

TREATMENT OF TRAUMATIC GLENOHUMERAL DISLOCATION: A CROSS-SECTIONAL STUDY

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ABSTRACT

Objective: The aim of the present study was to investigate Brazilian orthopedists' opinions regarding the main aspects of the treatment of glenohumeral traumatic dislocation and compare these to literature's current concepts. **Methods:** Two hundred questionnaires containing 13 items were randomly distributed to orthopedists who were attending a Brazilian orthopedics congress; 158 were filled in correctly and were considered in this study. **Results:** The preferred maneuver was traction-countertraction (60.8%). Among the respondents, 68.4% stated that glenohumeral dislocation reduction was achieved in the first attempt in 90% of the cases. The first attempt of reduction occurred mainly

in the Emergency room (96.5%). Seventy-nine individuals (50%) reported that they do not use any analgesic prior to reduction. The majority of the participants immobilize their patients after the reduction (98.1%). 75.4% of them keep their patients immobilized from 2 to 3 weeks. **Conclusion:** Generally, Brazilian orthopaedists perform traction-countertraction maneuvers, achieving reduction in the first attempt in more than 90% of the cases in the Emergency room. No previous analgesic agent is used prior to reduction. Immobilization of the patient is made with a Velpeau dressing or a sling for 2 to 3 weeks.

Keywords – *Shoulder dislocation; Epidemiology; Questionnaires*

INTRODUCTION

The shoulder joint is provided with the highest degree of mobility of the human body, a fact that makes it more susceptible to loss of congruence between its articular surfaces⁽¹⁾.

The glenohumeral dislocation (GHD) is a very common disease. In the literature, the incidence is described to be 17 cases per 100,000 inhabitants per year^(2,3) and 2% prevalence in the general population⁽⁴⁾.

Shoulder dislocations account for more than 50% of all dislocations presenting to the emergency room⁽³⁾.

The majority (90% to 98%) of these dislocations occurs anteriorly and is due to trauma^(5,6).

The ideal reduction method should be fast, effective, and painless to the patient. The doctor must be proficient at it and it should not cause associated injuries to the patient.

Numerous reduction techniques have been proposed⁽⁴⁾. The success rates vary from 70% to 90% in various studies in the literature^(7,8). The choice of method depends on several factors such as surgeon preference, the number of assistants, analgesic medication, and monitoring available⁽⁷⁻⁹⁾.

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Despite being a common clinical situation in emergency rooms, glenohumeral dislocations (GHD) still do not have a standardized treatment protocol. In our country, they are treated by various methods, and there are no studies that describe the most frequently used approach in regards to the method of reduction, analgesia, and effectiveness.

OBJECTIVE

The objective of this study is to present an overview of the treatment of traumatic glenohumeral dislocation in a population of Brazilian orthopedists and compare it with the most recent concepts established in the literature.

METHODS

The study was approved by the Research Ethics Committee of the Universidade Federal de São Paulo – UNIFESP with protocol number 1608/08. Participants were included in the study after signing an informed consent form.

During the 40th Brazilian Congress of Orthopedics and Traumatology, 200 questionnaires were randomly distributed in person with 13 multiple-choice objective questions regarding the main aspects in the approach to glenohumeral dislocation. The questionnaires sought to obtain details of the identification of respondents, as well as treatment and analgesic method used in the reduction of glenohumeral dislocations in emergency rooms (Appendix 1).

Respondents were recruited and included during the activities of the 40th Brazilian Congress of Orthopedics and Traumatology. We included orthopedic physicians and residents in orthopedics certified by the Brazilian Society of Orthopedics and Traumatology and/or belonging to affiliated clinics. Questionnaires that were completed by non-medical personnel attending the congress, foreign participants, previously completed, or that were incomplete were not considered for this study.

Statistical methods

The number of participants required, after calculating for a significant sample ($\alpha = 0.05$ and $\beta = 0.80$) was 124, considering a confidence interval of 95% and a standard deviation equal to four times

the sampling error. Predicting a loss of approximately 35%, we distributed 200 questionnaires.

Statistical analysis of all of the information collected in this research was initially performed descriptively.

Summary measures such as average, minimum, maximum, and standard deviation were calculated for the quantitative variables (numerical) evaluation.

