The Efficacy and Safety of Prakash Method of Closed Reduction of Anterior Shoulder Dislocation.

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ABSTRACT

Objective: To determine the effectiveness and safety of Prakash method of shoulder reduction in patients of anterior shoulder dislocation presenting to the emergency department.

Methods: This cross-sectional study was conducted in the emergency department of Al Qassimi Hospital Sharjah, United Arab Emirates, from 3rd July 2018 to 3rd July 2020. All patients with anterior shoulder dislocation meeting the inclusion criteria were managed using Prakash technique. Outcome was determined in terms of successful reduction and documentation of any technique related complications.

Results: A total of 100 patients with mean age 32.5 ± 8.3 years were included in this study. Males were 72(72%) and female 28(28%).Majority(96%,n=96) of the shoulders were successfully reduced with Prakash method. No complication related to the technique was noted.

Conclusion: Prakash method of shoulder reduction had a high success rate and without any complication. We recommend this procedure as a technique of choice to reduce anterior shoulder dislocations presenting to the emergency department.

Keywords: Dislocation, Reduction, Relocation, Shoulder, Glenohumeral.

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INTRODUCTION

Shoulder joint is the most mobile yet unstable joint in the human body and the incidence of shoulder joint dislocation is 2 to 8% among general populations[1,2] and 21 to 24 per 100000 in developed countries.[3,4] The most common form of dislocation is anterior and the aetiology includes falling down, road traffic accident and sport injuries.[4] Shoulder dislocation is the most common orthopedic trauma seen in the emergency room.[5] There are many reduction techniques to reduce shoulder joint dislocation. Nevertheless, most of these techniques require sedation or anesthesia.[6] Although the choice of reduction technique is practitioner-dependent, most choose simple maneuvers that require less sedation or anesthesia.[7] The success rate of the reduction technique also dependent on the chosen technique.[8,9] The best reduction method could be defined as the one which requires minimal assistance, yet highly effective, performed easily but with minimal pain or complications.[10] It is highlighted in the literature that most commonly used techniques such as Hippocratic or Kocher fail to meet the previous definition.[11,12] The relatively new technique developed by Prakash has succeeded to meet the previous criteria in reducing anterior shoulder dislocations without sedation or pain. This technique had 100% success rate and no complications were documented by Prakash when he reduced 147 dislocations including old dislocations ranging from 19 days to 89 days.[11]

In our hospital previously we reduced shoulder dislocations under anaesthesia which required mandatory laboratory and clinical workup of patients fitness for anaesthesia and associated risk resulting in increased hospital stay, use of financial resources and patient anxiety. To avoid these demerits we

started using Prakash technique. This study aimed to assess the effectiveness and safety of Prakash technique in patients with anterior shoulder dislocation presented to the emergency department of our hospital.

METHODS

This cross sectional study was conducted in the emergency department of Al Qassimi Hospital Sharjah, United Arab Emirates from 3rd July 2018 to to 3rd July 2020. Patients of either gender and all ages with anterior shoulder dislocation were included. Unconscious patients, patients with neurovascular injuries, spine trauma, polytrauma patients and patients presented after a week were excluded. The study was approved by the Ethical Committee of hospital and informed consent was taken from all study participants. In the included subjects complete history and physical examination was under taken and radiographs of the affected shoulder were advised.

Prakash reduction technique

The basic principal of Prakash technique is that traction has no role in the reduction of shoulder dislocation.[11]Prakash was of the opinion that shoulder dislocation is a translational or rotational injuries and must be reduced without traction. We applied this technique while the patient was in the sitting position with fixed scapula. The reduction process was performed without any assistance, sedation or muscle relaxant. Also, there was no traction applied during the procedure. The elbow of the affected side was flexed to 90 degrees and held with one hand and forearm with the other in the position of deformity without adducting or abducting. The arm was gently externally rotated until it was near parallel to the body and this position was maintained for a minute. Gradually the limb was adducted until the point of elbow came over the body.The arm was internally rotated so that the hand touched the opposite shoulder which confirmed reduction.[13] Post reduction neurovascular status was checked and radiograph was advised to confirmed reduction. Shoulder was immobilized with a polysling in all cases. All cases were relocated with single attempt of reduction. Patients who were unable to reduced were anesthetized and other methods were used for reduction.

