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Annals of Orthopedics & Rheumatology

Case Report

Lesion at the Capsule-Labral Junction of the Middle Gleno-Humeral Ligament

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Submitted: 07 July 2015

Accepted: 01 April 2016

Published: 04 April 2016

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Keywords
- Shoulder
- Microinstability
- Arthroscopy
- Ligament

Abstract

In this report is described an isolated avulsion of the middle glenohumeral ligamentfrom its glenoid insertion. She suffered an abrupt turn with external rotation and posterior displacement of the humeral head. The lesion of the middle glenohumeral ligament was diagnosed/assessed preoperatively by MRI. The rupture was produced at the junction between the labrum and the ligament. The middle glenohumeral ligament was re-attached into the glenoid edge by means of two bone anchors. The triggering painful movements and microinstability disappeared. The loss of the anterior stabilization that provides the middle glenohumeral ligament could therefore justify underlying shoulder microinstability.

ABBREVIATIONS

MGHL: Middle Glenohumeral Ligament; **GHL**: Glenohumeral Ligaments;

INTRODUCTION

The role of the glenohumeral ligaments (GHL) in shoulder stability is clearly defined through anatomical works [1-2]. From Bigliani's description in 1992 of lesions of the lower GHL at different levels [3], other lesions of the GHL have been described as instability causes: the humeral avulsion of the glenohumeral ligaments, bony avulsion of the glenohumeral ligaments from the humerus and posterior humeral avulsion of the glenohumeral ligaments, or "reverse" avulsion of the glenohumeral ligaments [4-6].

Most lesions of the glenohumeral ligaments are associated with lesions of other structures that stabilize the shoulder: Labral (Bankart lesion), cuff break, involvement of the biceps (SLAP), lesion of the capsule or a combination of injuries of more than one GHL [7-12].

In this report it is described an isolated avulsion of the middle glenohumeral ligament from its glenoid insertion. The rupture was produced at the junction between the labrum and the ligament. The MGHL was re-attached into the glenoid edge by means of two bone anchors. The triggering painful movements and microinstability disappeared. The loss of the anterior stabilization that provides the MGHL could therefore justify underlying shoulder microinstability.

CASE PRESENTATION

A 38-Year-old woman hooked her right arm with a fence when she was biking, suffering an abrupt turn with external rotation and posterior displacement of the humeral head (Figure 1). Initially a diagnosis of traumatic arthritis was made and the pain disappeared with oral anti-inflammatory drugs admninistration in two weeks.

2 years later she was attended in our consultation for pain episodes in the anterior aspect of her shoulder. Stabbing pain episodes were triggered by similar movements to those of the mechanism of the initial injury, but also during daily movements

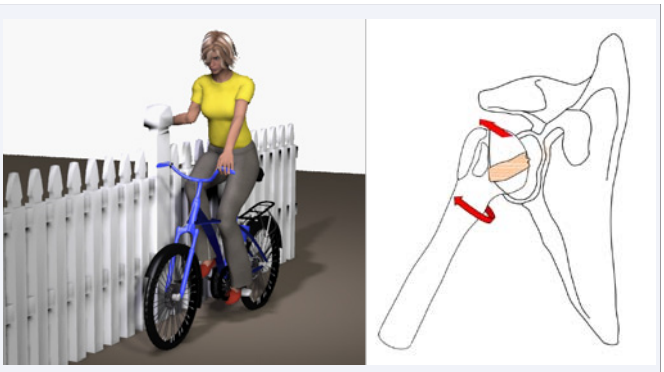

Figure 1 (A) – Picture showing the mechanism of lesion (B) - Picture shows the posterior displacement and external rotation of the humeral head.

that involved forced external rotation and posterior displacement of the shoulder (for example: placing the arm behind her and into the sleeve of the garments, by placing her hand in the back pocket or by positioning the arms as a jug).

