

Results of Magnuson-stack operation in recurrent anterior shoulder instability

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ABSTRACT

Objective: To evaluate the clinical results of Magnuson-stack operation in recurrent anterior shoulder instability

Methodology: Twenty-six patients with mean age of 27 years had undergone Magnuson-stack operation from July 2001 to September 2009 with mean follow up of 40 months. The clinical outcome was recorded according to Quick DASH score (Iranian version).

Results: There were no redislocations. Clinical outcome was excellent in eighteen (70%), and good in 8 (30%). The limitation in shoulder external rotation was observed in all of the patients without significant functional impairment.

Conclusion: We conclude that although in Magnuson-Stack procedure we do not correct the anatomical defect of the recurrent anterior shoulder instability, but the ease of the operation and the relatively good clinical results are the reasons to use them in these patients, if arthroscopic repair facilities are not available.

KEY WORDS: Magnuson-stack, Recurrent, Shoulder instability, Quick DASH score.

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INTRODUCTION

There are numerous techniques for open repair of anterior shoulder instability.¹ Although the most common cause of the functional deficiency of the inferior glenohumeral-labral complex is the

detachment of the complex from the anterior aspect of the glenoid (a Bankart lesion),^{2,3} however some non-anatomic procedures like Magnuson-stack are easy and has satisfactory results.⁴ This operation was developed in 1943 as a treatment for recurrent anterior dislocation of the glenohumeral joint. In this operation the anterior capsulomuscular wall is tightened by advancing the capsule and the tendon of the subscapularis muscle laterally on the humerus.⁵ However it has the disadvantage of not correcting a labral or capsular defect.

In this observational prospective study we evaluated the results of the Magnuson-Stack operation in preventing dislocation and it's functional results on shoulder using the Quick DASH score (Iranian version) on the patients.

METHODOLOGY

Between July 2001 until September 2009 a sum of twenty-six patients have been surgically treated for recurrent anterior shoulder dislocation by Magnuson-Stack operation. The patients were 25

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males and one female and had traumatic dislocation with at least four times of redislocation (Table-I). In all of the patients the apprehension test was positive at the time of admission and they had undergone standard physiotherapy program without response. The surgeries were done according to the Magnuson-Stack operation and during the operation the insertion of the subscapularis tendon along with a piece of bone transferred distally and laterally on the humeral neck.

Pendulum exercises without active or passive elbow extension were started after one week of immobilization in velpeau bandage and after six weeks range of motion exercises were started without weight.

Outcome of the operation was evaluated according to the quick DASH score (Iranian version) and

the range of motion and muscle strength were evaluated clinically and compared with the normal shoulder.

RESULTS

There were 25 male and one female in our patients. In 11 patients (42%) the number of dislocations was more than 10 times and actually they did not remember the actual times of recurrent dislocations. The average follow up time was 40 months. The demographic characteristics of the patients are shown in Table-I.

The mean time between the first episode of dislocation until surgery was approximately 12 months. The mean time of immobilization after the first episode of dislocation was three weeks in 14, two weeks in seven and one week in five patients. In

Table-I: Characteristics of the patients.

No.	Sex	Age	Side of involvement	No. of dislocations:	Time from first dislocation until operation (months)	Follow up time (months)	DASH score
1	M	23	L	>10	18	84	30
2	M	25	R	>10	20	36	42
3	M	19	R	4	7	62	32
4	M	31	R	6	6	48	33
5	M	22	R	>10	12	36	31
6	M	42	R	8	16	15	32
7	M	24	L	4	6	61	43
8	M	33	R	6	8	32	36
9	M	26	R	>10	16	18	34
10	M	25	R	>10	18	43	30
11	F	25	R	8	12	27	45
12	M	19	L	4	6	82	32
13	M	32	L	5	6	38	34
14	M	28	R	7	8	45	35
15	M	29	R	>10	12	23	33
16	M	19	R	5	12	17	34
17	M	24	R	4	8	46	43
18	M	31	R	>10	16	28	42
19	M	28	R	>10	18	42	32
20	M	27	L	>10	18	37	33
21	M	22	R	6	12	26	30
22	M	20	R	8	14	42	31
23	M	36	R	4	10	37	44
24	M	34	R	>10	12	46	45
25	M	23	R	8	10	52	43
26	M	37	R	>10	18	24	34

all of our patients the apprehension test was positive and of course it was the indication for operation.

