

Teardrop fracture: case report of a new and rare variant in the spectrum of chondrolabral lesions. A case report

Lesión en gota de lágrima: una variante nueva y poco frecuente en el espectro de las lesiones condrolabrales. Presentación de un caso

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Summary

Shoulder injuries account for a large number of hospital admissions, due to their wide variety of pathologies and injuries, generally produced by use or trauma. Among them are chondrolabral injuries, which have historically been categorized into three groups (GLAD, GARDS y GLAT); however, a new category has been recently proposed and named glenoid labral articular teardrop lesion (GLAT) because of its characteristic image on magnetic resonance and arthroscopy. The following is a case of a young athletic patient with right shoulder trauma in whom a lesión of this type was suspected based on clinical and imaging findings.

Resumen

Las lesiones de hombro representan un gran número de ingresos hospitalarios, debido a la variedad de patologías y afecciones, producidas generalmente por sobreuso del hombro o traumatismos. Entre ellas se encuentran las lesiones condrolabrales, las cuales se han clasificado históricamente en tres grupos (GLAD, GARDS y GLAT); sin embargo, recientemente se ha propuesto una nueva categoría que se denomina *lesión articular glenoidea en gota de lágrima* por su imagen característica en la resonancia magnética y en la artroscopia. Se presenta el caso de un paciente joven, deportista, con traumatismo del hombro derecho, en quien se sospechó por clínica e imágenes una lesión de este tipo.

Introduction

The shoulder is one of the joints most susceptible to injury due to its capacity to allow a wide range of movements in different directions (1). It is estimated that between 10% and 40% of emergency consultations are related to pathologies of this structure (2), among which injuries secondary to trauma affecting the glenoid, joint capsule and labral structures can be found. They are classified more specifically into chondral, labral, chondrolabral, labroligamentous and osseous lesions (3,4).

Regarding chondrolabral involvement, three types of alterations have been described: 1) glenoid labral articular disruption (GLAD), 2) glenoid articular rim divot (GARD) and 3) glenoid labral articular flap (GLAF). However, the glenoid labral articular teardrop lesion (GLAT) was recently added to this spectrum, which alludes to its characteristic imaging finding in magnetic resonance imaging (MRI) and arthroscopy: an image that resembles a teardrop (3, 4).

Unfortunately, little information is available on this new variant, especially there is no specific data on its incidence or prevalence. However, its descriptions show a tendency towards young, male and athletic patients (3).

The following is the case of a 28-year-old athlete patient who, after a trauma, showed a GLAT type lesion in a magnetic resonance arthrography. This is expected to contribute to a better registration of this alteration in order to better characterize it and to serve as a starting point to recognize and diagnose it in the images.

Clinical case

Male patient, 28 years old, athlete, with no relevant history, who seven months earlier suffered a fall from a height of 2 meters with blunt trauma to the right shoulder. As a consequence, he has pain, limitation of movement of the right shoulder and recurrent episodes of microinstability manifested by joint locking during movements. On physical examination, the only finding was limitation of range of motion, predominantly flexion of the joint. He was evaluated as an outpatient by an orthopedic physician who started management with anti-inflammatory analgesics and physical thera-

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py. However, due to persistent pain and episodes of microinstability, a SLAP type lesion (Superior labrum anterior to posterior or anteroposterior lesion of the superior glenoid labrum) was suspected. A shoulder X-ray was performed, which showed no bony lesions or alteration in the articular relations (Figure 1) and an arthro MRI of the right shoulder, which showed a rupture of the anteroinferior labrum between the 3 and 5 o'clock time axis with extension to the articular cartilage of the glenoid in an approximate length of 12 mm with a small flap, corresponding to a fragment of the labrum displaced towards the axillary recess (Figure 2).

With these results, the patient attended a follow-up by orthopedics, who indicated conservative management and the possibility of performing arthroscopy if the symptoms persisted. One year later, the patient reported significant improvement of symptoms.



Figure 1. a) X-ray of the right shoulder in anteroposterior projections; b) Stryker; c) Y of scapula and d) axillary: adequate joint congruence is observed without apparent lesions of traumatic origin.

