**ROLE OF MR IMAGING IN ASSESSMENT OF THE ROTATOR CUFF INJURIES****Dhramalkumar Patel^{1*}, Rajeshkumar Rathore², Paridhi Jain³**¹ 3rd Year Resident, ² Professor, ³ 3rd Year Resident

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ABSTRACT:**BACKGROUND :** Rotator cuff tear are common and can result in significant disability and shoulder pain. MRI is the preferred modality for evaluating the shoulder joint and is taken into consideration over USG.**MATERIALS AND METHODS :** A prospective study involving 45 patients with shoulder pain who were referred to the Dhiraj General Hospital's Department of Radiodiagnosis was carried out. The Achieva 1.5 Tesla Philips MR system was used for each scan. For every patient sagittal oblique, coronal oblique, and axial T2 proton density fat- saturated weighted images , coronal oblique and sagittal oblique T1 and coronal oblique T2 weighted images were obtained.**RESULTS:** From August 2023 to January 2024, 45 patients with shoulder problems were brought to our institution for a diagnostic workup. This information was gathered retrospectively. Among the 45 patients, 25 were found to have full thickness tears on MRI, and 20 to have partial thickness tears. In majority of cases involved tendon was supraspinatus tendon, which was detected in 40 patients (88.88 % of cases), subscapularis tendon in 7 patients (15.5% of cases), and infraspinatus tendon in 5 patient (11.11 % of cases), Tear of teres minor tendon is not detected in this study. joint effusion, subacromial-subdeltoid bursitis , acromio-clavicular joint arthrosis and soft tissue pathology were ancillary findings.**CONCLUSION:** MRI replace other investigations since they offer detailed diagnoses. Because of this, magnetic resonance imaging (MR imaging) is the gold standard for accurately depicting nearly all shoulder pathologies.**KEY WORDS:** MRI, Rotator cuff , Supraspinatus tendon.**INTRODUCTION:**

When shoulder pain occurs, whether or not there is a reduction in range of motion, it's generally referred to the radiologist for assessment. Making the right decision about the next investigative modality is aided by clinical examination and plain radiography assessment. Due to its superior soft tissue contrast, magnetic resonance imaging (MRI) has supplanted all previous diagnostic procedures and is now regarded as an investigative screening technique. It has supplanted all other examinations and is regarded as the preferred screening method for shoulder issues.

AIMS AND OBJECTIVES :

- To assess the diagnostic precision of standard MRI in identifying and characterizing rotator cuff injuries.

MATERIALS AND METHODS :

A retrospective analysis was carried out on 45 patients who, between August 2023 and January 2024, were sent with shoulder pain or dysfunction to the Dhiraj General Hospital's Department of Radiodiagnosis. Achieva 1.5 Tesla Philips MR systems were used for all of the scans. For every patient sagittal oblique, coronal oblique, and axial T2 proton density fat-saturated weighted images, coronal oblique and sagittal oblique T1 and coronal oblique T2 weighted images were obtained. (Photos 1–7).

Photo – 1:

T2 weighted PD fat suppressed coronal image.
Full thickness tear of the supraspinatus tendon

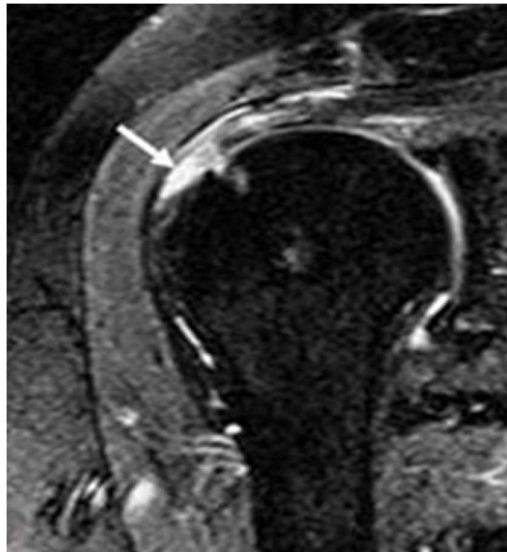


Photo – 2:

T2 weighted fat suppressed coronal image.
Partial thickness tear of the supraspinatus tendon at the articular surface.



Photo – 3:
T2 weighted PD fat suppressed coronal image.
Interstitial type of partial tear of the supraspinatus tendon.



