







Evaluation of Patients Presenting to the Emergency Service with Shoulder Dislocation

Abuzer Coşkun¹ , Mehmet Eren² , İlhan Korkmaz³ , Behçet Al⁴ ,
Suat Zengin⁴ , Şevki Hakan Eren⁴ 

¹Emergency Service, Sivas State Hospital, Sivas, Turkey

²Clinic of Orthopedics, Yenimahalle State Hospital, Ankara, Turkey

³Department of Emergency Medicine, Cumhuriyet University School of Medicine, Sivas, Turkey

⁴Department of Emergency Medicine, Gaziantep University School of Medicine, Gaziantep, Turkey

ABSTRACT

Objective: Glenohumeral joint dislocation is the most common major joint dislocation in the entire body. This study is an epidemiologic and demographic investigation of dislocated shoulder cases presenting to the emergency room of a public hospital.

Methods: This study includes patients that presented to the emergency room of Sivas public hospital with a dislocated shoulder between the dates 01/02/2015-01/01/2018. Patients that were admitted to the emergency room and diagnosed with shoulder dislocation were informed about the study.

Results: Five hundred and eighty one patients presenting to Sivas public hospital and diagnosed with shoulder dislocation were included in the study. The average age of patients was 43±18.59, with the youngest patient 19 years old and the oldest 88 years old. 537 (92.4%) patients had anterior, 32 (5.5%) patients had posterior and 12 (2.1%) patients had inferior dislocations.

Conclusion: Shoulder dislocation cases are commonly seen in emergency rooms. It is more commonly seen in males and the most frequently seen type is anterior dislocation. This condition concerning individuals of all age groups develops mainly due to trauma. Despite the fact that shoulder dislocations can be diagnosed and treated easily in emergency rooms, prevention of shoulder dislocations can only be achieved by means of preventive measures and informative meetings.

Keywords: Emergency service, shoulder dislocation, orthopedics

INTRODUCTION

Among major joint dislocations in the entire body, glenohumeral joint dislocation is the most common (1).

Anterior dislocations (95%), posterior dislocations (2-5%), and inferior dislocations (luxation erecta) secondary to arm hyper-abduction injury (0.5%) constitute the majority of shoulder dislocations (2-6).

Anterior dislocations occur mostly due to indirect trauma when the upper extremity is positioned in abduction, extension, and external rotation. Convulsion, direct impact to the back, and electric shock can also result in anterior shoulder dislocation. Posterior dislocations occur mostly due to indirect trauma when the upper extremity is positioned in adduction, flexion, and internal rotation (4, 7).

Inferior shoulder dislocation is very rare. It is mainly seen in older patients. Superior glenohumeral dislocation is a very rare presentation that is seen less frequently than inferior shoulder dislocations (4, 8).

After shoulder dislocation, patients tend not to move their arm due to muscle spasm and pain. In cases of anterior shoulder dis-

location, the shoulder is typically in slight abduction and external rotation. Fullness in the posterior region of the shoulder joint is decreased, and the humeral head cannot be felt by palpating the posterior edge of the acromion. Since patients with posterior shoulder dislocation do not exhibit a marked deformity, they should be examined very carefully. The arm on the affected side is typically in adduction and internal rotation. The humeral head can be palpated on the posterior and coracoid process on the anterior. Pain is significantly severe in inferior shoulder dislocation. In a typical clinical presentation, the patient's arm is in 110°-160° abduction, the elbow is in flexion, the forearm is in pronation, and the hand is above the head level. This position can also be defined as the salute position. The humeral head can be palpated on the lateral chest wall and axilla. The humeral shaft is directed to the superior. Pain is significantly severe in superior shoulder dislocation. In a typical clinical presentation, the patient's arm is in adduction, and the upper extremity affected by the migration of humeral head to the superior is shortened. The humeral head can be palpated above the acromion. Neurologic pressure symptoms often coexist, and are alleviated after reduction (4, 7, 8).

Anteroposterior, scapular Y, and axillary graphs of the shoulder should be obtained in radiologic imaging. Direct graphs, espe-

ORCID IDs of the authors: A.C. 0000-0003-4824-7021; M.E. 0000-0002-3303-0092; İ.K. 0000-0001-5182-3136; B.A. 0000-0001-8743-8731; S.Z. 0000-0003-1196-6380; Ş.H.E. 0000-0003-1686-7234.

Corresponding Author: Şevki Hakan Eren E-mail: shakaneren@hotmail.com

Received: 28.02.2018 • **Accepted:** 02.04.2018



cially in posterior dislocations, can sometimes be unhelpful. In this case, computerized tomography should be used (2, 4).

