JBJS ESSENTIAL Surgical Techniques

Reduction of Acute Anterior Dislocation with the FARES Method

Fares E. Sayegh, MD, Eustathios I. Kenanidis, MD, Kyriakos A. Papavasiliou, MD, Michael E. Potoupnis, MD, Stavros Pellios, MD, John M. Kirkos, MD, and George A. Kapetanos, MD

Based on an original article: *J Bone Joint Surg Am.* 2009 Dec;91(12):2775-82.

Introduction

The FARES (Fast, Reliable, and Safe) method is a new way to reduce acute anterior glenohumeral dislocations that combines the application of gentle longitudinal traction, vertical oscillation movements, and abduction and external rotation of the arm.

There are several well-known methods of reduction of an anterior glenohumeral dislocation, including those introduced by Hippocrates[1], Kocher[2,3], Milch[4,5], and Stimpson[1]. Several other techniques have also been proposed, in an attempt to provide an easier method to achieve reduction that is more effective for the physician and less painful for the patient[6-11].

The FARES method is a fast, reliable, and safe way to reduce anterior glenohumeral dislocations[12]. Reduction is performed by one physician, without the need to use analgesics or anesthesia. This method has been proven to be effective and has not been accompanied by complications[12]. Moreover, it appears to be less painful and is faster than other methods of reducing glenohumeral dislocations. It can also be applied to patients with anterior glenohumeral dislocation who also have a fracture of the greater tuberosity[12].

Although several studies have been performed in an attempt to evaluate the efficacy of different methods of reduction of shoulder dislocations, few of them have been comparative[1-11]. As a result, deciding which technique to use is seldom based on objective criteria. The FARES method appears to be superior to other techniques. Our previously published prospective randomized study[12] showed the FARES method to be significantly more effective, faster, and less painful for the reduction of anterior glenohumeral dislocations in comparison with the Hippocratic and Kocher methods.

The FARES reduction method consists of six steps (Video 1; see Appendix):

Step 1: Position the patient
Step 2: Brief the patient
Step 3: Hold the arm
Step 4: Apply traction and add oscillations
Step 5: Abduct and externally rotate the arm
Step 6: Achieve reduction

Step 1: Position the Patient

Place the patient supine on a stretcher, with his/her elbow extended, and advise him/her to hold the stretcher with the opposite hand.

- Place the patient on a stretcher in the supine position (Fig. 1). Be sure that the level of the stretcher is suitable for the surgeon's height in order to facilitate reduction.
- Gently place the affected arm on the side of the patient with the elbow in an extended position.
- Advise the patient to hold the stretcher with the opposite hand (arrow) (Fig. 1).
- Make sure that the patient is lying comfortably and is relaxed as possible.

Step 2: Brief the Patient

Convince the patient that his/her cooperation is necessary for a better outcome.

- Explain the entire procedure to the patient.
- Convince the patient that his/her cooperation is necessary for a better outcome. Make sure that he/she understands that the reduction will be achieved gently, gradually, and not aggressively and that he/she will experience minimal discomfort.

doi:10.2106/JBJS.ST.K.00043 2012, 2(3):e13

- Communicate with the patient during the entire procedure.
- Advise the patient to take relaxing deep breaths.

Step 3: Hold the Arm

Holding the patient's hand with both of your hands, with his/her elbow extended and forearm in neutral rotation, start the procedure at 30° of shoulder abduction.

- Stand at the side of the affected extremity, facing the patient.
- Firmly hold the patient's hand with both of your hands (Fig. 2-A). Hold the patient's hand throughout the procedure.
- Keep the elbow extended and the forearm in neutral rotation (arrow) (Fig. 2-B).
- Start the procedure at 30° of shoulder abduction (Fig. 2-B).

Step 4: Apply Traction and Add Oscillations

Applying gentle longitudinal traction to keep the arm extended, add gentle vertical oscillating movements.

