


Research Paper: Evaluation of Recurrence Rate and Risk Factors Affecting Recurrence of Recurrent Shoulder Dislocation in Kashani Hospital in 2017-2018



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ABSTRACT

Background: In this article, the prevalence of recurrent anterior dislocation of the shoulder and the effect of factors such as age, occupation, primary cause and gender on it have been investigated.

Objectives: This study aimed to investigate the factors related to the frequency of recurrent anterior shoulder dislocation in clients of the Orthopedic Ward of Kashani Hospital, Isfahan City, Iran, in 2017-2018.

Methods: The present research is a cross-sectional study. The study population comprised all patients with traumatic and anterior shoulder dislocation referred to Kashani Hospital during 2017-2018. The sampling method in the present study was census. The patients were asked by phone or in person after their presence about the recurrences of dislocations between the beginning of 2017 and the end of 2018. The obtained data were analyzed in SPSS version 25.

Results: Out of 256 patients, 22% had a recurrence of dislocation. The recurrence rate of dislocation in less than 20 years patients was 40%, and in 20 to 40 years was 63%. The highest recurrence rate of dislocation was reported in the age group of 20 to 40 years in the present study. Based on the present study results, the recurrence rate of dislocation in the age-group of 20-40 years was significantly higher than in other groups. There was no significant relationship between gender and recurrence of dislocation in the subjects ($P>0.05$). Significance was observed in the primary cause and type of occupation in recurrence of dislocation ($P<0.05$).

Conclusion: The recurrence rate of dislocation in the patients who suffered from dislocations for the first time was 22%. Based on the results, the rate of recurrence of dislocation in the present study was lower than the rate of recurrence of dislocation in similar studies.

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1. Introduction

The shoulder joint is one of the largest joints in the human body with the greatest range of motion. Therefore, the shoulder joint is the most common joint that is dislocated, and usually, 2% of people suffer from this dislocation.

An anterior dislocation occurs when a strong force is applied to the shoulder in the external rotation and abduction. The shoulder joint can be dislocated in various directions, of which anterior dislocation is the most common type [1].

Dislocation of the shoulder joint is commonly recurrent. This instability of the shoulder reduces the patient's activities. Also, this dislocation is prone to recurrence (instability). There are several reasons for its occurrence [2]. Therefore, considering the importance of the issue, it is essential to identify the recurrence rate of dislocation and risk factors for the recurrence of dislocation [3].

In a study, the presence of a defect in the glenoid cavity and relaxation of the ligaments, especially young and professional athletes, were mentioned as risk factors for recurrent dislocation [4, 5]. In another study, 75% of those treated conservatively had recurrent dislocations, compared with 11% of those who underwent surgery. This study showed that conservative treatment in young patients increases the risk of re-dislocations [6]. In a review study in 1956 on 500 patients with anterior dislocation, 99% of patients were between 10 and 20 years old. It was also shown that the rate of recurrent dislocation was 100% in patients under 10 years of age and 94% in patients aged 10-20 years [7, 8]. In another review study on 573 patients, the rate of re-dislocation in people under 20 years old was 90%, in 20-40 years old 60% and over 40 years old 10% [2].

Although shoulder dislocation has long been recognized as a disorder, there is no agreement on the length of the course and the position of immobilization to prevent recurrent dislocation. Recommendations ranged from no immobilization to immobilization for 8 weeks [3]. Rowe and Sakellarides found no evidence that immobilization was effective for more than 3 weeks. Maran et al. described 21 skeletally immature patients who had been treated for 15 years. All patients had re-dislocations at least once. Immobilization for more than 6 weeks did not affect re-dislocations. Henry and Genung found that the rate of re-dislocation was 90% in patients who were immobilized and 85% in patients who were not immo-

bilized. It showed that immobilization did not affect re-dislocation [2]. In a review study of 252 patients aged 15-35 years, 55.7% of patients had another dislocation in the first year after dislocation and 66.8% in the first two years after dislocation, which was higher in the lower buttocks [1]. Numerous studies have shown that young age, closed posture, and being an athlete are effective in the recurrence of shoulder dislocations [9-13].

