Injury Extra (2005) **36**, 450–453

ELSEVIER

www.elsevier.com/locate/inext

CASE REPORT

Luxatio erecta (inferior dislocation of the shoulder): A report of two cases and a review of the literature

Kazu Matsumoto*, **Akira Ohara, Kazuteru Yamanaka, Iori Takigami, Toshitaka Naganawa**

Department of Orthopedic Surgery, Matsunami General Hospital, 185-1 Dendai, Kasamatu-cho, Hashima-gun, Gifu 501-6062, Japan

Accepted 21 March 2005

Introduction

Anterior dislocation of the glenohumeral joint is the most frequent of all traumatic dislocations. Luxatio erecta humeri is a rare form of injury, accounting for only 0.5% of all shoulder dislocations.[4] Only sporadic case reports have appeared in the literature.[1,2,9] The authors present two new cases of luxatio erecta with a review of the relevant literature.

Case reports

Case 1

A 66-year-old, right-handed woman sustained a car accident and was referred to the emergency ward of our hospital. The patient presented with inferior dislocation of her right shoulder with the arm in a rigidly fixed upright position. The forearm was in slight pronation and the elbow in flexion. She was unable to lower her arm from its elevated position and had severe shoulder pain. Physical examination revealed that the right arm was abducted to 130° with swelling in the right axilla. The right humeral head was palpable in the axilla. Clinical examination revealed no neurologic or vascular injuries.

Radiographic examination showed inferior dislocation of the humeral head with respect to the glenoid fossa (Fig. 1). Closed reduction was achieved by applying traction and gently pushing the humeral head superiorly without any sedation or analgesia. After reduction, triangular bandage immobilization was applied to the right shoulder. Vascular examination revealed well perfused extremities with easily palpable distal pulses, and the neurological status was also intact. Subsequent roentgenography revealed anatomic reduction. In order to evaluate soft-tissue structures such as the rotator cuff and labrum and occult skeletal pathology, MRI was carried out. This revealed a complete tear of the supraspinatus tendon (Fig. 2). Although the patient was advised that the rotator cuff tear could be treated surgically, she chose not to have surgery. The shoulder was immobilized with a triangular bandage for 3 weeks. Codman's exercise programme was started three times a day. In the 3rd week, she was allowed to do active exercise. She

* Corresponding author. Tel.: +81 58 388 0111; fax: +81 58 388 2391.
E-mail address: kazu-ma@db3.so-net.ne.jp (K. Matsumoto).

1572-3461
doi:10.1016/j.injury.2005.03.020

Figure 1 Anteroposterior (AP) radiographic view of the right shoulder joint. The right humeral head is dislocated inferiorly.

Figure 2 T2-weighted MRI view shows complete rupture of the supraspinatus tendon (arrow) of the right shoulder.

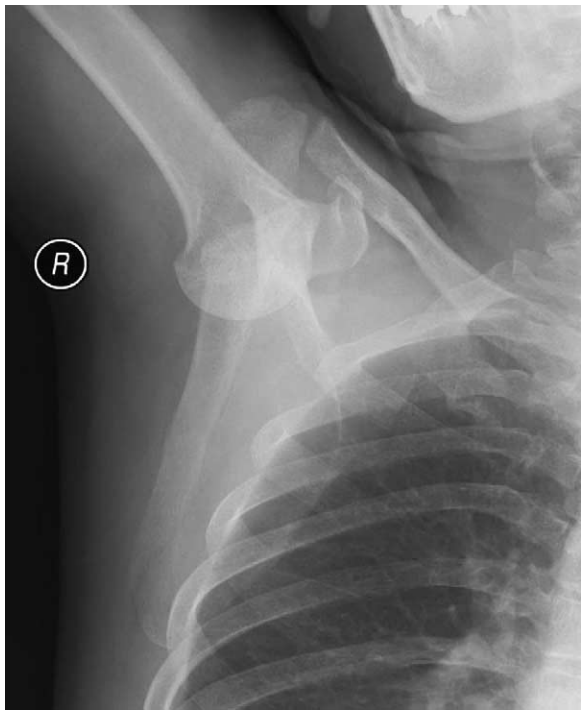

Figure 3 Anteroposterior (AP) radiograph of the right shoulder in Case 2 shows inferior dislocation of the glenohumeral joint.

regained her shoulder function within 8 weeks after admission and at the last follow-up examination, 12 months after admission, she was still asymptomatic.

