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Original Article Comparing Effect of Sports Activity on Arthroscopic Treatment of Shoulder Instability

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Abstract

Bankart lesion is a challenging situation for shoulder dependent sports. Arthroscopic treatment has become a more popular method for anterior shoulder instability but it is critical to define risk factors. In this study, midterm results of arthroscopic instability treatments of patients who had done shoulder dependent sports were evaluated. It was found that there was no significant association between the patients who did not do sports and those who did shoulder dependent sports.

Keywords: Shoulder instability; Arthroscopic shoulder treatment; Bankart lesion; Shoulder rehabilitation

Introduction

Shoulder dislocations are common among people who engage in sports. This situation prevents the player from returning to these activities. Traumatic shoulder dislocation frequently requires surgical repair. Re-dislocation rates after non-surgical treatment in young athletes approach 90% to 100% [1,2]. The open bankart repair is gold standard. But the arthroscopic bankart repair has become popular and good results have been achieved. In the arthroscopic bankart treatment, appropriate patient selection is an important factor to consider. The related literature includes risk factors for arthroscopic anterior shoulder instability treatment [3-5].

The primary purpose of this study was to evaluate the midterm results of two groups of young patients, one including patients who do no sportive activities and the other one patients who do shoulder dependent sports. It has been hypothesized that shoulder dependent sport is not significant for clinic outcome. It is critical to define risk factors.

Methods

We retrospectively reviewed 28 patients who were operated for traumatic anterior instability of the shoulder . The informed consent was obtained from patients. All of the patients included in this study were admitted with a diagnosis of post-traumatic anterior shoulder instability between 2007 and 2012. The following patients were included in the study: 1) Patients who suffered from post-traumatic shoulder dislocation (at least once); 2) Patients with less than 25% glenoid bone loss; 3) Patients whose size of humeral Hill-Sachs lesion did not cause anterior glenohumeral engagement. 4) Patients who were professional players. 5) Patients with only bankart lesion. Patients excluded were as follows: 1) Patients with non-traumatic, voluntary dislocations; and 2) Patients with multidirectional instability, 3) Patients diagnosed with a neurological deficit (axillary or suprascapular) upon physical examination.

A total of 28 patients meeting the aforementioned criteria were included in this study. Patients were divided into 2 groups according to the sportive activities. Group I consisted of 13 patients with a shoulder injury caused by sportive activities and Group II consisted of 15 patients without any sportive activities. Table 1 shows the demographic characteristics of these patients.

Surgical method

Two surgeons performed all surgical procedures with the patient in beach-chair position under general anaesthesia. Shoulder stability and joint motion space were re-evaluated and recorded under general anaesthesia before the operation. Standard 30-degree scope was used. Presence of anterior labral lesion, glenoid bone deficit, Hill-Sachs lesion and quality of capsular tissue were recorded. Capsular tissue quality and capsular tension were assessed by means of a grasper.

	Group I	Group II	P value	Total
Number of Patients	13	15	n.s	28
Age (years)	22 (18-30)	26 (18-32)	n.s	23.6
Gender				
Male	9	12	n.s	21
Female	4	3	n.s	7
Affected side				
Right	10	13	n.s	23
Left	3	2	n.s	5
Sports activity				
Wrestler	5			
Swimmer	2			
Goalkeeper	2			
Basketball player	3			
Handball player	1			
Number of Dislocations	2 (1-4)	4 (1-6)	n.s	3.2
Period between injury and surgery (month)	12 (4-16)	10 (6-18)	n.s	10.2
Pre-operative score				
Rowe	20 (14-24)	15 (12-18)	n.s	36.4
Duration of follow-up (month)	38.6 (12-60)	30.7 (17-55)	n.s	33.4

All values expressed as median (range)

Table 1: Demographic characteristics of the patients.

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Labro-ligamentous complex was completely separated from glenoid and mobilized towards the superior and lateral by means of a rasp and radiofrequency (RF). The glenoid neck was decorticated using a burr and the bleeding bone required for tissue recovery was revealed. Glenoid rim was perforated at 5:30, 4:30, 3:30 o'clocks position, and a 2.9 mm absorbable or a 3 mm metal anchor (Mitek, 2.9 Lupine Anchor or 3mm Fastin Threaded Anchor, made in Raynham, USA) was placed. Using a suture transferring system (Mitek, Ideal Suture Shuttle, made in Raynham, USA), a no.2 PDS was passed through labrum and inferior glenohumeral ligament at 5-7 mm inferior to the anchor. Subsequently, threads of this anchor were transferred and passed through labrum and ligament with the PDS. During fixation, the shoulder was kept between the neutral position and 45-degree external rotation position (to avoid fixation with excessive tension). Fixation was then secured with Revo knot technique. Following the knot, repair was assessed based on presence of an arthroscopic "drive through sign". When additional anchor was necessary, that was placed at 3:00 o'clocks position.

