



A CASE REPORT OF IRREDUCIBLE ANTERIOR SHOULDER DISLOCATION WITH INTERPOSITION OF THE LONG HEAD OF THE BICEPS AND GREATER TUBEROSITY FRACTURE

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ABSTRACT **Background:** Failure of closed manipulative reduction of an acute anterior shoulder dislocation is seldom reported in the literature and is usually due to structural blocks such as soft tissue entrapment (biceps, subscapularis, labrum), bony fragments (glenoid, greater tuberosity) and severe head impaction (Hill-Sachs lesion).

Case Report: We present a case of an irreducible anterior shoulder dislocation in a 57-year-old male patient after a road-traffic accident. He had severe impaction of the head underneath glenoid rim and associated fracture of the greater tuberosity. Closed reduction performed in the emergency room under sedation and later at the theatre under general anaesthesia was unsuccessful. Open reduction using the deltopectoral approach revealed that the reason for obstruction was the posterolateral entrapment of the biceps tendon between the humeral head and the tuberosity fragment. Reduction was achieved after subscapularis tenotomy and opening of the joint; the tuberosity fragment was fixed with transosseous sutures and the long head of the biceps tendon was tenodesized. The patient had an uneventful postoperative recovery and at his last follow up, 12 months postoperatively, he had a stable joint, full range of motion and a Constant score of 90.

Conclusion: A comprehensive literature review revealed 22 similar reports affecting a total of 30 patients. Interposition of the LHBT alone or in combination with greater tuberosity fracture was the most common obstacle to reduction, followed by subscapularis tendon interposition and other less common reasons. Early surgical intervention with open reduction and confrontation of associated injuries is mandatory for a successful outcome.

KEYWORDS : Irreducible, Anterior, Shoulder dislocation, Long head of biceps, Greater tuberosity fracture, Open reduction.

INTRODUCTION

The shoulder is potentially one of the most unstable joints of the body, with very little bony stability or containment, adhering a fine balance between the mobility to perform athletic activities and stability required to power and stabilise the arm. Both static (glenoid labrum, glenoid concavity, glenohumeral ligaments, vacuum effect) and dynamic (proprioception, periarticular musculature) stabilizers work in synchrony to maintain stability in performing the extreme activities required by the shoulder in sports and heavy manual work [1]. Despite that, owing to the wide range of shoulder's motion, it is the most susceptible joint to dislocation in human body. Dislocations can occur anteriorly posteriorly or inferiorly, however the most frequent dislocations are anterior, accounting for approximately 96% [2]. The vast majority of them are treated with closed reduction under light sedation or general anesthesia. The clinical presentation of anterior shoulder dislocation is usually obvious. Patients support their affected shoulder in a slightly abduction and external rotation. The clinician must confirm distal pulses and rule out neurological injuries, although neurovascular injuries are not contraindication for closed reduction [3]. Radiographic documentation of the dislocation as well as possible associated osseous injuries should be performed before attempting reduction.

Numerous methods of reduction have been described in the literature, using traction, leverage or scapular manipulation. Success rates of 70% to 90% have been reported, regardless of the technique used [4]. Irreducible anterior shoulder dislocation is a rare entity requiring open reduction. Structural blocks to reduction include soft tissue entrapment (biceps, subscapularis), bony fragments (glenoid, greater tuberosity) and severe head impaction (Hill-Sachs). Presented here is a case of an acute irreducible anterior shoulder dislocation due to interposed long biceps tendon and greater tuberosity fracture. A comprehensive review of the recent literature is provided as well.

