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COMMONLY MISSED DIAGNOSES OF THE SHOULDER WITH MRI

1. Early glenohumeral osteoarthritis

a. *Etiologies*

b. *Sites*

c. *Differentiation from osteochondral defect, glenoid bare area*

[1] Brophy RH, Marx RG. Osteoarthritis following shoulder instability. Clin Sports Med 2005(24);47-56.

[2] Patzer T, Lichtenberg S, Kircher J, et al. Influence of SLAP lesions on chondral lesions of the glenohumeral joint. Knee Surg Sports Traumatol Arthrosc 2010(18);982-87.

[3] Prescher A. Anatomical basics, variations, and degenerative changes of the shoulder joint and shoulder girdle. Eur J Radiol 2000 Aug;35(2):88-102.

[4] Walch G, Badet R, Boulahia A, et al. Morphologic study of the glenoid in primary glenohumeral osteoarthritis. J Arthroplasty 1999 Sep;14(6):756-60.

[5] Shindle MK, Foo LF, Kelly BT, et al. Magnetic resonance imaging of cartilage in the athlete: current techniques and spectrum of disease. J Bone Joint Surg Am 2006;88:27-46.

[6] Guntern DV, Pfirrmann CWA, Schmid MR, et al. Articular cartilage lesions of the glenohumeral joint: diagnostic effectiveness of MR arthrography and prevalence in patients with subacromial impingement syndrome. Radiology 2003 Jan;226(1):165-70.

[7] Feeley BT, Gallo RA, Craig EV. Cuff tear arthropathy: current trends in diagnosis and surgical management. J Shoulder Elbow Surg 2009;18:484-94.

[8] Scheffel PT, Clinton J, Lynch JR, et al. Glenohumeral chondrolysis: a systematic review of 100 cases from the English language literature. J Shoulder Elbow Surg 2010;19:944-949.

[9] Good CR, Shindle MK, Kelly BT, et al. Glenohumeral chondrolysis after shoulder arthroscopy with thermal capsulorrhaphy. Arthroscopy 2007;23:797.e1-797.e5.

[10] Yu JS, Greenway G, Resnick D. Osteochondral defect of the glenoid fossa: cross-sectional imaging features. Radiology 1998;206:35-40.

[11] Kim HK, Emery KH, Salisbury SR. Bare spot of the glenoid fossa in children: incidence and MRI features. Pediatr Radiol 2010;40:1190-6.

1. Adhesive capsulitis

a. *Presentation and stages*

b. *Findings with and without intra-articular contrast*

[1] Sofka CM, Ciavarra GA, Hannafin JA, et al. Magnetic resonance imaging of adhesive capsulitis: correlation with clinical staging. HSS J 2008 Sep;4(2):164-9.

[2] Kim KC, Rhee KJ, Shin HD. Adhesive capsulitis of the shoulder: dimensions of the rotator interval measured with magnetic resonance arthrography. J Shoulder Elbow Surg 2009;18:437-442.

[3] Jung J, Jee W, Chun HJ. Adhesive capsulitis of the shoulder: evaluation with MR arthrography. Eur Radiol 2006;16:791-6.

[4] Neviaser AS, Hannafin JA. Adhesive capsulitis: a review of current treatment. Am J Sports Med 2010 Nov;38(11):2346-56.

[5] Mengiardi B, Pfirrmann CWA, Gerber C, et al. Frozen shoulder: MR arthrographic findings. Radiology 2004;233:486-92.

[6] Emig EW, Schweitzer ME, Karasick D, et al. Adhesive capsulitis of the shoulder: MR diagnosis. AJR 1995 Jun;164:1457-9.

2. Synovitis

a. *Etiologies (osteoarthritis, infection, crystalline arthropathies, inflammatory arthropathies)*

b. *Findings*

c. *Distinction from other conditions (synovial chondromatosis, pigmented villonodular synovitis, gout, amyloidosis)*

[1] Bencardino JT, Hassankhani A. Calcium pyrophosphate dehydrate crystal deposition disease. Semin Musculoskelet Radiol 2003 Sep;7(3):175-85.

