Arthroscopic Bankart repair: modified transglenoid sutures versus suture anchors more than 5 years: a retrospective study

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Introduction
Arthroscopic Bankart repair is a common procedure for treatment of recurrent traumatic anterior shoulder dislocation all over the world. Different studies compared the outcome of transglenoid sutures after different modifications with the outcome of suture anchors and they found no significant difference between the two procedures.
Objective
The aim of this study was to compare the long-term results of the modified transglenoid sutures through two holes and the use of suture anchors .
Patients and methods
Seventy patients were included in this study (42 for the transglenoid group and 28 for the second group). The mean follow-up period for the first (transglenoid) group was 7.19 years (range 5–11) and for the second (anchor) group 6.93 years (range 5–12).
Results
There is a significant difference in both groups between the preoperative and postoperative Rowe scores (P=0.000), while there is insignificance when comparing the two groups. Six patients (14.3%) in the transglenoid group suffered from recurrence of instability (two dislocations and four subluxations). Two of them needed second operation (open Laterjet procedure). In the anchor group, four (14.2%) patients suffered recurrence of symptoms of instability (two dislocations and two subluxations). Two of them required second operation. One patient of the first group suffered infection related to the sutures and the knot that required removal of the suture material.
Conclusion
Modified transglenoid suture technique is quietly equal to the repair with suture anchors for treatment of recurrent traumatic anterior shoulder instability.

Keywords:
anchors, comparative, modified sutures, transglenoid

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Introduction

Arthroscopic Bankart repair is a common procedure for treatment of recurrent traumatic anterior shoulder dislocation all over the world [1,2]. The original transglenoid, which was developed by Caspari [3], was declined because of the fair and poor outcomes according to different studies [4]. Suture anchors were developed in the past two decades with excellent and good short-term and mid-term results [5]. In developing countries, the cost of suture anchors is high. Different studies compared the outcome of transglenoid sutures after different modifications with the outcome of suture anchors and they found no significant difference between the two procedures [6].

Modified transglenoid Bankart repair with the use of 2–4 Ethipond suture material (no 5) passing through two transglenoid holes, was used with excellent results regarding Rowe score and failure rate [7].

Objective

The aim of this study was to compare the long-term results of the modified transglenoid sutures and the use of suture anchors as regards Rowe score, instability (dislocation and subluxation), infection, problems related to the material used, and the need for second operation.

Patients and methods

Between March 2006 and January 2013, 70 patients were operated upon for recurrent traumatic anterior shoulder dislocation in Benha University Hospital and Al Helal Hospital (ministry of health) by the same team using two different procedures according to the availability of the implants for Bankart repair and the acceptance of the

patient. The study was approved by the institutional ethics committee in the Orthopedic Department of Orthopaedic Surgery, Benha University, Egypt. All patients were diagnosed as recurrent traumatic anterior shoulder dislocation by history and physical examination. All patients had been evaluated by radiography and MRI and all documented to have Bankart lesion. Forty-two patients (35 males and seven females) with mean age at the time of operation, 29.1 years, were available for the first group, while 28 patients (24 males and four females) with mean age at the time of operation, 27.36 years, were available for the second group.

The exclusion criteria for both groups were bony Bankart lesion, erosion of the glenoid more than 25% as seen during diagnostic arthroscopy, multidirectional instability, and previous operation for recurrent shoulder instability (Table 1).

The operation

All patients were operated upon by the same team under the same circumstances using preoperative antibiotic prophylaxis after induction of anesthesia, beach-chair position, diagnostic arthroscopy of the shoulder, and preparation of the anterior glenoid margin as a routine for all patients.

In the transglenoid suture group, modified technique using 2–4 labral sutures (no 5 Ethipond) passing through two transglenoid holes (at 4 and 2 o'clock in the right shoulder and 8 and 10 o'clock in the left shoulder) to the back of the scapula and posterior knot was done and tied (Fig. 1).

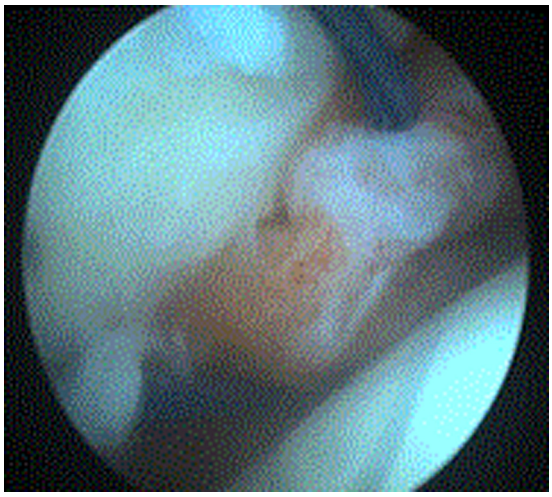
In the anchor group, two or three knot-tying suture anchors had been used according to the extent of the tear starting from the anteroinferior glenoid (Fig. 2).

