

Outcomes of Acute Arthroscopic Repair and Conservative Treatment Following First Traumatic Dislocation of the Shoulder Joint in Young Patients

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Abstract

Introduction: The aim of this study was to compare patients who had arthroscopic repair done following the first traumatic dislocation with patients who were treated conservatively, in terms of stability and function. **Materials and Methods:** Acute arthroscopic Bankart repair with absorbable tack was used in 30 shoulders after the first dislocation, while 32 patients who sustained traumatic anterior dislocation were treated conservatively at Gülhane Military Medical Academy, Department of Orthopaedics and Traumatology between March 1997 and April 2001. Preoperative and postoperative range of motion of the shoulder and Constant score of all patients were recorded. **Results:** In the conservative group, the average pretreatment Constant score was 46.8 (range, 30 to 70) and the average post-treatment Constant score was 71.4 (range, 30 to 95). In the surgical group, the average preoperative Constant score in cases with Bankart lesion was 44.7 (range, 30 to 60) and the average postoperative Constant score was 92.3 (range, 65 to 100), ($P = 0.0001$). **Conclusion:** Our results support the use of acute arthroscopic repair of traumatic anterior shoulder dislocations with absorbable tacks. Arthroscopic repair is the treatment of choice in young and active patients who are having their first traumatic dislocation.

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Key words: Acute shoulder dislocation, Bankart lesion

Introduction

Traumatic dislocation of the shoulder is a serious problem especially in active and young patients. Shoulder instability and recurrent dislocation hinder patient activities. The rate of recurrence in patients under 30 years of age is between 50% and 95%.¹⁻³

Acute repair of anterior shoulder dislocations is a controversial issue.⁴⁻⁷ There is a limited number of studies on acute repair.^{1,6,8} The reported arthroscopic studies indicate that severe intraarticular pathologies may occur after the first dislocation in anterior instabilities.^{1,9,10} The fact that recurrences after the first dislocation can be caused by minor trauma in young and active patients may be related to untreated pathologies of the first dislocation. Although this has not been proven clinically, it is obvious that Bankart lesion with capsular injury is a predisposing factor in the recurrence of dislocations.^{2,7,9}

Arthroscopic repair following first traumatic dislocation prevents recurrent dislocations and provides stability by

the adaptation between humeral head and glenoid. The aim of this study was to compare patients who had arthroscopic repair performed following the first traumatic dislocation with patients treated conservatively, in terms of stability and function.

Materials and Methods

Between March 1997 and April 2001 at the Gülhane Military Medical Academy, Department of Orthopaedics and Traumatology, acute arthroscopic Bankart repair with absorbable tack was used in 30 shoulders after the first dislocation, while 33 patients were treated conservatively. Patient selection for both groups was done at random. Patients were informed of the treatment choices available and were asked to select one. Patients who sustained dislocation due to a trauma without any predisposing factors were included in this study. Exclusion criteria included patients with multi-directional instability and hyperlaxity in other joints.

In the surgical group, the mean age was 21.2 (range, 18

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to 26) years. All patients were male. All patients in the surgical group were operated after the first dislocation; the average period between the occurrence of dislocation and surgery was 10.5 (range, 5 to 23) days. In this group, dislocation occurred due to the following reasons: a military training accident in 10 (33.4%) cases, sports accidents in 11 (36.6%) cases, falling from a height in 5 (16.7%) cases and motor vehicle accidents in 4 (13.3%) cases.

Standard antero-posterior (AP) radiographic assessments were done preoperatively for all patients in the study. Magnetic resonance image (MRI) was performed in only 15 patients. Cases having bony Bankart lesion were excluded from the study (Table I).

Surgical Technique

All the patients in the surgical group were operated under general anaesthesia in the lateral decubitus position. Traction was applied to the shoulder joint with a 3-kg standard weight. During surgery, applying extra traction intermittently distracted the joint. After the standard posterior portal was placed, the anterior portal was created. The antero-inferior portal was used for the surgical procedure. Bioabsorbable tack was placed by the portal. The labroligamentous lesions were repaired using 2 to 3 bioabsorbable tacks according to the condition of the lesion (Fig. 1). The applied traction was made as little as possible during this process and was checked with a hook after the procedure was completed. The portals were closed, Velpeau bandage was wrapped, and cold packs were applied to the operative site for 48 hours. After 48 hours, they were started on isometric exercises in a sling. Then, they were begun on increasingly aggressive strengthening and mobilisation into external rotation. Most patients were allowed to return to non-contact sports by 3 months and to contact sports by 5 months postoperatively. None of the patients required post-surgical narcotic analgesia. Only single-dose conventional analgesic was used. Single-dose first generation cefalosporin was used for prophylactic aim before and during the operation. Preoperative and postoperative range of motion of the shoulder and Constant score of all patients were recorded.

