

FLEXION ADDUCTION EXTERNAL ROTATION (FADER) METHOD FOR REDUCTION OF ANTERIOR SHOULDER DISLOCATION: A STUDY OF 30 CASES

Jaganmohan Sontyana^{1,*}, G Pradeep Gandharva², Satyaprasad Jonnalagedda³,
Sudhir Mahadeoprasad Shandilya⁴, Karthik Thota⁵, K. Pradeep Kumar⁶

^{1,2}Assistant Professor, ³Professor and HOD, ⁴Associate Professor, ^{5,6}Post Graduate,
Department of Orthopaedics, GSL Medical College and General Hospital, Rajahmundry - 533294

***Corresponding Author:**

E mail: drjagan18@gmail.com

ABSTRACT:

Objective: To assess the success rate of Flexion Adduction External Rotation (FADER) technique in reducing anterior shoulder dislocation and to report our experience.

Methods: A prospective study included 30 patient, with 21 male and 9 female associated with acute anterior dislocation of shoulder treated by FADER in a medical college attached hospital.

Results: The FADER technique was used to reduce 30 cases of anterior dislocation shoulder during the study period. 27 cases were first time dislocations and 3 cases second time recurrent dislocations. Fracture of greater tuberosity was present in 2 cases. Reduction is achieved in first attempt in 28 cases, in second attempt in 1 case, and 1 case was reduced under general anaesthesia. No complications were noted. Overall success rate was 96.6%

Conclusion: we report the successful use of FADER technique for reduction of traumatic anterior shoulder dislocations, mainly without traction, exhaustion, second assistant, anaesthesia, sedation and uncomfortable position. We believe that FADER may also be applied by inexperienced physicians, as it is simple, easily understood and reproducible with success

Keywords: Anterior, Shoulder, Dislocation, FADER, Reduction.

INTRODUCTION

Shoulder dislocations account for almost 50% of all joint dislocations¹. Most commonly these dislocations are anterior (90- 98%) and occur as a result of trauma². There are several methods of reduction described, and no single technique has a 100% success rate nor is any technique ideal in every situation. Reported success rates of various techniques range from 70% to 96%³. We had difficulty in reducing a shoulder dislocation when a single physician is attending the patient and reviewed the literature for single operator techniques. Murat GÜL et al⁴ study of 128 patients series was found impressive.

AN IDEAL REDUCTION TECHNIQUE SHOULD BE:

Easy

Quick - no delay

No traction- no exhaustion

No anaesthesia- no need for nil by mouth

Single operator technique

Relatively painless

High success rate

FADER is a relatively new technique which is meeting all the above criteria. It is reported to be safe

effective and comfortable reduction method for treatment of shoulder dislocation or fracture dislocation of shoulder⁴.

AIM AND OBJECTIVE

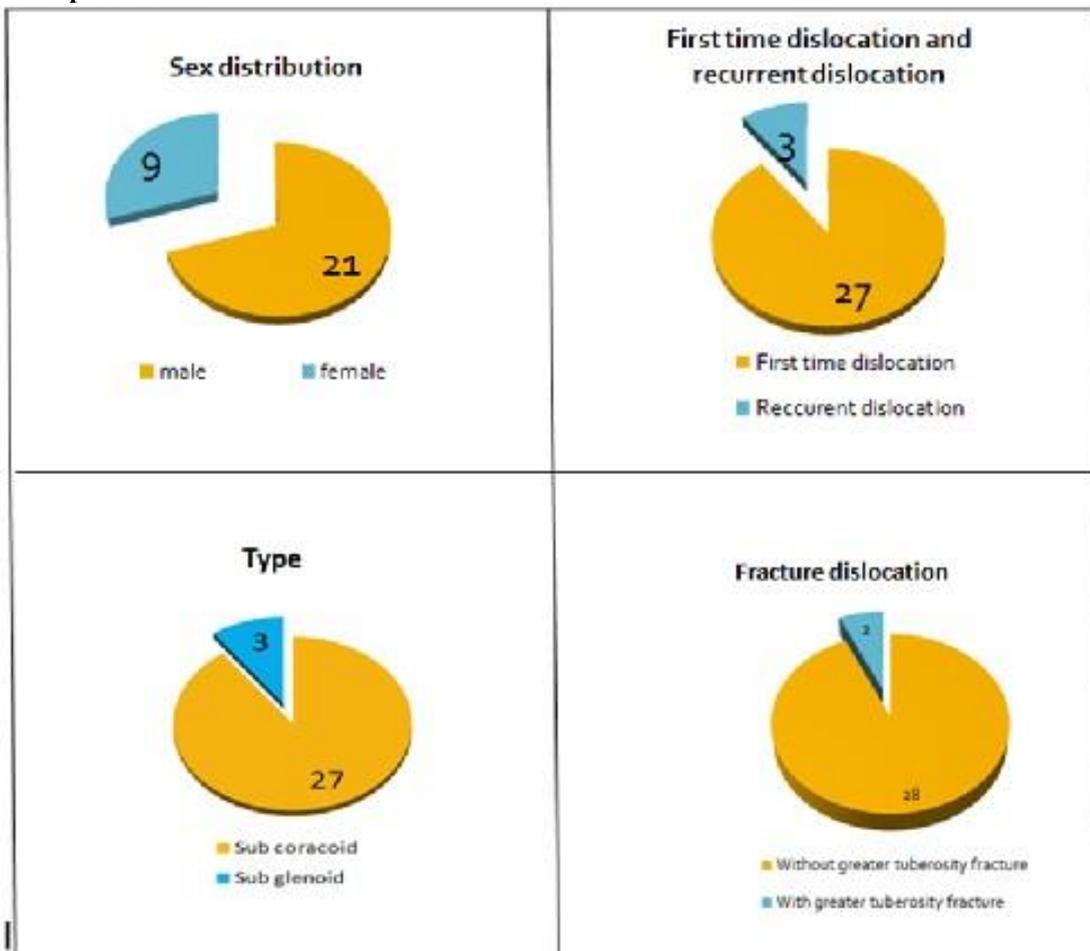
To assess the success rate of Flexion Adduction External Rotation (FADER) technique in reducing anterior shoulder dislocation and to report our experience.

