

RESULTS OF THE PUTTI-PLATT OPERATION FOR RECURRENT ANTERIOR DISLOCATION OF THE SHOULDER

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ABSTRACT

This was a prospective clinical trial carried out at NITOR, Dhaka from July 2004 to June 2006 involving 18 patients with recurrent anterior dislocation of the shoulder. All the cases were managed by Putti-Platt operative procedure. The aim of this study was to evaluate the effectiveness of the Putti-Platt procedure in the management of recurrent anterior dislocation of the shoulder. In this study, purposive sampling methods were followed irrespective of sex. Most common age group in this series was 21-30 years. This prospective clinical study comprised with 18 patients, 16 cases (88.88%) showed excellent and good results and 2 cases (11.11%) showed fair results. Therefore, Putti-Platt procedure can be considered as an effective procedure in the treatment of recurrent anterior dislocation of shoulder. Less tissue handling, close postoperative follow-up and active muscle exercise is essential for producing good result. The long-term result is beyond the scope of this study. Long-term follow up is needed to evaluate the final out come of these patients.

INTRODUCTION

The bony anatomy of the shoulder joint does not provide inherent stability. The shoulder, by virtue of its anatomy and biomechanics, is one of the most unstable and frequently dislocated joints in the body, accounting for nearly 50% of all dislocations (Phillips, 2003). There is no essential pathological lesion responsible for every recurrent subluxation or dislocation of the shoulder. Cause of the recurrent dislocation is still a matter of debate. It has been implicated on many factors but the chief factor was thought to be failure to immobilize the shoulder for proper period of time after reduction of an initial dislocation. But the current concept has identified number of other more important factors like the site and nature of the damage at the time of the initial dislocation (McLaughlin and Cavallaro, 1950) & (McLaughlin and MacLellan, 1967), severity of the trauma causing the initial dislocation (Rowe, 1963), the age of the patient at the time of the initial dislocation (Hovelius, 1987) & (Rowe and Sakellarides, 1961) & (McLaughlin and Cavallaro, 1950).

There is no single essential lesion is responsible for every recurrent dislocation of the shoulder. Stability of this inherently unstable joint depends on a continuing balance between the static and dynamic mechanisms influencing motion and stability. In addition to the various possible primary deficiencies like laxity of the capsule influencing instability, secondary deficiencies like Hill-Sachs lesion can occur when repeated dislocations have occurred. Erosion of the anterior glenoid rim, stretching of the anterior capsule and subscapularis tendon, and fraying and degeneration of the glenoid labrum can all occur with repeated dislocation. The primary deficiency, as well as the

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secondary deficiencies, will need to be considered at the time of surgery and in postoperative rehabilitation to correct the instability. Since no single deficiency is responsible for every recurrent dislocation of the shoulder, no single operative procedure can be applied to every patient. The surgeon must carefully search for identify the deficiencies present in order to choose the proper procedure.

More than 150 operations and many modifications of the some have been devised to treat traumatic recurrent anterior instability of the shoulder (Pritsch *et al.*, 1983). There is no single best procedure. There are no generally accepted concepts for the treatment of traumatic anterior shoulder dislocation. Factors that have been stressed as important in achieving a successful result are adequate exposure and accurate surgical technique. The pathological condition should be defined and a procedure performed that corrects this condition most anatomically. Ideally, the procedure for recurrent instability should include the following factors: (i) low recurrence rate, (ii) low complication rate, (iii) low re-operation rate, (iv) does not harm (arthritis), (v) do not restrict motion, (vi) is applicable in most cases, (vii) allows observation of the joint, (viii) corrects the pathological condition, and (ix) is not too difficult to perform (Phillips, 2003).

Rationale:

In this study, resilience of The Putti-Platt procedure for the management of the anterior recurrent dislocation of shoulder was assessed

Hypothesis:

Putti-Platt procedure is an effective procedure for the management of the recurrent anterior dislocation of the shoulder.

Aims of the study:

Effectiveness of The Putti-Platt procedure in the management of recurrent anterior dislocation of the shoulder.

Objectives of the study:

1. To find out the age, sex incidence and predominant side of injury.
2. To see the effect of the procedure on range of motion, pain tuniton and stabilizing of shoulder.

PATIENTS AND METHODS

Type of study: A clinical trial.

