be performed as a single comprehensive test, including the injection and the static and dynamic motion MR imaging. Good diagnostic accuracy for intraarticular lesions and glenohumeral instability was found in a small sample.

Source: MEDLINE

Full Text:

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32. **Shoulder magnetic resonance arthrography: a prospective randomized study of anterior and posterior ultrasonography-guided contrast injections.**

Author(s): Koivikko MP, Mustonen AO

Citation: Acta Radiologica, October 2008, vol./is. 49/8(912-7), 0284-1851;1600-0455 (2008 Oct)

Publication Date: October 2008

Abstract: BACKGROUND: Magnetic resonance (MR) arthrography is an accurate imaging method for internal shoulder derangements and rotator cuff pathologies. Both anterior and posterior contrast injection techniques, under palpatory, fluoroscopic, or ultrasonographic guidance have been described in the literature. However, clinical comparisons of the injection techniques remain few. PURPOSE: To compare the performance of anterior and posterior ultrasonography (US)-guided arthrography injections of the shoulder regarding patient discomfort and influence on diagnostic MR reading, and to illustrate the typical artifacts resulting from contrast leakage in the respective techniques. MATERIAL AND METHODS: 43 MR arthrographies were prospectively randomized into anterior and posterior US-guided contrast injections and performed by two radiologists, with the study of artifacts from contrast leakage. Pain from the injections was assessed by a survey utilizing a 100-mm visual analogue scale (VAS). RESULTS: Of the 23 anterior injections, nine caused contrast artifacts in the subscapular tendon, and in three the leakage extended further anteriorly. Of the 20 posterior injections, 12 showed injection artifacts of the rotator cuff, extending outside the cuff in seven. Two of the
anterior and none of the posterior artifacts compromised diagnostic quality. In posterior injections, the leakage regularly occurred at the caudal edge of the infraspinatus muscle and was easily distinguishable from rotator cuff tears. All patients completed the pain survey. Mean VAS scores were 25.0 (median 18, SD 22) for anterior, and 25.4 (median 16, SD 25) for posterior injections. The two radiologists achieved different mean VAS scores but closely agreed as to anterior and posterior VAS scores.

**CONCLUSION:** Arthrography injections were fairly simple to perform under US guidance. Patient discomfort for anterior and posterior injections was equally minor. A tailored approach utilizing anterior or posterior injections, depending on anticipated shoulder pathology, is recommended. Because in posterior injections all artifacts were posterior and readily recognizable, it seems especially suitable for suspected anterior rotator cuff, joint capsule, and labral pathologies.

**Source:** MEDLINE

**Full Text:**

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### 33. Imaging of the shoulder after surgery.

**Author(s):** McMenamin D, Koulouris G, Morrison WB

**Citation:** European Journal of Radiology, October 2008, vol./is. 68/1(106-19), 0720-048X;0720-048X (2008 Oct)

**Publication Date:** October 2008

**Abstract:** Postoperative imaging of the shoulder is challenging. This article reviews the radiologic evaluation following surgery for subacromial impingement, rotator cuff lesions and glenohumeral instability, including the common surgical procedures, the expected postoperative findings and potential complications. A specific emphasis is made on magnetic resonance imaging.

