International Journal of Life science & Pharma Research

# STUDY ON EFFICIENCY OF ROTATION-TRACTION-TECHNIQUE IN REDUCTION OF SHOULDER: A RANDOMIZED CONTROLLED CLINICAL TRIAL

**MOHAMMAD HOSSEINI KASNAVIEH[1], HAMED BASIR GHAFOURI[1], GHOLAMREZA MASOUMI[1], MOHAMADREZA YASINZADEH[1], NADER TAVAKOLI[2], HASSAN AMIRI[1], AMIR KHATAMI[3]**

*[1]Assistant Professor, Emergency medicine management research center, Iran university of Medical sciences, Tehran, Iran.*
*[2]Associated Professor, Trauma and injury research centre, Iran university of Medical sciences, Tehran, Iran.*
*[3]Emergency medicine resident, Iran university of Medical sciences, Tehran, Iran*

## ABSTRACT

The lack of accurate statistics in some methods about anterior shoulder dislocation, however we design a study for compare efficacy rotational with traction in patients.In randomized controlled trials, 111 participation's divided randomized to two study group (rotational 56 and traction 55). This study was carried out in 2016 on Shohadaye 7tir Hospital in Tehran. Patients were following as complications, duration of the process and repeat or not to repeat dislocation. Duration of the process dislocation in rotational was lower compare to rotational, but is not significant p-value= 0.55. There was no difference statistically (p-value= 0.219) in replacing repeated anterior shoulder in traction (55%) with rotational (41%). did not differ in subclass for sex and age. There is not techniques anterior shoulder dislocation without error. So doctors have to learn different methods, in special clinical situations, overcrowded emergency condition, do the best and most appropriate method.

**KEYWORDS***: Anterior shoulder, rotational, traction, shoulder dislocation*

## INTRODUCTION

In Emergency Department of hospitals, anterior dislocation of the shoulder is the most common dislocations. Almost half of all bone dislocation is dislocation of the shoulder and 90-95% for anterior dislocation.[1] A history of previous dislocations with High incidence in 22 years old young people referred to emergency is the problem of this group of people.[2] In the meantime, there are different techniques for reducible anterior dislocation of the shoulder. The process developed over the years with the advent of new techniques. Manipulations of the shoulder blade, Milch, Kocher, Simpson, Rotational and so on refer to the techniques of dislocation of the shoulder.[3,4] Failures in techniques for reducible anterior dislocation of the shoulder have obliged the researchers and clinicians to assess the most effective method among above methods. However, clinician's skill in closed reduction of shoulder and familiarity with several techniques dependent on patient's conditions and dislocation of the shoulder have been emphasized in various studies[5-7].

## MATERIAL AND METHODS

This study was conducted in 2016 at emergency department of Shohadaye 7tir Hospital on patients admitted to emergency department of hospital with symptoms of anterior dislocation of the shoulder. After reviewing patients' clinical symptoms and confirmed anterior dislocation of the shoulder and obtaining informed consent from patients, patients were included in the study. Participants in study were divided into two groups of shoulder reduction with Tractional and rotational methods using block randomization process. In this randomized controlled clinical trial, 111 patients participated in the study which 56 patients were in rotational group

and 55 patients were in tractional group for shoulder reduction. Reduction of anterior dislocation of the shoulder was performed by a specialist in emergency medicine. Participants in the study were unaware of type of technique applied for next or previous patients that finally the study was performed blind. Patients were followed up for two months in terms of side effects and neurological, arthritis, dislocation.

***Procedure***

Table 1 displays demographic information of the samples in the study. Average age of the patients referred for reduction of shoulder is 33.7 years old; the youngest and oldest patients have been 14 and 75 years old, respectively. The average duration of anesthesia has been 6.17 (six minutes and seventeen seconds) with an average duration of 2.5 for working process. Among the participants, men and women with 99 (89.2%) and 12 (10.8%) developed frequency distribution of gender. In addition, age of patients displays duration of work and duration of anesthesia into separate study groups (rotation and traction). Since the process of reduction of the shoulder in rotation method is less than above direction in traction method, this duration in the groups under study differs just for one second. Difference of age in groups under study can be explained by chance which this difference might have taken place due to chance.

**Table 1**
***Demographic information for group and all patients***

| Row | Total Patients | | Rotation | | Traction | |
|---|---|---|---|---|---|---|
| | Mean | Standard deviation | Mean | Standard deviation | Mean | Standard deviation |
| Age | 33.7 | 12.5 | 31.1 | 10.5 | 36.4 | 14 |
| Anesthesia time | 6.17 | 0.9 | 6.3 | 1 | 6.1 | 1 |
| Work duration | 2.5 | 0.5 | 2.5 | 0.54 | 2.6 | 0.58 |

***Difference of required time for reduction of shoulder in two rotation and traction methods has not had a huge difference (p-value= 0.55). Average time for reduction of* anterior dislocation *of the* shoulder with rotation and traction methods is 2.5 and 2.6 minutes, respectively.**