The qualitative variables (categorized) were analyzed by calculating the absolute and relative frequencies (percentages), besides composing bar graphs and pie charts⁽¹⁰⁾.

An extension of Fisher's exact test⁽¹¹⁾ was the inferential analysis employed in order to study the association between the distribution of the specialty and preferred reduction maneuver completed, approximate success rate of the reductions, and the analgesic used before the reduction.

A significance level of 5% was used in all the conclusions obtained through the inferential analysis.

Statistical analyses were performed with the Statistical Package for Social Sciences (SPSS) software version 11.0.

RESULTS

The study included 158 participants. Forty-two were excluded: 29 questionnaires were incomplete, four were completed twice by the same congress attendee, one was completed by a foreign orthopedist, and eight were completed by non-orthopedists. We obtained an adequate response rate of 79%.

Regarding gender, the majority of respondents were male (96.2%).

The average age of the 158 subjects was 39.5 years, ranging from 26 to 68 years with a standard deviation of 10.3 years. The female group had a mean age of 36.3 years, ranging from 26 to 45 years, with a standard deviation of 7.2 years, whereas the male group's mean age was 39.6 years, ranging from 26 to 68 years, with standard deviation of 10.4 years.

In the selected sample, only 22 (13.9%) individuals were residents in orthopedics and traumatology.

About 121 (76.6%) individuals were specialists, 22 (18.2%) of whom were shoulder and elbow specialists and 99 (81.8%) of whom were specialists in other areas.

The maneuver preferred by most individuals was traction and counter-traction, accounting for 96 (60.8%) individuals (Table 1).

Table 1 – Distribution of individuals according to the type of maneuver preferred.

Maneuver preferred	Participants	Percentage
Traction and counter-traction	96	60.8%
Kocher	42	26.6%
Milch	6	3.8%
Spaso	6	3.8%
Hippocrates	4	2.5%
Scapular manipulation	4	2.5%
Total	158	100.0%

Source: Department of Orthopedics and Traumatology, UNIFESP/EPM.

The approximate success rate was defined as obtaining the reduction of glenohumeral dislocation on a first attempt.

The most frequent approximate rate of success of reductions among individuals assessed was greater than 90% (Figure 1).

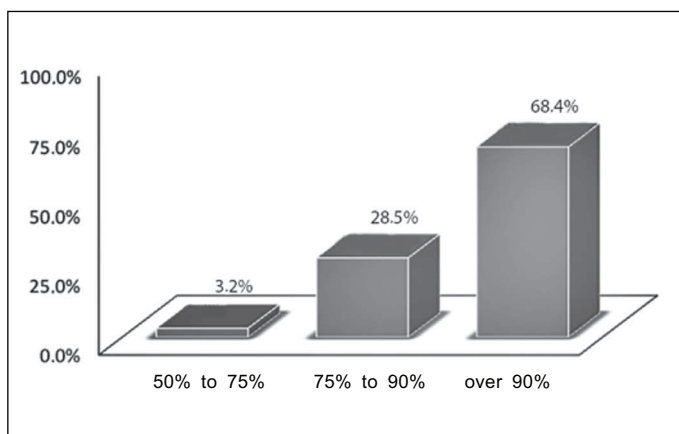


Figure 1 – Distribution of individuals according to the approximate rate of success.

Source: Department of Orthopedics and Traumatology, UNIFESP/EPM

The location of the first attempt to reduce occurs predominantly in the ER in 95.6% of the cases. Only 4.4% of respondents perform the first attempt at reduction in the operating room.

Seventy-nine (50.0%) subjects reported using no analgesia before the reduction. The methods of analgesia used by the other individuals are summarized in Table 2.

Table 2 – Distribution of individuals according to the analgesic method used prior to reduction.

Analgesic method	Participants	Percentage
None	79	50.0%
Oral or intravenous	44	27.8%
Intravenous or inhalation sedation	18	11.4%
Intra-articular injection	13	8.2%
Supraescapular block	4	2.5%
Total	158	100.0%

Source: Department of Orthopedics and Traumatology, UNIFESP/EPM.

Only 22 (13.9%) individuals monitor vital signs.

