

# Treatment of the traumatic anterior shoulder dislocation by immobilization in external rotation – a review of the current literature

**Created by:** Dr. med. Markus Hahn  
ArtiMed Medical Consulting, Königstor 32, 34117 Kassel

## SUMMARY

Traumatic anterior shoulder dislocation is a frequent and painful injury which equally affects young and older persons. The incidence is approx. 15 cases per 100,000 persons and year (6). The standard treatment that had been common for a long time was immobilization, in which the affected shoulder was fixed in front of the body in internal rotation. However doubts of this treatment method grew since 1990, since it was linked to high recurrence rates. Therefore various alternative forms of treatment have been developed (5). The aim of this literature review is to assess the current knowledge on conservative treatment of traumatic anterior shoulder dislocation. For this purpose, a literature search was performed in suitable databases (PubMed, Embase). The results of clinical trials which might contribute to answering the inquiry were considered herein. After reviewing all suitable publications on conservative therapy, it can be concluded that the shoulder joint should be immobilized in external rotation for approx. 3-7 weeks after traumatic anterior dislocation.

## INTRODUCTION

Traumatic shoulder dislocation frequently occurs when the shoulder is forced into a position of abduction, hyperextension and external rotation. This mechanism levers the humeral head out of its natural fastening, the joint socket. Such movements generally occur when falling onto the extended arm, after violent collisions or sudden twisting. Among others, sequelae like Bankart or Hill-Sachs lesions may result (7). After a first-ever traumatic shoulder dislocation, dislocations may subsequently recur at lower impacts. Reasons for this may include older fractures, damage to the cartilage, muscles and nerves, or a weakened capsule and ligament complex. Since Hippocrates, traumatic shoulder dislocation was treated for a long time by means of reduction and subsequent immobilization in internal rotation (5, 7). The assumed foundation of this therapy was to give the joint capsule and surrounding tissues sufficient time for regeneration in this position. Furthermore, excessive external rotation and therewith the risk of a recurrent dislocation was to be prevented (8). However literature showed recurrence rates of 20-96% for this treatment method (9,10,11). Therefore the intent of this overview is to clarify whether, how and for how long immobilization after traumatic anterior shoulder dislocation is recommended and which conservative therapy finally promises the best treatment results.

## METHODS

A literature review was performed in suitable databases (PubMed, Embase). Search terms included „anterior“, „shoulder dislocation“, „immobilization“, „conservative treatment“ as well as the corresponding German terms. The identified publications were selected for up-to-dateness and relevance. After the research was done and the publications were selected, 24 studies remained and were included in the literature review.

## RESULTS

Since Hippocrates, traumatic anterior shoulder dislocation has been treated by means of reduction and subsequent immobilization in internal rotation (5, 7). Due to relatively high recurrence rates, it was questioned in the past 20 years whether this therapy can withstand critical appraisal. Studies were conducted on this subject with the aim of determining the value of immobilization. In early studies, Rowe and Sakellarides presented results which showed benefits of treatment with immobilization (15, 16). Results of Kralinger et al., Marans et al., as well as Mc Laughlin and Lellan, on the other hand, were not able to observe improvements by immobilization (12, 13, 14). Results regarding the required duration of immobilization were similarly controversial. Studies of Lill et al., Hovelius et al., as well as Simonet and Cofield showed no difference in the dislocation recurrence rate with respect to the duration of arm immobilization (17, 18, 19). However Kiviluoto et al. and Maeda et al. were able to show differences with a significant benefit for longer immobilization (3-7 weeks) of the affected arm (20, 21). Another important point in the treatment of traumatic shoulder dislocation is the question of the rotational position of the immobilized arm. The original conservative treatment in internal rotation goes back to the time of Hippocrates (5, 7). Itoi et al. questioned conservative therapy with immobilization in internal rotation in 1999 (2). In two studies, Itoi et al. observed reduced recurrence rates after immobilization in external rotation, particularly with regard to healing of Bankart lesions (3, 4, 24). Subjects with traumatic anterior shoulder dislocation were randomized to immobilization in internal or external rotation, with significantly better results obtained for immobilization in external rotation. 30% of patients in the internal rotation group reported recurrent shoulder dislocation at the follow-up visit, while not a single patient suffered from recurrent shoulder dislocation after immobilization in external rotation. When comparing the recurrence rates in patients under the age of 30 years, as many as 45% of patients reported a recurrent shoulder dislocation after immobilization in internal rotation, while patients after immobilization in external rotation had no reports of recurrences (4). Pennekamp et al. proved in an MRI study that in the treatment of a first-ever traumatic anterior dislocation of the shoulder, labrum ligament lesions heal in an incorrect position if immobilized in internal rotation. A much better reduction of the labrum ligament complex can be obtained in external rotation. All patients showed

a significantly improved position of the labrum ligament complex after immobilization in external rotation. Patients immobilized in internal rotation additionally suffered from separation and dislocation of the labrum ligament complex (22). In 2007, Itoi et al. published another study which again confirmed a significantly lower recurrence rate of shoulder dislocation in patients after immobilization in external rotation. The reduction of the relative risk (RRR) of recurrent dislocation provided by immobilization in external rotation compared to internal rotation was as big as 38.2% for all patients and 46.1% for the sub-group of patients under the age of 30 years (23). Furthermore, Handoll et al. compared the frequency of recurrences after surgical and conservative treatment in a meta-analysis of 5 studies. Surgical therapy showed benefits for younger patients who were active in sports; in all other cases, no benefit could be found for a either therapy on the basis of insufficient data (1, 5).

## DISCUSSION

The aim of this literature review was to find out which conservative form of treatment delivers the best results after traumatic anterior shoulder dislocation. Regarding immobilization of the shoulder joint as well as the duration of the immobilization, there were partly contradictory results (12-14, 17-19). However, beneficial results were observed after longer immobilization of 3-7 weeks (20, 21). With regard to the rotational position of the shoulder during immobilization, there were clearly superior results in favour of external rotation (2, 3, 4, 5, 22, 23, 24). This particularly applies to the case of Bankart lesion (23, 24). Especially in younger patients immobilization in internal rotation was linked to high recurrence rates (4, 23). A benefit of shoulder surgery as compared to conservative immobilization was shown in young patients who were actively engaged in sports.

In summary, it can be concluded that the standard treatment of traumatic anterior shoulder dislocation consists of immobilization in external rotation for a period of approx. 3-7 weeks.

## LITERATURE

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