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Study on the functional outcome of arthroscopic Bankart repair in post-traumatic recurrent anterior dislocation of shoulder

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Abstract

Introduction: Shoulder joint is the most common joint to get dislocated with the anteroinferior type being the commonest. Detachment of the glenoid labrum termed as Bankart lesion is the cause of recurrent shoulder dislocation. Arthroscopic repair has gained popularity in recent days.

Methods: 33 patients were studied with a follow-up period of 1 year after undergoing Arthroscopic Bankart repair by a single experienced orthopaedic (Arthroscopic) surgeon. All the patients included in the study strictly followed rehabilitation protocol. Modified University of California Los Angeles (UCLA) scale was used to evaluate the effectiveness of the surgery.

Results: In our study the mean post operative UCLA score was 30.9 with maximum score being 34 and minimum score was 20. 51.5% patients had excellent result whereas 36.4% had good, 9.1% with fair and 3% with poor outcome. Thus, patients with satisfactory score returning to sports activity and job was 87.9%

Conclusion: Arthroscopic Bankart repair gives good to excellent functional and clinical outcome in anterior shoulder instability.

Keywords: Bankart, shoulder joint, glenoid labrum termed, arthroscopic repair

Introduction

Shoulder joint is the most common joint in our body to be dislocated, with a 1.7% incidence in the general population^[1], accounting for more than 50% of all dislocations^[2]. Between several types of shoulder dislocations, antero-inferior type is the most common which is frequently associated with trauma. Main complication of shoulder dislocation is recurrent instability, and it accounts for an average of 70-90% recurrence rate in patients between 20-40 years of age. During shoulder dislocation, humeral head is forced anteriorly out of glenoid cavity resulting in detachment of fibrocartilaginous labrum from the anterior rim of glenoid cavity. This detachment of glenoid labrum is called Bankart lesion. Management of recurrent shoulder joint dislocation is mainly directed towards re-attachment of labroligamentous complex to glenoid rim with suture anchors.

Anterior shoulder instability can be treated either by open procedure or arthroscopic method. Recent advancements in the technique, suture materials, bioabsorbable anchors and concomitant treatment of other pathologies, arthroscopic repair has become a standard care. The aim of our study is to assess the functional outcome and range of motion after arthroscopic Bankart repair in patients with recurrent anterior dislocation of the shoulder joint.

Methods

After approval of the institutional ethical committee a prospective study was undertaken over a period of 1 year (between June 2016 to July 2017) in a tertiary care hospital in West Bengal.

Patients of the age group between 20 to 40 years with recurrent anterior dislocation of shoulder joint were included in the study. There should be history of trauma in the first episode of dislocation. The patients with such history were evaluated clinically and radiologically with Xray, MRI and CT scan.

The patients with Bankart lesion with less than 25% bone involvement of the glenoid cavity were included in the study.

The patients with neuromuscular disorders, sponatenuous first episode of dislocation, patients with seizure disorders, Hill Sachs lesion with more than 30% of bony involvement were excluded from the study population.

33 such patients were included in the study population.

The patients were operated by a single senior orthopaedic (Arthroscopic) surgeon after explaining the outcome, complications, and the prolonged rehabilitation protocol and with written and informed consent.

Under General anaesthesia the patients were positioned in lateral decubitus with arm in 40-45 degrees of abduction and 10-15 degrees of forward flexion and neutral rotation using adhesive skin traction of 10-15 lb weight with the bony prominences well padded.

After establishing anterosuperior and anterior midglenoid portal, diagnostic arthroscopy was performed. The labrum was freed from the glenoid neck and the bony surface was freshened off the fibrous tissue with the help of shaver. The inferior most suture anchor was inserted on the face of articular cartilage of the glenoid around the 5-6 o'clock position. It was ensured that the suture anchor was placed below the sub chondral bone (2-3mm below). A suture retriever was passed under the Bankart lesion. Using the antero-superior portal the suture near the labrum was brought out through the labrum and then through the mid glenoid portal in a retrograde fashion. This suture limb was designated as the "Post"; to ensure that the knot remains on the capsular side of glenoid, outside the articular surface; resulting in anatomical restoration of labrum height and depth. Suture were tied using a Duncan loop sliding locking knot and secured with multiple reverse half hitches. Second hole was drilled at 3.30 to 4.30 O'clock position and accessory anchors were used based on the extent and size of labral tear. If anteroinferior capsular laxity was present then it was treated with plication of redundant capsule. A final evaluation through the anterior superior portal showing balanced humeral head in the centre of the glenoid was the end point of the procedure.

