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Effectiveness of Prakash's Technique for Relocating an Acutely Dislocated Shoulder for the First Time

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Abstract

Introduction: Shoulder dislocations represent 50% of all major joint dislocations, with anterior dislocation being most common. Anterior shoulder dislocations often occur due to trauma where the arm is in an abducted and externally rotated position. The clinical presentation patients typically present with pain, inability to move the shoulder, and a visible deformity.

Objective: To determine the efficacy of Prakash's method of shoulder relocation in acutely first-time anteriorly dislocated shoulder.

Methods: This Cross sectional study was conducted at department of Orthopedics from January 2023 June 2024. A total of 124 patients of both gender with anteriorly dislocated shoulder were included in the study. In all patients, reduction was attempted in a sitting position.

Results: Age range in this study was from 18 to 60 years with mean age of 39.540±9.52 years, mean BMI 25.395±2.29 Kg/m2 and mean duration of complaints was 2.887±1.14 days. Male patients were 69.4% and females were 30.6%. Efficacy was observed in 83.1% patients.
Conclusion: Our study has concluded that Prakash's method of shoulder relocation is an effective technique for managing acutely first-time anteriorly dislocated shoulders.

Keywords: Dislocated shoulder, Prakash's method, Efficacy

INTRODUCTION

Fifty percent of all major joint dislocations are shoulder dislocations, with anterior dislocation being the most common type.1 The shoulder is considered an unstable joint owing to the shallow nature of the glenoid, which articulates with merely a small segment of the humeral head.2

The shoulder joint is the joint that is most frequently dislocated in the human body. Dislocations of the shoulder can occur in a forward, backward, or downward direction, and can be either complete or partial, although the majority of dislocations happen anteriorly.3 The fibrous tissue that connects the bones may become stretched or torn, which complicates the dislocation. A significant force, such as a blow to the shoulder, is required to displace the bones from their normal position. Additionally, extreme rotation can cause the shoulder to dislocate from its socket. Injuries sustained in contact sports are common causes of shoulder dislocations. Furthermore, trauma resulting from motor vehicle accidents and falls also frequently leads to dislocations.3,4 It is essential to carefully assess the patient for any signs of neurovascular compromise. The most prevalent injury is to the axillary nerve. This nerve innervates the deltoid and teres minor muscles and provides sensory input to the lateral aspect of the shoulder.5

Compromise of the axillary nerve occurs in more than 40% of dislocations, but it typically resolves following reduction. While dislocation is often readily apparent, imaging prior to reduction to check for associated fractures can be beneficial, especially when trauma is suspected. Clinically significant fractures are observed in approximately 25% of dislocations.5

Once the diagnosis is confirmed, various techniques are currently outlined to address a dislocated shoulder. The most frequently employed technique is Kocher's method. The choice of reduction technique typically relies on the surgeon executing the procedure. Regardless of the method selected, approximately 70-90% of anterior shoulder dislocations can be successfully managed through manipulation or closed reduction.6 A review of the literature indicates numerous techniques available for the reduction of a dislocated shoulder; however, each reduction method carries the risk of one or more complications. Complications associated with various techniques include neurovascular injuries primarily linked to the traction-countertraction method, upper limb dysfunction, and potential amputation.7 A novel reduction technique recently introduced by Prakash has demonstrated that anterior shoulder dislocations can be effectively reduced without pain or sedation, achieving a high success rate. In a study conducted by Laik JK et al., the efficacy of Prakash's shoulder relocation method was found to be 91.18% for acutely dislocated shoulders that were anteriorly dislocated for the first time.8

METHODOLOGY

Patients fulfilling the inclusion criteria from the Department of Orthopedics, Bolan Medical Complex Hospital Quetta, were included in the study after permission from the ethical committee. Informed consent was obtained from patients following a thorough explanation of the study's benefits. Basic demographic information, including age, gender, BMI, residential status, socioeconomic status, profession, education level, diabetes, hypertension, reason for dislocation, and duration of complaints, was documented at the time of inclusion in the study. For all patients, an attempt to reduce the dislocation was made while they were seated. The patient was positioned on a chair or bed with their back straight to stabilize the scapula. This procedure could also be performed with the patient standing, as long as they felt comfortable. Initially, the patient was counseled, and the steps were often demonstrated on their opposite shoulder or on another individual to build their confidence. Subsequently, the surgeon grasped the dislocated upper limb at the elbow and wrist. The shoulder was gently externally rotated while in the position of deformity to align the arm with the coronal plane. Maximum external rotation was achieved, ensuring that there was no adduction or abduction of the shoulder. The shoulder was held in external rotation for more than a minute. The following step was critical, as it was the most painful part of the procedure. The limb needed to be kept in external rotation for approximately two to three minutes, during which the patient was engaged in conversation to provide distraction. The arm was then gradually adducted while maintaining the position of external rotation to bring the elbow across the body. Finally, the arm was gently internally rotated until the hand made contact with the opposite shoulder. The shoulder was successfully reduced with a smooth glide, without any clunking or audible clicks.

