

Comparison Between External Rotation Method and Milch Method For Reduction of Acute Anterior Dislocation of Shoulder

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ABSTRACT

Background: Anterior dislocation of shoulder account for more than 50% of dislocation that occur in our body. Several methods of reduction are described in literature which are painful or require anaesthesia.

Aim: This study was undertaken to compare the External Rotation Method and Milch method for reduction of anterior dislocation of shoulder.

Materials and Methods: There were total 52 patients with anterior dislocation of shoulder, distributed randomly into 2 groups. Reduction was done by External Rotation Method and Milch Method for each group and their outcome were compared.

Statistical Analysis: The data was analysed by using SPSS for Windows (version 16.0) by applying the Chi-Square test. p-values of <0.05 was considered as significant.

Results: Among each group of 26 patients, three patients required anaesthesia in External Rotation Method and eight patients required anaesthesia in Milch Method. There was no statistically significant difference in success rate between external rotation (88.46%) and Milch (69.23%) methods of reduction (p=0.09).

Conclusion: Both methods of reduction can be used for reduction of anterior dislocation of shoulder without anaesthesia but external rotation method was found to be easier and less painful.

Keywords: Atraumatic, Shoulder dislocation, Shoulder joint

INTRODUCTION

Shoulder dislocation is the commonest dislocation that occurs in our body. Shoulder joint is a ball and socket type of joint and has greatest degree of mobility. More than 50% of all joint dislocation presenting to Department of Emergency is shoulder joint. Most often it is anterior dislocation (90-95%) [1].

There are many methods traditionally described for reduction of shoulder dislocation. Those techniques are painful to patients and may be associated with further injury [2-4]. Ideal method should be easy, effective, and less painful, not associated with iatrogenic complication and should be easy to teach and learn [3,4].

Among different methods of reduction were External Rotation method and Milch method are popular. External rotation method is newer technique which is safe and reliable method done mainly without requirement of any sedation and anaesthesia. It can be performed with relatively less pain in anterior dislocation of shoulder [5]. Milch method describe by Milch in 1938, in which position of humerus help to reduce the muscle force that help in easy reduction and is relatively painless, safe and free of complication [6,7].

Both methods are found to be atraumatic, relatively painless and can be done without anaesthesia [2,4,5]. Here we have compared these two methods regarding their success rate and outcome.

MATERIALS AND METHODS

It was a prospective study conducted in Department of Emergency of Fishtail Hospital and Research Centre Pokhara, Nepal comparing two methods (External Rotation Method and Milch Method) of reduction for anterior shoulder dislocation. The study was conducted from June 2011 to May 2014, for 3 years. There were a total of 52 cases of dislocation distributed randomly into 2 groups. All the procedures were done by consultant orthopaedic surgeon (first author only).

Inclusion criteria: Patients with acute traumatic anterior dislocation of shoulder for first time, patients with associated fracture greater tuberosity and or axillary nerve palsy who presented within 24 h of injury were included in the study.

Exclusion criteria: Patients with poly trauma, haemodynamically unstable patients, Neers 3 or 4 part fracture, head splitting proximal humerus fracture glenoid fracture involving >25% , open growth plate , and patients with generalized joint laxity were excluded from the study.

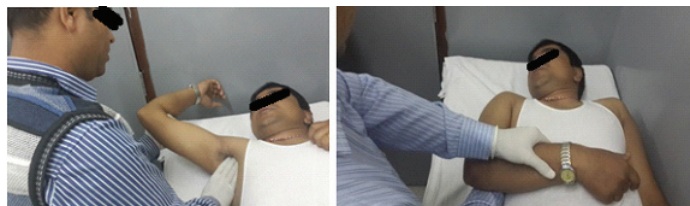
In external rotation method, patient was asked to lie in bed in supine position. They were explained regarding the procedure and were asked to be relaxed during the whole procedure. The affected arm was abducted to chest wall, elbow flexed at 90°, shoulder was flexed at 20°, grasping the wrist of the patient with one hand and holding elbow by other hand, arm was externally rotated slowly and gently until forearm is in coronal plane. No traction was used during the procedure. Once reduction was achieved the arm was gently internally rotated to bring forearm to lie across the chest [8] [Table/ Fig-1].



[Table/Fig-1]: Shoulder dislocation reduced by External rotation method

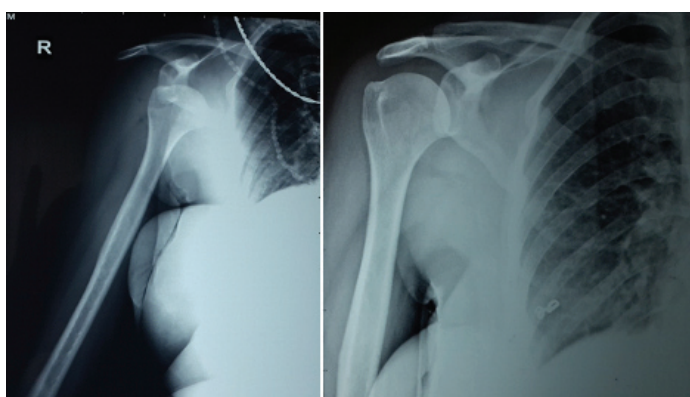
In Milch technique, patient was placed in supine position with head of the bed elevated. Patients were explained regarding the procedure. Then the affected arm was held by the wrist and was slowly abducted and externally rotated to achieve approximately 90° of

abduction in over head position and 90° of external rotation. Gentle longitudinal traction was applied in line of humerus. Milch did not implement traction during his reductions which is slight modification in our technique. Then free hand was placed into the axilla to feel the humeral head and it is pressed laterally and superiorly to achieve reduction. During the procedure patient was constantly reassured that no pain would be felt [6,7] [Table/Fig-2].