MATERIALS AND METHOD

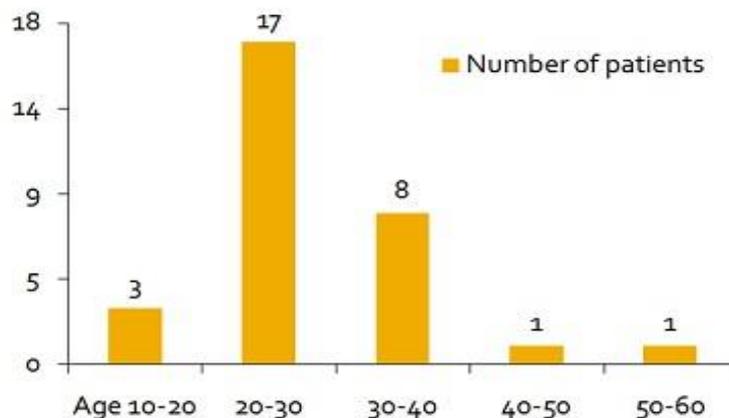
This is a prospective study conducted in a medical college attached hospital. Conducted between May 2014 and April 2015. The study included 30 patients having acute and recurrent anterior dislocation of shoulder with or without greater tuberosity fracture treated by FADER.

The procedure is performed by the authors and post graduates. Authors performed in first few cases and postgraduates learnt the technique in a lecture conducted by first author. Demonstration performed over a healthy volunteer and from the video recorded in first few cases. Trained post graduates performed procedures in rest of the cases.

Patient sample character



Age Distribution



METHOD

Patient history is noted, examined (Figure 4) for axillary nerve and vascular injuries. Routinely Anteroposterior radiographs taken. In cases where the

dislocation is suspected but not confirmed in Anteroposterior radiograph scapula Y view or axillary view is taken to confirm.

TECHNIQUE: Patient is made to lie in supine position, surgeon stands on the side of dislocation, his hand, towards patient head end, holds the patients wrist and other hand holds the elbow of the patient. The elbow of the patient flexed to 90° and the arm is flexed anteriorly by 20°(Figure 1). The arm is then adducted onto the chest (Figure 2), then shoulder is externally rotated using forearm as the lever until forearm is in coronal plane (Figure 3) to achieve reduction. Traction or forced rotation should not be applied. Reduced shoulder is kept in traditional internal rotation position with shoulder immobiliser (Figure 5) and Antero-posterior radiograph were taken to confirm reduction. Neurovascular status reassessed. Time taken for the total procedure is noted. And patient is asked the hypothetical question that whether they would undergo same procedure again if their shoulder dislocates again.

Shoulder is immobilised for a week, followed by pendulum exercises as the patient is able to tolerate. Isometric shoulder strengthening exercises are started from 3rd week along with active and passive shoulder mobility exercises as patient tolerates. External rotation and abduction over 90° strictly avoided for a minimum of 4 weeks. Shoulder strengthening and mobility exercises continue till shoulder movements restored under physiotherapist.