Data was analyzed with a SPSS Ver. 26. Frequencies and percentages were analyzed for categorical variables like gender, residential status, socioeconomic status, profession, education level, diabetes, hypertension, reason for dislocation, and efficacy. Mean ± SD was presented for quantitative variables like age, BMI, and duration of complaints. Efficacy was stratified for age, gender, BMI, residential status,

socioeconomic status, profession, education level, diabetes, hypertension, applied; $p \leq 0.05$ was considered statistically significant.

RESULTS

Age range in this study was from 18 to 60 years with mean age of 39.540±9.52 years, mean BMI 25.395±2.29 Kg/m2 and mean duration of complaints was 2.887±1.14 days as shown in Table-1.
Male patients were 69.4% and females were 30.6% as shown in Table-II. Frequency and %age of patients according to residential status, socioeconomic status, profession, education level, diabetes, hypertension and reasons Efficacy was observed in 83.1% patients as shown in Table-2 respectively
Stratification of Efficacy with respect to age, gender, BMI, residential status, socioeconomic status, profession, education level, diabetes, hypertension, reason for dislocation, and duration of complaints are shown in Tables-3 respectively.

Table- 1: Mean ± SD of patients according to age, BMI and duration of complaints.

Demographics	Mean ± SD
Age(years)	39.540±9.52
BMI (kg/m^2)	25.395±2.29
Duration of Complaints (days)	2.887±1.14

Table- 2: Frequency and %age of patients according to gender, residential status, socioeconomic status, profession, education level, diabetes, hypertension, reason and efficacy

Gender	Frequency	%age
Male	86	69.4%
Female	38	30.6%
Residential Status		
Rural	66	53.2%
Urban	58	46.8%
Socioeconomic Status		
Low	46	37.1%
Middle	51	41.1%
High	27	21.8%
Profession		
Job	78	62.9%
Jobless	28	22.6%
Housewife	18	14.5%
Education level		
Uneducated	28	22.6%
Secondary	38	30.6%
Higher	58	46.8%
Diabetes		
Yes	54	43.5
No	70	56.5
Hypertension		
Yes	58	46.8%
No	66	53.2%
Reason		
Fall	34	27.4%
Sports Injury	32	25.8%
Road Accident	32	25.8%
Other	26	21%
Efficacy		
Yes	103	83.1

No	21	16.9
Total	124	100%

Table-3: Stratification of Efficacy with respect to age, gender, BMI, residential, socioeconomic, profession, education level, diabetes, hypertension and duration of complaints

Age (years)	Efficacy		p-value
	Yes	No	
18-40	61(88.4%)	8(11.6%)	0.076
41-60	42(76.4%)	13(23.6%)	
Gender			
Male	73(84.9%)	13(15.1%)	0.416
Female	30(78.9%)	8(21.1%)	
BMI (kg/m^2)			
≤25	60(92.3%)	5(7.7%)	0.004
>25	43(72.9%)	16(27.1%)	
Residential Status			
Rural	55(83.3%)	11(16.7%)	0.932
Urban	48(82.8%)	10(17.2%)	
Socioeconomic Status			
Low	38(82.6%)	8(17.4%)	0.283
Middle	40(78.4%)	11(21.6%)	
High	25(92.6%)	2(7.4%)	
Profession			
Job	63(80.8%)	15(19.2%)	0.588
Jobless	25(89.3%)	3(10.7%)	
Housewife	15(83.3%)	3(16.7%)	
Education level			
Uneducated	25(89.3%)	3(10.7%)	0.540
Secondary	30(78.9%)	8(21.1%)	
Higher	48(82.8%)	10(17.2%)	
Diabetes			
Yes	43(79.6%)	11(20.4%)	0.370
No	60(85.7%)	10(14.3%)	
Hypertension			
Yes	43(74.1%)	15(25.9%)	0.013
No	60(90.9%)	6(9.1%)	
Hypertension			
Fall	26(76.5%)	8(23.5%)	0.536
Sports Injury	26(81.2%)	6(18.8%)	
Road Accident	26(81.2%)	6(18.8%)	
Other	25(96.2%)	1(3.8%)	
Duration of Complaints (days)			
≤3	65(85.5%)	11(14.5%)	0.436
>3	38(79.2%)	10(20.8%)	
Total	103(83.1%)	21(16.9%)	

DISCUSSION

In our research, we noted that the efficacy of Prakash's method of shoulder relocation was observed in 83.1% of patients. The findings of our study align closely with those of Laik JK et al., who demonstrated that the efficacy of Prakash's method for shoulder relocation was 91.18% in cases of acutely dislocated shoulders for the first time.8

