



International Journal of
Clinical Medicine Research

Keywords

Shoulder Dislocation,
Recurrent,
Traumatic

Received: May 22, 2015

Revised: June 15, 2015

Accepted: June 16, 2015

Frequency of Recurrent Shoulder Dislocation After Primary Traumatic Anterior Dislocation Treated Non Operatively

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Citation

Faaiz Ali Shah, Waqar Alam, Shahab ud Din. Frequency of Recurrent Shoulder Dislocation After Primary Traumatic Anterior Dislocation Treated Non Operatively. *International Journal of Clinical Medicine Research*. Vol. 2, No. 4, 2015, pp. 49-53.

Abstract

Traumatic anterior shoulder dislocation has high rate of recurrence when treated non operatively especially in young active patients. An evidence-based approach is therefore necessary to determine the best treatment regime for a patient presenting initially with traumatic anterior shoulder dislocation. The purpose of this study was to determine the frequency of recurrent shoulder dislocation after primary traumatic anterior dislocation treated non operatively. The study design was prospective observational cohort and was conducted in level I Orthopaedic and Traumatology Unit "A" Medical Teaching Institution (MTI) Lady Reading Hospital (LRH) Peshawar, Khyber Pakhtunkhwa, Pakistan from May 2011 to May 2015. A total of eighteen patients (14 male and 4 females) mean age 32 years with first episode traumatic anterior shoulder dislocation fulfilling the inclusion criteria were treated with close reduction under general anaesthesia and sling immobilization followed by supervised physical therapy program. Patients received regular clinical follow-up for a minimum of two years to assess whether recurrent dislocation had developed or not. Eight (47%) patients has had recurrent shoulder dislocation with majority (75%, n=6) under 30 years of age. Patients younger than 22 years at the time of first dislocation showed a shorter interval of redislocation (12-16 weeks) and a higher frequency of dislocations (3-5). Patients with Bankart lesions had a higher frequency of recurrent dislocations (62.5%, n=5) In conclusion non operative treatment of traumatic anterior shoulder dislocation with close reduction and sling immobilization leads to a high rate of recurrent dislocation. Patients under the age of thirty years were more likely to have recurrent shoulder dislocation than over thirty years old.

1. Introduction

The estimated incidence rate of shoulder dislocations in the United States is 23.9 per 100,000 person-years, which is approximately twice the previously reported value with young age and male sex are the main risk factors for shoulder dislocation in the United States population. ¹The main cause of primary shoulder dislocation is traumatic and 95% of the first episodes of dislocation are due to strong collision, landing on an outstretched arm, or by a sudden and violent motion of the shoulder. ² Acute first time shoulder

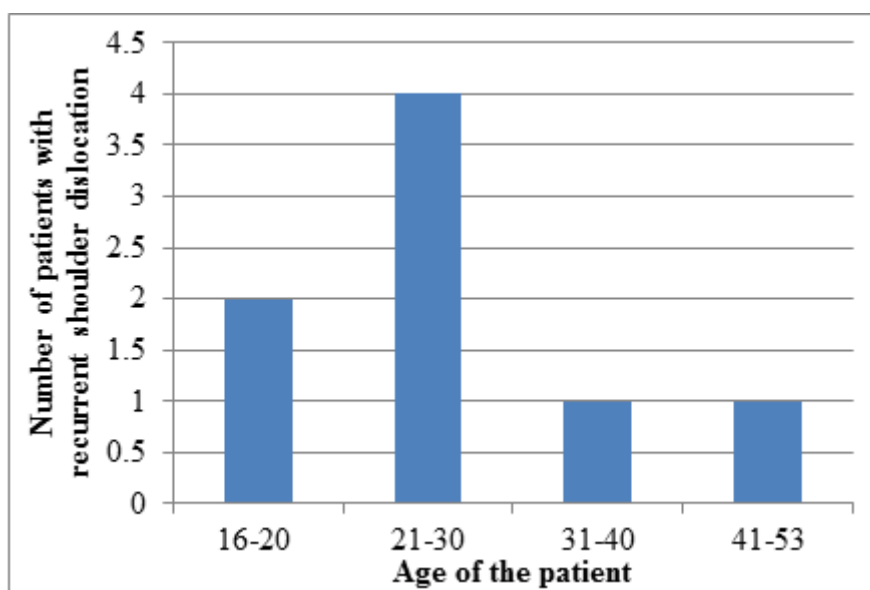
dislocation is a relatively common problem in accident and emergency departments but a standard management protocol is still lacking and methods of treatment, such as immobilization, activity restriction, and physical therapy rehabilitation, appear as options in the non operative treatment after the first traumatic anterior dislocation.³ In United Kingdom, over 90% of trauma clinicians treat this condition with initial immobilization in internal rotation for an average of 4.8 weeks and for young patients (<25 years), 81% prefer this conservative management at the outset.⁴ Although the optimal position and length of immobilization after successful reduction is still under discussion, there is overwhelming agreement in the literature that the age of the patient at the first episode of dislocation is the most important prognostic factor for recurrence. The literature suggests recurrence rates of between 67 and 97%, with patients under the age of 30 at greatest risk.⁵ Younger patients involved in contact or collision sports or who require overhead occupational use of the arm are more likely to have a re dislocation of the shoulder than are their less active peers or older persons.⁶ A number of studies of non-operative treatment after shoulder dislocation have been unable to show that any given treatment is better than another regarding the rate of recurrence.^{7,8} The objective of this study was to determine the frequency of recurrent shoulder dislocation after primary traumatic anterior dislocation treated non operatively. As there are no local research studies presenting the results of nonsurgical treatment of traumatic shoulder dislocation in our hospital, our research study will produce guidelines for the design of future clinical trials, assessing the efficacy of interventions designed to improve the outcome after a primary traumatic anterior shoulder dislocation.

