



## Reduction of Shoulder Dislocation using Osteopathic Techniques without Anesthesia, A New Approach

Slabospitsky MA<sup>1</sup>, Tkach AV<sup>2</sup>, Tkachenko AN<sup>3</sup>, Maryam Jamil<sup>4</sup> and Ehsan Ulhaq<sup>5\*</sup>

<sup>1</sup>State Budgetary Health Institution of Sevastopol "City Hospital No. 1 Named After N.I. Pirogova." St. Admiral Oktyabrsky, Sevastopol, Russia

<sup>2</sup>Crimean Federal University Named After V.I. Vernadsky, Simferopol, Lenin Boulevard, Russia

<sup>3</sup>North-Western State Medical University named after I.I. Mechnikov Ministry of Health of the Russian Federation, Saint-Petersburg, Russia

<sup>4</sup>Department of General Surgery Ghurki Trust Hospital, Lahore Medical and Dental College (LMDC) Lahore, Pakistan

<sup>5</sup>Department of Orthopedics Services Hospital Lahore, Services Institute of Medical Sciences (SIMS) Lahore, Pakistan

\*Corresponding Author: Ehsan Ulhaq, Department of Orthopedics Services Hospital Lahore, Services Institute of Medical Sciences (SIMS) Lahore, Pakistan.

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### Abstract

**Introduction:** Among all joint dislocations, shoulder dislocation is most common. There are many ways to reduce a dislocated shoulder. Assistance to such victims is provided in ER, outpatient and inpatient. The results of conservative treatment of patients with shoulder dislocation are not always positive.

**Purpose of the Study:** To analyze the results of the author's manual procedure for reduction of shoulder dislocation.

**Materials and Methods:** The study was conducted from 2013 till end of 2020, the location of the study was the trauma center of the "City Hospital No. 1 named after N.I. Pirogov." The inclusion criteria of patients was the primary dislocation of the shoulder, the diagnosis: "Closed traumatic dislocation of the shoulder" in total - 1968 patients. Exclusion criteria - secondary dislocation. Successful correction of shoulder dislocation on an outpatient basis was performed in 1,159 (58.9%) patients, after unsuccessful correction, 809 (41.1%) patients were hospitalized with shoulder dislocation. Patients on an outpatient basis were randomly divided into 2 groups: group 1 - patients (n = 1552) were reduced by traditional methods using local anesthesia, in group 2 patients (n = 416) the author's manual technique was used without local anesthesia. By gender, age and type of dislocation, patients of both groups did not differ statistically significantly.

**Results:** The use of osteopathic techniques was effective in 85% of cases (352 people), 64 people were hospitalized (15%). The effectiveness of using traditional methods with the use of local anesthesia was 52% (dislocation was reduced in 807 patients), the rest of the patients were treated in inpatients.

**Conclusion:** The use of the author's manual technique in patients with dislocated shoulder on an outpatient basis has a higher efficiency compared to traditional methods due to the fact that more patients receive care without hospital admission. In addition, this type of treatment is carried out without anesthesia, which also reduces the cost of treatment in this category of patients.

**Keywords:** Shoulder Dislocation; Dislocation; Anesthesia; Manual Techniques

### Introduction

Among all joint dislocations, shoulder dislocation (SD) occupy a leading position and account for more than 50% [1,2]. The high frequency of SD is explained by its anatomical and physiological features: large size of the shoulder joint, significant volume and variety of movements; the relatively small plane of the joint surface of the scapula and the large head of the humerus; weakness of the capsule wall of the joint and others [1,3,4]. Reduction of SD as soon as possible after injury is a basic measure for successful treatment of dislocation [5].

Incidence of SD is 17 observations per 100,000 population annually, which is markedly higher among men aged 21 to 30 years and women aged 61 to 80 years [6,7]. The recurrence rate of SD is about 50% [8,9].

Both in the Russian Federation and in other countries, the frequency of SD continues to rise and does not have a steady downward trend [10,11]. Dozens of methods for reduction of SD are described and used. The issues of diagnosis, treatment and rehabilitation of patients with shoulder dislocation continue to be dis-

cussed by specialists from many countries [12-14].