Shoulder dislocation is treated by reduction with traction and counter-traction maneuvers under sedation and/or analgesia. The arm should be immobilized in a sling for 3-6 weeks after reduction. Severely painful shoulder dislocations should be treated under general anesthesia (4, 7).

The most commonly used and known methods are the Hippocratic technique and the Kocher technique. In addition, there is the Stimson technique, Milch technique, and combined techniques involving both these methods. The front flexion-adduction-external rotation (FAD rotation) method has also been commonly used in recent years (1, 7, 8).

Neurologic complications are common during the reduction of shoulder dislocation. However, the probability of these complications cannot be predicted before the reduction procedure. Apraxia is generally completely healed. Nerve laceration is significantly rare (less than 4% of cases). Axillary and suprascapular nerves carry the highest risk of laceration (1, 4, 7).

This study is an epidemiologic and demographic investigation of dislocated shoulder cases presenting to the emergency room of a public hospital.

METHODS

This study includes patients who presented to the emergency room of Sivas Numune Public Hospital with a dislocated shoulder between the dates 01/02/2015 and 01/01/2018. This hospital provides services for 1 million people on average, and the number of patients admitted to the emergency room per day is around 1200-1400. Ethics committee approval was received for this study. Ethical approval was obtained from the Non-interventional Clinical Research Ethical Committee of Cumhuriyet University (2017-20836).

Patients admitted to the emergency room and diagnosed with shoulder dislocation were informed about this study. Patient consents were obtained, and patient information was filled in previously prepared reports. Emergency medicine specialists and orthopedists treated patients, and evaluated their radiologic imaging. During treatment, the emergency trauma room was used. Patients with polytrauma, hemodynamic instability, and accompanying two- and more-part proximal humerus fracture were not included in the same group as patients with intraarticular fracture.

RESULTS

A total of 581 patients presenting to Sivas Numune Public Hospital and diagnosed with shoulder dislocation were included in the study.

The average age of patients was 43±18.59 years, with the youngest patient aged 19 years, and the oldest 88 years. The study included 242 (41.7%) females and 339 (58.3%) male. A total of 537 (92.4%) patients had anterior, 32 (5.5%) patients had posterior, and 12 (2.1%) patients had inferior dislocations. In addition, bilateral shoulder dislocation was observed in 12 (2.1%) patients, and superior dislocation in none. A total of 497 (85.5%) of shoulder dislocation cases were associated with trauma, whereas 84

Table 1. Demographic information of shoulder dislocation

Demographic Variable	Case cohort	%
Age (year)		
Mean	43±18.59	
Range	69	
Min-Max	19-88	
Sex		
Male	339	58.3
Female	242	41.7
Shoulder dislocation type		
Anterior	537	92.4
Posterior	32	5.5
Inferior	12	2.1
Bilateral	12	2.1
Injury mechanism		
Traumatic	497	85.5
Nontraumatic	84	14.5
Method		
FAD	183	31.5
Cunningham	164	28.2
FAD+Cunningham	177	30.5
Others	57	9.8
Sedation		
Yes	480	82.6
No	101	17.4
Type of dislocation occurred		
Primary	473	81.4
Recurrent	108	18.6

(14.5%) of the cases were due to spontaneous and low-energy events (coughing, sneezing etc.).

Reduction of dislocations was performed by FAD rotation in 183 patients, Cunningham in 164 patients, and both methods in 177 patients. One of the other methods, that is, Hippocratic, Kocher, or Stimson, was applied for dislocations that could not be reduced with the previously mentioned methods. The remaining 57 dislocations were reduced using these methods.

A total of 480 (82.6%) patients were sedated, and 101 (17.4%) patients were not sedated. A total of 23 (3.9%) patients were hospitalized, and 558 (86.1%) patients were discharged after a short monitoring period in the emergency room.

The average duration of hospital stay was 9.12 ± 5.50 days with the longest hospitalization period of 33 days.

In the first attempt, 455 (78.3%) dislocations were reduced, whereas in the second, 126 (21.7%) dislocations were reduced.

Furthermore, 473 (81.4%) cases presented with a dislocated shoulder for the first time, whereas 108 (18.6%) cases presented with recurrent shoulder dislocation to the emergency room (Table 1).

DISCUSSION

This study was conducted with data obtained from a public hospital that address a large population, and showed the incidence and demographic characteristics of shoulder dislocation cases. Sadly, there are not many extensive studies showing these characteristics of shoulder dislocation in Turkey. The studies conducted indicate that the prevalence of shoulder dislocation is higher throughout the world as compared to that in Turkey. For instance, studies conducted in the United States and Europe report rates that are three to four fold higher in comparison to the rates of the studies conducted in Turkey (9-12). This might stem from the sociodemographic structure of people living in this region. Another reason might be the fact that people living in Sivas and its vicinity choose a more sedentary lifestyle due to long and harsh winter conditions.