The initial 4 weeks postoperative period pendular exercises of the shoulder were allowed. After 4 weeks main emphasis was given on regaining the flexion; Scapular stabilization and

isometric rotator cuff exercises were started. From 8th week onwards muscle strengthening exercises, mobilization exercises and proprioception were advised. Recreational sports and noncontact sports were allowed after 4 months and contact sports after 6 months.

The patients were followed up at 2 weeks postop period then at 1 month, and then at monthly interval for 6 months and then at the end of 1 year after Arthroscopic Bankart repair. Treatment failure has been regarded as the persistence of recurrent shoulder dislocation post-surgery or sensation of instability or apprehension of dislocation, preventing the return of functional activity of the shoulder; or requiring a further stabilizing procedure.

Modified University of California Los Angeles (UCLA) scale was used to evaluate the effectiveness of the arthroscopic Bankart repair. The scale is the collective evaluation of the patient's pain, function: with each carrying a maximum of 10 points; active forward flexion, strength in forward flexion, and patient satisfaction: with each carrying 5 points. The maximum possible score is 35, with a higher score indicating better shoulder function^[3].

Data analysis was done using SPSS (Statistical Package for Social Support), version 16, following compilation of data. Descriptive analyses were computed in terms of mean and frequency. Correlation between the variables were assessed.

Results

33 patients were studied between the age group of 21 to 37 years with mean age of 25 years. 90.9% patients were male. 61% patients had right sided shoulder dislocation. Throwing activity was the mechanism of initial injury causing first dislocation in 46% of the patients followed by fall on ground in 30% patients. Mean interval between 1st dislocation and surgery was 3.5 years and had an average of 4 dislocations before surgery. The average post-surgery UCLA score was 30.9 with the maximum score being 30.9 and minimum score was 20 (Fig 1). 51.5% of patients had excellent results post-surgery (Fig 2). Figure 3 shows the functional activity of patients at 1 year of follow-up after surgery.

One patient had surgical site infection which was treated with debridement and iv antibiotics. 1 patient was recorded as failure in view of recurrent dislocation.