- Apply gentle longitudinal traction to keep the arm extended, making sure that the applied traction is continuous throughout the procedure.
- Add gentle vertical oscillating movements. Continuously oscillate the arm (two or three full "cycles" per second) with "short-range" movements (approximately 5 cm above and beneath the horizontal level) that resemble the motion of a wave.

Step 5: Abduct and Externally Rotate the Arm

Gradually abduct the arm to 90° and then gradually externally rotate the arm to achieve full external rotation.

- Gradually abduct the arm to 90° while simultaneously applying longitudinal traction and vertical oscillating movements (arrow) (Fig. 3-A).
- Gradually externally rotate the arm (arrow) (Fig. 3-B), achieving full external rotation (Fig. 3-B).
- Keep in mind that gentle longitudinal traction, vertical oscillating movements, shoulder abduction, and external rotation of the arm need to be performed simultaneously.

Step 6: Achieve Reduction

The dislocation is usually reduced once 120° to 150° of shoulder abduction has been achieved.

- Continue to abduct the arm; the dislocation is usually reduced once 120° to 150° of shoulder abduction has been achieved (Fig. 4-A). Keep in mind that reduction is not necessarily accompanied by a "clunk."
- While holding the reduced arm, place your opposite hand on the patient's axilla and gently move the forearm to lie across the chest (Fig. 4-B).
- Once reduction has been achieved, discharge the patient with his/her arm immobilized in internal rotation with a sling (Fig. 4-C).

Results

In our previously published prospective randomized study, the FARES method was compared with the Hippocratic and the Kocher methods[12]. The FARES method was used in fifty-three patients (age range, eighteen to seventy-three years); eight patients had anterior glenohumeral dislocation accompanied by a humeral greater tuberosity fracture. The time interval between the anterior glenohumeral dislocation and the first attempted reduction ranged from thirty minutes to sixteen hours (mean and standard deviation, 2.7 ± 2.6 hours). No complications were noted following the reduction in any patient.

The FARES method was significantly more efficient in comparison with the Hippocratic and the Kocher methods ($p = 0.033$)[12]. Reduction was achieved in forty-seven (89%) of the fifty-three patients treated with the FARES method. This success rate is among the highest reported in the literature. Six patients (five men and one woman; mean age, 39.3 years) underwent closed reduction of the dislocation under general anesthesia in the operating room[12].

Reduction was also significantly faster with the FARES method when compared with the other two methods ($p < 0.001$)[12]. The mean time of reduction with the FARES method was 2.36 ± 1.24 minutes, compared with approximately six minutes with the Hippocratic method and 4.5 minutes with the Kocher method.

The pain felt during the reduction (based on the patient's reported score on a visual analogue scale) was significantly milder with the FARES method ($p < 0.001$)[12].

What to Watch For

Indications

- Anterior glenohumeral dislocation with or without a fracture of the greater tuberosity
- Patients who are skeletally mature
- Recurrent anterior glenohumeral dislocation

Contraindications

- Anterior glenohumeral dislocation accompanied by a humeral fracture other than a fracture of the greater tuberosity
- A neurological deficit in the affected extremity prior to the reduction attempt
- Posterior glenohumeral dislocation (a relative contraindication)
- A physician not familiar with the method

Pitfalls & Challenges

- The reduction may not succeed if the patient is not cooperative.
- Dislocations that are not recent may be difficult to reduce with this method.
- The success of the FARES method depends on the cooperation of the patient and the strict continuity of its steps. Interruption of the procedure at any of its stages may lead to the failure of the attempt to reduce the dislocation.
- Aggressive longitudinal traction may cause discomfort that will eventually lead to failure of the attempt to reduce the dislocation.
- Longitudinal traction, oscillating movements, shoulder abduction, and external rotation of the arm must be simultaneously and gently applied, or the reduction attempt may fail.

