

## Techniques and Procedures



### REDUCING A SHOULDER DISLOCATION WITHOUT SWEATING. THE DAVOS TECHNIQUE AND ITS RESULTS. EVALUATION OF A NONTRAUMATIC, SAFE, AND SIMPLE TECHNIQUE FOR REDUCING ANTERIOR SHOULDER DISLOCATIONS

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**Abstract—Background:** Anterior shoulder dislocation is a well-known injury for people working in emergency departments (EDs). Throughout the years, the focus has been shifted onto more gentle reduction techniques with less risk of iatrogenic injury, fracture displacement, and less pain for the patient. We present the results of one such technique, the Davos reduction maneuver, also known as the Boss-Holzach-Matter technique, as well as its advantages, disadvantages, and a few practical tips. **Discussion:** We evaluated, retrospectively, 100 patients presenting with an anteroinferior shoulder dislocation, who were treated in the ED of the university hospital of Geneva, Switzerland, in a time period of 18 months. In every case, the Davos technique was used for shoulder reduction. The detailed technique is described. Successful reduction was achieved in 86 patients. There were no neurological complications. Greater tuberosity fracture malreduction was noted in one case. Eighteen patients received no analgesia. Our results were comparable or superior to other reduction techniques. **Conclusion:** We concluded that the Davos technique is an easy, nontraumatic, very well-tolerated, and most of all, safe way to reduce a shoulder. It is complication free and easy to apply, giving reproducible and comparable or superior results to other reduction techniques. At the same time, it is well tolerated by a compliant patient, which makes it an ideal first-time reduction technique for anterior shoulder dislocations. © 2016 Elsevier Inc.

**Keywords—**shoulder; dislocation; reduction; nontraumatic; Davos

### INTRODUCTION

Anterior shoulder dislocation is a problem that emergency physicians and orthopedic surgeons are often confronted with. Numerous reduction techniques have been described, some involving simple traction or rotation maneuvers, others involving a combination of traction and rotation. There has always been a quest for an easy, nontraumatic technique that would be as painless as possible, simple and safe for the anatomical structures within and around the glenohumeral joint.

The technique we present was first described in 1993 by Boss, Holzach and Matter, who reported over 60% successful reductions using it (1). It was introduced as a nontraumatic, patient-controlled technique that did not require the use of anesthesia. At the same time, the authors recommended it as an autoreduction technique and it has already been re-described as such (2,3).

A paper published in 1997 by Ceroni et al. reported on 100 shoulder dislocations that were reduced with the same method; the success rate was 60% (4). This article made the technique better known around the world, but still, relatively few people use it on a daily basis. It is also known as the Davos technique, as the authors who first described it worked in Davos Hospital.

## DISCUSSION

We evaluated, retrospectively, 100 patients presenting with an anteroinferior shoulder dislocation, who were treated in the Emergency Department (ED) of the university hospital of Geneva, Switzerland in a time period of 18 months. Patients with insufficient data or cases in which reduction was achieved by switching to a different technique were excluded from the study. In all patients, the reduction technique used was the one described by Boss et al. (1).

Mean age was 40 years, with an age span from 18 to 73 years. Of 100 patients, 59 were men and 41 were women. Thirty-eight of the dislocations were primary and 62 were recurrent.

Inclusion criteria for our study were patients with a primary or recurrent anterior shoulder dislocation without concomitant humeral neck fracture. Patients with bony Bankart lesions or greater tuberosity fractures were included in the study.

Exclusion criteria were posterior shoulder dislocations or concomitant humeral neck fractures.

The parameters evaluated are: sex, primary or recurrent dislocation, the presence or not of a fracture, medication administered prior to reduction, whether the reduction was carried out by a doctor or a nurse, reduction time, eventual neurovascular complications, and success or failure of the technique.

The reduction was performed in the following manner:

The patient is sitting on his bed holding his injured extremity with his other hand (Figure 1). He is asked to flex his ipsilateral knee as much as possible and, with a little help, he passes both hands in front of the flexed knee. The hands are then tied together using an elastic band, preferably at the level of the wrist joint and not at the fingers, as this way the patient doesn't have to concentrate on keeping the fingers crossed, and thus, can be more relaxed (Figures 2 and 3). Another important point is that



Figure 1. Patient positioning prior to attaching the wrists.



Figure 2. Attaching the wrists to the knee helps keep the muscles relaxed.

the elbows should be kept close to the thigh, as this way the shoulders can be more relaxed. The two wrists can either be tied on the proximal tibia or simply held in place by whoever is treating the patient. At that point the physician can sit on the patient's foot and instruct the patient to lean his head back, let his shoulders roll forward, extending the arms and relaxing all the muscles (Figure 4). By extending the neck, the patient exerts a constant traction on the injured shoulder and the dislocation is reduced without any need for additional maneuvers on the physician's part. Once the shoulder is reduced, it is immobilized in a sling, and postreduction x-ray studies can be obtained.

Six patients had an associated bony Bankart lesion, and another 6 had an associated greater tuberosity fracture.

As far as the administered medication is concerned, all 24 patients admitted by ambulance received fentanyl during the transport, at an average dose of 62 mg. In the ED, the medication used was paracetamol, lorazepam,



Figure 3. Do not keep fingers on the tibia, to avoid unwanted muscle tension and attach more securely.

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