Role of Magnetic Resonance Imaging in Assessment of Postoperative Shoulder Joint for rotator cuff injuries

Thesis

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بسم الله الرحمن الرحيم

قالوا
سبحانك لا علم لنا إلا ما علمتنا إنك أنت العليم الحكيم

صدق الله العظيم

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List of Abbreviations

Abbr.		Full term
ABER	:	Abduction and External Rotation.
AC joint	:	Acromioclavicular joint.
ALPSA	:	Anterior labroligamentous periosteum sleeve avulsion lesion.
ARAC	:	Arthroscopic resection of the acromioclavicular joint.
BLC	:	Biceps labral complex.
CHL	:	Coracohumeral ligament.
FOV	:	Field of view.
FSE	:	Fast spin echo sequences.
GLAD	:	Gleno-labral articular disruption lesion.
GR	:	Gradient sequences.
HAGL	:	Humeral avulsion of glenohumeral ligaments lesion.
IGL	:	Inferior glenohumeral ligament.
IGLC	:	Inferior glenohumeral ligament complex.
LLC	:	Labro-ligamentous complex.
MDI	:	Multidirectional instability.
MGL	:	Middle glenohumeral ligament.
MRI	:	Magnetic resonance imaging.
PD	:	Proton density sequences.
POLPSA	:	Posterior labrocapsular periosteal sleeve avulsion.
RF	:	Radiofrequency.
SE	:	Spin echo sequences.
SGL	:	Superior glenohumeral ligament.
SLAP	:	Superior Labral Anteroposterior lesions.
STIR	:	Short tau inversion recovery sequences.
T1WI	:	T1-weighted image.
T2WI	:	T2-weighted image.
TA	:	Time of acquisition.
TE	:	Time of Echo.
TR	:	Time of repetition.
TSE		Turbo spin echo.

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Abstract

Magnetic resonance imaging (MRI) evaluation of the postoperative shoulder presents technical and diagnostic challenges related to imaging artifacts from hardware and micro metallic shavings, postsurgical scarring, and morphological alterations. MRI plays an active role in post-operative shoulder imaging because of its superior contrast resolution. It is important for the radiologist to accurately diagnose complication that might occurs after surgery to guide optimal treatment.

Key Words: shoulder; postoperative imaging; MRI.

Introduction

Rotator cuff tears are common soft-tissue injuries that often require surgical treatment. Initial efforts to better tendon healing centered on improving the strength of repair.Rotator cuff tear is one of the most common shoulder diseases. The rotator cuff muscles are the supraspinatus, infraspinatus, subscapularis, and teres minor. Repetitive microtrauma and anatomic variations lead to most rotator cuff injuries. Such injuries are commonly encountered in athletic and nonathletic patients ***Sanders et al., 2014.***

The postoperative shoulder may be evaluated with various imaging modalities, including radiography, ultrasonography (US), computed tomography (CT), and magnetic resonance (MR) imaging, each of which has advantages and disadvantages. Radiography is adequate for the evaluation of prostheses, bone alignment, and surgical hardware, but it has very low sensitivity and specificity for the evaluation of soft tissues. US is adequate in evaluation of the soft tissues in the rotator cuff but is operator dependent and has limitations in the evaluation of labral and bone abnormalities. CT provides high-resolution depiction of osseous structures, as well as high-quality multiplanar imaging capabilities ***Alberto et al., 2015.***

MR imaging is the modality of choice for obtaining optimal soft-tissue visualization however several factors may decrease its accuracy in the evaluation of the postoperative shoulder. The most frequently performed surgical procedures followed up with MR imaging of the shoulder are subacromial decompression for impingement, rotator cuff repair, and repair of glenohumeral instability ***Alberto et al., 2015.***

Magnetic resonance imaging (MRI) evaluation of post-operative shoulder presents technical and diagnostic challenges related to imaging artifacts from hardware and micro metallic shavings, postsurgical scarring, and morphological alterations***Beltran et al., 2014.***

The transition from metallic hardware to bioabsorbable suture anchors used in orthopaedic surgery has rendered less metallic susceptibility artifact over the years allowing more accurate interpretation of MR images***.Bancroft et al., 2012.***

Magnetic resonance imaging (MRI) and MR arthrography have proven valuable for managing the postoperative shoulder, particularly in relation to the rotator cuff and labrum. MRI has proven to be an accurate imaging technique for differentiating expected findings versus complications in postoperative setting ***Uhthoff et al., 2014.***

Aim of work

The purpose of study is to analyse the value of postoperative MRI imaging studies in identifying the appearance of the shoulder after surgical repair of rotator cuff injuries, and assessing postoperative complications.