Most participants, 155 (98.1% of total), use immobilization after reduction. The types of immobilization used are described in Figure 2.

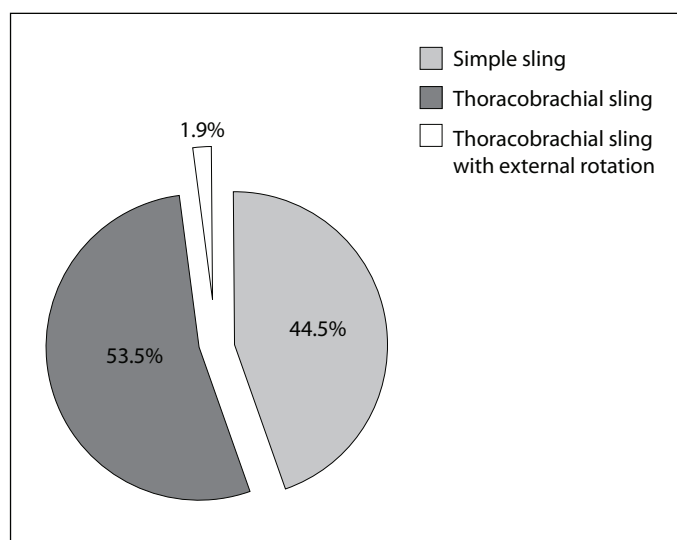


Figure 2 – Distribution of individuals according to the type of immobilization.

Source: Department of Orthopedics and Traumatology, UNIFESP/EPM

The period of immobilization that individuals recommend after reduction are summarized in Table 3.

Of the 158 subjects, 38 (24.1%) surgically treat patients in the first episode of dislocation. Of those who treat in the first episode, 32 (84.2%) prefer to use arthroscopic treatment, and six (15.8%) prefer to use open surgical treatment.

Figures 3 to 5 show the jointly distribution of the preferred reduction maneuver, orthopedic specialty, the approximate rate of success of the reductions, and the analgesic method used before the reduction.

When we addressed the preferred technique and specialty, there was no statistically significant association between preferred reduction maneuver and

Table 3 – Distribution of individuals according to duration of immobilization (weeks) after reduction.

Time (weeks)	Participants	Percentage
Less than one	11	7.1%
One	15	9.7%
Two	43	27.7%
Three	74	47.7%
Four	6	3.9%
Five	1	0.6%
More than six	5	3.2%
Total	155	100.0%

Source: Department of Orthopedics and Traumatology, UNIFESP/EPM.

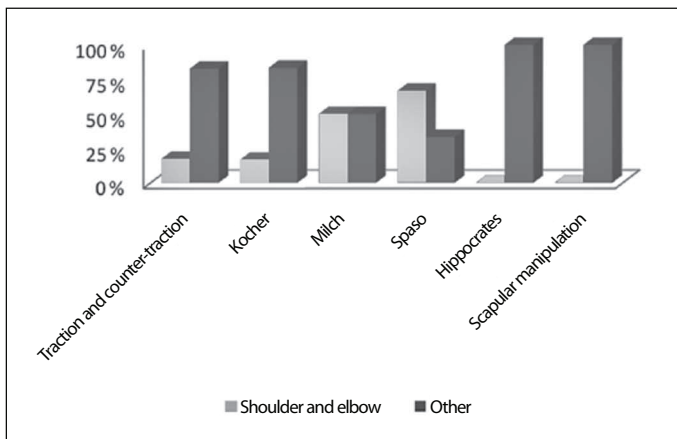


Figure 3 – Distribution of individuals according to the preferred reduction maneuver and specialty completed.

Source: Department of Orthopedics and Traumatology, UNIFESP/EPM.

specialty completed (Fisher’s exact test, $p = 0.221$), approximate success rate of the reductions (Fisher’s exact test, $p = 0.261$) and analgesic method performed prior to reduction (Fisher’s exact test, $p = 0.224$).

DISCUSSION

Glenohumeral dislocation is the most common joint dislocation of the human body⁽¹²⁾.