Case 2

A 52-year-old, right-handed man injured his right arm when attempting to stop baggage falling off a truck by raising the arm over his head. He presented at the emergency room with his arm still raised, his forearm resting on his head, and a firm, palpable mass in the axilla. Radiographic examination showed inferior dislocation of the humeral head with respect to the glenoid fossa (Fig. 3). The radial and ulnar pulses were palpable and strong, and no motor or sensory deficits were detected. Closed reduction, under intravenous sedation (250 mg thiopental sodium), was achieved by applying traction and gently pushing the humeral head superiorly. Subsequent roentgenography revealed anatomic reduction. In order to evaluate soft-tissue structures such as the rotator cuff and labrum and occult skeletal pathology, MRI was carried out. This revealed a partial tear of the supraspinatus tendon (Fig. 4A) and bone contusion of the greater tubercule (Fig. 4B). A shoulder immobilizer was applied for 10 days. The patient regained his shoulder function within 6 weeks after admission, and at the last

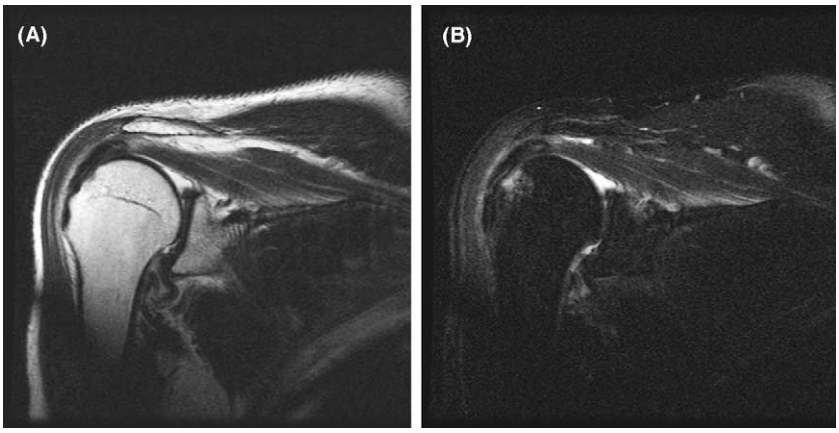

Figure 4 (A) T2-weighted coronal MRI view reveals a partial tear of the supraspinatus tendon. (B) T2-STIR coronal MRI view reveals high intensity in the greater tubercule, indicating bone contusion.

follow-up examination, 12 months after admission, he was still asymptomatic.

Discussion

Inferior dislocation of the glenohumeral joint is an extremely rare injury. Middeldorph and Scharm[7] are generally credited with first recognizing the unique nature of luxatio erecta in 1859. The incidence of luxatio erecta has been estimated to be 0.5% of all shoulder dislocations,[4] and approximately 100 cases have been reported sporadically in the English-language literature.[9]

Davids and Talbott[1] reported two mechanisms of luxatio erecta in 1990. One is the indirect mechanism, mostly due to violent abduction force on an already abducted limb so that the proximal shaft of the humerus is levered over the acromion (Fig. 5A). In this scenario, the humeral head breaks the inferior joint capsule and the inferior and middle glenohumeral ligament. In addition, the supraspinatus and infraspinatus muscles are torn. The other is the direct mechanism, which occurs after direct axial loading on a fully abducted arm (Fig. 5B). In this situation, the humeral head is driven through the weak inferior glenohumeral ligaments and joint capsule, frequently fracturing the greater tuberosity and/or tearing the rotator cuff. The former mechanism is more common than the latter. Both of our patients were considered to have sustained hyperabduction injuries.

The clinical presentation of luxatio erecta is characteristic, with the arm elevated and the forearm fixed, resting on the head. The humeral head is palpable on the chest wall. Radiographic examinations usually reveal the humeral head to be located beneath the coracoid or glenoid, with the humeral shaft located parallel to the scapula spine.