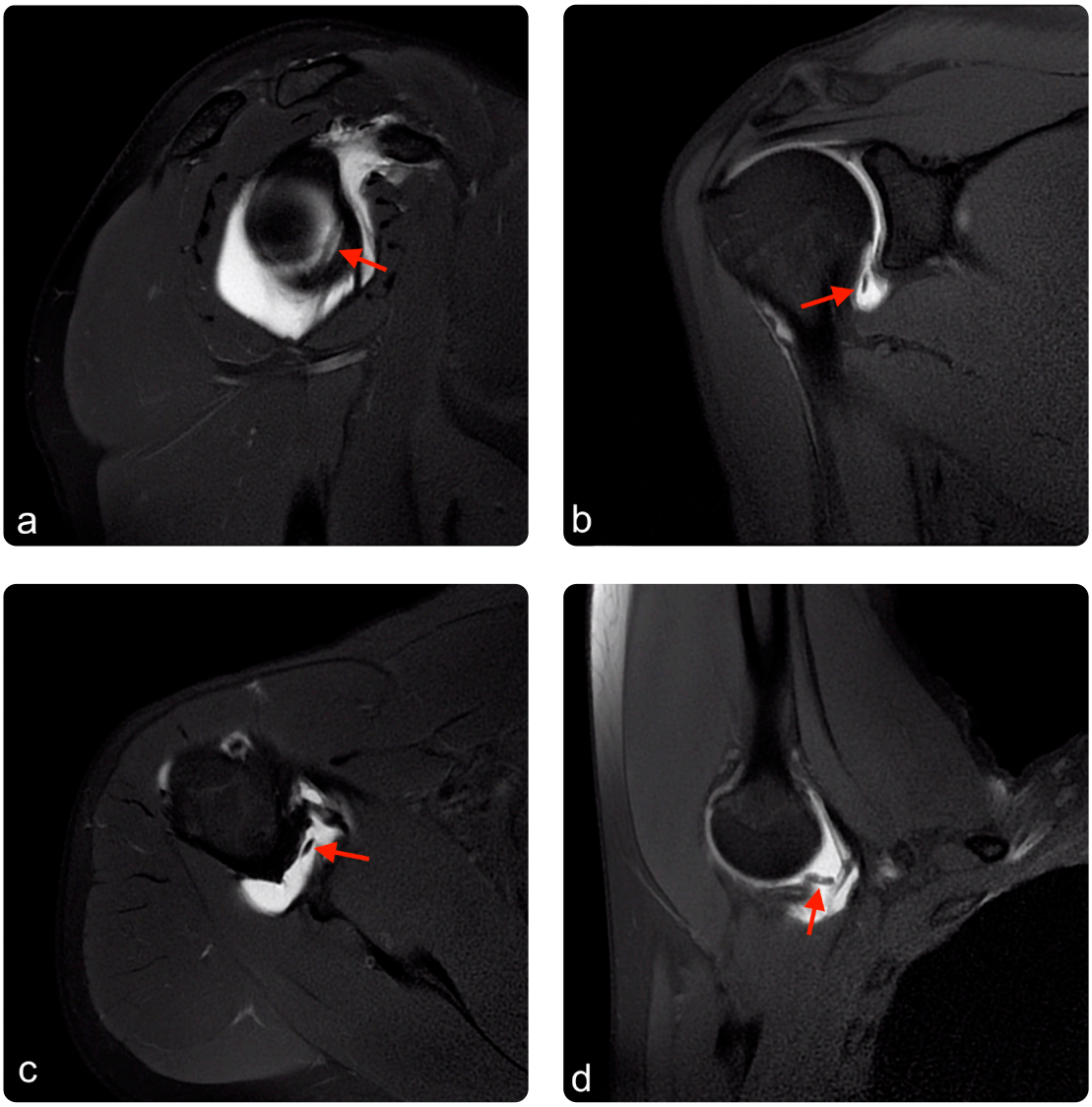


Figure 2. MRI of the right shoulder with intra-articular contrast medium: T1-weighted sequences with fat suppression in a) sagittal, b) coronal, c) axial and d) ABER (abduction and external rotation) sections, showing rupture of the anteroinferior labrum in the clockwise axis between 3 and 5 o'clock with extension to the articular cartilage of the glenoid in an approximate length of 12 mm associated to a flap corresponding to a fragment of the labrum, which is displaced towards the axillary recess (red arrow).

Discussion

Teardrop lesion was described in February 2018 by Lederman, et al. as a variant within the spectrum of chondrolabral lesions, characterized by a tear of the anteroinferior labrum extending to the glenoid articular cartilage, associated with a labral fragment, which is typically rotated and displaced toward the axillary recess (3).