There are a number of techniques for the reduction of anterior dislocation of the shoulder. In addition, numerous variations of classic techniques have also been made that have been described by Kocher^(13,14), Milch⁽¹⁵⁾, Stimson^(16,17), and Bosley⁽¹⁸⁾. In our study, the most widely used technique was traction and counter-traction, which is also widely used in other countries⁽⁹⁾, followed by the Kocher technique. The Spaso maneuver was cited as preferred by only six (3.8%) participants, though it is considered effective

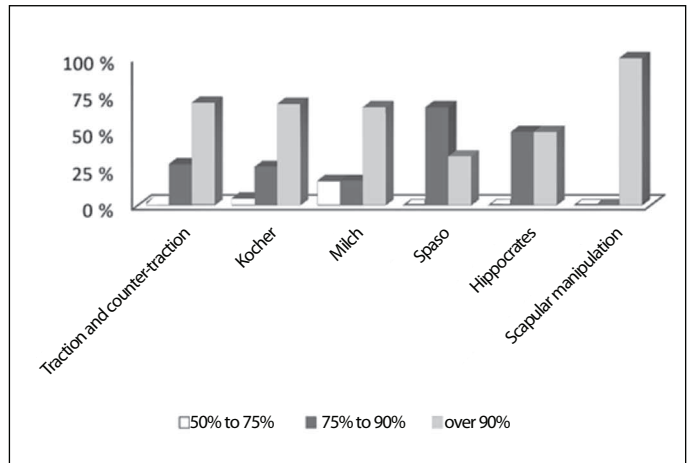


Figure 4 – Distribution of individuals according to the preferred reduction maneuver and approximate rate of success of the reductions.

Source: Department of Orthopedics and Traumatology, UNIFESP/EPM.

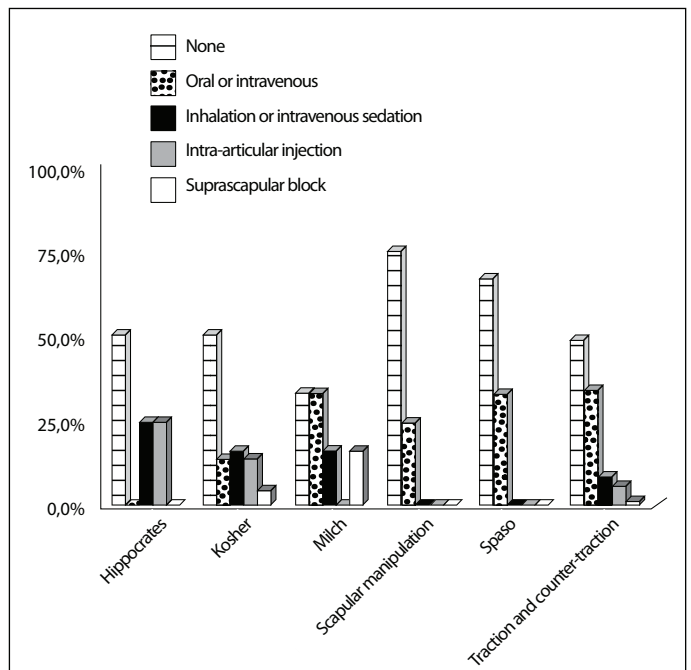


Figure 5 – Distribution of individuals according to the preferred reduction maneuver and analgesia prior to reduction.

Source: Department of Orthopedics and Traumatology, UNIFESP/EPM.

and reproducible, and can be performed by only one attendant⁽¹⁹⁾. A hypothesis for its lack of popularity among the respondents is that there have been few studies published in the English language regarding this maneuver⁽²⁰⁾.

In the literature there is still no consensus on what is the best method of reduction. There are insufficient quality comparative studies, and the choice depends on several factors such as the doctor’s experience in relation to the maneuver and the number of assistants.

The success rate reported by the majority (68.4%) of respondents was higher than 90%, which is similar to that of other studies, which have reported it to be approximately 90 to 95%⁽⁷⁾.

The location of the first attempt to reduce the dislocation of the shoulder is most often the emergency room. This is probably due to convenience and speed, since early reduction readily eliminates the stretching and compression of neurovascular structures, and minimizes the muscle spasms that must be overcome to perform the maneuver. It also prevents the progressive increase of the humeral head defect called the Hill-Sachs lesion, which occurs in 35 to 40% of cases according to the literature^(2,7).

