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Research Article

PREDISPOSING FACTORS FOR RECURRENT SHOULDER DISLOCATION AFTER ARTHROSCOPIC TREATMENT

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Abstract:

Background: Arthroscopic repair treatment of anterior shoulder dislocation can fail. We hypothesized that patients who are at higher risk for reoccurrence of dislocation after following repair treatment could be recognized preoperatively on the basis of their clinical history. The purpose of the present study was to identify the risk factors for recurrence in a community-based population of patients with traumatic unidirectional instability that was treated with a single arthroscopic technique.

Method and results: Consecutive unselected patients (182; 186 shoulders) with recurrent instability (redislocation or subluxation) were selected. at Fatima Memorial Hospital Lahore during 2018–2019 arthroscopic suture anchor repair treatment was used to operate initial traumatic anteroinferior shoulder dislocation. from case records all the data were retrospectively such as demographic data and details of operation, and glenoid and preoperative radiographs were used to assess the glenoid and Hill–Sachs lesions. The primary outcome measure was recurrence of instability (redislocation or subluxation). By using Oxford instability scores and subjective shoulder values (SSVs), using postal questionnaires Functional results were assessed. One hundred and seventy-four shoulders were assessed after a median of 51 (range 24–95) months' follow-up. 19% of recurrences rate of instability was observed (redislocation 9% and subluxation 10%). further surgery was needed by only eight patients and needed by on. The mean Oxford instability score was 21 and the mean SSV 84%. 44% recurrent rate was found among patients aged 20 or less and among patients over 20, 12% rate. Logistic regression analysis stated that age ≤ 20 (OR 8.8), Hill–Sachs lesion (OR 3.3), glenoid erosion (OR 2.7) and length of follow-up (OR 1.5) were the most important risk factors for recurrence.

Conclusions: Our study identified factors that are independently associated with a higher risk of recurrence following arthroscopic. Patients who are more likely to have a redislocation following arthroscopic repair of an anterior shoulder dislocation can be identified preoperatively on the basis of sex, age, and the time from the first dislocation to surgery.

Keywords: Shoulder instability Arthroscopic stabilization Outcome Recurrence Risk factors.

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INTRODUCTION:

Traumatic anterior shoulder instability is a common injury accounting for 90 % of all glenohumeral dislocations [1]. The Bankart repair restores stability by reattaching the avulsed anterior capsulo-labral complex to the glenoid neck. Surgical treatment can be performed with an open or arthroscopic technique. The success rate of open surgical treatment for shoulder instability has been high, with reported redislocation rates of less than 10 % [2]. With the advent of and rapid improvement in arthroscopic techniques for shoulder surgery, arthroscopic stabilization has become a viable and frequently employed procedure to address anterior instability. Compared with the open stabilization procedures, arthroscopy has several advantages: better diagnostic ability and repair of all accompanying lesions, less chance of stiffness, shorter surgery time and less post-operative pain. In addition, the need to detach and repair the subscapularis is entirely avoided. However, many of the initial studies comparing the open Bankart repair and the arthroscopic technique suggested that patients managed arthroscopically have a poorer outcome with recurrence rates of up to 49 % [3]. These studies were based on older methods including transglenoid sutures and bioabsorbable tacks. Early failure of the initial arthroscopic techniques has been attributed to non-anatomical labral repair [4]. In addition, recurrent instability was often the consequence of undertreatment of capsular redundancy because of ineffective hardware.

The recent arthroscopic techniques involve modern suture anchors that enable capsular plications. Such techniques have been shown to decrease the recurrence rate, which now ranges from 4 to 17 % [5,6], making this more comparable to the results of open procedures [7]. Despite these technical advancements, 10 years postoperatively, there is still a recurrence rate of around 35 % [8]. Several factors, including age, participation in contact sports, technical errors, anterior labroligamentous periosteal sleeve avulsion (ALPSA), bone defects, insufficient soft-tissue tensioning and the number of previous dislocations, have been suggested to increase the risk of recurrence of instability [9,10]. Recognizing the cause of failure of a primary arthroscopic Bankart repair is of paramount importance in order to improve preoperative recognition of patients at risk of failure. The aim of this study was to understand the risk factors underlying the recurrence of instability in patients managed arthroscopically.