In the conservatively treated group, the mean age was 22.1 (range, 19 to 32) years. Four of the patients (12.5%)

were female and 28 (87.5%) were male. Dislocation occurred due to the following reasons: training accident in 8 (25.0%) cases, sports accidents in 15 (46.9%) cases, motor vehicle accidents in 5 (15.6%) cases and falling from a height in 4 (12.5%) cases. None of the patients had any fractures (Table I). Velpau bandage was wrapped for 3 weeks. During immobilisation, the tone of the shoulder musculature was maintained by isometric contractions of the muscles into flexion and extension, internal and external rotation, abduction and adduction. Then, the patients were started on mobilisation exercises. Finally, rotational exercises (pendulum manouvre and flexion and extension of the elbow) were started. Most patients were allowed to return to non-contact sports by 4 months and to contact sports by 6 months postoperatively.

Results

In the conservative group, the mean follow-up period was 40 (range, 18 to 63) months. In this group, the average pre-treatment Constant score was 46.8 (range, 30 to 70) and the average post-treatment score was 71.4 (range, 30 to 95). The results were classified as excellent in 7 cases (21.9%), good in 12 cases (37.5%), poor in 11 cases (34.4%) and failure in 2 cases (6.2%). Recurrence of dislocation was observed in 12 cases (37.5%) in the first year. In 3 of these cases (9.3%), dislocation reoccurred more than twice (Table II). Electromyography (EMG) was done in all patients. Partial lesion in axillary nerve was documented in 3 cases (9.3%). These patients were assigned to the conservative group in order to be protected from the negative effects of traction. EMGs performed 6 weeks later showed that symptoms had disappeared.

In the surgical group, the mean follow-up period was 33 (range, 10 to 60) months, the average preoperative Constant score was 44.7 (range, 30 to 60) and the average postoperative Constant score was 92.3 (range, 65 to 100). The results were classified as excellent in 26 cases (86.7%), good in 3 cases (10%) and poor in 1 case (3.3%). Dislocation was observed at 6 months after surgery in the patients with poor result. Open repair and capsular shift surgery were performed (Table II). Abduction and external rotation

TABLE I: AETIOLOGIC FACTORS

Aetiology	Conservative group	Surgical group
Training accident	8 (25%)	10 (33.4%)
Sports accident	15 (46.9%)	11 (36.6%)
Fall	4 (12.9%)	5 (16.7%)
Motor vehicle accident	5 (15.6%)	4 (13.3%)

TABLE II: RESULTS

Results	Conservative group	Surgical group
Excellent (%)	7 (21.9)	26 (86.7)
Good (%)	12 (37.5)	3 (10)
Poor (%)	11 (34.4)	1 (3.3)
Failure (%)	2 (6.2)	-
Pretreatment Constant's score (range)	46.8 (30-70)	44.7 (30-60)
Posttreatment Constant's score (range)	71.4 (30-95)	92.3 (65-100)
Redislocations (%)	12 (37.5)	1 (3.3)

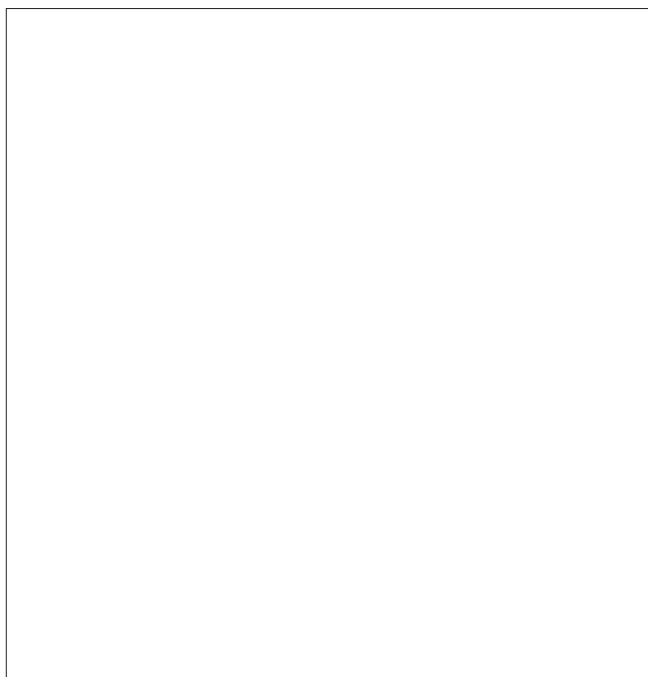


Fig. 1. Arthroscopic appearance of the Bankart lesion.

improved in the surgical group (Fig. 2). The changes in the shoulder movement were not statistically significant ($P = 0.275$) compared to the normal shoulder. No infections were noted in any of the patients.

Haemarthrosis of the joint was noted in all cases in the surgical group as an arthroscopic finding. Superior labrum anterior-posterior (SLAP) lesions were noted in 4 patients (13.3%) and Bankart lesions were noted in 28 patients (93.3%). In all cases, different degrees of chondral injury accepted as Hill-Sachs lesion were observed in the posterior humeral head (Fig. 3). No rotator cuff tear was identified. A loose body was observed in 1 case. Out of the 4 identified SLAP lesions, 1 was Type III, 2 were Type IV, and 1 was Type V.

Labroligamentous lesions were identified in different locations in 28 patients. Twenty-three (76.6%) cases of rupture of the anterior-inferior glenoid and 4 (13.4%) cases of rupture of the anterior and anterior-superior were observed. In 3 (10%) cases, the rupture occurred from the anterior-superior through the entire anterior-inferior labrum.