**Table 2**
***Difference on duration of reduction of anterior dislocation of the shoulder in two groups***

| Groups | duration of reduction of anterior dislocation of the shoulder | | Sig value |
|---|---|---|---|
| | Mean | Standard deviation | |
| rotation | 2.5 | 0.54 | P= 0.55 |
| traction | 2.6 | 0.58 | |

***To compare duration of reduction of anterior dislocation of the shoulder once or more times via rotational or tractional methods, no difference was observed (p=0.219). Among 56 cases of reduction of anterior dislocation of the shoulder via rotational methods, 23(41%) cases were iterated; in tractional method, reduction of anterior dislocation of the shoulder was iterated in 29(52%) cases.***

**Table 3**
***Iteration and lack of iteration in reduction of anterior dislocation of the shoulder in the groups under study***

| Groups | Needing to iteration in reduction of anterior dislocation of the shoulder | | Sig value |
|---|---|---|---|
| | No | Yes | |
| rotation | 33 | 23 | P= 0.219 |
| traction | 26 | 29 | |
| **Sum** | 59 | 52 | |

Since average reduction of anterior dislocation of the shoulder in both methods has been greater in men than women, results from test did not show a difference between groups above in the layers under study. To examine role of techniques of reduction of anterior dislocation of the shoulder and participants' gender in the study in duration of the process above, role of gender with sig(p-value=0.26) and reduction of anterior dislocation of the shoulder(p-value=0.95) were not displayed significant in duration of process above. significance difference was displayed in the time

spent for reduction of anterior dislocation of the shoulder in groups under study in terms of iteration or lack of iteration in reduction of anterior dislocation of the shoulder(P<0.001). Iteration in reduction of anterior dislocation of the shoulder causes increase in duration above, and this difference in the layer under study is not significant without considering iteration and lack of iteration and with considering effect of the study group. Thus, it can know effect of significance by effect of that variable, iteration or lack of iteration in reduction of anterior dislocation of the shoulder.

**Table 4**
***Iteration or lack of iteration in study groups in terms of gender***

| | iteration in reduction of anterior dislocation of the shoulder | Rotation | Traction | Sum |
|---|---|---|---|---|
| Man | No | 29 | 23 | 52 |
| | Yes | 22 | 25 | 47 |
| Woman | No | 4 | 3 | 7 |
| | Yes | 1 | 4 | 5 |

In logistic regression model, to determine significant and effective factors in iteration and lack of iteration in reduction of anterior dislocation of the shoulder with variables (age, gender, reduction of anterior dislocation of the shoulder), no variable under study is significant, while the chance ration in terms of gender (OR=1.19 CI= .33- 4.33) had effect of 19% in iteration of process, but this value has not been significant statically (p-value= 0.786). for age groups under 40 years old, 40 years old and above 40 years old, effect of 69% was seen in terms of chance ratio(OR=1.69 CI= .604- 4.76), but the effect with sig(p-value= 0.316) rejected the relationship.

## DISCUSSION AND CONCLUSION

Duration of work in rotation and traction methods was obtained 2.5 and 2.6 minutes which displayed lack of significance (p-value= 0.55). To specify the relationship between methods applied in reduction of anterior dislocation of the shoulder with iteration or lack of iteration of above action, lack of relationship (p-value= 0.219) was displayed between type of technique with iteration or lack of iteration of process. With regard to failure(100%) in reduction of anterior dislocation of the shoulder with a method and lack of an ideal technique in anterior shoulder for in reduction of anterior dislocation of the shoulder, researchers and physicians started investigating efficiency of various techniques. In these comparisons, simple procedure, performance speed, efficiency, pain reduction and ability to do the movements with more freedom and improvement in the least time have been mentioned in this technique. results from this study indicated failure in none of the methods under study, so that there were errors in both techniques which caused lack of final decision in selection of a method named top method. However, these techniques might differ in different conditions and features of patients or type of dislocation, physicians' skill should not be ignored[5]. Some research-educational groups involved in process above (reduction of anterior dislocation of the shoulder) have recommended use of Local anesthetics or prescribed drug groups Sedation, Analgesia in process above. We conducted the research with least doses. Pharmaceutical groups (100 ketamine, fentanyl 50 and Propofol 50-100) were prescribed based on patient's conditions. The role of medications used in irreducible anterior shoulder dislocation (p-value = .072) was not effective. However different conflicts are seen in the use of these drug groups in reference books and articles [6,8,9]. Vasudevan has used anesthetic drugs in patients' shoulder dislocation due to failure in the first reduction of shoulder [10]. Reduced time for reduction of anterior shoulder dislocation in different studies using different techniques has not been specified[7]. Lack of significant difference in different techniques has caused confusion in selection of suitable method. However different theories have been mentioned by authors of articles which have been more likely based on physician's familiarity and skill with method above, patient's conditions play a major role in selection of type of method. Lack of superiority in duration of working techniques under study in this study is in line with the conducted studies. There are many reports on much time spent for reduction of dislocated shoulder in methods Kocher, Stimson than Milch, traction-countraction[7,11]. However physician's skill in comparison of these techniques should be controlled. In review article by Jaffari Jokar who had conducted published articles in use of Milch, external rotation methods, duration of Milch technique and external rotation has been 3.76 and