Physical examination showed right trapezius muscle contracture and limited external rotation in comparison with the left shoulder. Positive apprehension test was demonstrated with external rotation and 30º abduction of the arm. The load shift test over the MGHL was felt positive, while load shift test over the superior and inferior glenohumeral ligaments was negative. Besides Jobe apprehension-augmentation-relocation test was positive.

The simple radiography appeared normal. The MRI study showed findings consistent with a possible MGHL tear (Figure 2), but no further abnormalities were identified. Given the persistence of symptoms and the findings of the imaging study, surgical treatment was decided.

The patient was anesthetized by scalene blockade and general anesthesia. She was placed in lateral decubitus position. Under general anesthesia translational movements were made: anterior, inferior and posterior, it was observed mild anterior translation grade 1, while the remainder of the exploration was otherwise normal [13].

The first assessment was made from the posterior portal and a complete tear lesion of the middle glenohumeral ligament at the glenoid attachment was found (Figure 3). It was proved that there was no Bankart lesion and that the long head of the biceps tendon was not dislocated or injured. It also was ruled out any injury at the humeral insertion of the middle and inferior glenohumeral ligaments. Therefore, a definitive diagnosis of an isolated lesion of the MGHL was made.

After the glenohumeral joint exploration was completed, a third portal was made to repair the ligament lesion. Firstly the ligament was released from adhesions to the subscapularis tendon (Figure 4A). Also the margins between the labrum and the ligament insertion were revived with a shaver. The MGHL was re-attached into the glenoid edge by means of two bone anchors (Bio-raptor 2,3 mm, Smith&Nephew®) (Figure 4B). Finally the subacromial space was assessed and no other lesions were found.

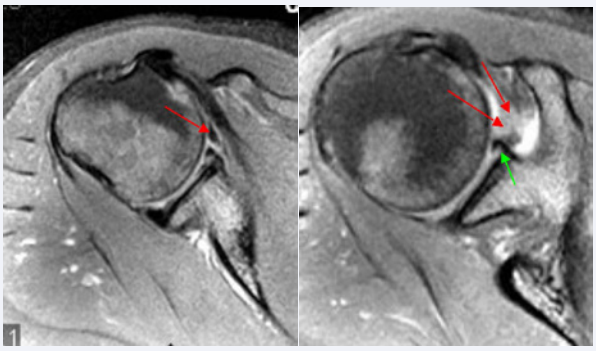

Figure 2 (A) – Axial fat-saturated proton density images shows normal middle glenohumeral ligament (Red arrow) just below the level of the coracoid process (B) - At the level of the coracoid process the proximal aspect of the MGHL appears thickened and ill-defined with increased signal consistent with an underlying tear (Red arrows), the anterosuperior labrum appears intact (Green arrow).

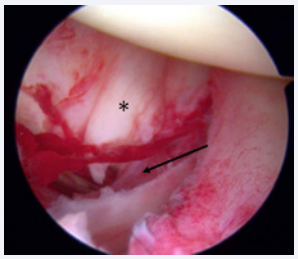

Figure 3 The avulsion of the middle glenohumeral ligament (asterisc) from the glenoid insertion (black arrow) is shown from the posterior arthroscopic portal.

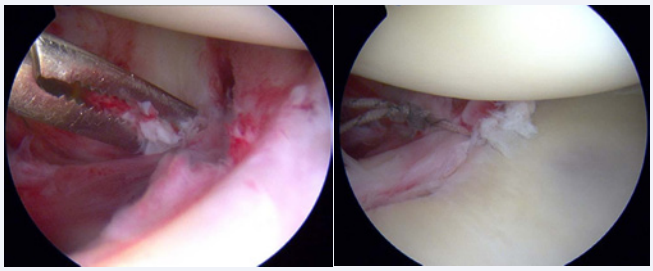

Figure 4 (A) –The middle glenohumeral ligament was mobilized from the subscapularis tendon (B) - 2 bone anchors were used to reinsert the ligament into the glenoid edge.