Half of the respondents do not use any analgesic or sedation.

The muscle spasm is the main obstacle for the reduction of the shoulder⁽²⁰⁾. Some authors recommend some form of analgesia and/or sedation^(19,22-24) for the reduction of glenohumeral dislocation.

The use of oral medication requires more time for the onset of its effect compared to other routes. Its absorption may be influenced by several factors, such as other medications and food.

Intravenous analgesia has some side effects, such as nausea and care required of the nursing team. Some medications are contraindicated in cases of pregnancy, trauma involving monitoring of the central nervous system, and the intra-abdominal organs⁽²⁵⁾.

Until recently, there were no alternatives to orally and parenterally administered painkillers and sedatives. Lippit *et al.*⁽²⁶⁾ described the intra-articular injection of lidocaine and reported excellent results in a prospective study; subsequently, several authors have also reported good results with this method^(20,27-30).

The monitoring is indicated when using sedatives, due to possible cardiovascular depression⁽³⁰⁾. In our study, monitoring of vital signs is used by only 13.9% of participants. This may reflect the scarcity of vital sign monitors in the emergency services and the difficulty of moving the patient to locations with more resources.

Among the types of immobilization cited, 53.5% of respondents make use of a thoracobrahcial sling,

44.5% use the simple type and 1.9% use a thoracobrahcial sling with external rotation. In the literature, there were no high-quality comparative studies indicating the best method. According to Itoi *et al.*⁽³¹⁾, immobilization with external rotation reduced the risk of a recurrence of dislocation compared with the fixed internal rotation immobilizations in 42% to 26%; however, the results obtained by these authors have not been replicated in other studies⁽³²⁾.

In our study, approximately 78% of respondents maintain immobilization for two to three weeks, as recommended in the literature⁽³³⁾.

Glenohumeral dislocation, as a common condition, is usually treated by orthopedic surgeons and medical first responders at the emergency services.

We had expected to find a correlation between the orthopedist specialty and reduction maneuver, as well as the success rate and analgesic method employed, which did not occur in our study. There was no statistically significant correlation between the reduction maneuver and the specialization of the orthopedist, and the approximate success rate and the analgesic method used prior to reduction.

A weakness point in our study that could become a new project is to conduct a similar study with non-orthopedic doctors who are accustomed to dealing with this type of injury.

This study is not intended to dictate conduct in treating glenohumeral dislocations, but to express the actual forms of treatment used in Brazil. Future research on the topic should include a prospective randomized study, distinct methods for reduction and analgesia in the emergency room environment.

CONCLUSION

Overall, the Brazilian orthopedist performs the reduction of glenohumeral dislocation using the traction and counter-traction maneuver. The approximate success rate is 90% and the first attempt at reduction is performed in the emergency room. Analgesia is not used prior to reduction. Patients are immobilized with a thoracobrahcial or simple sling, in other words, in internal rotation for two to three weeks.

APPENDIX 1

Cross-sectional study on the treatment of glenohumeral dislocations in the emergency room

Identification: _____

Age: _____

Gender: Male Female

Resident: Yes No

Specialist: Yes No

Shoulder and elbow Other

Preferred reduction maneuver (check only one):

Traction and counter-traction Kocher

Milch Spaso

Scapular manipulation Hippocrates

Other. Which? _____

TApproximate rate of success in the reductions:

< 50% 50% 50% to 75%

75% to 90% > 90%.

Location of the first attempt to reduce:

Emergency room Surgical center

Other. Where? _____

Type of analgesia before reduction:

None

Oral or intravenous (Dipyrone, Tramadol, etc.)

Intravenous or inhalation sedation

Suprascapular block Intra-articular injection

Other. Which? _____

Monitoring of vital signs (e.g., oximeter, cardiac monitor)

Yes No

Immobilization after reduction:

Yes No

Thoracobrachial sling Simple sling

Thoracobrachial sling with external rotation

Thoracobrachial plaster cast

Other. Which? _____

If yes, for how long?

Less than 1 week 1 week 2 week

3 week 4 week 5 week

6 week More than 6 week

Patients surgically treated in the first episode of dislocation:

Yes No Depends

Arthroscopic Open

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