None of the patients reported dislocation after the operation but, the apprehension test was still positive in 10 (38%) of the patients. In 19 (73%) of the patients the dominant side was operated. The forward and backward flexion was normal in operated shoulder compared with the normal side but, the external rotation in 90 degree of abduction was about 55 degree (45-60) whereas in normal shoulder it was 75 degree (65-90).

The average DASH (The Disabilities of the Arm, Shoulder and Hand Outcome Measure) score was 30-36 (Excellent) in 18 (70%) and 40-45 (Good) in 8 (30%). This questionnaire is about the symptoms of the patients like pain and weakness and also their abilities in doing some of daily living activities like turning key, pushing heavy doors, carrying heavy objects, hair washing, wearing shirts, etc (20 different activities). Each activity has five scores from one (without difficulty) to five (not able to do) hence the point 100 is the maximum and 20 is the minimum score and the lower the score the better the result.

DISCUSSION

As in Magnuson-stack procedure the main pathology of the anterior shoulder instability is not corrected. There are a few articles regarding outcome of this operation or comparing the results of this procedure with other non-anatomic procedures and in new orthopedic textbooks, the technique of this operation has been eliminated.

Regan et al⁶ compared the functional results of the Bristow, Magnuson-stack, and Putti-Platt procedures and reported better results in Magnuson and Bristow in comparison with Putti-Platt. Miller et al⁷ evaluated the efficacy of the Magnuson-stack operation in 43 patients and reported 90 percent of satisfactory results and 10 degree loss of external rotation.

Ahmadian⁸ in a review of 38 cases of recurrent anterior dislocation of the shoulder whom undergone Magnuson-Stack operation detected subscapularis laxity as a constant finding and concluded this as the cause of dislocation in these patients. Yee et al⁹ reviewed the outcome of surgical repair of recurrent anterior shoulder instability. Procedures consisted of Putti-Platt, Bristow, Magnuson-Stack, Botychev and Bankart repairs. The authors concluded that the most functional deficiency was in throwing, working overhead, pulling and working at shoulder level in all of the patients.

Although the treatment of the recurrent anterior shoulder dislocation in patients who failed a supervised rehabilitation program is operative stabilization¹⁰, many of these procedures have fallen out of favor because of the long-term results and complications of their use.¹¹

Anterior tightening procedures like Magnuson-Stack and tight Bankart repair result in greater posterior joint loads leading to pain and arthrosis but, anatomic procedures produce more normal mechanics.^{12,13} On the other hand, many authors believe that Bankart operation has excellent clinical outcome and is the treatment of choice for traumatic shoulder dislocation especially for young athletic patients,¹⁴⁻¹⁶ although there are studies that insist on older non-anatomic procedures like Bristow-Laterjet and reported equal results between Bristow and Bankart procedures.^{10,17,18}

CONCLUSION

In treating the anterior shoulder instability there is a trend to the newer techniques especially the arthroscopic repairs and the use of these sophisticated techniques is accepted worldwide. Although in older techniques like Magnuson-Stack operation the responsible anatomic lesion is not addressed and is not repaired, but the results of our study suggest that if we do not have the facility or the experience of the newer techniques, we can use this older technique with high rate of success and low rate of complications as the patients will adopt with the limitation in external rotation .