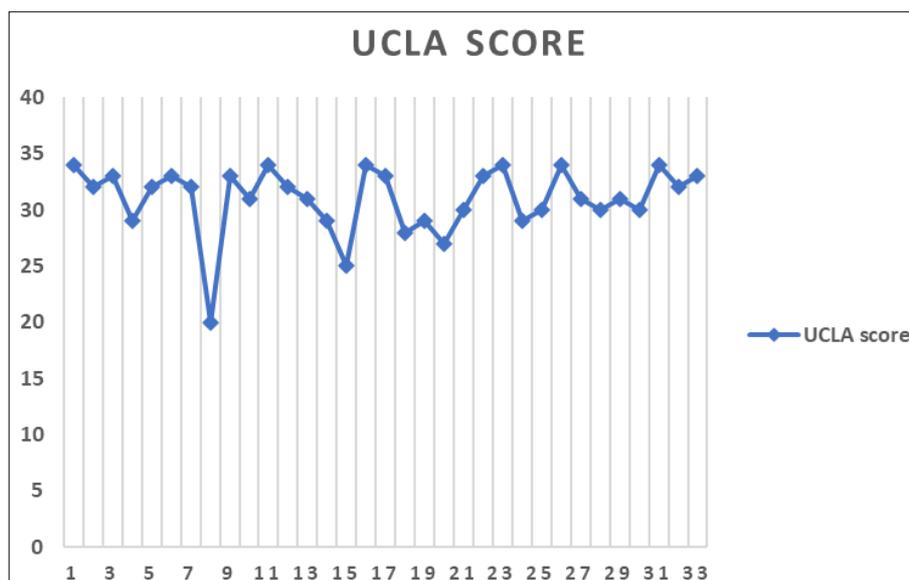


Fig 1: Patient wise distribution of UCLA score

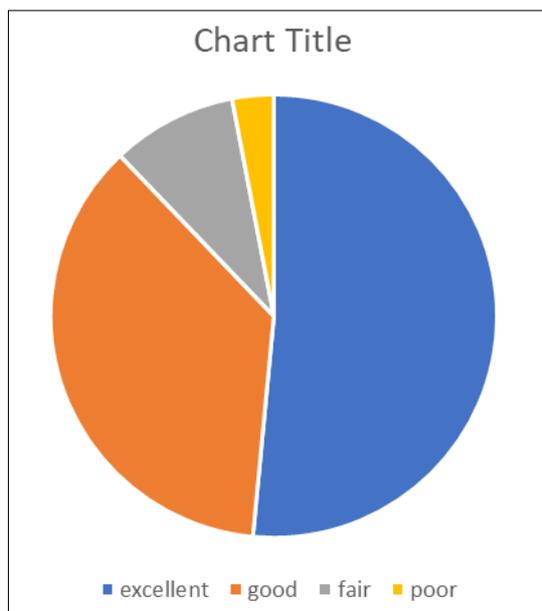


Fig 2: Pie chart showing UCLA score of patients



Fig 3: Functional activities of 2 patients at 1 year follow-up

Discussion

Shoulder joint stability is compromised for mobility; and is a joint which has high incidence of dislocation with labro-ligamentous Bankart injury; as the labro-ligamentous complex is the most important stabilizing mechanism of Shoulder joint [4, 5]. Capsular laxity should be ruled out pre-operatively; as the reason of glenohumeral instability causing recurrent shoulder joint dislocation, otherwise can lead to failure of repair [6]. Anterior shoulder dislocations can be treated either by the conventional open procedure or by Arthroscopic repair [7, 8]. Since 1993 the first reported arthroscopic Bankart repair by Detrisac [9]; it has gained popularity in recent years as it is a minimally invasive approach and cosmetically acceptable. The post-operative morbidity is less owing to less surgical time and less blood loss [10-12]. Open cases of Bankart repair have high morbidity and cases of post-operative tendon disruption in the form of subscapularis tear has been reported; in contrary to it arthroscopic repair has reported excellent restoration of shoulder range of motion, thus making it more

acceptable mode of treatment in modern practice [13, 14].

UCLA shoulder score is a combined objective and subjective survey widely used for evaluating functional outcome following treatment of rotator cuff disease and shoulder instability [15, 16]. The assessment can easily be done on OPD basis.

In our study the mean post operative UCLA score was 30.9 with maximum score being 34 and minimum score was 20. 51.5% patients had excellent result whereas 36.4% had good, 9.1% with fair and 3% with poor outcome. Thus, patients with satisfactory score returning to sports activity and job was 87.9%. Allesandro Castagna in Milan, Italy studied 43 patients with an average follow-up period of 130.8 months had a mean post-surgery UCLA score of 32.1 and 71% of patients had a satisfactory score [17]. Similar recent studies done in India by Rahul Jaju *et al.* [18] the mean UCLA score was 31.14 and in the study Sachin Katti *et al.* [19] 90.5% patients had satisfactory score (Table 3)

Table 1: Recent clinical studies and outcome of Arthroscopic Bankart repair based on UCLA score

Author	Journal	N	Mean follow-up in months	Outcome	Recurrence rate
Castagna <i>et al.</i> ^[17]	Am J Sports Med 2010	31	130.8	UCLA (mean) 32, satisfactory score in 71% patients	19.40%
R Jaju <i>et al.</i> ^[18]	Int J Orth Sciences 2018	48	13.71	UCLA (mean) 31.14	25%
S Katti <i>et al.</i> ^[19]	Int J Orth Sciences 2017	21	12	Satisfactory score in 90.5% patients	4.70%
our study		33	12	UCLA (mean) 30.9, Satisfactory score in 87.9% patients	3%

Arthroscopic Bankart repair provides good functional result and should be performed in patients with recurrent anterior shoulder dislocation specifically in young adults. There is excellent restoration of range of motion, decrease in the recurrence rate and return to sports activity and job. However surgical technique and post-operative rehabilitation in the form of physiotherapy are the key for good function. The limitation of our study is small study population and a short period of follow-up (1 year).

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