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EVALUATION OF CLINICAL OUTCOME OF MAGNUSON STACK SURGERY IN RECURRING ANTERIOR SHOULDER INSTABILITY

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Abstract:
Objective: *This research work was carried out to assess the findings of Magnuson-stack surgery in recurring anterior shoulder instability.*
Methodology: *In this research work, total 26 patients with an average age of twenty-seven years underwent Magnuson-stack surgery from June 2015 to July 2020 with an average follow up period of 40 months. We recorded the clinical findings according to the Quick DASH score.*
Results: *We found no re-dislocations. We found the excellent clinical outcome in 70.0% (n: 18) and good in 30.0% (n: 8) patients. We observed the limitation in the external rotation of the shoulder in every patient present with no significant functionality impairment.*
Conclusion: *The findings of this research work concluded that although in procedure of Magnuson-Stack, we do not rectify the anatomical anomaly of the recurring anterior shoulder instability, but ease of surgery and relatively good clinical findings are the causes to utilize them in the patients, if there is no availability of the facilities related to the arthroscopic repair.*
KEYWORDS: *Recurring, Magnuson-Stack, Surgery, Rotation, Quick Dash Score, Impairment, Anomaly, Re-Dislocation, Anatomical.*

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INTRODUCTION:

There are many methods for open repair of the anterior shoulder instability [1]. Although most frequent reason of the functionality lack of inferior glenohumeral-labral complex is the detachment of complex from anterior aspect of glenoid [2, 3]. But some non-anatomic methods as Magnuson-stack are much easy and these are present with the satisfactory findings [4]. The development of this surgery was carried out in in 1943 for the treatment of the recurring anterior detachment/dislocation of glenohumeral joint. In this surgery, the tightening of the anterior capsule-muscular wall is carried out with the advancement of the capsule as well as tendon of subscapularis muscle across on the humerus [5]. There is one disadvantage of this procedure as no correction of the capsular defect. In this prospective research work based on observations, we assessed the findings of Magnuson-Stack surgery in the prevention of dislocation and results of its function on the shoulder utilizing the Quick DASH score on the patients.

METHODOLOGY:

From June 2015 to July 2020, a sum of 26 patients underwent surgery for recurring anterior shoulder instability with the use of Magnuson-Stack surgical intervention. There were twenty-five males and only one female and they were present with traumatic dislocation with minimum 4 times of re-dislocation (Table-1). In all the patients, there were positive results for all the patients at the admission time and all these patients underwent standard program of physiotherapy with no response. These surgical interventions were carried out according to Magnuson-stack surgery and during the surgical intervention, insertion of subscapularis tendon in addition with the piece of bone shifted distally and laterally on humeral neck. Pendulum exercises with no passive or active extension of elbow were initiated after complete one week of the immobilization in the velpeau bandage and after the completion of 6 weeks, we started the range of the motion exercises without any weight. We evaluated the surgery outcome in accordance with the quick DASH scores and also assessed the range of muscle and motion strength clinically and then its comparison was carried out with the normal shoulder. We obtained the written consent of all the patients after describing them the rationale of this research work completely. We obtained the permission of the ethical committee of the institute for the conduction of this research work. We excluded the patients suffering from other serious complications or the patients who failed to accomplish the complete follow-up period. P value of less than 0.050 was considered as significant.

RESULTS:

There were one female and twenty-five males in our recruited patients. In 42% (n: 11) patients, the number of the dislocations was higher than ten times and actually they were present without any remembrance of the actual number of the recurring dislocations. Mean follow up duration was 40 months. The traits of demography of all the patients were present in Table-1. The average duration between the 1st dislocation episodes until surgery was of about twelve months. The average immobilization's time after 1st episode of dislocation was total 3 weeks in fourteen, 2 weeks in 7 and only 1 week in 5 patients. The outcome was positive results of apprehension test in all the patients and of course it was sign for surgical intervention.

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

No patients stated the dislocation after the surgical intervention but there were still positive findings of the apprehension test in 38% (n: 10) patients. In 73% (n: 19) patients, we performed the surgery at the dominant side of the patients. The backward and forward flexion was just normal in all the operated shoulders as compared with the healthy normal side but the average of the external rotation in ninety degree of abduction was 55 degree (with a range from 45 to 60 degree) while in case of the normal shoulder, average of the external rotation was seventy five degree (with an average of 65 to 90 degree).

The disabilities of the arm, shoulder and hand Outcome measure (DASH) scores was from 30 to 36 (Excellent) in 70% (n: 18) patients and from 40 to 45 (Good) in 30% (n: 8) patients. This particular questionnaire is about the different symptoms of the patients like weakness and pain as well as their capabilities in performing some of daily routine living activities as turning of key, pushing of the heavy doors, carrying objects with heavy mass, washing of hair, shirts wearing etc. (twenty different activities). There are five scores for every activity from 1 which is without difficulty to 5 which is not able to do hence the score of twenty is the minimum and score of one

hundred is the maximum and there were better results with the lower scores.

DISCUSSION:

As in procedure of Magnuson-stack operation, the basic pathology of the anterior shoulder instability is not fully rectified. There are very few articles about the clinical outcomes of this particular surgery or comparison of the findings of this specific procedure with some other non-anatomic techniques and in the current orthopedic books, the method of this particular surgical intervention has been removed. Regan [6] has compared the functionality results of the three different procedures of Putti-Platt, Bristow and Magnuson-stack surgeries and he came to the conclusion that there were much better clinical results in the procedures of Magnuson & Bristow as compared to results of the patients treated with Putti-Platt. Miller [7] assessed the effectiveness of the Magnuson-stack surgery in total forty-three patient and he concluded that 90% patients were present with satisfactory clinical results and all of these patients were present with 10-degree loss in the external rotation of shoulder.

Ahmadian [8] in a research work conducted on thirty-eight patients of recurring anterior dislocation of shoulder who underwent the Magnuson-stack surgery identifies the subscapularis laxity as the constant finding and he stated this as the main reason of dislocation among these patients. Yee [9] reviewed the findings of the repair of recurring anterior shoulder instability through surgical intervention. The comprising techniques were Bankart, Putti-Platt, Bristow and Magnuson-Stack surgery repair. The researchers found that there was very common functional deficiency in working, throwing, overhead, pulling at the level of shoulder and overload in all the patients of this research study.

Although treatment of the dislocation of the recurring anterior shoulder among the patients who were not able to follow the supervised program of rehabilitation is the surgical stabilization [10], many of such procedures lost out of favor due to the long-term outcomes and rate of complications associated with their utilization [11]. Procedures of anterior tightening as Magnuson-stack and Bankart repair result in the high posterior joint loads causing the arthrosis and pain but, anatomic methods produce the more normal mechanics [12, 13]. There are some authors who believe that there are excellent clinical results of the Bankart surgery and this procedure is the treatment of choice for the traumatic dislocation of the shoulder particularly for the athletic patients of very young age [14,15], although there are some research works that emphasis on the ancient non-anatomic methods as Bristow-Later jet and stated the equal results of outcome between the procedures of Bristow & Bankart surgeries.

CONCLUSION:

For the treatment of the anterior shoulder instability, there is rise in the trend of application of new techniques particularly arthroscopic repairs and utilization of these sophisticated methods is well accepted in the whole world. Although in ancient methods like the Magnuson-Stack surgery, there is no address for the responsible anatomic abrasion and it is also not repaired, but the findings of this research work state that there was deficiency of the experience and facility of the newer methods, we can utilize this old method with high success rate and very low complication rate with the limitation of external rotation of the shoulder.

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