Leroux et al. (13) found that the average age of patients presenting to hospitals with shoulder dislocation was 37.39 ± 16.62 years, whereas Tas et al. (14) found it to be 37.2 ± 21.3 years, and Abbasi et al. (15) found it to be 31.63 ± 15.88 years in their studies encompassing Turkey. In our study, the average patient age was 43 ± 18.59 years. Sivas is a city that is not strong in terms of industry with especially limited employment opportunities and harsh winter conditions. The highest rate of immigration to another city in Turkey is seen in Sivas. In fact, most of the immigrants in Istanbul are from Sivas. The high average age of the patients with dislocated shoulders in our study is associated with the fact that the employed young population is low in Sivas.

The majority of cases in our study were males, whereas females constituted only 42%. In literature, males constitute the majority of shoulder dislocation cases (13-15). Our study is in compliance with the literature in this respect.

In the study, 537 (92.4%) patients had anterior, 32 (5.5%) patients had posterior, and 12 (2.1%) patients had inferior dislocations. In addition, bilateral shoulder dislocation was observed in 12 (2.1%) patients, and superior dislocation in none. In this aspect, our study complies with other studies examining this subject (13-16).

The initial diagnosis and treatment of shoulder dislocation is performed in emergency departments throughout the world (17). Emergency medicine physicians should have sufficient knowledge for the initial diagnosis of shoulder dislocation. In Turkey, emergency medicine physicians in many clinics are sufficiently trained for diagnosing shoulder dislocation. In fact, in our study,

almost all shoulder dislocations were diagnosed by emergency medicine physicians. Orthopedists provided support during the reduction operation.

Shoulder dislocation mainly occurs due to various types of trauma. Falls, car accidents, and sports injuries are some examples. A minority of shoulder dislocations occur due to epileptic seizures, mild strain, and contraction (4, 7). Tas et al. (14) found that shoulder dislocation injuries resulted from falls in 74.5%, simple trauma in 12.5%, motor vehicle accidents in 8.7%, physical assault in 2.9%, and epileptic seizures in only 1.4% of cases. Abbasi et al. (15) classified causes of shoulder dislocation as traumatic and atraumatic, and reported that traumatic causes were encountered more frequently with 63.8%. The most common traumatic causes included fights and falls, whereas the majority of atraumatic causes occurred during sleep and arm movement (15). In our study, 497 (85.5%) of shoulder dislocation cases were associated with trauma, whereas 84 (14.5%) of the cases were due to spontaneous and low-energy (coughing, sneezing etc.) events.

There are many conventional methods for the reduction of shoulder dislocation. The most commonly used methods are the Hippocratic technique and the Kocher technique. In addition, there is the Stimson technique, Milch technique, or combined techniques involving both these methods; the Cunningham technique and the FAD rotation method (7, 16). Reduction was performed by FAD rotation in 183 patients, Cunningham in 164 patients, and both methods in 177 patients. The Hippocratic, Kocher or Stimson method was applied for 57 dislocations that could not be reduced through the previously mentioned methods.

In a study conducted in Turkey, it was stated that FADR rotation method is a simple, nontraumatic, and effective method that requires only one practitioner to reduce shoulder dislocations. It was suggested that the method can be easily applied by orthopedic assistants and emergency physicians since it is practical and has a low learning curve (16).

Gul et al. (16) did not sedate their patients during the reduction procedure, in which they used the FAD rotation method, because there was not much pain. Tas et al. (14), on the other hand, sedated all their patients during the reduction procedure. In Canada, all patients were sedated during the reduction of shoulder dislocations in a study investigating younger cases (13). In our study, 480 (82.6%) patients were sedated during reduction, whereas sedation was not needed in 101 (17.4%) patients. Sedation was performed by emergency physicians in the emergency room.

The average duration of hospital stay was 9.12 ± 5.50 days with the longest hospitalization period of 33 days. A total of 455 dislocations were reduced in the first attempt, whereas 126 dislocations were reduced in the second attempt.

Furthermore, 473 (81.4%) cases presented with a dislocated shoulder for the first time, whereas 108 (18.6%) cases presented with recurrent shoulder dislocation to the emergency room. Considering the studies conducted in Turkey, Gul et al. (16) reported that recurrent shoulder dislocation was seen in 28.1% of

the cases, whereas Tas et al. (14) reported the same in 17.3% of the cases. Our study is similar to the ones in the literature.