This type of lesion is most frequently seen in young, athletic male patients who present clinically with pain, limitation of shoulder range of motion, and usually with recurrent episodes of dislocation or physical examination signs of glenohumeral instability (5). This is the case of the patient described here, who presented with all the aforementioned symptoms, in addition to having the typical sociodemographic characteristics.

Regarding diagnostic imaging, conventional radiography is useful in the context of trauma, since it allows ruling out dislocation or bone lesions; however, it does not allow assessing the labrum or articular cartilage. Ideally, projections such as true anteroposterior, axillary and apical oblique should be available. Others, such as Stryker and the Y of the scapula, are also useful (6).

The study of choice in patients in whom lesions of these structures are suspected, as in the case described, is MRI and, in particular, resonance arthrography, since the injection of medium contrast in the joint and the use of special positions, such as abduction and external rotation (ABER), favor a better visualization and characterization of the chondrolabral lesions (7, 8). This is consistent with the clinical case presented, since initially the radiography did not identify any abnormality, but the arthro-resonance allowed establishing the definitive findings.

Typical MRI findings consist of altered morphology and signal of the anteroinferior capsulolabral complex with a lesion extending from the articular cartilage and involving the labrum (most frequently between the 4 o'clock and 6 o'clock time axes: 30), with detachment of a labral fragment that migrates into the axillary recess and forms a teardrop-like image within the articular recess, which is best identified in the coronal plane on fat-saturated images with intra-articular contrast medium. The labral fragment is usually rotated and connected to the glenoid rim by a thin pedicle (1).

In a prospective study carried out by Lederman, et al. (3) 36 patients were recruited, 83% of whom were men with an average age of 27 years. Sixty-seven percent had episodes of instability or presented with this sign on physical examination. In addition to the tear drop lesion located in the anteroinferior quadrant of the glenoid, Hill-Sachs lesions (71 %), Bankart lesions (13 %), labral tears (16 %) and anterior labroligamentous avulsion with periosteal cuff (16 %) were reported in association. This allows us to determine that GLAT does not always appear in isolation, as in the patient in the case presented, but can be accompanied by other alterations that should not be overlooked.

The main differential diagnosis is GLAF lesions, from which it differs morphologically by the presence of the flap, which is by definition absent in GLAD. This finding alone differentiates their clinical manifestations, since in GLAF lesions the predominant symptom is pain, while in GLAT lesions glenohumeral instability is greater, as in the case presented, associated with a sensation of intermittent joint locking (9, 10).

This last point makes it extremely important for radiologists to know it and identify it correctly, due to its pathognomonic characteristics in MRI, since, unlike patients with GLAF lesions, these patients will not improve with medical treatment, but need surgical management to repair the defect, recover the normal anatomy of the joint and restore functionality, since as mentioned, they are typically young patients and athletes in whom their return to functionality is of vital importance (3, 11).

Although there is no consensus on the surgical approach, currently the most commonly used method is arthroscopy, a less invasive procedure than open surgery. The surgical technique, as proposed by several authors, will depend on the size of the lesions: in small lesions, debridement and repair of the labrum and articular cartilage, and in larger ones, repositioning and fixation of the fragment will generally be performed to try to recover the normal anatomy as much as possible, as proposed by Page et al (4).

On the other hand, little has been described about its prognosis, but a good evolution has been documented in those patients with a small size lesion and anterior instability (11).

Undoubtedly, there are still many unknowns regarding the GLAT type chondrolabral lesion, especially in terms of treatment and follow-up, which is attributed to its recent description. However, its radiological characterization is already defined, so the radiologist should include it among his diagnostic possibilities when the context warrants it.

Conclusion

In the context of a patient with post-traumatic shoulder pain, the identification of lesions in any of the articular components is of vital importance, since the management and therefore the long-term functionality of the joint depends on it.

With the recent description of the new GLAT type chondrolabral lesion, one more differential diagnosis is added to the spectrum of pathologies of traumatic origin whose most characteristic finding will be the involvement of the labrum with tear drop morphology. This implies that both the radiologist and the clinician should include it as a diagnostic possibility when the context justifies it, because although there are still some unknowns on the subject, its imaging characterization is already defined, which favors its recognition.

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