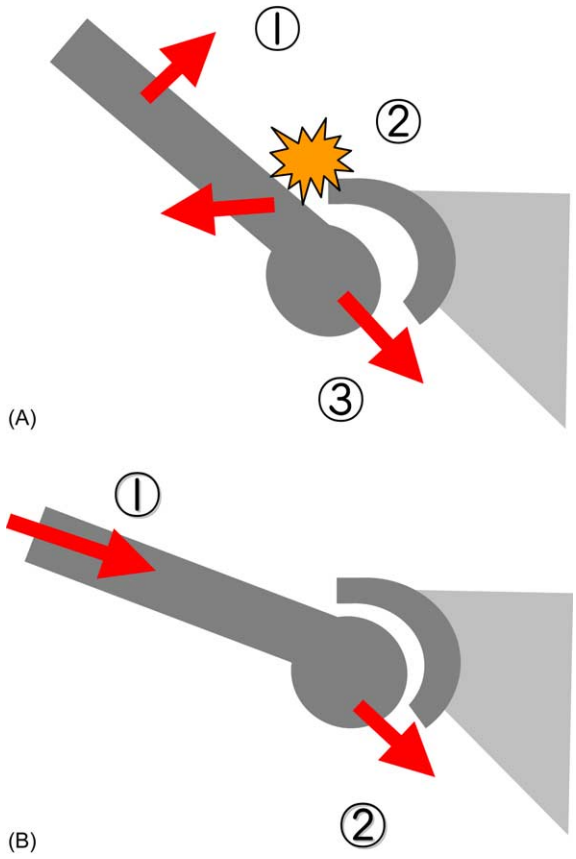

Figure 5 Mechanism of luxatio erecta. (A) Indirect mechanism. In an already abducted limb (①), the proximal shaft of the humerus is levered over the acromion (②), leading to inferior dislocation (③). (B) Direct mechanism. There is direct axial loading on a fully abducted arm (①), leading to inferior dislocation (②).

Mallon et al.[6] reviewed 80 reported cases of luxatio erecta. They described rotator cuff tears

to be associated with the injury in 12% of the patients. Schai et al.[8] recently reported an arthroscopic study of a patient with luxatio erecta. They described that the patient showed complete detachment of the anterior labrum and ligament complex (SLAP) and recommended surgical treatment. A fracture of the greater tuberosity is seen in 37% of patients with this injury,[6] and the percentage of fractures in inferior glenohumeral dislocation appears to be far higher than that in anterior and posterior glenohumeral dislocations. Some 60% of patients continue to suffer from some degree of neurologic compromise, most commonly to the axillary nerve, but the prognosis for recovery of neurologic function is excellent.[6] Several authors have reported some cases of luxatio erecta associated with axillary artery injuries.[3,5] Both of the present two patients suffered some degree of rotator cuff tearing, and one had contusion of the greater tuberosity. However, neither sustained vascular or neurological injuries.

Although luxatio erecta is a relatively rare dislocation, the prognosis for patients is good. Recurrent dislocation has rarely been reported. Although some authors have recommended immediate reduction followed by surgical repair of the rotator cuff at a later date,[8] our patients achieved functional recovery after conservative treatment.

Conclusion

We present two new cases of luxatio erecta. The patients achieved complete functional recovery within 1 year after treatment by closed reduction.

References

1. Davids JR, Talbott RD. Luxatio erecta humeri. A case report. Clin Orthop 1990;252:144—9.
2. Fery A, Sommelet J. Erect dislocation of the shoulder (luxatio erecta humeri). General review apropos of 10 cases. Int Orthop 1987;11(2):95—103.
3. Gardham JR, Scott JE. Axillary artery occlusion with erect dislocation of the shoulder. Injury 1979;11(2):155—8.
4. Laskin RS, Sedlin ED. Luxatio erecta in infancy. Clin Orthop 1971;80:126—9.
5. Lev-El A, Adar R, Rubinstein Z. Axillary artery injury in erect dislocation of the shoulder. J Trauma 1981;21(4):323—5.
6. Mallon WJ, Bassett III FH, Goldner RD. Luxatio erecta: the inferior glenohumeral dislocation. J Orthop Trauma 1990; 4(1):19—24.
7. Middledorph M. De nova humeri luxationis specie. Clin Eur 1859;2.
8. Schai P, Hintermann B. Arthroscopic findings in luxatio erecta of the glenohumeral joint: case report and review of the literature. Clin J Sport Med 1998;8(2):138—41.
9. Yamamoto T, Yoshiya S, Kurosaka M, Nagira K, Nabeshima Y. Luxatio erecta (inferior dislocation of the shoulder): a report of 5 cases and a review of the literature. Am J Orthop 2003;32(12):601—3.