[Table/Fig-2]: Shoulder dislocation reduced by Milch method

The position of the humeral head was assessed clinically and radiographically after reduction in both the methods and repeat neurovascular examination was performed. Then the patients arm were placed in a shoulder immobilizer [Table/Fig-3].



[Table/Fig-3]: Shoulder dislocation and post reduction X-rays

STATISTICAL ANALYSIS

The data was analysed by using SPSS for Windows (version 16.0) by applying the Chi-Square test and p-values of 0.05 and less were considered as significant.

RESULTS

There were 52 patients, 26 in each group with acute anterior dislocation of shoulder enrolled for the study. The age of 52 patients ranged from 20-40 years with mean of 27.65 ± 5.50 years. There were 32 (61.5%) male patients and 20 (38.5%) female patients of total 52 patients. There was no significance between two groups in terms of age and sex with $p=0.92$, $p=0.569$ respectively. [Table/Fig-4].

Variable		External Rotation Methods (ERM) (n=26)	Milch's Methods (n=26)	p-value (Chi-sq test)
Age		27.88±5.85	27.42±5.24	0.92
Sex	Male	15 (57.7%)	17 (65.4%)	0.57
	Female	11 (42.3%)	9 (34.6%)	0.57
Success rate without anaesthesia		23 (88.46%)	18(69.23%)	0.09

[Table/Fig-4]: Comparison Age and sex between two groups of reduction methods

Dislocation was more common in right side 34 (65.4%). Most patients came to the hospital within 3 hours of injury. Fall in ground was the commonest mode of injury with 42(80.77%) cases, sport related injury in eight cases, one case of seizure disorder and one case of electrocution.

Among 26 of the External Rotation Methods, three patients required anaesthesia with some sedation and eight patients required anaesthesia in Milch method. All cases were successfully reduced.

The mean time required for External Rotation Methods was 2.5 min, and it was 3.76 min for Milch method for reduction. There is statistically significant difference between two methods in term of time with p-value 0.005

Reduction was achieved in first attempt without anaesthesia in 23 cases out of 26 (88.46%) in External Rotation Method and in 18 cases of 26 patients (69.23%) in Milch methods ($p=0.09$). Three patients in External Rotation Method and eight patients in Milch methods were successfully reduced under anaesthesia.

DISCUSSION

Shoulder dislocation is the commonest joint to be dislocated and can be reduced by different methods of reduction. Among them both External Rotation and Milch method of reduction can be done easily with good rate of success without any anaesthesia [1-4].

The study suggests that there is no statistically significant difference in success rate between external rotation (88.46%) and Milch (69.23%) methods of reduction ($p=0.09$). The external rotation method was easier, less painful causing minimum discomfort to patients and requires single doctor to perform it [4]. The reduction methods commonly used for shoulder dislocation depend upon either traction or leverage. Traction increases muscle spasm and require more force that cause more difficult and painful and less like to get success [9]. In Milch method leverage principle is used. The position of humerus such that the resultant force of perihumeral muscle lies parallel to shaft of humerus, which help to minimize the muscle force and reduction is achieved easily [6,7]. As traction was not used in External rotation method for reduction, this might be the reason for the less pain as compare to Milch method in our study.

Mirick et al., and Leidelmeier recommended use of intravenous anaesthesia for patients with a dislocation for the first time however, in our study, 41 (78%) of the 52 successful reductions were performed without the use of sedation in patients who had a dislocation for the first time, among them also external rotation method had high success rate [10,11]. The present study shows that an external rotation method is easier to perform and have high chance of success. Even without any sedation and anaesthesia patients experience less pain so that after procedure patients can be sent home immediately which decrease the hospital cost. This is similar to the study done by different authors [10-12].

There was no short term complication in our series. Both methods can be done safely for acute dislocation immediately as patients arrives to the hospital and after reduction patients can be discharge immediately which decreases the hospital stay, health resource utilization. Furthermore there is no requirement of anaesthesia in majority of cases which itself decreases the anesthetic hazards.

As we have not used the pain scale in our study we were unable to quantify the pain which is the weakness of the study. Further research needs to be dedicated to studying the mechanics of reduction techniques and their effects on the pathoanatomy of the dislocated shoulder.

CONCLUSION

There was no statistically significant difference in success rate of both methods. However external rotation method was found to be easier, less painful and faster. Both methods can be used for reduction of acute anterior dislocation of shoulder without anaesthesia.

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