Study objectives

The present study aimed to investigate the factors related to the frequency of recurrent anterior shoulder dislocation in clients of the Orthopedic Ward of Kashani Hospital, Isfahan City, Iran, in 2017-2018.

2. Methods

The present research is a cross-sectional study conducted in Kashani University Hospital, Isfahan City, Iran, during 2017-2018. The study population comprised all patients with traumatic and anterior shoulder dislocation referred to Kashani Hospital during 2017-2018. The inclusion criteria include patients with traumatic and anterior shoulder dislocation, having the first dislocation, and consent to participate in the study. The exclusion criteria include patients older than 60, history of shoulder surgery, posterior dislocation and the presence of deformity in the shoulder and dissatisfaction with the study continuation or lack of information, recurrent dislocations, and fracture dislocation.

The sampling method was census so that all people referred to Kashani Hospital with traumatic and anterior shoulder dislocation during the years 2017-2018 were enrolled. First, by referring to the medical records of Kashani Hospital, the patients who are eligible to enter the study were extracted. Then the demographic characteristics of the patients were obtained from the file. Shoulder dislocation should be anterior and traumatic and should not occur spontaneously. It must happen because of traumas, including falls, sports activities, and accidents. The patients were then divided into age groups of less than 20 years, 20-40 years, 40-60 years, and more than 60 years. We had no patients under 10 years old with a shoulder dislocation and very few cases above 60 years. The patients were then asked by phone or in person about the presence or absence and the number of recurrences of dislocations between 2017-2018. After collecting information in a checklist, the data were entered into SPSS v. 20 and presented in tables and graphs by central and dispersion indices for qualitative variables. Also, quantitative variables are analyzed by

the independent t-test, Chi-square test, and finally, logistic regression.

3. Results

Overall, 389 patients were identified and examined in the present study. Out of 389 patients, 101 were hospitalized due to recurrence of dislocation and excluded from the study. Also, 32 patients were excluded from the study due to lack of follow-up. Therefore, the information of 256 patients who suffered a dislocation for the first time was evaluated in the present study.

Table 1 and Table 2 present the descriptive characteristics of the 256 patients studied. The Mean±SD age of the subjects was 35.64±18.58 years. Also, the Mean±SD duration of follow-up was 3.1±1.26 years.

About 90% of the subjects were men, and approximately 80% were employees, self-employed, or students. Falling was the most common cause of dislocation in the subjects. About 22.6% of patients had a recurrence of dislocation. Table 3 presents the relationship between recurrence rate and demographic variables of gender, occupation, and primary cause. According to Table 3, there was no significant relationship between gender and recurrence of dislocation in the subjects ($P>0.05$). However, there was a significant difference in the primary cause and recurrence of dislocation ($P<0.05$). Table 4 shows the relationship between age and duration of immobility and recurrence of dislocation in the subjects. According to Table 4, the mean age of people with recurrence of dislocation was significantly low ($P<0.05$). Also, the mean duration of immobility in people with recurrent dislocation was significantly low ($P<0.05$).

Table 1. Determining the frequency distribution of demographic characteristics of the subjects

Qualitative Variables		No. (%)
Gender	Male	232 (90.6)
	Female	24 (9.4)
Job	Retired	7 (2.7)
	Employee	62 (24.2)
	Self-employed	88 (34.3)
	Student	59 (23.2)
	Manual worker	22 (8.4)
	Unemployed	10 (4.0)
	Housewife	9 (3.4)
Primary cause	Fall	97 (38.0)
	Accident	35 (13.8)
	Sport	47 (18.5)
	Convulsions	51 (19.9)
	Clash	15 (5.7)
	While doing work	10 (4.0)
Recurrence	Yes	58 (22.6)
	No	198 (77.4)
First time	Yes	256 (58.9)
	No	101 (41.1)

Table 2. Mean±SD age and duration of immobility in the subjects (N=256)

Quantitative Variables	Mean±SD
Age (y)	35.64±18.58
Duration of immobility (day)	15.5±4.61
Duration of follow-up (y)	3.1±1.26

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4. Discussion

Anterior dislocation is the most common shoulder dislocations, accounting for up to 97% of all. The main complication of anterior shoulder dislocation is its recurrence [14]. Therefore, the present study aimed to determine the factors related to the frequency of recurrent anterior dislocation of the recurrent shoulder in the

Orthopedic Ward of Kashani Hospital, Isfahan City, Iran, in 2017-2018.