Clinical Comments

- The FARES method seems to be very well tolerated by the patient. Is this an indirect indication of minimal trauma during the reduction? This needs to be further explored and validated.
- Is there a possibility that the reduction method is directly associated with the later development of shoulder instability? If so, can minimal trauma during reduction eventually lead to fewer patients with shoulder instability? This also needs to be verified.

Appendix

A video demonstrating the reduction procedure is available with the online version of this article as a data supplement at jbjs.org.

Fares E. Sayegh, MD
Stavros Pellios, MD
"Papageorgiou" General Hospital, Ring-Road, North Efkarpia, 546 03 Thessaloniki, Greece

Eustathios I. Kenanidis, MD
7 Anoikseos Street, 570 10 Thessaloniki, Greece. E-mail address: stathiskenanidis@gmail.com

Kyriakos A. Papavasiliou, MD
3 Natalias Mela Street, 546 46 Thessaloniki, Greece

Michael E. Potoupnis, MD
65 Olinthou Street, 543 51 Thessaloniki, Greece

John M. Kirkos, MD
138 Al. Papanastasiou Street, 542 49 Thessaloniki, Greece

George A. Kapetanos, MD
8 25th Martiou Street, 552 36 Panorama, Thessaloniki, Greece

Disclosure: None of the authors received payments or services, either directly or indirectly (i.e., via his or her institution), from a third party in support of any aspect of this work. None of the authors, or their institution(s), have had

any financial relationship, in the thirty-six months prior to submission of this work, with any entity in the biomedical arena that could be perceived to influence or have the potential to influence what is written in this work. Also, no author has had any other relationships, or has engaged in any other activities, that could be perceived to influence or have the potential to influence what is written in this work. The complete **Disclosures of Potential Conflicts of Interest** submitted by authors are always provided with the online version of the article.

References

1. Mattick A, Wyatt JP. From Hippocrates to the Eskimo—a history of techniques used to reduce anterior dislocation of the shoulder. J R Coll Surg Edinb. 2000 Oct;45(5):312-6.

2. Uglow MG. Kocher's painless reduction of anterior dislocation of the shoulder: a prospective randomised trial. Injury. 1998 Mar;29(2):135-7.

3. Berkenblit SI, Hand MB, MacAusland WR. Reduction of skiing-related anterior shoulder dislocation using Kocher's method without traction. Am J Orthop (Belle Mead NJ). 2000 Oct;29(10):811-4. Erratum in: Am J Orthop 2001 Jan;30(1):38.

4. Beattie TF, Steedman DJ, McGowan A, Robertson CE. A comparison of the Milch and Kocher techniques for acute anterior dislocation of the shoulder. Injury. 1986 Sep;17(5):349-52.

5. Russell JA, Holmes EM 3rd, Keller DJ, Vargas JH 3rd. Reduction of acute anterior shoulder dislocations using the Milch technique: a study of ski injuries. J Trauma. 1981 Sep;21(9):802-4.

6. Kothari RU, Dronen SC. Prospective evaluation of the scapular manipulation technique in reducing anterior shoulder dislocations. Ann Emerg Med. 1992 Nov;21(11):1349-52.

7. Poulsen SR. Reduction of acute shoulder dislocations using the Eskimo technique: a study of 23 consecutive cases. J Trauma. 1988 Sep;28(9):1382-3.

8. McNamara RM. Reduction of anterior shoulder dislocations by scapular manipulation. Ann Emerg Med. 1993 Jul;22(7):1140-4.

9. Eachempati KK, Dua A, Malhotra R, Bhan S, Bera JR. The external rotation method for reduction of acute anterior dislocations and fracture-dislocations of the shoulder. J Bone Joint Surg Am. 2004 Nov;86-A(11):2431-4.

10. Ugras AA, Mahirogullari M, Kural C, Erturk AH, Cakmak S. Reduction of anterior shoulder dislocations by Spaso technique: clinical results. J Emerg Med. 2008 May;34(4):383-7. Epub 2008 Jan 28.