All methods of correcting shoulder dislocation can be divided into two categories: conservative and surgical. Modern traumatology has about 50 methods of correcting dislocations of the shoulder and all of them require maximum relaxation of the patient's muscles, which cannot be achieved if patient is in severe pain, therefore, most existing methods of correcting dislocated shoulder needs preliminary anesthesia and muscle relaxation of the patient [1,15,16]. However, in recent years, publications began to appear on the reduction of shoulder dislocation using manual techniques without the use of anesthetics [17,18]. This was an incentive for a special study aimed at developing and approving the author's manual method for correcting SD without the use of anesthesia.

### Purpose

To analyze the results of the author's manual procedure for correcting shoulder dislocation

### Materials and Methods

The study was carried out from 2013 to 2020 inclusive, the sample was continuous. It includes patients with primary dislocation of the shoulder who came to the trauma center of the "City Hospital No. 1 named after N.I. Pirogov," and diagnosed with "Closed traumatic dislocation of the shoulder" - total 1968 patients. Exclusion criteria - secondary dislocation of the shoulder. The method of treating closed SD has been patented [19].

Method involves osteopathic maneuver on muscle-fascial region of shoulder joint in patient's sitting position using soft tissue techniques by simultaneous traction and inhibition. Traction is performed on the patient's injured arm, which is abducted by the hand to the side to the horizontal level and then retracted posteriorly at an angle of 3-15 degrees. Inhibition is carried out in the armpit of the injured arm. No more than 3 attempts are made. In the patient's supine position, the injured arm is only retracted to a horizontal level.

The method is carried out as follows: the position of the patient: sitting on a chair, leaning back on the back of the chair; legs bent at an angle of about 90 degrees at the hip and knee joints; the distance between the knees and feet is from 10 to 50 cm; the head is straight, the gaze is directed forward; shoulders are lowered, relaxed. If the patient cannot sit, then the prone position, on the edge of the couch or manipulation table on the side of the injured limb.

### Doctor's position

Standing, on the side of the injured limb, facing the patient. The wrist (opposite to the injured side) of hand is to hold (by assistant) softly without putting pressure on the bone, muscle and neuro-vascular structures of the forearm and hand. The fingertips of the doctor's hand are in the (injured side) axilla, under the head of the dislocated bone.

### Correction technique

The injured arm of the patient abducted to the horizontal level,

limb traction (osteopathic technique) is performed, with its retraction posteriorly at an angle of 3 to 15 degrees. Rhythmic traction with rhythm of 10-15 cycles per minute is performed. Simultaneously with the traction of the arm fingers located in the axilla, inhibition (osteopathic technique) of the muscles of the shoulder joint is carried out. Traction and inhibition are carried out within 5 to 15 seconds.

When the muscles are relaxed, the doctor documents the independent return of the head of the humerus to its congruent position with the glenoid cavity of the scapula. At the same time, the injured limb is adducted towards the body. When the patient is lying down, the injured limb is abducted only to the side to the horizontal level.

Contraindication complicated dislocation. Absolute: damage to the blood vessels of the limb; damage to the nerves of the injured limb; old dislocation. Relative: fracture of the bones of the shoulder joint; partial damage (compression) of the structures of the extremity involved in innervation.

A distinctive feature of the proposed method of SD reduction is restoration of congruence of articular surfaces of humerus without excessive force and anesthesia. This eliminates the risk of fracture of the humerus, damage to the cartilaginous surfaces of the joint and the risk of damage to the vessels and nerves of the shoulder joint area; provides the possibility of treatment in outpatient conditions; reduces the cost of treatment; shorten duration of treatment.

Patients were randomly divided into 2 groups. In the outpatient setting, patients in Group 1 (n = 1552) underwent reduction using conventional methods using anesthesia; in Group 2 patients (n = 416), author's manual techniques were used without anesthesia.

The distribution of patients by sex and age in Groups 1 and 2 are presented in table 1, by type of dislocation - in table 2.

There was no statistically significant difference between patients of groups 1 and 2 by sex and age, as well as by the type of dislocation.

### Results and Discussion

Treatment of patients with a diagnosis of "Closed traumatic dislocation of the shoulder" in the city of Sevastopol is carried out in the trauma center and the Department of Traumatology and Orthopedics of the City Hospital No. N.I. Pirogov. Reduction of the SD in other medical institutions of the city is rare and does not affect the main indicators of the type of treatment (inpatient or outpatient).