METHOD:

Consecutive unselected patients (182; 186 shoulders) with recurrent instability (redislocation or

subluxation) were selected. at Fatima Memorial Hospital Lahore during 2018–2019 arthroscopic sutureanchor repair treatment was used to operate initial traumatic anteroinferior shoulder dislocation. No open stabilization surgery was carried out during that time as a primary operation for shoulder instability except in cases of large glenoid fractures (25% of the width of the glenoid in axial view) or displaced (5 mm) greater tubercle fractures associated with anteroinferior dislocation. The case charts of the patients were retrospectively reviewed as regards demographic data, details of the operation, postoperative recovery and instability recurrence, and reoperations. The mean and median age of the patients (132 men, 50 women) at the time of surgery was 28 (SD 9, range 15–58) and 26, respectively. There were 119 right and 67 left shoulders involved. The mechanism of injury was sports related in 89, a fall from a standing position in 35, distension in 15, motor vehicle collision (MVC) in 11, bicycle accident in 8, seizure in 7, fall from a height in 6, other injury in 10 and unknown in 5 cases.

The preoperative radiographs were retrospectively assessed by one of us for Hill–Sachs lesions and glenoid lesions. The presence of Hill–Sachs lesion was noted (present or absent) from an axial view, but no attempt was made to assess its size. Glenoid lesions were assessed from both AP and axial views. Glenoid bone erosion was considered to be present if the sclerotic rim line was blurred in the anteroinferior part of the glenoid .in an AP view or if the anterior glenoid rim was round or blunt in an axial view . If there was a fragment present, it was considered to be a bony Bankart lesion, but no attempt was made to assess the size or position of the fragment A Hill–Sachs lesion was present in 113 shoulders and there were no signs of humeral lesions in 70 shoulders. The glenoid was intact in 125 shoulders was recorded. All patients wore a sling with the arm in internal rotation for 3 weeks and after that time they started gentle rangeof-motion exercises without external rotation beyond 0 degrees, which was started only after 6 weeks. Strengthening exercises were started after 8 weeks and a return to unrestricted activities including sports was allowed after 5 months. Twenty patients had been treated in our hospital because of recurrent instability, and we were able to combine the data from their case charts with that from the questionnaires. Twelve patients were lost to follow-up. They did not return the questionnaires, their addresses were unknown or the last known telephone number, if any, was not in use. According to the case records, they had not contacted our hospital as regards their operated shoulders. The median follow-up period among those who could be contacted (170

patients, 174 shoulders) was 51 (range 24–95) months.

Statistical analysis:

Chi-square or Fisher's exact tests for categorical data, Student's t-tests, receiver operating characteristic (ROC) curves and logistic regression were used as statistical methods. A p value of <0.05 was considered statistically significant. Parameters with $p < 0.2$ and those of clinical interest were entered into a multivariate logistic regression model. Parameters in the final model were selected according to p value ($p < 0.05$) or if the change in -2 times log likelihood function was significant in comparison with a previous model. Goodness-of-fit was evaluated by means of the Hosmer–Lemeshow test.

