



Inferior glenohumeral dislocation (luxatio erecta humeri): report of six cases and review of the literature

Inferior omuz çıkığı (luksasyo erekta):
Altı olgu sunumu ve literatürün gözden geçirilmesi

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BACKGROUND

Inferior shoulder dislocation, also referred to as luxatio erecta, is a rare type of shoulder dislocation. Its incidence is about 1 in 200 (0.5%) among all shoulder dislocations. The objective of this study was to review six cases of inferior shoulder dislocation, including their clinical and radiological presentation, management, and final outcome.

METHODS

Four males and two females, a total of six patients, with the diagnosis of inferior shoulder dislocation were treated between 2007 and 2010. Our purpose is to present our experience in the treatment of these patients together with the parallel research available in the literature.

RESULTS

Constant score was used to evaluate shoulder function. Pain, position, daily activities, range of motion, and strength scores were noted. All patients had good to excellent results with full functional recovery within two years after closed reduction and shoulder rehabilitation.

CONCLUSION

Doctors should be familiar with the occurrence of this infrequent condition and should prevent possible complications that might result from early reductions by using correct maneuvers in lieu of ordinary reduction techniques.

Key Words: Closed reduction; emergency; inferior dislocation; luxatio erecta; shoulder; trauma.

AMAÇ

Inferior omuz çıkığı, ayrıca luksasyo erekta olarak adlandırıp omuz çıkığının nadir görülen bir tipidir. Görülme sıklığı tüm omuz çıkık arasındaki yaklaşık 200'de 1'dir (%0,5). Bu çalışmanın amacı, inferior omuz çıkığının klinik ve radyolojik olarak sunumu, tedavisi ve nihai sonucun 6 olgu ile gözden geçirilmesidir.

GEREÇ VE YÖNTEM

Dört erkek ve iki kadın, toplam 6 hasta aşağı omuz çıkığı tanısı ile 2007 ve 2010 yılları arasında tedavi edildi. Tedavi ettiğimiz bu hastalar nedeniyle, bizim amacımız kaynaklar paralelinde deneyimimizi paylaşmaktır.

BULGULAR

Hastaların omuz fonksiyonlarını değerlendirmek için Constant omuz skorlaması kullanılarak ağrı, pozisyon, günlük yaşam aktiviteleri, eklem hareket açıklıkları ve gücü kaydedildi. Hastaların tamamında kapalı redüksiyon ve rehabilitasyon ile tedavi sonrası 2 yıl içinde tam fonksiyonel iyileşme sağlanarak mükemmel ya da iyi sonuç alındı.

SONUÇ

Doktorlar bu nadir durumun oluşumuna alışık olmalı ve doğru redüksiyon teknikleri dışında yapılan erken redüksiyonlar neticesinde oluşabilecek olası komplikasyonları önlemeleri gerekir.

Anahtar Sözcükler: Kapalı redüksiyon; acil; inferior çıkık; luksasyo erekta; omuz; travma.

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RESULTS

The mean follow-up duration of the patients was 32 months and the mean age was 45 (range, 22-75). Constant shoulder scoring system was used for the clinical examination as pain, position, daily activities, range of motion, and strength were noted. The mean shoulder score was 94 points (range, 86-100 points). In one of the patients, glenoid anterior wall fracture was diagnosed by computed tomography (Fig. 3). Presence of neurologic and vascular injury was followed after reduction. In one of the patients, it was observed during the six-month follow-up that complete recovery of the brachial plexus lesion was achieved with the rehabilitation program. During the follow-up examination

The shoulder joint is the joint where dislocations occur most frequently.^[1] Multi-directional mobility of the shoulder joint, its anatomic structure and frequent exposition to traumas result in the more frequent occurrence of dislocations.^[2] Forward and backward dislocations are observed at rates of 95% and 4-5%, respectively, in patients with shoulder dislocations.^[1,3] Downward dislocation (luxatio erecta - LE), with an occurrence rate of 0.5% among all shoulder dislocations, on the other hand, is a traumatic case that is observed quite rarely, which generally occurs during hyperabduction type trauma of the arm. In such cases, it is usually observed that the inferior capsule of the joint is torn.^[4,5] For the formation of the LE, a great amount of force is required; thus, many other injuries can be seen together.^[6]

The current study presents six cases of downward dislocation of the glenohumeral joint that were treated with closed reduction.

MATERIALS AND METHODS

Four males and two females, a total of six patients, with the diagnosis of inferior shoulder dislocation were treated between 2007 and 2010 (Table 1). Causes of the trauma included fall from a height (n=2), fall down stairs (n=2), motorcycle accident (n=1), and in-vehicle traffic accident (n=1). All six cases were admitted to the emergency service. Three of these patients had right shoulder trauma and the other three had left shoulder trauma; all stated that they had pain and could not bring their arm from abduction to neutral position. In their the clinical examination, it was observed that the shoulders of the patients were painful and were locked in the abduction position. In one of the patients, brachial plexus paralysis was diagnosed. Peripheral pulses were open in all patients. Radiologic examination revealed that the humerus head had been dislocated downwards in all patients (Fig. 1), and in one patient, tuberculum majus fracture accompanied the dislocation (Fig. 2 a, b). Closed reduction was applied to all six patients under anesthesia.