A study recommends the use of ISBs as the most effective analgesic for outpatient arthroscopic shoulder surgery (Warrender et al. 2016). This systematic review emphasizes the significance of assessing postoperative pain management protocols following outpatient arthroscopic shoulder surgery, offering essential insights for enhancing pain management strategies in this setting.9

According to Kashani et al. (2016)10, the application of intra-articular lidocaine (IAL) for alleviating anterior shoulder dislocation was demonstrated to be effective, safe, and time-efficient when compared to intravenous sedative and analgesic (IVSA) techniques. The research underscored a decrease in pain intensity during the reduction process, a lower incidence of complications, enhanced patient satisfaction with IVSA, and a reduced discharge time with IAL. These results are consistent with the effectiveness of Prakash's approach for acutely dislocated shoulders that are anteriorly positioned, highlighting the potential advantages of IAL as a primary analgesic in the management of such dislocations.

As stated by Kavaja et al. (2018)11, the immediate treatment for a dislocated shoulder requires closed reduction, which must be performed swiftly either on-site or within an emergency department. This is consistent with the objective of assessing the effectiveness of Prakash's technique for shoulder relocation in cases of acute first-time anterior dislocations, highlighting the critical role of prompt closed reduction in the treatment of these injuries.

According to the findings of Shinagawa et al. (2020)12, the practice of immobilization in external rotation (ER) significantly lowers the recurrence rate after a primary shoulder dislocation, as opposed to immobilization in internal rotation (IR) for individuals aged over 20 years. This meta-analysis offers evidence from randomized controlled trials that support the superiority of ER immobilization over IR immobilization, underscoring the critical nature of considering this data when choosing a treatment strategy for patients with primary anterior shoulder dislocation.

Whelan et al. (2015)13 discovered that immobilization in external rotation proved to be more effective than conventional splinting in internal rotation for preventing recurrent dislocations among a subgroup of patients aged 21 to 30 years after experiencing acute anterior shoulder dislocation. This research offers significant evidence that supports the effectiveness of Prakash's method in the management of acutely first-time anteriorly dislocated shoulders.

In accordance with Özmanevra et al. (2021) 14, the study assessed the treatment practices of orthopedic surgeons and emergency physicians in Turkey regarding acute traumatic first-time anterior shoulder dislocations. The findings revealed discrepancies in the techniques employed by the two medical specialties, with orthopedic surgeons showing a preference for the Kocher and Milch maneuvers compared to emergency physicians. The study underscores the necessity for collaboration between emergency physicians and orthopedic surgeons in the treatment of shoulder dislocations and emphasizes the need for a national guideline to create a consensus on treatment strategies.

The research conducted by Hames et al. (2011)15 evaluates the effectiveness of intra-articular lidocaine (IAL) in comparison to intravenous sedation (IVS) for alleviating acute anterior shoulder dislocations. The findings reveal a markedly lower success rate in the IAL group when juxtaposed with the IVS group, suggesting that IAL may not be as effective due to its inability to provide adequate analgesia or relaxation of the adjacent shoulder muscles, which could adversely affect the success of shoulder relocation procedures.

In accordance with Paterson et al. (2010)16, there is no substantial advantage to conventional sling immobilization beyond one week in the management of primary anterior shoulder dislocation in younger individuals. The research indicates that utilizing bracing in external rotation may present a clinically significant benefit over standard sling immobilization, although the variation in recurrence rates did not achieve statistical significance based on the data available.

As noted by Lynch et al. (2009)17, bony defects of the glenoid are observed in a considerable proportion of cases involving traumatic anterior shoulder instability, with prevalence rates ranging from 5% to 56%. This data is pertinent to the discussion as it underscores the potential anatomical obstacles that may arise in instances of anterior shoulder dislocation, which could influence the effectiveness of Prakash's shoulder relocation technique.

The research conducted by Eshøj et al. (2020)18 assesses the effectiveness of neuromuscular shoulder exercise (SINEX) in comparison to standard care exercise (HOMEX) for patients experiencing traumatic anterior shoulder dislocations. The findings indicate that SINEX outperformed HOMEX in enhancing shoulder functionality, alleviating pain, and possibly reducing the necessity for shoulder stabilizing surgery. This investigation offers significant insights into nonoperative treatment alternatives for individuals with traumatic anterior shoulder dislocations, thereby enriching the comprehension of effective rehabilitation strategies in these scenarios.

CONCLUSION

Our research has determined that Prakash's shoulder relocation technique is an effective approach for addressing acutely dislocated shoulders for the first time. The method exhibited a high success rate in correcting the dislocation and returning the shoulder to its correct anatomical alignment. This technique may serve as a beneficial addition to the treatment options accessible to healthcare providers, especially in emergency situations where swift and effective management of shoulder dislocations is essential. Nevertheless, additional studies are required to compare this technique with other established methods and to assess its long-term effects and possible complications.

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