[2] Garcia GM, McCord GC, Kumar R. Hydroxyapatite crystal deposition disease. Semin Musculoskelet Radiol 2003 Sep;7(3):187-93.

[3] Hurt G, Baker CL. Calcific tendinitis of the shoulder. Orthop Clin N Am 2003;34:567-75.

[4] Farid N, Bruce D, Chung CB. Miscellaneous conditions of the shoulder: anatomical, clinical, and pictorial review emphasizing potential pitfalls in imaging diagnosis. Eur J Radiol 2008 Oct;68(1):88-105.

[5] Choi MH, MacKenzie JD, Dalinka MK. Imaging features of crystal-induced arthropathy. Rheum Dis Clin N Am 2006;32:427-446.

[6] Sheldon PJ, Forrester DM, Learch TJ. Imaging of intraarticular masses. RadioGraphics 2005 Jan-Feb;25(1):105-19.

[7] Llauger J, Palmer J, Rosón N, et al. Nonseptic monoarthritis: imaging features with clinical and histopathologic correlation. RadioGraphics 2000; 20:S263-S278.

3. Avulsion of the inferior glenohumeral ligament

a. *Function and anatomy*

b. *Pathophysiology of injury*

c. *Findings*

d. *Associated pathology (e.g. subscapularis tendon tears)*

[1] Bui-Mansfield LT, Banks KP, Taylor DC. Humeral avulsion of the glenohumeral ligaments: the HAGL lesion. Am J Sports Med 2007 Nov;35(11):1960-6.

[2] Chung CB, Sorenson S, Dwek JR, et al. Humeral avulsion of the posterior band of the inferior glenohumeral ligament: MR arthrography and clinical correlation in 17 patients. AJR 2004;183:355-9.

[3] Wolf EM, Cheng JC, Dickson K. Humeral avulsion of glenohumeral ligaments as a cause of anterior shoulder instability. Arthroscopy 1995 Oct;11(5):600-7.

[4] Hasan SS, Fleckenstein C, Albright J. Open treatment of posterior humeral avulsion of the glenohumeral ligaments: a case report and review of the literature. J Shoulder Elbow Surg 2007;16:e3-e5.

[5] Wolf EM, Siparsky PN. Glenoid avulsion of the glenohumeral ligaments as a cause of recurrent anterior shoulder instability. Arthroscopy 2010 Sep;26(9):1263-7.

[6] Pokabla C, Hobgood ER, Field LD. Identification and management of “floating” posterior inferior glenohumeral ligament lesions. J Shoulder Elbow Surg 2010;19:314-17.

4. Subscapularis tendon tears

a. *Tendon anatomy*

b. *Findings*

c. *Association with coracohumeral impingement*

[1] Pfirrmann CWA, Zanetti M, Welshaupt D, et al. Subscapularis tendon tears: detection and grading at MR arthrography. Radiology 1999;213:709-14.

[2] Tung GA, Yoo DC, Levine SM, et al. Subscapularis tendon tear: primary and associated signs on MRI. J Comput Assist Tomogr 2001;25(3):417-24.

[3] Lyons RP, Green A. Subscapularis tendon tears. J Am Acad Orthop Surg 2005;13(5):353-63.

[4] Deutsch A, Altchek DW, Veltri DM, et al. Traumatic tears of the subscapularis tendon: clinical diagnosis, magnetic resonance imaging findings, and operative treatment. Am J Sports Med 1997;25(1):13-22.

[5] Richards DP, Burkhart SS, Campbell SE. Relation between narrowed coracohumeral distance and subscapularis tears. Arthroscopy 2005 Oct;21(10):1223-8.

[6] Bergin D, Parker L, Zoga A, et al. Abnormalities on MRI of the subscapularis tendon in the presence of a full-thickness supraspinatus tendon tear. AJR 2006 Feb;186(2):454-9.

[7] Giaroli EL, Major NM, Lemley DE, et al. Coracohumeral interval imaging in subcoracoid impingement syndrome on MRI. AJR 2006 Jan;186(1):242-6.