Fig. 1. Anteroposterior view of the right shoulder joint in an adult patient. The right humeral head is dislocated inferiorly (Case 1).

Table 1. Details of the patients

No	Age/ Gender	Cause of injury	Anesthesia/ management	Associated injuries/ complications	Follow-up (months)	Constant score	Outcome
1	38/M	Traffic accident	GA/CR	–	41	100	Excellent
2	22/M	Fall	SA/CR	Fracture of GT	55	96	Excellent
3	75/F	Fall from height	GA/CR	Glenoid fracture/RTC	29	86	Good
4	50/M	Traffic accident	SA/CR	Ax nerve lesion	27	96	Excellent
5	34/M	Fall from height	SA/CR	–	20	100	Excellent
6	51/F	Fall	GA/CR	BP lesion	25	88	Good

Ax: Axillary; BP: Brachial plexus; CR: Closed reduction; GA: General anesthesia; RTC: Rotator cuff tear; SA: Sedoanalgesia.

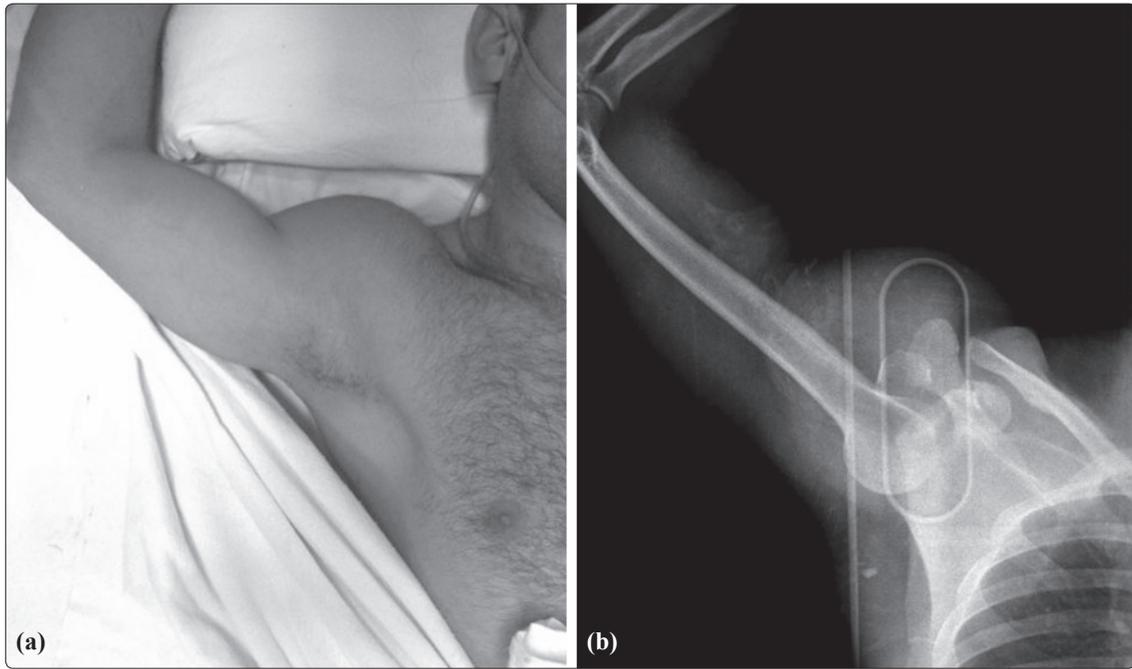


Fig. 2. (a) Patient with right luxatio erecta humeri and (b) radiograph displaying inferior shoulder dislocation with fractured greater tuberosity (Case 2).

of all patients, it was observed that anatomic relation of the joint was achieved and the fracture had been reduced.

DISCUSSION

Luxatio erecta is the inferior dislocation of the glenohumeral joint, which was defined by Middeldorpf and Scharm.^[7] The classical view, which is also characteristic, is the hyper-adduction of the affected arm, flexion of the elbow, and the hand positioned over or behind the head.^[5,7,8] The unaffected hand supports the arm in order to stabilize the affected arm and alleviate the pain. On physical examination, the glenoid cavity is empty and the head of the dislocated humerus can