CONCLUSION

Shoulder dislocation cases are commonly seen in emergency rooms. The incidence of shoulder dislocation is around 4.09% in Public Hospital. It is more commonly seen in males, and the most frequently seen type is anterior dislocation. This condition concerns individuals of all age groups, and develops mainly due to trauma. Although there are many methods for treating shoulder dislocation, a majority of shoulder dislocations were reduced using mainly FAD rotation and Cunningham methods in our study. Despite the fact that shoulder dislocations can be diagnosed and treated easily in emergency rooms, prevention of shoulder dislocations can only be achieved by means of preventive measures and informative meetings.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Cumhuriyet University (2017-20836).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - A.C., Ş.H.E.; Design - M.E., Ş.H.E.; Supervision - B.A., S.Z.; Resources - A.C., İ.K.; Materials - A.C., İ.K.; Data Collection and/or Processing - A.C., Ş.H.E.; Analysis and/or Interpretation - Ş.H.E.; Literature Search - Ş.H.E.; Writing Manuscript - Ş.H.E., A.C., İ.K.; Critical Review - Ş.H.E., A.C.

Conflict of Interest: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

REFERENCES

- Egol KA, Koval KJ, Zuckerman JD, eds: Handbook of fractures, 4th ed. Philadelphia, PA, Lippincott Williams & Wilkins, 2010.
- Cave EF, Burke JF, Boyd RJ. Trauma management. Chicago: Year Book Medical Publishers, 1974; 437.
- Becker R, Weyand F. Rare, bilateral posterior shoulder dislocation: a case report. *Unfallchir* 1990; 93: 66-8.
- Rockwood CA, Wirth MA. Subluxations and dislocations about the glenohumeral joint. In: Rockwood CA, Green DP, Buchholz RW, et al, eds. *Fractures in Adults*. Philadelphia: Lippincott-Raven; 1996: 1193-339.
- Garcia R, Ponsky T, Brody F, Long J. Bilateral luxation erecta complicated by venous thrombosis. *J Trauma* 2006; 60: 1132-4.
- Laskin RS, Sedlin ED. Luxatioerecta in infancy. *Clin Orthop* 1971; 80: 126-9.
- Zacchilli MA, Owens BD: Epidemiology of shoulder dislocations presenting to emergency departments in the United States. *J Bone Joint Surg Am* 2010; 92: 542-9.
- Cicak N. Posterior dislocation of the shoulder. *J Bone Joint Surg Br* 2004; 86: 324-32.
- Simonet WT, Melton LJ 3rd, Cofield RH, Ilstrup DM. Incidence of anterior shoulder dislocation in Olmsted County, Minnesota. *Clin Orthop Relat Res* 1984; 186: 186-91.
- Krøner K, Lind T, Jensen J. The epidemiology of shoulder dislocations. *Arch Orthop Trauma Surg* 1989; 108: 288-90.
- Nordqvist A, Petersson CJ. Incidence and causes of shoulder girdle injuries in an urban population. *J Shoulder Elbow Surg* 1995; 4: 107-12.
- Liavaag S, Svenningsen S, Reikerås O, Enger M, Fjalestad T, Pripp AH, et al. The epidemiology of shoulder dislocations in Oslo. *Scand J Med Sci Sports* 2011; 21: e334-40.
- Leroux T, Wasserstein D, Veillette C, Khoshbin A, Henry P, Chahal J, et al. Epidemiology of primary anterior shoulder dislocation requiring closed reduction in Ontario, Canada. *Am J Sports Med* 2014; 42: 442-50.
- Taş M, Canbora MK, Köse Ö, Eğerci ÖF, Gem M. Demographic and clinical characteristics of traumatic shoulder dislocations in an urban city of Turkey: a retrospective analysis of 208 cases. *Acta Orthop Traumatol Turc* 2013; 47: 147-52.
- Abbasi S, Molaie H, Hafezimoğhadam P, Zare MA, Abbasi M, Rezaei M, et al. Diagnostic accuracy of ultrasonographic examination in the management of shoulder dislocation in the emergency department. *Ann Emerg Med* 2013; 62: 170-5.
- Gül M, Yavuz U, Sökücü S, Çetinkaya E, Arıkan Y, Kabukçuoğlu YS. Flexion-adduction-external rotation method for shoulder dislocations. *Acta Orthop Traumatol Turc* 2014; 48: 164-8.
- Einstein A, Podolsky B, Rosen N. Can quantum-mechanical description of physical reality be considered complete? *Phys Rev* 1935; 47: 777-80.

How to cite:

Coşkun A, Eren M, Korkmaz İ, Al B, Zengin S, Eren ŞH. Evaluation of Patients Presenting to the Emergency Service with Shoulder Dislocation. *Eur J Ther* 2018; 24(4): 241–4.