A rehabilitation program had been identical for both groups. The shoulder was fixed from the arm to the

Table 1 The demographics of the two groups

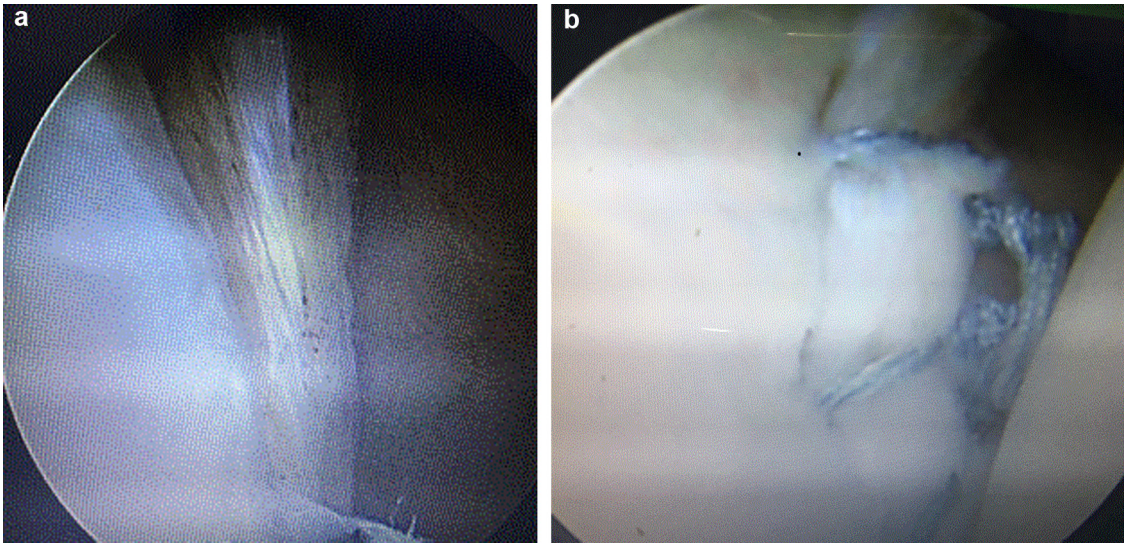
	Transglenoid group (first group)	Anchor group (second group)
Number of patients	42	28
Sex: male [*n* (%)]	35 (33.3)	24 (85.7)
	7 (16.7)	4 (14.3)
Age at the time of operation [mean (range)] (years)	29.1 (18–42)	27.36 (18–45)

Figure 1



Transglenoid sutures.

Figure 2



(a) Bankart lesion. (b) Repair with suture anchors.

chest for the first 3 weeks followed by passive movements for the second 3 weeks. Active movements had been allowed in the next 6 weeks. Return to routine work was allowed 3 months after the operation and manual work after 6 months.

Evaluation

The Rowe score [8,9] was used for evaluation of the shoulder function. It is a 100-point score system (50 points for stability, 20 points for motion, and 30 points for function). The results are classified as excellent (90–100), good (75–89), fair (51–74), and poor (<50).

Recurrence of dislocation required manual reduction. Subluxation is defined as a feeling of slipping of the shoulder. Apprehension test was used to evaluate stability.

Statistics

Statistical analysis was done using the paired-sample *t*-test to compare the mean preoperative and postoperative Rowe scores for each group and by independent-sample *t*-test to compare between both groups of patients. The descriptive statistics and analysis were done with IBM SPSS Statistics for Windows, Version 22.0 (IBM Corp., Armonk, New York, USA).

Results

Seventy patients were included in this study (42 for the transglenoid group and 28 for the second group). The mean follow-up period for the first (transglenoid) group was 7.19 years (range 5–11) and for the second (anchor) group 6.93 years (5–12).

The mean Rowe score was changed from 32.86 points preoperatively to 91.55 points postoperatively in the first transglenoid group, while the Rowe score was changed from 33.9 points to 92.14 postoperatively. In total, 36 patients (85.7%) showed excellent and good results in the first group and 24 patients (85.8%) showed excellent and good results in the second group.