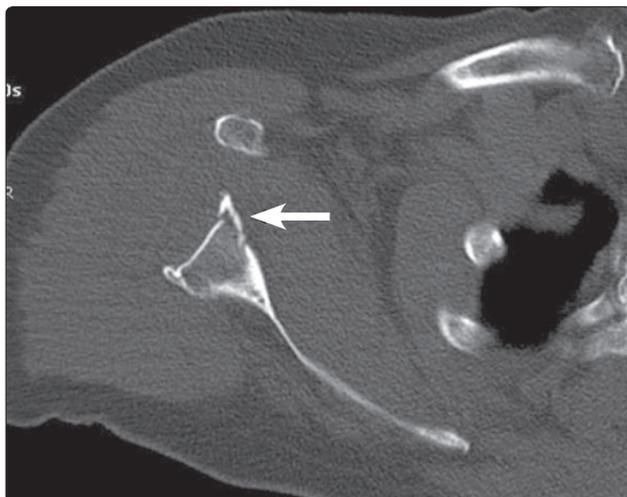


Fig. 3. Anterior wall fracture of the glenoid in a patient (arrow) (Case 3).

be palpated in the axilla or over the chest wall. Before the reduction procedure, conventional scapular X-ray films should be obtained in all patients in order to confirm the diagnosis and demonstrate any concomitant fractures. Transscapular Y-graphy, computed tomography and magnetic resonance imaging would be helpful in the diagnosis and treatment.^[1,2,9] The early diagnosis of LE is of critical importance. Inferior dislocation occurs mostly due to indirect injury. In the indirect mechanism, inferior dislocation of the shoulder develops due to the lever arm effect of the proximal humerus when a strong hyper-abduction force is applied to the arm. Because of the pulling effect of the pectoralis major, the arm stays in the erected position.^[7,10] There may be severe soft-tissue injury due to the avulsion of the supraspinatus, infraspinatus and teres minor muscles. There are some complications of LE. Tsuchida et al.^[10] found axillary nerve palsy in 60%, fracture of the humerus in 37% and rotator-cuff tear in 12% of the patients. Adhesive capsulitis and recurrent subluxation or dislocation can be seen as late complications.^[9,11,12] In our series, we found rotator-cuff tear in one patient and hypoesthesia of the axillary sensory area of the lateral shoulder in another.

Early reduction should be done to prevent complications.^[3,6] Adequate sedation and analgesia is fundamental to the procedure, and most of the LE cases can be treated successfully in the emergency room with closed reduction. Opposite-traction technique is the most effective closed reduction method. In this technique, traction and mild abduction are applied to the affected arm in the same direction of the humerus,

while opposite-directional traction is performed with a rounded sheet.^[1,2,12,13] Neurovascular examination and follow-up radiographs are important to exclude iatrogenic fractures after reduction. Successfully reduced cases should be immobilized by using arm-body bandage. If the reduction is unsuccessful, it should be repeated under anesthesia. The standard closed reduction of LE is contraindicated in neck and shaft fractures of the humerus and in the case of any suspicion of major vascular injury. In these cases, open reduction with surgery is indicated.^[2,9,14] Since LE occurs after high-energy trauma, a complete systemic examination must be done in order not to miss any other organ or system injuries. The prognosis is excellent in most of the non-complicated LE cases.^[2,4,7,9,15]

Although closed reduction is usually successful without difficulty, failures do occur, usually secondary to entrapment of the humeral head in the torn inferior joint capsule. If this occurs, operative treatment with open reduction is the treatment of choice.^[1,7,10] Additionally, if displacement of the tuberculum majus is more than 5 mm after reduction, surgery would be indicated. If the fracture involves more than 25% of the glenoid cavity, then surgery would also be indicated as instability may occur.^[1]

In a study of 16 consecutive patients with 18 shoulder dislocations, initial treatment of closed reduction failed in four patients, and they were surgically treated; recurrent instability of the injured shoulder developed in six patients, who were treated with a capsular reconstruction. The mean follow-up was nine years. Eighty-three percent of the patients had good to excellent treatment outcomes, and none of the associated neurovascular injuries affected final outcomes.^[9] In their meta-analysis of 80 cases, Mallon et al.^[4] found that 80% of patients sustained a fracture of the greater tuberosity or a rotator cuff tear, and 60% had some degree of neurologic compromise. Typically, however, these injuries resolved within one year. Our study results support those of Groh et al.^[9] and Mallon et al.^[4] Almost all patients achieved good strength and motion with non-operative management, and associated neurologic and associated injury did not affect the final outcomes. There was no direct association between age and comorbidities sustained during the injuries. None of our patients needed surgical intervention, and 100% of the patients had excellent or good outcome. Post-traumatic frozen shoulder is common and leads to a poor functional result.^[16] Post-traumatic frozen shoulder did not develop in any of our patients.

In conclusion, in this series, all dislocations were reduced with close reduction technique, and none of the patients developed recurrent instability. LE is a rare form of shoulder dislocation due to its specific

occurrence mechanism and clinical presentation. Doctors should be familiar with the occurrence of this infrequent condition and should prevent possible complications that might result from early reductions by using correct maneuvers in lieu of ordinary reduction techniques.

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