Efficacy of MRI over Conventional Radiograph in detecting labro-ligamentous lesions in cases of anterior instability of Glenohumeral Joint

Dr. Shishir Kumar
Senior Resident, DEPARTMENT OF RADIODIAGNOSIS, MGM MEDICAL COLLEGE & HOSPITAL, KAMOTHE, NAVI MUMBAI - 410 209.

Dr. Shreyansh S. Kothari
Resident, DEPARTMENT OF RADIODIAGNOSIS, MGM MEDICAL COLLEGE & HOSPITAL, KAMOTHE, NAVI MUMBAI - 410 209.

Dr. Priti Kapoor
Professor, DEPARTMENT OF RADIODIAGNOSIS, MGM MEDICAL COLLEGE & HOSPITAL, KAMOTHE, NAVI MUMBAI - 410 209.

ABSTRACT

MRI imaging is modality of choice for visualization of both soft tissue and osseous pathology of the Glenohumeral joint, which is not possible with conventional radiograph, arthrogram and ultrasonography. Though conventional radiography is the first imaging modality for virtually all shoulder pathology. Radiographs are often the only imaging study necessary for the evaluation of acute shoulder trauma, calcific tendonitis, arthritis, and osteoarthritis of distal clavicle (in athletes). In our study we have studied 30 patients with complaints of anterior instability of glenohumeral joint and were clinically suspected of labro-ligamentous lesion whose conventional radiograph were normal. In most of cases MRI detected multiple labral and ligamentous abnormalities in spite of radiograph being normal.

KEYWORDS

Glenohumeral Joint, Anterior Instability, S Kumar, S Kothari, P Kapoor.

INTRODUCTION

Glenohumeral joint (aka Shoulder Joint) is the most mobile and most unstable joint of the body. The humeral head articulates with relatively shallow glenoid fossa of the scapula and is dependent on muscular ligaments and labral integrity for stability. Anterior instability is more common and its etiology varies from being labroligamentous lesion, rotator cuff tears and osseous lesions. Mostly there is injury of anterior labrum and anterior band of inferior glenohumeral ligament. (Bankart lesion, Hill Sachs’ lesion etc.) Injuries associated with anterior ligament and capsule dislocations include: Avulsion of the anterior inferior glenohumeral ligament (AILGL) and capsule from the glenoid (more common in younger individuals), HAGL lesion with or without bone flecks, Fractures of the glenoid, humeral head, tuberosities, or coracoid process, Cuff tears associated with anterior and inferior glenohumeral dislocation (30% incidence in patients less than 40 years of age and 80% incidence in patients over 60 years of age), Vascular injury, which may occur during dislocation or reduction and is more common in elderly patients. The structures at risk include the axillary artery or vein or branches of the axillary artery—the thoracodorsal, subscapular, circumflex, and less commonly the long thoracic. Neurovascular injuries, usually affecting the brachial plexus and axillary nerves. All patients with normal radiograph and presence of labroligamentous lesion on MRI.

AIM AND OBJECTIVE

To compare efficacy of conventional radiograph and MRI in detecting labro-ligamentous lesion in case of anterior instability of Glenohumeral joint. To assess different etiologies of anterior instability of Glenohumeral joint using MRI as imaging modality.

MATERIAL AND METHODS

Source of Data: 50 patients clinically presenting as case of anterior instability of Glenohumeral joint who were suspected of labroligamentous lesions were evaluated irrespective of their age and sex. Conventional radiograph and MRI shoulder joint were performed on these patients.

Inclusion Criteria:

Exclusion Criteria:

Data Collection:

After all exclusions data of 30 patients were included in our study which fulfilled our inclusion criteria. A prospective cross sectional study was done. Study was conducted for a period of 1 year.

RESULTS:

It was a prospective and observational type of cross sectional study which included 30 patients. The study infers that MRI is more accurate in detecting the labroligamentous lesions in patients with instability of Glenohumeral joint who have normal shoulder radiograph and moreover MRI also helps in assessing the etiology of anterior instability which helps in pre procedure evaluation.

DISCUSSION:

The primary observation in this study states that MRI is modality of choice in detecting labro-ligamentous lesion in instability of Glenohumeral joint while conventional radiograph has limited use in detecting such lesions and is diagnostic in osseous lesions only. MRI findings of anterior instability may reveal a large number of labroligamentous abnormalities along with osseous lesions.

Bankart Lesion – is named after Arthur Sydney Blundell Bankart, British orthopedic surgeon and is most common labral injury which occurs due to tear of anterior inferior labrum with associated periosseal tear.10-12 It could be purely cartilaginous or can involve the bony rim of glenoid (Bony Bankart).

Hill Sachs Lesion – described by H A Hill & M D Sachs in 1940 and is a common injury associated with anterior glenohumeral

Discussion:
instability. It comprises of osseous injury to postero-superior humeral head which can present as subtle marrow oedema in milder cases to impaction fracture and bony fragment loss in severe cases.\(^4\)

**Perthes Lesion** – is named after **Georg Clemens Perthes** (1869-1927) German surgeon, who first described the lesion in 1905 and is defined as tear of glenoid labrum with intact scapular periosteum. \(^6\) Difficult to detect on conventional MRI, MR arthrogram improves detection rate.

**ALPSA Lesion** – was described by **Nevaiser**, is defined as an avulsion and medial rolling of inferior labroligamentous complex along the scapular neck usually secondary to chronic injury. \(^7\)

**GLAD Lesion** – was also described by **Nevaiser** comprises of a superficial anterior inferior labral tear associated with articular cartilage injury. \(^8\)

**SLAP Lesion** – Superior labrum anterior and posterior lesion described by **Snyder et al**, is an injury involving the superior aspect of glenoid labrum with biceps tendon anchor. Oftenly associated with anterior shoulder dislocation. \(^9\)

**HAGL Lesion** – Humeral avulsion of anterior glenohumeral ligament is less commonly encountered and causes anteroinferior instability. \(^10\)

**GAGL Lesion** – uncommon lesion implies to an avulsion of the inferior glenohumeral ligament from inferior glenoid without disruption of labrum.

**Rotator Cuff Tears** – These tears are associated with anterior and inferior glenohumeral dislocation and is common in elderly.

---

**References**


---

**Figure 1 & 2**: 25 years male patient with c/o anterior instability of shoulder joint. Shoulder radiograph reveal no significant abnormalities. Sagittal PD MRI images however reveal partial tear of supraspinatus tendon.

**Figure 3 & 4**: 30 years male patient with c/o anterior instability of shoulder joint. Shoulder radiograph reveal no significant abnormalities. Axial PD MRI images however reveal Bankart and Hill Sachs’ lesion.