Of 256 patients with their first dislocations, 22.6% experienced recurrent dislocations. The recurrence rate of dislocations in patients less than 20 years is 40% and in 20 to 40 years is 63%. The highest recurrence rate of dislocation is reported in the age group of 20-40 years in the present study. In a similar study, Simonet et al. ex-

Table 3. Determining the relationship between demographic variables and recurrence of dislocation in the subjects

Variables	Recurrence		P	
	Yes	No		
Gender	Male	44.8%	55.2%	0.84
	Female	40%	60%	
Age	Less than 20 years	40%	60%	0.02
	20-40 years	60%	40%	
	40-60 years	30%	70%	
Job	Retired	-	100%	0.01
	Employee	30%	71%	
	Self-employed	46%	53%	
	Student	42%	57%	
	Manual worker	100%	0	
	Unemployed	100%	0	
Primary cause	Fall	33%	66%	0.04
	Accident	20%	80%	
	Sport	100%	0	
	Convulsions	33%	66%	
	Clash	33%	66%	
	While doing work	100%	0	

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Chi-square test was used to find the correlation of the frequency distribution of comparisons; P<0.05 indicates the significance of difference.

Table 4. Determining the relationship between age and duration of immobility and recurrence of dislocation in the subjects

Quantitative Variables	Recurrence (Mean±SD)		P
	Yes	No	
Age (y)	28.7±8.33	41.1±22.23	0.03
Duration of immobility (day)	10.66±1.7	19.31±4.20	0.02

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The independent t-test was used to compare the means of the variables; $P < 0.05$ indicates the significance of the test.

amined the prevalence of dislocations and the recurrence rate. In this study, the data of 116 patients out of 124 patients were examined. Based on the results, out of 116 patients, 38 (33%) had recurrent dislocations: 21 out of 32 patients (66%) were under 20 years old, 17 out of 43 patients (40%) were 20 to 40 years old. Twenty-seven of the 33 young athletes (82%) had re-dislocations, while only 8 of the 27 non-athletes (30%) had recurrences of the dislocation at similar ages [15].

Based on the present study results, the recurrence rate of dislocation in the group of 20 to 40 years was significantly higher than in other groups. Several other studies confirming the present study's findings also showed that the recurrence rate of dislocation is higher in young patients than in the elderly [16-18]. Ramsey et al. reported that the high recurrence rate of anterior shoulder dislocation was higher in young patients [19]. Rhee et al. reported that these injuries occur at younger ages, with higher recurrence rates, and at shorter intervals between primary injury and recurrent instability events among athletes [20].

Based on other study results, no significant relationship was observed between the gender and recurrence of dislocation in the subjects; however, a significant difference was observed in the primary cause and type of occupation in recurrence of dislocation. Thus, the recurrence rate of manual workers and unemployed people was significantly higher than employees and retirees. Many different risk factors for recurrent anterior shoulder dislocations such as young age, participation in sports activities have been reported in other studies [21-24].

According to Porcellini et al. [25], age at first dislocation, male gender, and time from the first dislocation to surgery were significant risk factors for recurrence. However, in a prospective multicenter clinical study with 25 years of follow-up, no significant differences were found in relation to gender [26]. Because some patients were followed up by telephone, the level of hyper-laxity in the patients was not evaluated.

5. Conclusion

The recurrence rate of dislocation in the patients who suffered from dislocations for the first time was 22%. Based on the results, the rate of recurrence of dislocation in the present study was lower than the rate of recurrence of dislocation in similar studies.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethics Committee of the University of Isfahan University of Medical Science.

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Authors' contributions

Conceptualization and Supervision: Hossein Akbari Aghdam and Mohammad Dehghani; Investigation, Writing - original draft: Parisa Karimi; Writing - review & editing: All authors; Data collection and Data analysis: Hossein Akbari Aghdam, Mohammad Dehghani, and Parisa Karimi.

Conflict of interest

The authors declared no conflict of interest.

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