2. Material and Methods

Patients of both gender and all ages with first episode of

traumatic anterior shoulder dislocations presenting within one week of sustaining the injury and presenting to the Accident and Emergency Department/Out Patient Department (OPD) of Orthopaedic and Traumatology Unit' A' Medical Teaching Institution (MTI) Lady Reading Hospital (LRH) Peshawar Pakistan were included in the study. All patients with atraumatic shoulder dislocation, posterior shoulder dislocation, bilateral shoulder dislocations, associated fractures of the proximal humerus, rotator cuff tear, previous shoulder operations, glenohumeral or acromioclavicular arthritis, multi directional instability and neurovascular compromised limb were excluded from the study. The study protocol was approved by the Ethics committee of the hospital and informed written consent was taken from all the patients. Complete history and physical examination was done. X-ray shoulder AP and lateral view was taken. The method most frequently employed to relocate the anteriorly displaced humeral head was Hippocrates's technique⁹ under general anaesthesia. A post-reduction X-ray film was performed and the limb placed in a sling for an average of 3-4 weeks in internal rotation. The patient begins supervised physiotherapy exercises to prevent glenohumeral joint contracture followed by dynamic exercises to develop dynamic stabilizers of the shoulder and improve proprioception in the joint. All such patients were evaluated monthly or before for any recurrence. All patients who had a second episode of dislocation were managed and rehabilitated in the same way and post reduction X-ray and Magnetic Resonance Imaging (MRI) of the affected shoulder was done. All information gathered during the study was recorded and analyzed with use of the SPSS (version 18) software package.

3. Results



Graph No.1. Showing age wise distribution of patients with recurrent shoulder dislocation.

A total of eighteen patients (14 male and 4 females) mean age 32 years (range, 16-53) with primary traumatic anterior shoulder dislocation were enrolled in the study but seventeen patients could complete the study as one (5.5%) patient was lost to follow up after the first visit. Mechanism of initial injury was fall in eight (47%) patients, road traffic accidents four (22.2%), assault four (22.2%) and sports 2(11.1%) patients. Majority (66.6%, n=11) of the patients had dislocation of the dominant limb while non dominant limb was affected in seven (38.8%) patients. Eight (47%) patients has had recurrent shoulder dislocation with majority (75%, n=6) under 30 years of age (as shown in graph No.1), while 9(52%) patients has had no recurrence followed up to two year after the primary dislocation. The average age at the time of the first dislocation was 20 years (range, 18-28 years). First episode of re dislocation after the initial dislocation in majority 5(62.5%) was 12-18 weeks while in 3 (37.5%) patients it was 22-28 weeks. Patients younger than 22 years at the time of first dislocation showed a shorter interval of re dislocation (12-16 weeks) and a higher frequency of dislocations (3-5). A total of 2- 3 episode of re dislocation was noted in 3(37.5%) patients while 5(62.5%) patients has had 3-5 dislocations. Patients with Bankart lesions had a higher frequency of dislocation (62.5%, n=5) Hill-Sachs lesions were noted in 2(25%) patients, while 1(12.5%) patient had normal MRI of the shoulder. However, the size of the Hill-Sachs or Bankart lesions did not affect the frequency of recurrent shoulder dislocation. No neurovascular complication or fracture was reported post reduction in any case.