**Source:** MEDLINE

### 34. Acute traumatic posterior shoulder dislocation: MR findings.

**Author(s):** Saupe N, White LM, Bleakney R, Schweitzer ME, Recht MP, Jost B, Zanetti M

**Citation:** Radiology, July 2008, vol./is. 248/1(185-93), 0033-8419;1527-1315 (2008 Jul)

**Publication Date:** July 2008

**Abstract:** PURPOSE: To retrospectively evaluate the appearance of lesions of osseous and soft-tissue structures of the glenohumeral joint on magnetic resonance (MR) images after first-time traumatic posterior shoulder dislocation. MATERIALS AND METHODS: The study was institutional review board approved and HIPAA compliant, as appropriate, for the four institutions at which the involved patients were treated. Informed patient consent was obtained, were applicable. Thirty-six male patients (age range, 15-80 years; mean age, 40.2 years) with clinically documented first-time traumatic posterior shoulder dislocation were examined with MR arthrography (18 patients) or conventional shoulder MR imaging (18 patients). Causes of posterior shoulder dislocation were electric shock in
one patient, seizure in one patient, and trauma in 34 patients. Hill-Sachs lesions, rotator cuff tears, biceps tendon abnormalities, posterior labrocapsular complex lesions, humeral head translation, and osseous glenoid version angle were evaluated. Spearman rank correlation and Student t test analyses were performed. RESULTS: In 31 (86%) of the 36 patients, a reverse Hill-Sachs lesion was found. Eleven (31%) patients had a reverse osseous Bankart lesion. Twelve full-thickness rotator cuff tears were seen in seven (19%) patients: four supraspinatus tendon, three infraspinatus tendon, and five subscapularis tendon tears. Six (17%) patients had biceps tendon abnormalities. Posterior labrocapsular complex tears were identified in 21 (58%) patients: 10 (48%) with posterior labral sleeve avulsions and 11 (52%) with reverse Bankart lesions. Twenty-seven (75%) patients had a retroverted scaphoglenoid angle (mean, 4.5 degrees). The mean humeral translation distance relative to the osseous glenoid fossa was -4.8 mm; in 33 (92%) patients, this distance was translated posteriorly. CONCLUSION: The MR appearance of traumatic posterior shoulder dislocation was characterized by reverse Hill-Sachs lesions in 86% of patients and posterocaudal labrocapsular lesions in nearly 60% of patients. Full-thickness rotator cuff tears were seen in approximately 20% of patients. (c) RSNA, 2008.

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35. Use of preoperative three-dimensional computed tomography to quantify glenoid bone loss in shoulder instability.

Author(s): Chuang TY, Adams CR, Burkhart SS

Citation: Arthroscopy, April 2008, vol./is. 24/4(376-82), 0749-8063;1526-3231 (2008 Apr)

Publication Date: April 2008

Abstract: PURPOSE: The purpose of this study was to determine if three-dimensional computed tomography (3-D CT) scans of the glenoid can be used to accurately quantify, by means of a glenoid index, bone loss in patients with anterior glenohumeral instability, and to compare the results with arthroscopic measurements to determine if the 3-D CT scan can preoperatively predict which patients with anterior glenohumeral instability will benefit from a bone grafting procedure. METHODS: From 2003 to 2006, 188 patients with anterior glenohumeral instability underwent arthroscopic evaluation and treatment by the senior author (S.S.B.). Of 188 total patients, there were 25 patients ranging in age from 15 to 43 years (median, 19 years) who underwent 3-D CT evaluations of both shoulders followed by arthroscopy of the unstable shoulder. For an arthroscopically measured bone loss of less than 25% of the inferior glenoid diameter, an arthroscopic Bankart repair was performed; for a glenoid bone loss of greater than or equal to 25%, an open Latarjet reconstruction was performed. We defined the glenoid index as the ratio of the maximum inferior diameter of the injured glenoid compared to the maximum inferior diameter of the uninjured contralateral glenoid as calculated from the 3-D CT scans. If the glenoid index was greater than 0.75, the patient was
predicted to benefit from an arthroscopic Bankart repair (the need for surgery and the type of surgery having been determined on the basis of arthroscopic measurements). However, if the glenoid index was less than or equal to 0.75, the patient was predicted to benefit from an open Latarjet procedure. The results of each patient's glenoid index were compared with the arthroscopic decision to perform either an arthroscopic Bankart repair or an open Latarjet procedure.

RESULTS: Of the 25 patients included in this study, 13 patients underwent an open Latarjet procedure and 12 patients underwent an arthroscopic Bankart repair. The 3-D CT scans accurately predicted the arthroscopic decisions to perform an arthroscopic Bankart repair or open Latarjet in 24 (96%) of 25 cases (Fisher exact test; P < .001).

CONCLUSIONS: The glenoid index as calculated from the 3-D CT scan accurately predicted the requirement of a bone grafting procedure for 24 (96%) of 25 patients when the benchmark value of 0.75 was used. The 3-D CT scan can therefore be used by surgeons as an additional diagnostic tool for preoperative planning and patient counseling.