2.85 minutes, so that physician's skill and specialty indicated high specialty of physicians attended in the present study, conducted in lesser time in both methods than results of review article published in 2016. Results from their articles indicated that use of local anesthesia might improve process of work. Success in methods Milch and external rotation has been 69.2% and 88.4%. in this study, success in rotation method has been taken place more than traction methods(Milch , traction-countertraction), but this difference did not show a significant difference. Insignificance in review article by Jaffari Jokar confirms results from our study. However, in some references, low pain in method Milch has been mentioned. sontyana has known advantage of rotational method in no need to assistant in reduction of anterior shoulder dislocation; in addition, disadvantages of traction method have been mentioned in a lot of spasms, patient's pain and physician fatigue[9]. In rotation method, the capsule is allowed to relax during shoulder flexion.They mentioned external rotation method than rest of techniques due to ease of learning, simple making process without stretch and any need to assistant and anesthesia or painkillers with success of 96.6 %[9]. In addition, Tajima knew double traction method by physicians at emergency medicine without any need to orthopedic interventions at emergency department of hospital successful than rest of techniques. Authors have put emphasis on this point that since emergency physicians before other experts visit patients with shoulder dislocation found important to use the least dose of Sedative, Analgesia than acquisition of required skills with different methods of reduction of shoulder. However, lack of use of these drugs has been mentioned in different sources, but Propofol is a drug which is more likely used in emergency department [1] so that the process above is made simpler and the patient does not feel more pain. further, [1,5] in their articles mentioned different techniques of reduction of shoulder dislocation, and found that there is no technique without error in reduction of shoulder dislocation; physicians should have gain required skills in different methods so as to use the best and most suitable technique based on the person's clinical conditions and crowded conditions in emergency and not to become disappointed in failure of techniques and recommended trying to learn them with high accuracy.

## CONFLICT OF INTEREST

Conflict of interest declared none.

## REFERENCES


1. Kosuke Tajima, Yusho Nishida, Chikako Shimizu, Shingo Hori. Double traction method—an easy and safe reduction method for anterior shoulder dislocations, even for non-orthopedic surgeons. Acute Medicine & Surgery 2016; 3: 272–275.
2. Pelet S, Jolleo BM , Farron A. Bankart repair for recurrent anterior glenohumeral instability: Results at 29 years follow –up . J Shoulder Elbow Surg 2006; 1522: 203 – 207.
3. Cunningham NJ. Techniques for reduction of anteroinferior shoulder dislocation. Emerg Med Australas 2005; 17(5-6): 463- 471.
4. Habermeyer P, Lichtenberg S. Diagnosis and treatment of anterior and posterior shoulder dislocation. II. Treatment. Chirurg 2003; 74(12): 1178-1194.
5. chung ch. Closed reduction techniques for acute anterior shoulder dislocation: from Egyptians to Australians. Hong Kong Journal of Emergency Medicine 2004;11(3): 179-188.
6. Niaz Mohammad Jafari Chokan, Hamidreza Reihani, Elham Pishbin. Which technique is better for reduction of anterior shoulder dislocation? External rotation or Milch method. A review of literature. Rev Clin Med 2016; 3(4): 163-165.
7. Olcay Guler, safak ekinci, faruk akyildiz, uzeyir tirmik, salami cakmak, akin ugras, et al. Copmarison of four different reduction methods for anterior dislocation of the shoulder. Journal of orthopaedic surgery and research 2015;10(80): 1-7.
8. Mohammad-Reza Ghane, Seyed-Hamed Hoseini, Hamid-Reza Javadzadeh, Sadrollah Mahmoudi, Amin Saburi. Comparison between traction-countertraction and modified scapular manipulation for reduction of shoulder dislocation. Chinese Journal of Traumatology 2014;17(2):93-98.
9. Jaganmohan Sontyana, Pradeep Gandharva, Satyaprasad Jonnalagedda, Sudhir Mahadeoprasad Shandilya, Karthik Thota, Pradeep Kumar K. Flexion Adduction External Rotation (Fader) Method For Reduction Of Anterior Shoulder Dislocation:

A Study Of 30 Cases. Indian Journal of Orthopaedics Surgery 2015;2(2);93-97.

10. Thirunarayanan Vasudevan, Ramprasath Dhurvas Ramlal, Arularasan Samraj. Success outcome of reduction in anterior shoulder dislocation by FARES method. Int J Res Med Sci 2015 Dec;3(12):3858-3862.
11. Amar E, Maman E, Khashan M, Kauffman E, Rath E, Chechik O. Milch versus stimson technigue for nonsedative reduction of anterior shoulder dislocation; a prospective randomized trial and analysis of factors affecting success. J shoulder elbow surg 2012;21:1443-9.