Post-operative care and rehabilitation

The same rehabilitation program was given to both groups. All of the patients were kept at internal rotation with a velpeau bandage for 4 weeks. Passive pendulum exercises began on the first post-operation day. These passive exercises were performed 5 times a day. For the first 4 weeks, the abduction was limited to 60° in internal rotation. A proprioception recovery program was begun at the 4th week. External rotation was limited to 45 degrees until the end of 6th weeks. Between the sixth week and third month, use of the sling was reduced to nights only and abduction was allowed up to 90° in internal rotation with external rotation up to 30° in 90° of abduction. After the full range of motion during active exercises was restored, resistant muscle-reinforcing exercises were initiated at post-operative 12th week. Noncontact sports were permitted after 3 months, and contact sports were permitted 5 months after surgery.

Evaluation protocol

All of the patients paid visits at the 3th and 6th weeks, then in months 3, 6 and 12. They were then invited for annual visits. Shoulder range of motion and instability tests were checked during physical examination. Pre- and post-operative assessments were performed according to Rowe scores. Failure was defined as re-dislocation, or positive apprehension test.

Statistical analysis

All analyses were performed with SPSS 10 software with a 95% confidence level. Chi square Test, Student's t Test and Fisher's Variance Test were used. $p<0.05$ was considered as the significance level.

Results

Mean follow-up duration was 33.4 months in 28 patients with anterior instability who received arthroscopic treatment. Mean time from the first dislocation to surgical treatment was 10.2 months. Mean number of dislocations at presentation was 3.2. The mean number of anchors used was 3.4. The examinations performed under general anaesthesia were summarized in the table 2. Mean surgical duration was 62.5 minutes. Redislocation was seen in 2 (% 7.1) patients in post-operative period. These patients received open treatment with Latarjet procedure. Functional outcomes of these patients were excluded from the evaluation. 1 patient had ongoing post-operative apprehension test. This patient did not experience redislocation and did not receive any additional treatment during the follow-up. Functional outcomes of this patient were not excluded from the evaluation. The pre-operative mean Rowe score of patients was 36.4 and the mean Rowe score during their last visit was 91.6. The physical examination during the last visit revealed a mean external rotation limitation of 4.8 degrees and a mean forward flexion range of 176.4 degrees. The findings obtained during the last visit are summarized in the table 3. No complication was observed in the patients.

	Group I	Group II	P value	Total
Anterior Translation				
Grade II	3	6		9
Grade III	10	9		19
The number of anchors used	3.3 (2-4)	3.5 (2-4)	n.s	3.4
Surgical duration (minutes)	64 (44-70)	60 (40-72)	n.s	62.5

All values expressed as median (range)

Table 2: Intra-operative findings of the patients.

	Group I	Group II	P value	Total
Post-operative Rowe score	93 (86-100)	91 (85-100)	n.s	91.6
Redislocation	1 (%7.6)	1(%6.6)	n.s	2 (%7.1)
Apprehension test	0 (%0)	1(%6.6)		1(%3.5)
Limited external rotation	3 (2-6)	6 (3-9)	n.s	4.8
Forward flexion (range of motion)	176 (163-180)	175 (166-180)	n.s	176.4
Return to sports (months)	8.5 (7-12)	9.2 (8-16)	n.s	8.9

All values expressed as median (range)

Table 3: The outcomes in the last visit.

Comparison of pre- and post-operative scores in the Rowe scales showed a statistically significant difference ($p=0.009$). Based on this, patients benefited from arthroscopic treatment. There was no statistically significant difference (n.s) regarding dislocation rates in post-operative period according to the number of anchors used in patients. The number of pre-operative dislocations, amount of anterior translation during general anaesthesia did not adversely affect the post-operative outcomes. No statistically significant association was found between the number of anchors used and occurrence of redislocation (n.s). No statistically significant association was found between group I and group II. However, mean outcomes showed better outcomes in patients included in group I. Evaluation of functional outcomes and the number of anchors used demonstrated no statistically significant difference (n.s).