Place of study: National Institute of Traumatology and Orthopedic Rehabilitation (NITOR), Dhaka.

Period of study: This study was conducted during the period from July 2004 to June 2006.

Selection of cases: The patients irrespective of sex, with history of the anterior recurrent dislocation of shoulder, traumatic origin.

Sampling method: Purposive sampling method was followed as per inclusion and exclusion criteria. The diagnosis of the recurrent anterior dislocation of the shoulder was done from history and the findings of clinical examination.

Sample size: 18

Inclusion criteria:

- 1) Recurrent dislocation
- 2) Traumatic without fracture
- 3) Supple shoulder joint

Exclusion criteria:

1. Fracture dislocation.

2. Without epiphyseal fusion.
3. Pathological recurrent dislocation and fractures.
4. Restricted movement of the shoulder.

Procedure:

Data collection: A per-designed pro-forma containing history and examination findings of the patient, operative procedure and follow-up criteria was used to collect the data.

Data Analysis: The collected data was compiled and tabulated according to key variables. The analysis and interpretation of the data was performed using different statistical methods and formula.

Evaluation of the final outcome: Evaluation of the final outcome was based on the C.R ROWE grading system.

Measures of variables: After enrolment of the patient and tabulation of the collected data following outcome variable were measured:

a) Demographic variable

- i) Age
- ii) Sex

b) Clinical variable

- Nature of initial injury
- Treatment of initial dislocation
- Side of involvement

c) Outcome variable

- Function
- Pain
- Stability
- Motion

Ethical issues: Informed written consents from all patients included in the study was taken before hand.

Surgical Procedure: Putti-Platt procedure.

Rehabilitation: The postoperative rehabilitation program actually began pre-operatively, when the patient was instructed in a physician-directed stretching and strengthening program. We asked patients to perform these exercises a minimum of five times daily and emphasize that they were responsible to a large degree for the final outcome of the surgery by their participation in the exercise program. The body bandage was discontinued after 3 weeks and the patient was instructed to increase the use of the operated extremity for daily living activities. These activities can include dressing, combing hair, brushing teeth, eating and also shoulder stretching exercise. After 8 weeks, muscle building and strengthening exercises began.

We allowed patients to return to activities commensurate with their strength. Patients were not being allowed to return to heavy manual labor or sports until they have regained a range of motion near to that of the opposite side and have approximately 85% to 90% of the strength in their opposite extremity which generally took about 5 to 8 months. We cautioned patients, especially those in their second and third decade of live, that maintenance of shoulder stability and strength necessitates a commitment to continuing their exercise program two or three times per week once their formal rehabilitation is completed. (Dana, Michael & Charles 1997) & (Burkhead & Rockwood 1992)

Observation and results

This prospective clinical study was carried out at NITOR, Dhaka from July 2004 to June 2006 involving 18 patients with recurrent anterior dislocation of shoulder. Every body was treated by Putti-Platt procedure. In this series C.R. Rowe grading system was used to evaluate results. Excellent and good results were taken as satisfactory result. Fair and poor results were taken as unsatisfactory result.

Age and sex incidence: This clinical trial comprises 18 young patients with recurrent anterior dislocation of shoulder. Their ages varies from 16 to 35 years with an average 25.4 years. In this clinical trial, 17 patients were male and 1 was female.

Table 1: Distribution of patients by age groups.

Years	No. of patients	Percentage	Average
10-20 years	3	16.6%	25.4 years
21-30 years	12	66.6%	
31-40 years	3	16.6%	
Total	18	100%	

Occupation: Out of 18 patients, 7 patients were student, 3 were farmer, 3 were electrician, 2 were businessman, 2 were BDR and 1 was housewife.

Table 2: Occupation status of the patients.

Occupation	No. of case	Percentage
Student	7	38%
Farmer	3	17%
Businessman	2	11%
BDR	2	11%
Electrician	3	17%
Housewife	1	6%

Shoulder involved: Out of 18 cases, left side was affected in 10 cases and right side in 8 cases.

Table 3: Side involvement of patients.

Side	No. of case	Percentage
Left	10	56%
Right	08	44%
Total	18	100%

Table 4: Dominant/Non-dominant.

	No. of case	Percentage
Non-dominant	10	56%
Dominant	08	44%
Total	18	100%

Table 5: Frequency of dislocation before surgery.