There is a significant difference in both groups between the preoperative and postoperative Rowe scores (P=0.000), while there is insignificance when comparing the two groups.

Six patients (14.3%) in the transglenoid group suffered from recurrence of instability (two dislocations and four subluxations). Two of them needed second operation (open Latarjet procedure). In the anchor group, four (14.2%) patients suffered recurrence of symptoms of instability (two dislocations and two subluxations). Two of them required second operation.

One patient of the first group suffered infection related to the sutures and the knot that required removal of the suture material. There were no neurovascular complications in both groups (Tables 2 and 3).

Discussion

Detachment of the labrum is the fixed pathology in traumatic dislocation of the shoulder and it was known as Bankart lesion [10]. Arthroscopic repair of the Bankart lesion was started by transglenoid suture that was popularized by Caspari [3,11]. High failure rates of the transglenoid technique and the development of the suture anchors shifted most surgeons toward the repair with suture anchors [5,12]. Zaffagnini *et al.* [13] found the insignificant difference between the repair with transglenoid sutures and the open Bankart repair.

Table 2 The preoperative Rowe score of the two groups

	Tansglenoid (first group)	Anchor (second group)	Significance
Preoperative stability (50 points) (mean)	0	0	
Preoperative motion (20 points) [mean (SD)]	13.1 (3.97)	13.21 (3.9)	
Preoperative function (30 points) [mean (SD)]	20.12 (7.44)	20.71 (6.9)	
Total preoperative Rowe score (100 points) [mean (SD)]	32.86 (10.06)	33.93 (8.96)	Insignificant

Table 3 The postoperative Rowe score for both groups

	Transglenoid (first group)	Anchor (second group)	Significance
Postoperative stability (50 points) [mean (SD)]	45.24 (11.09)	45.7 (11.36)	P>0.05 insignificant
Postoperative motion (20 points) [mean (SD)]	18.69 (3.50)	18.57 (3.29)	P>0.05 insignificant
Postoperative function (30 points) [mean (SD)]	27.62 (5.56)	27.86 (4.17)	P>0.05 insignificant
Total Rowe score (100 points [mean (SD)]	91.55 (19.58)	92.14 (17.71)	P0.897>0.05 insignificant
Poor and fair (<76 points) [*n* (%)]	6 (14.3)	4 (14.2)	
Good and excellent (76 points and more) [*n* (%)]	36 (85.7)	24 (85.8)	

In this study, there is no significant difference between the arthroscopic transglenoid sutures (modified technique [7] by using no 5 Ethibond nonabsorbable suture material and passing through two drill holes) and the repair with suture anchors (—two to three knot-tying anchors). There were excellent results for both techniques according to the Rowe score (mean 91.55 points for the transglenoid group vs. 92.14 points for the anchor group). After a follow-up period of more than 5 years, 36 patients (85.3%) from 42 patients in the transglenoid group showed excellent and good results. In total, 24 patients (85.2%) from 28 patients in the anchor group showed excellent and good results. Both groups showed a significant difference between preoperative and postoperative scores as regards the stability, range of motion, function, and total Rowe scores.

Kim *et al*. [6,14] reported insignificant differences between modified transglenoid sutures (using polyglycolic absorbable suture material—PDS—and one transglenoid drill hole) and repair with suture anchors in nonathletic patients older than 30 years. In the transglenoid group, the Rowe score changed from 30 to 90 points with 85.7% of patients having good-to-excellent results. In his anchor group, 85.8% of patients showed good-to-excellent results with mean postoperative Rowe score of 90 points.

With traumatic dislocation, stretching of the capsule could affect the stability of the shoulder joint. This adds a pathology to the Bankart lesion, which may lead to recurrence of instability, especially subluxation with both groups [15,16].Infection occurred in one patient only (2.3%) in the transglenoid group that needed debridement and removal of the sutures after 5 months without affection of the stability of the shoulder.

With the advent of the suture anchor material and instruments, most surgeons prefer anchors for Bankart repair, but according to the cost-effectiveness, the transglenoid Bankart repair is an effective technique, especially when anchors are not available and the national funds are limited [17].

With transglenoid sutures, the suprascapular nerve is at risk [18]. In this study, there was no affection of the suprascapular nerve.

The limitation of the study is the limited number of patients and there was no accurate documentation of measuring the extent of the hill-sack lesion and the glenoid erosion.

Conclusion

Modified transglenoid suture technique is quietly equal to the repair with suture anchors for treatment of recurrent traumatic anterior shoulder instability.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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