Case Report

A 57-year-old male patient was transferred to the emergency department after a road traffic accident. He had a fall from his bike and his right arm was crashed by the following car. On clinical examination, he had pain and obvious deformity in the shoulder while he was unable to move his arm in any direction, especially in external rotation. He had numbness in the regimental badge region of the axillary nerve and normal radial pulse at the wrist. Radiological examination showed an anterior shoulder dislocation with impaction of the humeral head underneath glenoid and associated fracture of the greater tuberosity (Fig. 1). He had no other skeletal or visceral injuries. After conscious sedation, an effort for closed reduction (3 attempts) was performed in the emergency room but was unsuccessful. For

reasons unrelated to the patient or the disease a CT-scan of the shoulder was not possible to be performed at that time. The patient was transferred immediately to the operative theatre for closed manipulation under general anaesthesia in order to reduce the dislocation and avoid further neurological compromise; a CT-scan and/or MRI has been scheduled for the next morning. Despite prompt sedation and muscle relaxation the shoulder was still unable to interpose. Open reduction was accomplished thereafter using the deltopectoral approach; the biceps tendon was found entrapped posterolateral between the humeral head and the tuberosity fragment preventing once again reduction of the glenohumeral joint. (Fig. 2).

Tenotomy and tenodesis of the frayed biceps at the level of pectoralis major was performed using a bone anchor; the transverse ligament at the bicipital groove had been torn. Next, the subscapularis was incised, 1 cm medial to its insertion at the lesser tubercle, and retracted medially after separated from the capsule. The latter was incised and the labrum was clearly visualized and was found to be intact inferomedially. Using longitudinal traction and finger manipulation in an anterior direction the humeral head was finally reduced revealing a large triangular Hill-Sachs lesion at its posterior part. The greater tuberosity was fixed back to its bed using heavy transosseous sutures (Fig. 3). The capsule and subscapularis tendon were repaired anatomically with sutures and the shoulder joint was found stable through a full range of motion of internal rotation and external rotation with the arm in adduction and at 90° of abduction. The patient had an uneventful postoperative recovery without neurovascular compromise. Pendulum exercises initiated from the second postoperative day followed by passive assisted forward flexion and limitation of active internal rotation for 4 weeks. At the last follow up, one year postoperatively he had a stable joint, full range of motion and a Constant score of 90 (Fig. 4).



Fig. (1). Anteroposterior view of the right shoulder showing anterior

dislocation with impaction of the humeral head (Hill-Sachs lesion) and associated comminuted greater tuberosity fracture.

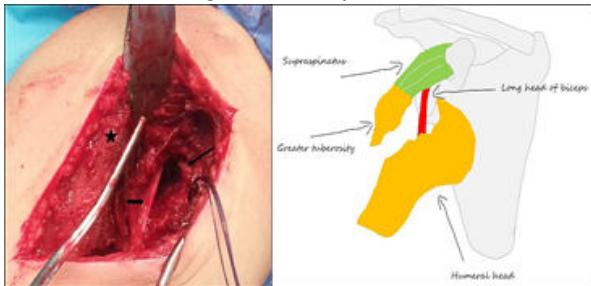


Fig.(2). Intraoperative view of the dislocation through the dectopectoral approach. The thin arrow shows the impaction of the humeral head underneath glenoid rim, the small arrow the interposed long head of the biceps tendon and the star the greater tuberosity fragment. The drawing at the right illustrates the intraoperative findings.



Fig.(3). Postoperative anteroposterior view of the right shoulder showing reduction of the dislocation and fixation of the greater tuberosity with transosseous sutures. The bone anchor indicates the site of biceps tendon tenodesis. Fig. (4). Follow up anteroposterior x-ray of the right shoulder in rotation showing a stable joint and good healing of the greater tuberosity

CONCLUSION

Acute irreducible anterior shoulder dislocation is not very common, even though must be suspected when associated with fracture of the greater tuberosity. Structural blocks to reduction may include soft tissue entrapment (biceps, subscapularis, labrum, nerves), bony fragments (glenoid, greater tuberosity) and severe head impaction (Hill-Sachs). Repeated forceful manipulation can increase the risk of fracture or neurovascular injury and should be avoided. Two plain x-rays must always be acquired before reduction, whereas in cases of uncommon bony fragments and impacted humeral head a CT or MRI scan should be ordered. Early surgical intervention with open reduction and confrontation of associated injuries is mandatory for a successful outcome.

LIST OF ABBREVIATIONS

- GT = Greater Tuberosity
- IGHL = Inferior GlenoHumeral Ligament
- LHBT = Long Head of the Biceps Tendon

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