Frequency of dislocation	No. of case	Percentage
Less than 5	5	28%
5-10	10	55%
11-16	0	0%
More than 16	3	17%
Total	18	100%

Initial trauma: The most common initial trauma was sports injuries 10 cases, road traffic accident 4 cases and others 4 cases.

Table 6: Initial trauma.

Cause of initial trauma	No. of case	Percentage
Sports	10	56%
RTA	4	22%
Others	4	22%
Total	18	100%

Length of immobilization after first dislocation: A total of 8 cases were immobilized up to 1-10 days, 5 cases were immobilized up to 11-21 days and no immobilization done in 6 cases.

Table 7: Length of immobilization after first dislocation

Length of initial immobilization	No. of case	Percentage
1-10 days	8	44%
11-21 days	5	28%
No immobilization	5	28%
Total	18	100%

Final Rowe Score:

Table 8: Final Rowe Score.

Case No.	Rowe Score
1	95
2	95
3	75
4	90
5	90
6	95
7	95
8	90
9	80
10	95
11	75
12	70
13	55
14	80
15	75

Case No.	Rowe Score
16	80
17	60
18	75

Case no. 13 did not follow advice properly and timely.

Clinical results:

Table 9: Clinical results of the present series.

Results	No. of patients	Percentage
Excellent	8	45%
Good	8	44%
Fair	2	11%
Poor	0	0%
Total	18	100%

Overall results: In this series, 16 cases were satisfactory and 2 cases were unsatisfactory.

Table 10: Overall results of the present series.

Results	No. of case	Percentage	Remark
Satisfactory	16	89%	$\chi^2 = P <$ Significant
Unsatisfactory	2	11%	
Total	18	11%	

DISCUSSION

Present series, which included 18 patient of recurrent anterior dislocation of shoulder, treated by Putti-Platt procedure with a average length of follow-up was 12.6 months.

In this series, recurrent dislocation of shoulder was more in man than woman. It was observed only in one woman out of 18 cases. Similar sex incidence was observed by Hovelius *et al.* (1979) and also by Brav (1955) (36 males and one female).

In this series, recurrent anterior dislocation of shoulder most commonly occurred in age group of 21-30 years with an average of 25.4 years. This result is in agreement with the statistical study of Brav (1955) who observed common age group of 18-41 years with an average of 23.4 years. In a review article, Robinson and Dobson (2004) reported that a sum of 50% of recurrent dislocation of shoulder had occurred in between 20-30 years.

Length of immobilization after reduction of initial dislocation was very much important. In the present series, only 8 cases were immobilized up to 1-10 days, 5 cases were immobilized 11-21 days and no immobilization was done in 5 cases. In a study of Brav (1955), only seven patients stated that there was immobilization of the shoulder following the original dislocation. Thirty-four initial dislocations (82.9%) were either treated by a simple sling or were not treated at all. Concerning the duration of original treatment only eight dislocations were treated for a period longer than two weeks. In thirty-three dislocations (80.5%), there was either no immobilization or immobilization was discontinued at the end of two weeks.

Many of the initial dislocation usually originated in body contact athletics/ sports. In this series, it was observed that 10 cases (55.5%) out of 18 cases occurred due to various sporting activities. Lipscomb (1975) described same observation. Brav (1955) also described same observation (23 cases due to sporting activities out of 30 cases).

Putti-Platt procedure can be done through classic deltopectoral approach and anterior axillary approach. In this series, Putti-Platt procedure was done through anterior axillary approach which had

some advantages like good exposure, minimal blood loss and a cosmetically desirable scar. Zenni (1978) observed similar things in his study.

In this series, it was observed that the limitation of external rotation with an average was 18.4°. MacDonald *et al.* (1992) stated that a limitation of at least 25 degrees of external rotation after an anterior procedure for recurrent dislocation of the shoulder was not only inevitable but also desirable and acceptable. In this series, limitation of external rotation less than usual average external rotation due to double breasting of subscapularis done in neutral position of shoulder in classic Putti-Platt these done in 10° internal rotation of shoulder joint.

In the clinical results of this series, 8 cases (44.44%) were excellent, 8 cases (44.44%) were good and 2 cases (11.11%) were fair. These results are in similarity with the study conducted by König *et al.* (1997) who observed 13 cases (50%) as excellent, 3 cases as good, 7 cases as fair and 3 cases as poor.

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