LEVEL OF EVIDENCE: Level III, development of diagnostic criteria with universally applied reference (nonconsecutive patients).

Source: MEDLINE

36. The effectiveness of diagnostic imaging methods for the assessment of soft tissue and articular disorders of the shoulder and elbow.

Author(s): Shahabpour M, Kichouh M, Laridon E, Gielen JL, De Mey J

Citation: European Journal of Radiology, February 2008, vol./is. 65/2(194-200), 0720-048X;0720-048X (2008 Feb)

Publication Date: February 2008

Abstract: There are no clear guidelines for diagnostic imaging of articular and soft tissue pathologies of the shoulder and elbow. Several methods are used, including magnetic resonance imaging (MRI), magnetic resonance arthrography (MRA) and ultrasound (US). Their cost-effectiveness is still unclear. We performed a meta-analysis of the relevant literature and discussed the role of MR imaging of the shoulder and elbow compared with other diagnostic imaging modalities. For the shoulder impingement syndrome and rotator cuff tears, MRI and US have a comparable accuracy for detection of full-thickness rotator cuff tears. MRA and US might be more accurate for the detection of partial-thickness tears than MRI. Given the large difference in cost of MR and US, ultrasound may be the most cost-effective diagnostic method for identification of full-thickness tears in a specialist hospital setting (Evidence level 3). Both MRA and CT arthrography (CTA) are effective methods for the detection of labrum tears. More recently, multidetector CTA has offered the advantages of thinner slices than with MRA in a shorter examination time. Still, MRA has the advantage towards CTA to directly visualize the affected structures with a better evaluation of extent and location and to detect associated capsuloligamentous injuries. For the elbow pathologies, plain MRI or MRA have the advantage towards CTA to detect occult bone injuries. CTA is better for the assessment of the thin cartilage of the elbow. Both US and MRI are reliable methods to detect chronic epicondylitis; US is more available and far more cost-effective (Evidence level 2). MRA can differentiate complete from partial tears of the medial collateral ligament. US or MRI can detect partial and complete biceps tendon tears and/or bursitis. MRI can provide important diagnostic information in lesions of the ulnar, radial, or median nerve.
Source: MEDLINE

37. **Shoulder joint pathology–improved diagnosis by magnetic resonance imaging (MRI): a pictorial essay and review.**

**Author(s):** Nidecker A

**Citation:** Srpski Arhiv Za Celokupno Lekarstvo, January 2008, vol./is. 136/1-2(50-61), 0370-8179;0370-8179 (2008 Jan-Feb)

**Publication Date:** January 2008

**Abstract:** This paper describes the personal experience of the author with Shoulder Arthro MR. This imaging method is put into perspective with other, more widely used diagnostic methods, which also have their advantages. Indications for Shoulder Arthro MR are discussed and details on the technique and interpretation are given. Also major shoulder pathology as impingement, rotator cuff tears and instability is discussed. Furthermore a review of the spectrum of pathology in 100 consecutively examined patients is made and treatment and outcome are listed. Lastly a pictorial review of typical pathologies in MR pictures is supplemented. After x-ray, Shoulder MR is now considered the standard among the imaging methods to diagnose shoulder disorders, as it allows for optimal depiction of pathology and diagnosis in all major imaging planes. At the same time the method gives the arthroscopist an excellent roadmap for his intervention. All in all, the treatment outcome of shoulder trauma has been improved by shoulder MR in conjunction with modern surgical and arthroscopic therapies.

Source: MEDLINE

38. **Imaging in shoulder disorders.**

**Author(s):** McNally EG, Rees JL

**Citation:** Skeletal Radiology, November 2007, vol./is. 36/11(1013-6), 0364-2348;0364-2348 (2007 Nov)

**Publication Date:** November 2007

**Abstract:** Clinical assessment of the patient with shoulder symptoms can usually localize the cause to one of a few syndromes, each associated with specific imaging questions. MRI is used as the primary form of investigation for recurrent dislocation, SLAP lesions and PSI, as well as articular cartilage, synovial disease, tumours and infection. Ultrasound plays the leading role in impingement, acromioclavicular disease, dynamic assessment and guided therapy. Both techniques are reported to play a role in adhesive capsulitis. In our hospital, approximately four times as many shoulder ultrasound examinations as shoulder MRI are carried out, but elsewhere these proportions will vary according to the prevalence of clinical syndromes in the population being treated.