RESULTS:

Results Fifteen patients (9%) had a new dislocation and 18 (10%) suffered subluxation. The overall recurrence rate was 19% and it occurred at a mean of 16 (SD 17, range 1–71) months after the operation (15 cases in 0–12 months, 8 cases in 13–24 months, 7 at [24 months; 3 unknown). Twenty-two patients regarded a new injury as being responsible for the recurrence, but 11 patients suffered recurrence without a new injury. Eighteen patients (10%) needed further surgery because of recurrent instability. The

mean Oxford instability score was 21 (SD 10, range 12–54) and the mean SSV 84% (SD 17%, range 10–100). The figures for those with stable shoulders were 19 (SD 8, range 12–51) and 89% (SD 14%, range 20–100) and for those who had recurrence of instability and reoperation, 30 (SD 11, range 12–54) and 67% (SD 19%, range 10–97), respectively. Young age at the time of surgery (mean age 26 with recurrence, 30 with no recurrence, $p = 0.03$) and length of follow-up (60 months (mean) with recurrence, 51 months (mean) with no recurrence, $p = 0.02$) were statistically significantly associated with recurrence. Bone defects and several other parameters were tested against recurrence (Table 1). Hill–Sachs lesion on preoperative radiographs and suture material were also statistically significantly associated with recurrence. Glenoid erosion seen on radiographs seemed to be associated with recurrence and glenoid fracture seemed to be protective as regards recurrence, but the difference did not quite reach statistical significance.

Patients had a new injury as a cause of recurrent instability. The results of multivariate logistic regression showed that age ≤ 20 was the most important risk factor as regards recurrence, followed by a Hill–Sachs lesion, glenoid erosion and length of follow-up (Table 2).

Table 1 Parameters tested against recurrence

Parameter	Recurrence (N)	No recurrence (N)	p Value
Sex			0.16
Male	27	98	
Female	6	43	
Side			0.06
Right	26	87	
Left	7	54	
Age at the time of surgery			
B20 years	16	20	0.001
[20 years	17	121	
Mechanism of injury			0.47
Sports	15	71	
Fall from standing position	5	27	
Distension	6	9	
MVC	2	8	
Bicycle accident	2	6	
Seizure	1	6	
Fall from a height	2	4	
Other injury	0	5	
Unknown	0	5	
Hill-Sachs lesion*			0.01
No	6	60	
Yes	26	80	
Glenoid lesion*			0.06
No	22	95	
Erosion	8	17	
Fracture	2	28	
Type of anchor			0.32
Bio-Suture Tak™	16	89	
Panalok™	12	30	
TAG™ Rod II Style	3	8	
Bio-Fastak™	2	11	
Bioraptor™	0	3	
Suture			0.05
Ethibond™	22	93	
Fiberwire™	3	32	
Panacryl™	8	13	
Durabraid™	0	3	
Anchor ? suture			0.20
Bio-Suture Tak™ ? Ethibond™	13	57	
Bio-Suture Tak™ +Fiberwire™	3	32	
Panalok™ + Panacryl™	8	13	
Panalok™ +Ethibond™	4	17	
Bio-Fastak™ + Ethibond™	2	11	
Bio-Raptor™ + Durabraid™	0	3	
TAG™ Rod II Style + Ethibond™	3	8	
Number of anchors			0.18
2	0	11	
3	17	75	
4	16	49	
5	0	6	
Associated conditions			0.47

Osteoarthritis	2	12
SLAP or posterior labrum	1	24
Rotator cuff lesion	0	4

Table 2 Results of multivariate logistic regression analysis for recurrence of instability

Parameter	OR	95% CI	p
Age (B20 years)	8.8	3.2–23.9	\0.001
Glenoid lesion, normal	1.0		
Erosion	2.7	0.86–8.4	0.09
Bony Bancart	0.26	0.05–1.3	0.09
Hill–Sachs lesion	3.3	1.1–9.6	0.028
Follow-up time, years	1.5	1.2–2.0	0.003

Values presented are odds ratios (ORs) and 95% confidence intervals (95% CIs). Values of p according to the Wald test are presented p (Hosmer–Lemeshow) = 0.30, Constant 0.02, $p < 0.001$

DISCUSSION:

The most important finding of our study was that the recurrence rate of instability after arthroscopic sutureanchor stabilization was 19%, this being higher than in previous studies. Patients who were 20 years old or younger were at the highest risk of recurrence and a new injury was common among these patients. Radiographic evidence of Hill–Sachs lesions and glenoid erosion were associated with recurrence, but their roles were less important in comparison with young age. The length of follow-up was also associated with an increase in recurrence rate. The functional result was good if stability was achieved in the primary operation. The high recurrence rate may be explained by longer follow-up period than in previous studies. Boileau et al. and Balg and Boileau reported failure rates of 15% in two studies of consecutive patients similar to ours. The mean follow-up periods in these two studies were shorter than in our study: 31 and 36 months, respectively, compared with our 51 months. Burkhart and De Beer reported an 11% recurrence rate in their study of 194 patients, but again the follow-up period was shorter (mean 27 months). The results of recent long-term studies have emphasized the fact that recurrence is

frequent even 2 years after surgery and longer follow-up is needed in order to reveal the real recurrence rate after arthroscopic Bankart repair. Kim et al. reported a recurrence rate of only 4% in a study with a follow-up period of 2–6 years, but these patients represented only some of their cases of arthroscopic stabilization during that time: they excluded 104 patients for various reasons and selection bias may have been possible. Shoulder dislocation is associated with young age, and young age is considered to be the most important risk factor as regards recurrence after first-time dislocation. Early surgery can lower the recurrence rate compared with non-operative treatment.

CONCLUSION:

Young age is the most important risk factor for recurrence of instability after arthroscopic sutureanchor Bankart repair. Bone defects seen in preoperative plain radiographs are less important and more accurate imaging is needed to reveal their true role for recurrence of instability.

REFERENCES:

1. Shah AS, Karadsheh MS, Sekiya JK (2011) Failure of operative treatment for glenohumeral instability: etiology and management. *Arthroscopy* 27(5):681–694
2. Thal R, Nofziger M, Bridges M, Kim JJ (2007) Arthroscopic Bankart repair using Knotless or

- BioKnotless suture anchors: 2- to 7-year results. *Arthroscopy* 23(4):367–375
3. Pope EJ, Ward JP, Rokito AS (2011) Anterior shoulder instability—a history of arthroscopic treatment. *Bull NYU Hosp Jt Dis* 69(1):44–49
 4. Burkhart SS, De Beer JF (2000) Traumatic glenohumeral bone defects and their relationship to failure of arthroscopic Bankart repairs: significance of the inverted-pear glenoid and the humeral engaging Hill-Sachs lesion. *Arthroscopy* 16(7):677–694
 5. Hobby J, Griffin D, Dunbar M, Boileau P (2007) Is arthroscopic surgery for stabilisation of chronic shoulder instability as effective as open surgery? A systematic review and meta-analysis of 62 studies including 3,044 arthroscopic operations. *J Bone Joint Surg Br* 89(9):1188–1196
 6. Voos JE, Livermore RW, Feeley BT, Altchek DW, Williams RJ, Warren RF, Cordasco FA, Allen AA (2010) Prospective evaluation of arthroscopic bankart repairs for anterior instability. *Am J Sports Med* 38(2):302–307
 7. Petrera M, Patella V, Patella S, Theodoropoulos J (2010) A metaanalysis of open versus arthroscopic Bankart repair using suture anchors. *Knee Surg Sports Traumatol Arthrosc* 18(12): 1742–1747
 8. van der Linde JA, van Kampen DA, Terwee CB, Dijkman LM, Kleinjan G, Willems WJ (2011) Long-term results after arthroscopic shoulder stabilization using suture anchors: an 8- to 10-year follow-up. *Am J Sports Med* 39(11):2396–2403
 9. Ozbaydar M, Elhassan B, Diller D, Massimini D, Higgins LD, Warner JJ (2008) Results of arthroscopic capsulolabral repair: Bankart lesion versus anterior labroligamentous periosteal sleeve avulsion lesion. *Arthroscopy* 24(11):1277–1283
 10. Balg F, Boileau P (2007) The instability severity index score. A simple pre-operative score to select patients for arthroscopic or open shoulder stabilisation. *J Bone Joint Surg Br* 89(11):1470–1477