Data obtained from questionnaire were entered and analyzed using SPSS version 23 computer software. Mean and standard deviation was calculated for quantitative variables while frequency and percentage was calculated for qualitative data.

RESULTS

This study involved 100 patients over a period of two years. The mean age of our study sample was 32.5 + 8.3 years. There were 72(72%) males and 28(28%) female. The site of dislocation occurred on the right side in 70(70%) patients and left in 30(30%) patients. More than two thirds of patients (n=70,70%) presented with shoulder dislocation for the first time while 30(30%) patients had recurrent shoulder dislocation. The aetiology of dislocation was road traffic accidents in 58(58%), sports injury in 22(22%),fall in 9(9%),physical assault 6(6%) in and trivial trauma in 5(5%).There were no concomitant fractures with the shoulder dislocation at presentation. It is important to mention that no sedation was used at all during the reduction process. The success rate of our study reached 96%(n=96). The mean reduction time was 4±1 minute. No post reduction fractures were seen. We were not able to reduce 4(4%) dislocations and anaesthesia was used for their reduction. No post reduction fracture or other complication was noted.

DISCUSSION

The traditional yet the most commonly used method of shoulder reduction is Hippocratic technique,[14-15] post reduction complications however have been reported with this technique.[16] There are many other techniques used for reduction of for shoulder dislocation but no consensus exist regarding the technique of choice to reduce shoulder dislocation.[17]We used Prakash technique of reduction and achieved 96% success rate. Our success rate is comparable to other techniques of shoulder reduction reported in the literature(table I) but the major advantage of our technique was that no anaesthesia and no assistant was required and no post reduction complication was noted in our series. The technique was easy and executed in few minutes and patients were sent home early.

Besides Prakash description and results of the technique in his original article in 2018,[11] we found 3 other original studies and one review article mentioning Prakash technique. Anjum et al[13] treated 61 patients with mean age 37.04±12.6 years and reported successful reduction in 58 out 61(95.08%) patients in the first attempt while the remaining 3 shoulders were reduced in the second attempt of the same technique. The mean time taken was 130.5±25.5 seconds. These authors recommended Prakash method as a primary technique for reducing shoulder dislocation in emergency. Kuru et al[33]

treated 19 patients with Prakash technique and achieved success rate of 94.7%(n=18). Ullah and Kabir[34] treated 30 patients and reported success rate of 90%(n=27).Both these studies did not report any complications. Gottlieb[35] in his review article described 26 shoulder reduction techniques. He was of the opinion that Prakash technique is a modification of external rotation maneuver first described by Reinald Leidelmeyer[36] in 1977.Gottlieb doubted the efficacy of Prakash methods in patients with muscle spasm and without analgesia. We recommend randomized trials with larger sample size to conform our results.

Table I: Literature review of different reduction technique of the shoulder joint and their success rate.

S. No	Reduction Technique	Author's Name	Year of study	Success rate (%)
1	Kocher	Royle G[18]	1973	95%
2	External Rotation	Miricik MJ[19]	1979	80%
3	Pulsion and Traction-Elderly	Manes HR[20]	1980	90%
4	Mulch	Russell JA[21]	1981	89%
5	Scapular manipulation	Anderson D[22]	1982	92%
6	Mulch	Beattie TF[23]	1986	70%
7	External Rotation	Danzl DF[24]	1986	78%
8	External Rotation with Traction	Banerjee A[25]	1990	86%
9	External Rotation	Thakur AJ[26]	1990	100%
10	External Rotation	Jeyarajan R[27]	1991	95%
11	Scapular manipulation	Kothari RU[28]	1992	96%
12	Mulch	Johnson G[29]	1992	86%
13	Modified Milch	Garnavos C[30]	1992	95%
14	Kocher without traction	Berkenblt SI[31]	2000	82%
15	Spaso	Yuen MC[32]	2001	88%
17	**Our study(Prakash Technique)**	**Saqlain HA**	**2020**	**96%**

CONCLUSION

Prakash method of shoulder reduction had a high success rate and without any complication. It is an easy and painless technique and is less time consuming. It does not require anaesthesia, analgesia or any assistant. We recommend this procedure as a technique of choice to reduce anterior shoulder dislocations presenting to the emergency department.

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