Source: MEDLINE

39. **Estimating the dimensions of the rotator interval with use of magnetic resonance arthrography.**

**Author(s):** Kim KC, Rhee KJ, Shin HD, Kim YM

**Citation:** Journal of Bone & Joint Surgery - American Volume, November
Abstract: BACKGROUND: The goal of the present study was to define the dimensions of the normal rotator interval with magnetic resonance arthrography and to compare these dimensions with those in shoulders with known chronic anterior instability in order to determine if abnormalities of the rotator interval might be better understood and estimated preoperatively. METHODS: We retrospectively reviewed a consecutive series of 202 shoulders that had undergone magnetic resonance arthrography between 2004 and 2005. Of these, 120 shoulders were included in the present study. These shoulders were divided into two groups according to the diagnosis. Group I comprised fifty shoulders with no instability, and Group II comprised seventy shoulders with chronic anterior instability. With use of magnetic resonance arthrography, the base and height of the rotator interval and the diameter of the glenoid were measured. Then, the area of the rotator interval and the rotator interval index were calculated. RESULTS: In Group I, the mean estimated rotator interval dimensions (height and base), the mean calculated rotator interval area, and the mean rotation interval index were 16.73 mm, 48.59 mm, 406.47 mm$^2$, and 0.64, respectively. In Group II, these values were 21.87 mm, 49.40 mm, 540.06 mm$^2$, and 0.94, respectively. The shoulders in Group II differed significantly from the shoulders in Group I in terms of rotator interval height, rotator interval area, and rotator interval index (p < 0.01 for all). CONCLUSIONS: There are significant differences in the dimensions of the rotator interval between patients with and without recurrent anterior shoulder instability. Estimating the dimensions of the rotator interval with use of magnetic resonance arthrography may be valuable for assessing patients preoperatively.
the 243 patients younger than 40 years with clinical history of potential labral pathology, 39% (95/243) showed a labral tear and 2.1% (5/243) had a full-thickness rotator cuff tendon tear. In the 89 patients with no history suggesting labral pathology, 19% (17/89) showed an unsuspected labral tear and 4.5% (4/89) had a full-thickness rotator cuff tear. These findings suggest that, regardless of the clinical indication for referral, patients aged 40 and less referred for shoulder MRI should be imaged using MR arthrography because of the significant risk that symptoms are related to unsuspected labral pathology.

**Source:** MEDLINE

**Full Text:**

Available in fulltext at EBSCO Host

41. **MR arthrography in calcific tendinitis of the shoulder: diagnostic performance and pitfalls.**

**Author(s):** Zubler C, Mengiardi B, Schmid MR, Hodler J, Jost B, Pfirrmann CW

**Citation:** European Radiology, June 2007, vol./is. 17/6(1603-10), 0938-7994;0938-7994 (2007 Jun)

**Publication Date:** June 2007

**Abstract:** The purpose was to assess the diagnostic performance of MR arthrography to diagnose calcific tendinitis of the shoulder and to assess the reasons for diagnostic errors. Standard MR arthograms of 22 patients with calcific tendinitis and 61 controls were retrospectively analyzed by two independent and blinded radiologists. All cases were consecutively collected from a database. Conventional radiographs were available in all cases serving as gold standard. The supraspinatus was involved in 16, the infraspinatus in four and the subscapularis in two patients. All diagnostic errors were analyzed by two additional readers. Reader 1 correctly detected 12 of the 22 shoulders with and 42 of the 61 shoulders without calcific tendinitis (sensitivity 0.55, specificity 0.66). The corresponding values for reader 2 were 13 of 22 and 40 of 61 cases (sensitivity 0.59, specificity 0.69). Inter-rater agreement (kappa-value) was 0.42. Small size of the calcific deposits and isointensity compared to the surrounding tissue were the most important reasons for false negative results. Normal hypointense areas within the supraspinatus tendon substance and attachment were the main reason for false positive results. In conclusion, MR arthrography is insufficient in the diagnosis of calcific tendinitis. Normal hypointense parts of the rotator cuff may mimic calcific deposits and calcifications may not be detected when they are isointense compared to the rotator cuff. Therefore, MR imaging should not be interpreted without corresponding radiographs.