The patient remained immobilized for a period of 4 weeks. Then she followed a rehabilitation protocol as it is commonly applied in operated glenohumeral instability cases. She was followed-up for two years. Recovery was uneventful and triggering painful movements and microinstability disappeared.

DISCUSSION

Classically, the recurrent shoulder instability has been characterized following established concepts: TUBS (Traumatic - Unidirectional - Bankart lesion - Surgery) and AMBRI (Atraumatic - Multidirectional - Bilateral - Rehabilitación - Inferior capsular shift). However, there is a group of patients with subluxation episodes that cannot be classified into these two groups as they only have small capsular-labral lesions and therefore have been grouped under the heading of "micro-instability" [14-16]. The role of gleno-humeral ligaments in shoulder stability is well defined in anatomical works; the MGHL is the primary stabilizer at anterior displacement at 45° of abduction and at external rotation in midabduction; it also limits inferior translation in abduction [1-2,17-18].The capsule and the glenohumeral ligaments can be injured during shoulder dislocations [19].

Since Bigliani's description of lower GHL injuries at different levels [3], other injuries that involve the gleno-humeral ligaments and cause shoulder instability have been described: humeral avulsion of the anterior gleno-humeral ligament [4], bony humeral avulsion of the glenohumeral ligaments [5] and posterior humeral avulsion of the inferior GHL or reverse avulsion of the anterior gleno-humeral ligament [6]. The lesion of anterior glenohumeral ligaments is usually associated to lesions of other stabilizing structures of the shoulder: labrum (Bankart lesion), cuff tear, biceps lesions (SLAP), and lesion of the capsule or combined injuries of more than one glenohumeral ligament [7-12].

Savoie III et al. [20] described an isolated avulsion of the MLGH from the juncture of the labrum and the glenoid rim. The other cases presented by Savoie involved the labral-glenoid junction but respected the junction between the labrum and the middle glenohumeral ligament, in contrast to the presented case that had ruptured this junction and the labrum was not detached from the glenoid rim. They only mentioned this isolated case of injury at the junction between the labrum and the ligament but neither the mechanism of lesion nor the physical exploration nor the applied treatment was described in this distinct case. Therefore, the presented case differs from the cases described by Savoie regarding injury zone and also in the mechanism of injury. This case sustained a forced movement in posterior direction and external rotation, while patients described by Savoie suffered hyperextension force of an abducted arm between 45°and 90°[20].

In this report it is described an isolated avulsion of the middle glenohumeral ligament from its glenoid insertion. The rupture was produced at the junction between the labrum and the ligament. It was not a lesion at the capsular-labral junction, neither was a rupture in the middle aspect of the ligament. On the other hand, it was not identified an elongation of the capsule, neither a lesion of the inferior glenohumeral ligament. The injury of this ligament was the cause of shoulder pain and anterior subluxation. Lesions of the MGHL are currently assessed by MRI [21]. Although MR arthrography is regarded superior to conventional MRI for the diagnosis of middle glenohumeral ligament lesions, the underlying tear may be highly suspected in some cases in conventional MRI studies as in the presented case.

This case can be classified into the microinstability heading aspositive apprehension signs; dull pain and forward displacement under general anesthesia were present. The loss of the anterior stabilization that provides the MGHL could therefore justify underlying shoulder microinstability. The mechanism of injury that is described in microinstability cases correspond to repeated microtrauma [14,22-23], in contrast to the exposed case in which it was related to an abrupt movement of posterior displacement and external rotation of the arm. Therefore, despite the distinct traumatic origin of the presented case it can be framed within these cases of microinstability.

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Cite this article

Cuéllar A, Casado OL, Sánchez A, Cuéllar A, Cuéllar R (2016) Lesion at the Capsule-Labral Junction of the Middle Gleno-Humeral Ligament. Ann Orthop Rheumatol 4(1): 1065.