Role of MRI in Rotator Cuff Tear and Labral Lesion with Arthroscopic Correlation

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Abstract

Background: Shoulder MRI is the principal non-invasive investigation for suspected rotator cuff and labral pathology, while arthroscopy remains the reference standard. This study evaluated the correlation between MRI and arthroscopic findings in operated shoulders at a tertiary care teaching hospital.

Methods: This retrospective study included 19 patients who underwent MRI of the shoulder followed by arthroscopy of the same limb between January 2024 and January 2026 at PESIMSR, Kuppam. MRI was performed on a 1.5-T GE Signa Explorer scanner using an 8-channel phased-array shoulder coil with axial T1, proton-density fat-suppressed (PDFS) and GRE sequences; sagittal T1 and PDFS; and coronal T2 and PDFS sequences. Supraspinatus, infraspinatus, subscapularis, teres minor, labral lesions, joint effusion, bursal fluid, osseous lesions and associated findings were recorded and compared with intraoperative arthroscopic findings.

Results: The mean age was 43.9±15.1 years (range 17-70 years), and 77.8% were male. MRI detected supraspinatus tears in 83.3%, infraspinatus tears in 33.3%, subscapularis tears in 33.3%, labral lesions in 33.3% and Hill-Sachs lesions in 27.8% of shoulders. Arthroscopy demonstrated supraspinatus tears in 72.2%, labral lesions in 33.3%, Hill-Sachs lesions in 27.8%, infraspinatus tears in 16.7% and subscapularis tears in 11.1%. For supraspinatus tears, MRI showed 100% sensitivity, 60.0% specificity and 88.9% accuracy; for infraspinatus tears, 100%, 80.0% and 83.3%; for subscapularis tears, 100%, 75.0% and 77.8%; and for labral and Hill-Sachs lesions, 100% concordance with arthroscopy in this dataset.

Conclusion: MRI showed excellent sensitivity for surgically relevant shoulder pathology and perfect agreement for labral and Hill-Sachs lesions in this series, although a tendency to overcall associated cuff tears was noted. MRI remains highly useful for preoperative mapping of shoulder lesions and surgical planning.

Keywords

Arthroscopy, labral lesion, magnetic resonance imaging, rotator cuff tear, shoulder.