**Source:** MEDLINE

**Full Text:**

Available in fulltext at EBSCO Host

42. **Magnetic resonance imaging findings associated with surgically proven rotator interval lesions.**

**Author(s):** Vinson EN, Major NM, Higgins LD
OBJECTIVE: To identify shoulder magnetic resonance imaging (MRI) findings associated with surgically proven rotator interval abnormalities.

MATERIALS AND METHODS: The preoperative MRI examinations of five patients with surgically proven rotator interval (RI) lesions requiring closure were retrospectively evaluated by three musculoskeletal-trained radiologists in consensus. We assessed the structures in the RI, including the coracohumeral ligament, superior glenohumeral ligament, fat tissue, biceps tendon, and capsule for variations in size and signal alteration. In addition, we noted associated findings of rotator cuff and labral pathology.

RESULTS: Three of three of the MR arthrogram studies demonstrated extension of gadolinium to the cortex of the undersurface of the coracoid process compared with the control images, seen best on the sagittal oblique images. Four of five of the studies demonstrated subjective thickening of the coracohumeral ligament, and three of five of the studies demonstrated subjective thickening of the superior glenohumeral ligament. Five of five of the studies demonstrated a labral tear.

CONCLUSIONS: The MRI arthrogram finding of gadolinium extending to the cortex of the undersurface of the coracoid process was noted on the studies of those patients with rotator interval lesions at surgery in this series. Noting this finding—especially in the presence of a labral tear and/or thickening of the coracohumeral ligament or superior glenohumeral ligament—may be helpful in the preoperative diagnosis of rotator interval lesions.

Source: MEDLINE
Author(s): Andrisek G, Duc SR, Froehlich JM, Hodler J, Weishaupt D

Citation: AJR. American Journal of Roentgenology, April 2007, vol./is. 188/4(1081-8), 0361-803X;1546-3141 (2007 Apr)

Publication Date: April 2007

Abstract: OBJECTIVE: The purpose of our study was to investigate the contrast dynamics and the relationship between visualization of intraarticular structures and time elapsed between intraarticular injection of contrast agent and MRI in symptomatic patients referred for MR arthrography of the shoulder, hip, and wrist.

SUBJECTS AND METHODS: Our local ethics committees and the national drug administration approved this multicentric study. We prospectively studied 11 shoulders, 11 hips, and 10 wrists. After the intraarticular gadolinium injection, patients underwent a baseline MR arthrography protocol (time point [TP] 1) and subsequent MRI at another four time points (TP 2-TP 5) up to 240 minutes. The course of contrast-to-noise ratio (CNR) over time was calculated. Three observers assessed the degree of visualization of different intraarticular structures and the overall image quality at each time point using a 3-point scale and a 5-point scale, respectively.

RESULTS: For all joints, CNR measurements showed peak CNR at TP 1 (21 minutes) and TP 2 (45 minutes) with a subsequent, near-logarithmic decline of CNR values over time. Visualization of different anatomic structures decreased over time. Overall image quality was insufficient for diagnostic purposes at TP 3 (96 minutes) in three (27%) of 11 shoulders and in three (27%) of 11 hips. In two (20%) of 10 wrists, image quality was insufficient at TP 2 (45 minutes).

CONCLUSION: For MR arthrography, the degree of visualization of intraarticular structures depends on the time elapsed between contrast injection and MRI. MR arthrography of the shoulder and hip should be performed within 90 minutes, and MR arthrography of the wrist should be performed within 45 minutes, after intraarticular injection.