Reduction of the SD on an outpatient basis was performed in 1159 (58.9%) patients. Hospitalized with dislocated shoulder, 809 (41.1%) injured patients received inpatient treatment for this pathology (Table 3).

Age groups	Group 1				Group 2			
	M		F		M		F	
	Nº	%	Nº	%	Nº	%	Nº	%
18 - 29	145	9,3	16	1,0	18	4,3	6	1,4
30 - 44	240	15,5	44	2,8	58	13,9	41	9,9
45 - 59	198	12,8	117	7,5	63	15,1	9	2,2
60 - 74	224	14,4	197	12,7	54	13,0	48	11,5
75 - 89	193	12,4	149	9,6	71	17,1	41	9,9
< 90	13	0,8	16	1,0	4	1,0	3	0,7
Total	1013	65,3	539	34,7	268	64,4	148	35,6
	1552				416			

**Table 1:** Distribution of patients with dislocated shoulder by age and gender in conventional treatment groups (1) and using the author’s method (2).

Type of Dislocation	Group 1				Group 2			
	M		F		M		F	
	Nº	%	Nº	%	Nº	%	Nº	%
Anterior	915	59,0	466	30,0	236	56,7	134	32,2
Inferior	73	4,7	67	4,3	26	6,3	12	2,9
Posterior	25	1,6	6	0,4	6	1,4	2	0,5
Total	1013	65,3	539	34,7	236	56,7	134	32,2
	1552				416			

**Table 2:** Distribution of patients with dislocated shoulder by type of dislocation. In conventional treatment group (1) and using the author’s method group (2).

Reduction of Shoulder Dislocation:	Nº of Observations (%)
Out-patient	1159 (58,9)
Using osteopathic techniques	352 (17,9)
By traditional methods (using local anesthesia)	807 (41,0)
Inpatient (using general anesthesia)	809 (41,1)
After an unsuccessful result of using osteopathic methods	64 (3,3)
As a result of inefficiency of traditional methods	745 (37,8)
Total	1968 (100)

**Table 3:** Conditions for providing medical care to patients with shoulder dislocation.

The use of the author’s osteopathic technique as emergency care was carried out in 416 patients (out of 1968 who attended). In 85% of cases (352 cases), the dislocation was reduced on an outpatient basis, using osteopathic techniques, without the use of anesthesia. 64 patients (15%) were hospitalized. In 1552 observations, traditional methods of reduction of shoulder dislocation were used under local anesthesia, during which it was possible to reduce shoulder dislocation in 807 patients (52%). The remaining

745 (48%) injured were hospitalized for surgery under anesthesia.

Most trauma surgeons consider the time from the moment of injury to the reduction of the SD to be the main factor: the dislocated segment must be reduced as soon as possible after the diagnosis is established. Pain relief, according to most experts, is mandatory when reducing a dislocated shoulder. Anesthesia can be either general or local. Some authors give preference to anesthesia [20],

Others consider local anesthesia a vital part of management, which is provided by the introduction of a 1% solution of procaine (lidocaine) or another anesthetic in the amount of 20-40 ml into the joint cavity [21,22]. Some experts recommend conduction anesthesia [23,24].

Reduction of the shoulder without anesthesia is considered by many authors to be a mistake [25-27]. These researchers, before reduction of SD, consider it vital to counsel the patient: to calm him down, to determine the behavior at the stages of reduction, to achieve maximum relaxation of the muscles. Reduction process is started only after anesthesia is achieved [25,28]. Despite the vast majority of such works, publications began to appear with the opposite exact point of view - where it is recommended to reduce the SD without anesthesia. For example, D. Stafylakis, *et al.* (2016) believes that 18% of patients with shoulder dislocation can be treated without the use of anesthesia [29]. The number of such studies has been growing in recent years [30-32].

## Conclusion

Comparison of the use of traditional methods and the author's manual technique of SD reduction in outpatient emergency care demonstrates a higher (1.6 times) efficiency of the latter due to the fact that more patients receive assistance already in the outpatient clinic and do not need admission. In addition, the use of manual techniques is carried out without anesthesia and, therefore, the treatment of uncomplicated shoulder dislocation on an outpatient basis using the author's manual technique can significantly reduce the cost of treatment in this category of patients.

Thus, the effectiveness of using the author's manual technique for shoulder dislocation on outpatient basis is significantly higher than as inpatients with standard examination and reduction under local anesthesia.

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