Figure 1. Flexion of elbow and flexion of shoulder



Figure 2. Adduction of arm



Figure 3. External rotation



Figure 4. Pre reduction



Figure 5. Post reduction

RESULTS

Reduction was achieved in first attempt in 28 cases, 1 case reduced in second attempt and 1 case was reduced under general anaesthesia. No complications were noted. No patient had neurovascular injury. Mean reduction time was less than 1 min (Range 1-3 min), Overall success rate of 96.6%. Two patients with recurrent shoulder dislocation who had undergone reduction under general anaesthesia earlier said this procedure was more painful. Rest of the patients said 'yes' for repetition of same procedure in case of dislocation again.

DISCUSSION

Many of the surgeons confused this method with Kochers when first described by us at our institute. The Original Kochers⁵ method was performed with the elbow flexed to 90⁰, the arm adducted to chest and using the forearm as lever arm was slowly external rotated until resistance was felt, then shoulder was flexed as far as possible and finally reduction was achieved by internal rotation of the arm. The Kocher method has success rates of 68% and 77% in randomised controlled trials.^{6,7}

With Milch⁸ method of reduction, the surgeon places his or her hand on the patients shoulder in a way that the surgeons thumb is braced against the dislocated humeral head the arm is simultaneously abducted and external rotated and reduction is achieved by elevating the humerus over head, which is painful and associated with cartilage damage⁹.

Taking consideration of other Single operator techniques. In Fares⁶ method physician holds the hand of the patient while the arm is by the side of the patient with elbow extended and the forearm in neutral rotation. In this position longitudinal traction is applied and the arm is slowly abducted with intermittent vertical oscillating movements in an attempt to relax muscles. Once past 90 degrees of abduction, the arm is gently externally rotated continuing abduction and oscillations. Reduction usually achieved at around 120 degrees of abduction. They have reported a success rate of 88.7%.

In External rotation method patient lies supine, with elbow flexed to 90 degrees traction is applied, then arm is adducted to the side of chest, next shoulder is flexed to 20 degrees and externally rotated. This method Reported to had a success rate of 89%^{10,11}.

In The Spaso technique, patient lies supine, the affected arm is grasped around the wrist and lifted vertically, while applying gentle traction. In this position with traction shoulder is rotated externally and dislocation is reduced. This method reported a success rate of 87.5%.¹²

Fares method, External rotation method and Spaso methods though they are single operator procedures traction is essential. Traction induces further spasm, and pain to patient and it is exhaustive to the physician.

In Scapular manipulation method, patient made to lie prone arm hangs by the side of couch, traction is applied and arm externally rotated. Scapula is the held superiorly over lateral aspect and inferior tip of scapula is pushed medially and dorsally. Reported a success rate of 78.4 % to 96 %.^{13,14,15} This method require prone position and could be more dangerous when sedation has to be given and cannot be tried in unconscious patients.

In Chair method patient is made to sit in a chair with the back rest. Patient sits sideways with axilla over the back rest, depending on patient height folded bed sheet or pillow are kept in between arm and back rest. Elbow is passively flexed traction is applied to reduce dislocation. Shoulder is externally rotated in few difficult cases. Main disadvantage with chair technique is the need for appropriate chair which may not be available in all circumstances.¹⁶

Unlike methods which use traction and try reduction in neutral position, FADER allows capsule relaxation during flexion of shoulder. Medial pull of subscapularis and pectoralis major are neutralized by adduction. Major structures preventing lateral displacement of the humeral head ,is neutralized by gentle external rotation^{17,18} The long head of biceps tendon by making spring effect facilitate entry of head into joint. and reduction is achieved. In FADER prone position, special requirements like chair is not needed.

In our study 96.6% of our patients didn't require anaesthesia, patient has no waiting time after radiographic confirmation of diagnosis for staying nil by mouth. Reduction can be done as outpatient procedure without assistance. As the traction is avoided patient is more relaxed and there is no need for surgeon to fight against patient muscle spasm leading to less exhaustion. Two patients with recurrent shoulder dislocation who had underwent reduction under general anaesthesia earlier said this procedure was more painful. However they were satisfied with the quick solution in less expenditure.

Procedure is easily and quickly learnt by Post graduates and could reproduce successful results without much assistance. This has reduced calling for help, anaesthesia and operation theatre need. Patient expenditure, waiting time and suffering time has significantly reduced.

CONCLUSION

FADER technique is easy to learn, Simple procedure done without traction, second assistant, anaesthesia, sedation, uncomfortable position and is associated with a high success rate of 96.6%. We also would like to conclude that sample size is small to report a high success rate. However, It is better for an Orthopaedic surgeon to learn this new technique so that it will be helpful in single person practice and while attending less equipped peripheral hospitals.

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