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45. Rotator cuff tears: assessment with MR arthrography in 275 patients with arthroscopic correlation.

Author(s): Waldt S, Bruegel M, Mueller D, Holzapfel K, Imhoff AB, Rummeny EJ, Woertler K

Citation: European Radiology, February 2007, vol./is. 17/2(491-8), 0938-7994;0938-7994 (2007 Feb)

Publication Date: February 2007

Abstract: We assessed the diagnostic performance of magnetic resonance (MR) arthrography in the diagnosis of articular-sided partial-thickness and full-thickness rotator cuff tears in a large symptomatic population. MR arthograms obtained in 275 patients including a study group of 139 patients with rotator cuff tears proved by arthroscopy and a control group of 136 patients with arthroscopically intact rotator cuff tendons were reviewed in random order. MR imaging was performed on a 1.0 T system (Magnetom
Expert, Siemens). MR arthrograms were analyzed by two radiologists in consensus for articular-sided partial-thickness and full-thickness tears of the supraspinatus, infraspinatus, and subscapularis tendons. At arthroscopy, 197 rotator cuff tears were diagnosed, including 105 partial-thickness (93 supraspinatus, nine infraspinatus, three subscapularis) and 92 full-thickness (43 supraspinatus, 20 infraspinatus, 29 subscapularis) tendon tears. For full-thickness tears, sensitivity, specificity, and accuracy were 96%, 99%, and 98%, respectively, and for partial tears 80%, 97%, and 95%, respectively. False negative and positive assessments in the diagnosis of articular-sided partial-thickness tears were predominantly [78% (35/45)] observed with small articular-sided (Ellman grade 1) tendon tears. MR arthrography is highly accurate in the diagnosis of full-thickness rotator cuff tears and is accurate in the diagnosis of articular-sided partial-thickness tears. Limitations in the diagnosis of partial-thickness tears are mainly restricted to small articular-sided tears (Ellman grade 1) due to difficulties in differentiation between fiber tearing, tendinitis, synovitic changes, and superficial fraying at tendon margins.

**Source:** MEDLINE

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46. **Sensitivity and specificity in detection of labral tears with 3.0-T MRI of the shoulder.**

**Author(s):** Magee TH, Williams D

**Citation:** AJR. American Journal of Roentgenology, December 2006, vol./is. 187/6(1448-52), 0361-803X;1546-3141 (2006 Dec)

**Publication Date:** December 2006

**Abstract:** OBJECTIVE: MRI of the shoulder has been found to be sensitive and specific for detection of labral tears at 1.5 T or lower field strength compared with arthroscopy, whereas 3.0-T MRI of the shoulder has not been specifically assessed. This study assesses the sensitivity and specificity of MRI at 3.0 T for labral tears compared with arthroscopy. CONCLUSION: MRI of the shoulder at 3.0 T is very sensitive and specific compared with arthroscopy in detection of superior, anterior, and posterior labral tears.

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47. **MR arthrography in the differential diagnosis of type II superior labral anteroposterior lesion and sublabral recess.**

**Author(s):** Jin W, Ryu KN, Kwon SH, Rhee YG, Yang DM

**Citation:** AJR. American Journal of Roentgenology, October 2006, vol./is. 187/4(887-93), 0361-803X;1546-3141 (2006 Oct)
Publication Date: October 2006