Discussion

This study demonstrated approximately 7.1% re-dislocation with arthroscopic Bankart repair performed with anchors. The re-dislocation rate obtained in this study is lower compared to those in literature [6-8].

According to the literature, one of the most important factors is the number of anchors used for the treatment. The mean number of anchors used in this study was 3.4. Stability requires a minimum of 3 anchors. Studies show increased rate of re-dislocations with the use of 2 anchors or less [5,9].

The risk factor is selecting patients with humeral bone defects or glenoid defects. Success rates in arthroscopic Bankart repair are particularly low in patients with inverted-pear glenoid with glenoid

bone defects greater than 30% and in patients with Hill Sachs lesion with a bone defect large enough to cause complete entrapment to anterior glenoid at humeral head. In this study, arthroscopic Bankart repair was not used in patients with large Hill Sachs lesion or in patients with glenoid defect greater than 25%. These patients were treated with open surgical methods such as Laterjet Method [3,4].

This study demonstrated that the number of pre-operative dislocations and rate of anterior translation observed during pre-operative examination did not adversely affect post-operative outcomes. The studies showed that increased number of pre-operative dislocations, period between injury and surgery and increased rate of anterior translation did not adversely affect post-operative outcomes. Mobilizing the anterior capsuloligamentous complex precisely from the glenoid neck, then shifting upward and towards the lateral, and fixation with an appropriate number of anchors provided successful arthroscopic outcomes [3,7].

In this study no significant association was found between the sportive activities. The success rate was seen similar in the three groups. And re-dislocation or apprehension test was seen near percentages. The underlying reason is that the risk factor was considered and patients were selected in accordance with these factors. In the literature, similar results can be seen [2,10,11].

Conclusions

The outcomes obtained with the instability surgery method using an appropriate patient selection in this study are comparable to the outcomes achieved with patients who don't do any sportive activities. Being a professional player does not influence performed rehabilitation protocol.

References

1. Ee GW, Mohamed S, Tan AH (2011) Long term results of arthroscopic Bankart repair for traumatic anterior shoulder instability. J Orthop Surg Res 6: 28.
2. Stein T, Linke RD, Buckup J, Efe T, von Eisenhart-Rothe R, et al. (2011) Shoulder sport-specific impairments after arthroscopic Bankart repair: a prospective longitudinal assessment. Am J Sports Med 39: 2404-2414.
3. Porcellini G, Campi F, Pegreffi F, Castagna A, Paladini P (2009) Predisposing factors for recurrent shoulder dislocation after arthroscopic treatment. J Bone Joint Surg Am 91: 2537-2542.
4. Boileau P, Villalba M, Héry JY, Balg F, Ahrens P, et al. (2006) Risk factors for recurrence of shoulder instability after arthroscopic Bankart repair. J Bone Joint Surg Am 88: 1755-1763.
5. Provencher MT, Ghodadra N, Romeo AA (2010) Arthroscopic management of anterior instability: pearls, pitfalls, and lessons learned. Orthop Clin North Am 41: 325-337.
6. Kocaoglu B, Guven O, Nalbantoglu U, Aydin N, Haklar U (2009) No difference between knotless sutures and suture anchors in arthroscopic repair of Bankart lesions in collision athletes. Knee Surg Sports Traumatol Arthrosc 17: 844-849.
7. Hantes ME, Venouziou AI, Liantsis AK, Dailiana ZH, Malizos KN (2009) Arthroscopic repair for chronic anterior shoulder instability: a comparative study between patients with Bankart lesions and patients with combined Bankart and superior labral anterior posterior lesions. Am J Sports Med 37: 1093-1098.
8. Fabre T, Abi-Chahla ML, Billaud A, Geneste M, Durandeau A (2010) Long-term results with Bankart procedure: a 26-year follow-up study of 50 cases. J Shoulder Elbow Surg 19: 318-323.
9. Voos JE, Livermore RW, Feeley BT, Altchek DW, Williams RJ, et al. (2010) Prospective evaluation of arthroscopic bankart repairs for anterior instability. Am J Sports Med 38: 302-307.
10. Douoguih WE (2005) Treatment of traumatic anterior shoulder instability in the contact and collision athlete. Current Opinion in Orthopaedics. 16: 82-88.
11. Petrera M, Tsuji M, Theodoropoulos J (2011) Arthroscopic Bankart Repair With Suture Anchors in Collision Versus Non-collision Athletes (SS-10). Arthroscopy: The Journal of Arthroscopic & Related Surgery. 27: e34

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