4. Discussion

Traumatic anterior shoulder dislocation is a common problem faced by orthopedic surgeons.¹⁰ The risk of recurrent instability, after a primary traumatic anterior shoulder dislocation managed conservatively, is highest in young patients, with up to 87% being noted within 2 years.^{11,12} In our study eight (47%) out of seventeen shoulders developed recurrence within a year after initial traumatic dislocation. One hundred and thirty-one patients were followed for an average of four years after their first shoulder dislocation by Sachs and Stone and reported 33% incidence of recurrent dislocation.⁶ An Italian study reported 92% recurrence rate after primary traumatic dislocations.¹³ Rapariz reported 31% incidence of recurrent shoulder dislocation in patients older than 60 years of age.¹⁴ In a prospective 25-year follow-up study (the longest of its kind), Hovelius et al found that approximately half of all patients between the ages of 12 and 25 years who had undergone nonoperative treatment experienced subsequent recurrence.¹⁵ Majority(75%,n=6) of patients with recurrent shoulder dislocation in our study were under 30 years of age with the average age at the time of the first dislocation being 20 years (range, 18-28 years). Chalidis and Sachinis reported that young patients between 14 and 20 years old with first-time dislocation had an 88.9% possibility of recurrence. In the 21–30 years of age group, the rate was

also high, almost 70%. In older ages and especially in women, there was also a 30–40% possibility for recurrence.¹⁶ Another study noted that age was the most significant prognostic factor in shoulder recurrence which took place in 64% of patients less than 20 years of age and in 6% of those older than 40 years.¹⁷ Kralinger and Golser also clearly showed that physical therapy and immobilization do not reduce the risk of recurrence. The only factor associated with recurrence was age between 21 and 30 years. They further suggested that patients in this age group who participate in high-risk sports activities should undergo primary surgical stabilization because of the increased risk of recurrence.¹⁸ In another study 76 patients (14 female and 62 male patients), aged 15 to 39 years, were randomized to surgical repair (n = 37) or conservative treatment (n = 39). After a minimum of 2 years' follow-up, 56% had recurrence after conservative treatment and 3% after open repair (P< .005).¹⁹

The post reduction shoulder immobilization position after primary traumatic shoulder dislocation in our study was the conventional internal rotation but some studies advocate a conservative treatment with immobilization in external rotation to reduce the risk of recurrent dislocation. In a randomized, prospective study, a series of 40 patients were divided between internal rotation and external rotation groups. There was a 50% recurrence of dislocation in the internal rotation group versus 0% re-dislocation in the external rotation group.²⁰ But nonsurgical treatment with immobilization of the limb in external rotation is not well accepted by majority of orthopedic surgeons as evident from a study in the UK, in which 93% of respondents supported the immobilization in internal rotation in non operative treatment after first shoulder dislocation.²¹ Moreover the current best evidence does not support a relative effectiveness of immobilization in external rotation compared with internal rotation to avoid recurrent shoulder dislocations in patients with traumatic anterior shoulder dislocations.²²

Wheeler and his colleagues evaluated the natural history of anterior shoulder dislocations in a young athletic population (cadets at the United States Military Academy) and compared conventional means of non operative treatment with early arthroscopic treatment (staple capsulorrhaphy or anterior glenoid abrasion). They found that the rate of recurrent instability after a shoulder dislocation was 92% (35 of 38) in cadets treated non operatively. In comparison, arthroscopic treatment of acute shoulder dislocations has been successful in 78% (7 of 9) of cadets followed for at least 14 months. With the high rate of recurrence of shoulder instability in young athletes, they believe that arthroscopic surgical intervention after the initial shoulder dislocation can dramatically lower the recurrence rate and should be considered as a treatment option in young athletes.²³ Similarly forty subjects younger than 30 years with a first traumatic anterior shoulder dislocation were randomized by Kirkley²⁴ to receive immediate anterior stabilization plus rehabilitation or immobilization followed by rehabilitation. At an average follow-up of 75 months,

there was a significant difference in the rate of redislocation between the groups and therefore he recommended that immediate arthroscopic stabilization is the treatment of choice in a subset of patients who are younger than 30 years and are higher level athletes. Some interesting studies²⁵ have shown that arthroscopic lavage during the early phase after dislocation can reduce the risk of re dislocation compared with the recurrence rate after non operative treatment. The mechanism by which lavage reduces the recurrence is not exactly known but it is proposed that evacuating haemarthrosis, cartilage and bone pieces or debris reduces joint effusion and capsular distention thus allowing direct contact between the capsulolabral complex and the glenoid rim, thus promoting healing of soft tissue lesions.

Our study had a small sample size and with a shorter follow up period. Therefore sufficiently powered, good quality and well reported randomized controlled trials with long-term surveillance of conservative management are required to provide clinical recommendations regarding the therapeutic intervention for first-time anterior shoulder dislocators in our set up.

5. Conclusion

Non operative treatment of traumatic anterior shoulder dislocation with close reduction and sling immobilization lead to a high rate of recurrent dislocation. We therefore recommend operative stabilization rather than conservative treatment for primary traumatic anterior shoulder dislocation especially in patients younger than thirty years of age.

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