Abstract: OBJECTIVE: The objective of our study was to assess the utility of five MR arthrographic findings in differentiating type II superior labral anteroposterior (SLAP) lesion from superior sublabral recess.MATERIALS AND METHODS: The MR arthrograms of 55 patients (57 cases) with either type II SLAP lesion (34 cases) or superior sublabral recess (23 cases) who underwent arthroscopic surgery and MR arthrography were retrospectively reviewed. Two independent reviewers searched for the extension, direction, and shape of high signal intensity in the superior labrum on MR arthrograms. In addition, the presence of concomitant anterosuperior labral tear and anteroposterior extension of high signal intensity on axial images was evaluated. The frequencies of these findings in cases of type II SLAP lesion and sublabral recess were evaluated, and the statistical significance of each finding in differentiation of the two groups was assessed.RESULTS: Extension of high signal intensity behind the biceps anchor that extended beneath the labrum on fat-saturated oblique coronal T1-weighted images was found in 33 (97%) of the cases of type II SLAP lesion and 21 (91%) of the cases of sublabral recess. Laterally curved high signal intensity was found in 17 (50%) of the cases of type II SLAP lesion but in only four (17%) of the cases of sublabral recess. Globular or irregular shape of the superior labrum was present in 22 (65%) of the cases of type II SLAP lesion and in 10 (43%) of the cases of sublabral recess. Concomitant anterosuperior labral tear was seen in 14 (41%) of the cases of type II SLAP lesion but in only two (8.7%) of the cases of sublabral recess. Anteroposterior extension of high signal intensity in the superior labrum on fat-saturated axial T1-weighted images was detected in 33 cases of type II SLAP lesion (97%) and in 14 cases of sublabral recess (61%).CONCLUSION: Although the MR arthrographic findings were similar for type II SLAP lesion and sublabral recess, laterally curved high signal intensity on oblique coronal images, concomitant anterosuperior labral tear, and anteroposterior extension of high signal intensity on axial images were helpful findings in the diagnosis of type II SLAP lesion.

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48. 3.0-T MRI of the supraspinatus tendon.

Author(s): Magee T, Williams D

Citation: AJR. American Journal of Roentgenology, October 2006, vol./is. 187/4(881-6), 0361-803X;1546-3141 (2006 Oct)

Publication Date: October 2006

Abstract: OBJECTIVE: MRI of the shoulder has been found to be highly sensitive and specific for detection of full-thickness supraspinatus tendon tears at 1.5-T or lower field strength compared with arthroscopy. MRI of the shoulder at 3.0 T has not been specifically assessed. This study assesses the sensitivity and specificity of MRI at 3.0 T for supraspinatus tendon tears compared with arthroscopy.MATERIALS AND METHODS: Two experienced musculoskeletal radiologists retrospectively reviewed MR
images of the shoulder in 150 consecutive patients who had subsequent arthroscopy. All patients had oblique coronal and sagittal T1-weighted and fat-saturated T2-weighted axial, oblique coronal, and sagittal imaging performed. The radiologists interpreted the MR images by consensus without knowledge of the arthroscopy results. Scans were interpreted for full-thickness or partial-thickness supraspinatus tendon tears. If partial-thickness supraspinatus tendon tears were seen on MRI, the reviewers noted whether the partial-thickness tear was articular or bursal in location. The radiologists also separated the supraspinatus tendon tears into small (< 1 cm retraction from the humeral head) and large (> 1 cm retraction from the humeral head). All 150 patients went on to arthroscopy. After consensus review of the MR images, arthroscopy results were compared with consensus MR interpretations.

RESULTS: Ninety-eight of the 150 patients had full-thickness supraspinatus tendon tears at arthroscopy. Twenty-six of the 150 patients had partial-thickness supraspinatus tendon tears. Seventeen of these 26 partial-thickness tears were along the articular surface and nine were along the bursal surface. Ninety-six of 98 full-thickness tears seen at arthroscopy were seen on consensus MRI interpretation. All 26 partial-thickness tears seen at arthroscopy were seen at consensus MR interpretation; however, two of the partial-thickness articular surface tears seen at arthroscopy were interpreted as full-thickness tears on consensus MRI interpretation. Twenty-eight of the 98 full-thickness supraspinatus tendon tears were small tears (< 1 cm retraction from the humeral head) on arthroscopy. Two of these 28 small tears seen on arthroscopy were not seen on consensus MRI interpretation. Twenty-six patients had intact supraspinatus tendons on both retrospective consensus MRI interpretation and at arthroscopy.

CONCLUSION: MRI of the shoulder at 3.0 T is highly sensitive and specific compared with arthroscopy in the detection of full-thickness and partial-thickness supraspinatus tendon tears.

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glenohumeral joint. This article reviews the appearances of normal anatomic structures in MRI of the shoulder and disorders involving the rotator cuff and glenoid labrum. Copyright CO 2006 by Elsevier Inc.