Photo – 4:
T2 weighted fat suppressed coronal image.
Supraspinatus tendinosis.



Photo – 5:
T2 weighted Axial image.
subscapularis tear near the tendon insertion at the upper margin of the lesser tuberosity.



Photo – 6:

T2 weighted fat suppressed coronal image.

fluid extension from the lateral to the medial side of the subacromial-subdeltoid bursa (white arrows), beneath the acromion and deltoid muscle, respectively, in the context of a rotator cuff rupture (arrowhead).

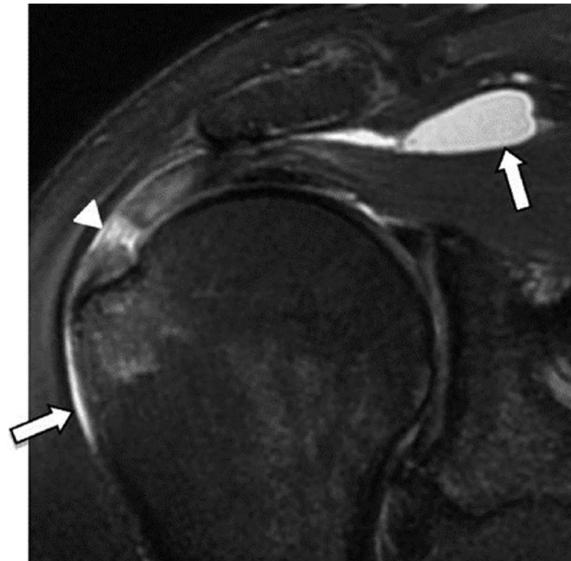


Photo – 7:

T2 weighted fat suppressed coronal image.

Impaction fracture of the posterolateral aspect of the humeral head (Hill Sach's deformity) (arrow)



OUTCOMES:

In my study, supraspinatus tendinopathy was observed in 40 patients (88.88%), while subscapularis tendinopathy was present in 7 patients (15.5%) and infraspinatus tendinopathy in 5 patients (11.11%). The ancillary findings comprised joint effusion in 22 patients (48.8%),Acromio-clavicular joint arthrosis in 10 patients (22.22%) subacromial-subdeltoid bursitis (8.8%) and soft tissue pathology. The age group above 40 years old had the highest incidence of pathology, accounting for 75.5 % of all cases (34 patients).

DISCUSSION:

One of the most common reasons of shoulder pain, especially in elderly people, is rotator cuff injuries.

As people mature, tears become more often.

In the rotator cuff, supraspinatus tendinopathy is the most prevalent disease. Often, as the tendon of supraspinatus travels between the acromion and the humeral head, it impinges beneath the acromion. It is a multifactorial mechanism.

Among the major reasons of rotator cuff tears are:

- Trauma (either acute or chronic repetitive)
- Subacromial Impingement
- Degeneration of tendon
- Hypo vascularity

Table – 1: Distribution of patients with full and partial thickness tears on MRI.

| | No. of patients |
|-------------------------|-----------------|
| Full thickness tears | 25 |
| Partial thickness tears | 20 |

Table –2: MRI rotator cuff tendon involvement.

| | Frequency | Percentage |
|-------------------------------|-----------|------------|
| Supraspinatus tear/tendinosis | 40 | 88.88% |
| Subscapularis tear/tendinosis | 7 | 15.5% |
| Infraspinatus tear/tendinosis | 5 | 11.11% |
| Teres minor tear/tendinosis | NIL | NIL |

Table – 3: Ancillary MRI findings in individuals with rotator cuff injuries.

| Findings | Frequency | Percentage |
|------------------------------------|-----------|------------|
| Joint effusion | 22 | 48.8% |
| Subacromial-Subdeltoid bursitis | 4 | 8.8% |
| Acromio-clavicular joint arthrosis | 10 | 22.22% |
| Fracture greater tubercle | 4 | 8.8% |
| Labral tear | 1 | 2.2% |
| Hill sach’s and Bankart | 1 | 2.2% |

CONCLUSION:

Shoulder joint magnetic resonance imaging (MRI) is a widely accepted imaging modality. This was

initially as a result of MRI's sensitivity and specificity in identifying rotator cuff injuries.

The most typical rotator cuff pathology is supraspinatus tendinopathy. It is a frequent, debilitating illness that is increasingly common after middle age and is a common source of shoulder pain.

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