Discussion

Arciero et al¹ reported observations of Hill-Sachs and Bankart lesions in all patients following acute dislocation. Other studies support this finding.^{6,9,10} The aetiology of anterior-inferior glenohumeral instability is numerous.^{7,11} Cole and Warner⁵ reported that capsular laxity or injury related to a Bankart lesion is the cause of shoulder instability.

In our study, Bankart lesions in 28 (93.3%) of 30 cases

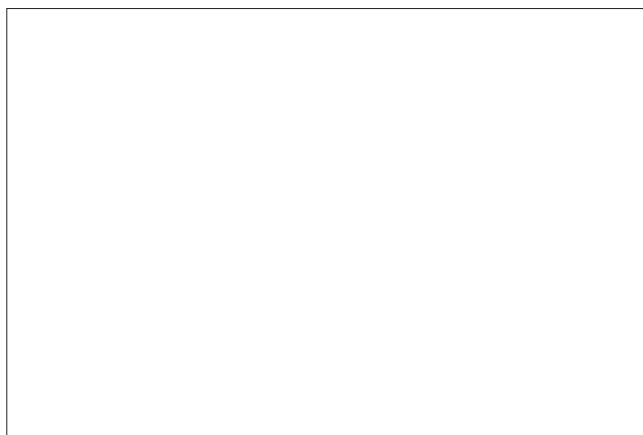


Fig. 2. Clinical appearance 3 months after surgery.

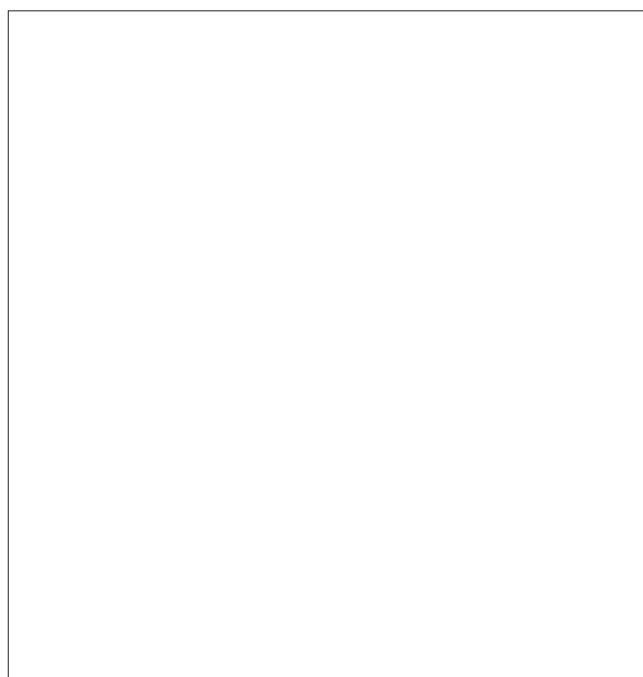


Fig. 3. Arthroscopic appearance of the Hill-Sachs lesion.

and SLAP lesions in 4 patients (13.3%) confirmed that severe intraarticular injuries occurred in all acute dislocations. These lesions are the cause of future recurrent dislocations.^{2,7,9}

Physicians who defend the use of acute repair consider that the period of instability and the number of repeated dislocations result in structural changes inside the joint that are difficult to repair.^{5,7} It is expected that Bankart repair will strengthen the stability in the acute period. In the acute period, fixation of glenoid labrum to its original site provides harmony between the glenoid and humeral head, and enhances stability by making a barrier in front of the humeral head.^{1,3,4} Arciero et al^{1,3} reported that pain disappeared and no recurrence was observed after short-

term follow-up in cases where Bankart lesion repair was applied. During the 3.5-year follow-up period of our study, only 1 (3.3%) redislocation was documented. This is similar to reports in the literature.^{1,3,4} We did not observe any postoperative instability after the operation. This result may be the most important clinical evidence of the harmony between the glenoid and humeral head provided by acute repairs.

Patient selection is one of the basic criteria for successful outcome of arthroscopic Bankart repair.^{1,3,5,7,12} The aim of the treatment of acute anterior dislocation of the shoulder is to provide glenohumeral stability and to minimise loss of glenohumeral motion. The choice of treatment must be individualised on the basis of the degree of instability of the shoulder. Arthroscopists started to act more flexible in the matter of the patient selection by limiting their indications.^{5,8,11,12} In recent years, most authors have claimed that arthroscopic repair and open repair are different methods used for different indications; hence, they cannot be alternatives to each other.^{5,7,8,11,12} We believe that the most important reason for high recurrence rates after arthroscopic repair reported in the literature is inappropriate patient selection. Arthroscopic Bankart repair has a high rate of failure in patients with capsular laxity, multiple instability, rotator interval lesion and recurrent dislocations.

Our results support the use of acute arthroscopic repair of selected traumatic anterior shoulder dislocations with absorbable tack. Arthroscopic repair seems to be the treatment of choice in young and active patients who are having their first traumatic dislocation.

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