Source: CINAHL

50. **Adhesive capsulitis of the shoulder: evaluation with MR arthrography.**

**Author(s):** Jung JY, Jee WH, Chun HJ, Kim YS, Chung YG, Kim JM

**Citation:** European Radiology, April 2006, vol./is. 16/4(791-6), 0938-7994;0938-7994 (2006 Apr)

**Publication Date:** April 2006

**Abstract:** The purpose of this study was to determine the usefulness of magnetic resonance (MR) arthrography for diagnosing adhesive capsulitis. Shoulder MR images of 28 patients with (n=14) and without (n=14) adhesive capsulitis were retrospectively analyzed. MR images were assessed for capsule and synovium thickness as well as the width of the axillary recess on oblique coronal fat-suppressed T1-weighted images and T2-weighted images, respectively. On oblique sagittal fat-suppressed T1-weighted images, the width of the rotator interval and the presence of abnormal tissue in the interval were evaluated. Significant differences were found between the two groups in capsule and synovium thickness on both sides of the recess on oblique coronal T2-weighted images (P=0.000), whereas thickness on the humeral aspect showed no significant difference on oblique coronal fat-suppressed T1-weighted images (P=0.109). On oblique coronal T2-weighted images, a cut-off value of 3-mm thickness gave the highest diagnostic accuracy for adhesive capsulitis with sensitivity, specificity, and accuracy of 79% (11/14), 100% (14/14), and 89% (25/28) at the humeral side and 93% (13/14), 86% (12/14), and 89% (25/28) at the glenoid side, respectively. There were significant differences in rotator interval width, presence of abnormal tissue in the rotator interval, and axillary recess width between the two groups (P<0.05). Thickness of capsule and synovium of the axillary recess greater than 3 mm is a practical MR criterion for diagnosing adhesive capsulitis when measured on oblique coronal T2-weighted MR arthrography images without fat suppression. The presence of abnormal tissue in the rotator interval showed high sensitivity but rather low specificity.

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51. **One-shot CT and MR arthrography of the shoulder with a mixture of iodinated and paramagnetic contrast agents using arthroscopy as a gold standard.**

**Author(s):** Aliprandi A, Fausto A, Quarenghi M, Modestino S, Randelli P, Sardanelli F

**Citation:** Radiologia Medica, February 2006, vol./is. 111/1(53-60), 0033-8362;0033-8362 (2006 Feb)

**Publication Date:** February 2006
Abstract: PURPOSE: Our aim was to perform computed tomography arthrography (CTA) and magnetic resonance arthrography (MRA) of the shoulder as a one-shot examination and to evaluate its value on the basis of arthroscopy as a gold standard. MATERIALS AND METHODS: Fifteen men and 16 women with planned arthroscopy for chronic (n=17) or traumatic tear of the rotator cuff (n=8), congenital atraumatic (n=1) or traumatic glenohumeral instability (n=2), traumatic tear of the rotator cuff with glenohumeral instability (n=1), or "frozen shoulder" (n=2) underwent plain helical CT in neutral position and intra-articular CT-guided injection of a mixture of iodinated and paramagnetic contrast agents (gadodiamide at 1:250 and iobitridol 350 at 1:5 in 20 ml of saline solution). CT helical scans in intra- and extrarotation and T1-weighted MRA scans in the neutral position were obtained. CTA and MRA were evaluated separately and jointly (CTA-MRA) in different blinded sessions, giving a 0-3 score to the agreement of CTA, MRA, and CTA-MRA with arthroscopy. RESULTS: The injected volume of the solution ranged from 10 to 24 ml. No side effects were observed. CTA obtained a score of 2.33+/-0.62, MRA 2.47+/-0.52, and CTA-MRA 2.67+/-0.49. Significant differences were found for CTA-MRA versus CTA (p=0.0281) and MRA (p=0.0277). There was no significant difference for CTA versus MRA. CONCLUSIONS: CTA and MRA can be performed as a one-shot exam. CTA-MRA seems to give more information than CTA or MRA separately.

Source: MEDLINE