11. Garnavos C. Technical note: modifications and improvements of the Milch technique for the reduction of anterior dislocation of the shoulder without premedication. J Trauma. 1992 Jun;32(6):801-3.

12. Sayegh FE, Kenanidis EI, Papavasiliou KA, Potoupnis ME, Kirkos JM, Kapetanos GA. Reduction of acute anterior dislocations: a prospective randomized study comparing a new technique with the Hippocratic and Kocher methods. J Bone Joint Surg Am. 2009 Dec;91(12):2775-82.

Figures

Fig. 1

Clinical photograph showing the patient in the supine position on a stretcher. Advise the patient to hold the stretcher with his/her opposite hand (arrow).

Fig. 2-A

Clinical photograph showing the physician firmly holding the hand of the patient with both of his hands.

Fig. 2-B

Clinical photograph showing the starting position of the procedure. The physician initiates the reduction at 30° of shoulder abduction, keeping the elbow extended and the forearm in neutral rotation (arrow).

Fig. 3-A

Clinical photograph illustrating the physician abducting the arm with the forearm in neutral rotation (arrow), until 90° of shoulder abduction has been reached.

Fig. 3-B

Clinical photograph showing the physician gradually externally rotating the arm (arrow), past 90° of shoulder abduction, until full external rotation has been achieved.

Fig. 4-A

Clinical photograph showing the physician continuing to abduct the arm. The dislocation is usually reduced once 120° to 150° of shoulder abduction has been achieved (arrow).

Fig. 4-B

Clinical photograph showing the patient with the shoulder reduced and the forearm positioned across the chest.

Fig. 4-C

Clinical photograph showing the patient ready to be discharged. Note that, although not shown here, the patient is discharged with his/her arm in internal rotation in a sling.

Fig. 1

Fig. 2a

Fig. 2b

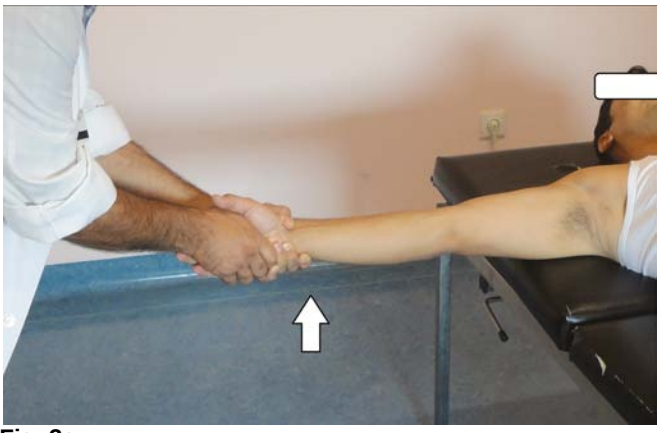

Fig. 3a

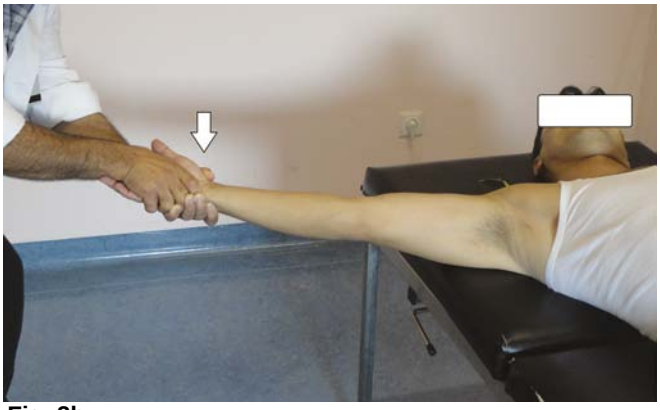

Fig. 3b

Fig. 4a

Fig. 4b

Fig. 4c