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REFERENCES

1. Millet PJ, Clavert P, Warner J. Open operative treatment for anterior shoulder instability: When and why? *J Bone J Surg (Am)* 2005;87:419-432.
2. Mizuno N, Yoneda M, Hayashida K, Nakagawa S. Recurrent anterior shoulder dislocation caused by a midsubstance complete capsular tear. *J Bone J Surg (Am)* 2005;87:2717-2723.
3. Wolf EM, Cheng JC, Dickson K. Humeral avulsion of glenohumeral ligaments as a cause of anterior shoulder instability. *Arthroscopy* 1995;11:600-607.
4. Rodriguez Merchan EC, Ortega M. The Magnuson-Stack operation for recurrent dislocation of the shoulder. A long-term follow up of 44 patients. *Int Orthop* 1994;18(6):356-358.
5. Magnuson PB, Stack JK. Recurrent dislocation of the shoulder. *JAMA* 1943;123:889.

6. Regan WD Jr, Webster-Bogart S, Hawkins RJ, Fowler PJ. Comparative functional analysis of the Bristow, Magnuson-Stack, and Putti-Platt procedure for recurrent dislocation of the shoulder. *Am J Sports Med* 1989;17(1):42-48.
7. Miller LS, Donahue JR, Good RP, Staerk AJ. The Magnuson-Stack procedure for treatment of recurrent glenohumeral dislocations. *Am J Sports Med* 1984;12(2):133-137.
8. Ahmadian AM. The magnuson-Stack operation for recurrent anterior dislocation of the shoulder. A review of 38 cases. *J Bone Joint Surg (Br)* 1987;69(1):111-114.
9. Yee AJ, Devane PA, Horne G. Surgical repair for recurrent anterior instability of the shoulder. *Aust N Z J Surg* 1999;69(11):802-807.
10. Omidi-Kashani F, Sadri-Mahvelati E, Mazlumi SM, Makhmalbaf H. Is Bristow-Laterjet operation effective for every recurrent anterior dislocation? *Arch Iran Med* 2008;11(3):270-273.
11. Rokito AS, Namkoong S, Zuckerman JD, Gallagher MA. Open surgical treatment of anterior glenohumeral instability: An historical prescriptive and review of the literature. (Part II) *Am J Orthop* 1998;27(12):784-790.
12. Ahmad CS, Wang VM, Sugalski MT, Levine WN, Bigliani LU. Biomechanics of shoulder capsulorrhaphy procedures. *J Shoulder Elbow Surg* 2005;14(1 suppl 5):125-185.
13. Bonneville N, Mansat P, Bellumore Y, Mansat M, Bonneville P. Surgical treatment of anterior shoulder instability in rugby players: Clinical and radiographic results with minimum five-year follow-up. *Rev Chir Orthop Reparatrice Appar Mot* 2008;94(7):635-642. Epub 2008 May 1.
14. Weiss S, Ettrich O, Kasten P, Loew M. Evaluation of force and mobility following the open Bankart operation for treatment of recurrent dislocation of the shoulder. *Z Orthop Ihre Grenzgeb* 2004;142(5):592-597.
15. Tingart M, Bathis H, Bouillon B, Neugebauer E, Tilling T. Surgical therapy of traumatic shoulder dislocation. Are there evidence-based indications for arthroscopic Bankart operation? *Unfallchirurg* 2001;104(9):894-901.
16. Strahovnik A, Fokter SK. Long-term results after open Bankart operation for anterior shoulder instability. A 3-to 16-year follow up. *Wien Klin Wochenscher* 2006;118(2):58-61.
17. Weaver JK, Derkash RS. Don't forget the Bristow-Laterjet procedure. *Clin Orthop Relat Res* 1994;(308):102-110.
18. Salvi AE, Paladini P, Campi F, Porcellini G. The Bristow-Laterjet method in the treatment of shoulder instability that cannot be resolved by arthroscopy. A review of literature and technical-surgical aspects. *Chir Organi Mov* 2005;90(4):353-364.