

Comparison of Cyriax Capsular Stretch Versus Posterior Glide in Treating Adhesive Capsulitis of Shoulder

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ABSTRACT

Objective: The main objective of the study was to compare two mobilization techniques and to see which of the two techniques gave faster rate of improvement in range of motion and reduction in pain in patients with adhesive capsulitis of shoulder. **Methodology:** 35 patients were selected for the study of which 28 were included as per the inclusion criterion. The 28 selected were randomly assigned into the experimental and the control groups respectively. Patients with more than 50% restriction in range of motion along with capsular pattern of restriction of ROM were included in the study. The subjects were given with Cyriax capsular stretch (in experimental group A) and Posterior glide of the shoulder (in control Group B) for 15 minutes along with active and passive exercises at the affected shoulder for 14 sittings and SPADI and VAS were noted on the 1st, 7th & 14th day. **Result :** This study shows that even though extent of increase in range of motion, at day 7 and day 14, Group A showed significantly higher degree of abduction as compared to that of Group B, but when comparing both the groups in overall percentage improvement, the mean percentage change in Group A was higher as compared to Group B for all the variables, yet for all the variables result was statistically insignificant. **Conclusion:** There was no significant difference between the two approaches, so either of the techniques can be used for management of adhesive capsulitis.

Key Words : Adhesive capsulitis, Cyriax capsular stretch, Posterior glide of shoulder, Capsular restriction of pattern of movement.

INTRODUCTION

Stiff shoulder which is characterized by loss of motion, is one of the most common musculoskeletal disorders encountered in daily orthopedic practice and remains challenging to treat¹. Over the years the stiff shoulder was labeled initially peri-arthritis by

Duplay in 1872, the frozen shoulder by Codman in 1934 and later adhesive capsulitis by Neviasser in 1945. Adhesive capsulitis of the shoulder is characterized by insidious onset and progressive pain, loss of active and passive mobility of glenohumeral joint². Primary adhesive capsulitis is used to describe an insidious onset of painful stiffness of glenohumeral joint and secondary adhesive capsulitis on the other hand is associated with a known predisposing condition of the shoulder eg. Humerus fracture, dislocation of shoulder, avascular necrosis, osteo-arthritis of shoulder or stroke)³. Prevalence of adhesive capsulitis in general population has been estimated to be in between 3-5% and it arises from idiopathic or post traumatic causes. Adhesive

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capsulitis is the main cause of shoulder pain and dysfunction in middle aged and elderly population. The factors associated with it are: gender, trauma, immobilization, diabetes, stroke, myocardial infarction, thyroid disorder, reflex sympathetic dystrophy, autoimmune disorder, cervical disorder⁴. The pathogenesis of primary frozen shoulder is unknown. In 1945, Neviaser was the first to attempt to implicate shoulder capsule adhesion as the etiology of the adhesive capsulitis (frozen shoulder), since then several authors have agreed with his proposal⁵. More recently, orthography and arthroscopy have been used to investigate the involved tissues. In adhesive capsulitis loss of dependent fold, decreased capsular volume and capsular contractions have been demonstrated, in addition contracture of coracohumeral ligament adhesions of subacromial bursa, rotator interval thickening have all been reported⁶. Vermeulen et al also in their study indicated that in adhesive capsulitis the capsular extensibility is decreased, axillary recess becomes adherent and the flexibility of the biceps tendon in its sheath is reduced, as a result the external rotation of its humeral head to pass under the acromion during abduction is severely restricted⁷. On pathologic examination of the shoulder joint capsule, in adhesive capsulitis the capsule tends to be contracted, thickened and closely adherent to the humeral head, contributing to limitation of movement. In adhesive capsulitis, limitation of external rotation with arm in abduction is typically associated with anteroinferior capsular restriction, whereas limited internal rotation and horizontal adduction are associated with a posterior capsular restriction. The capsular pattern is designated by a hard end feel and limitation of three passive motions in fixed proportions limitations of medial rotation is slight, abduction is more pronounced and that of lateral rotation is marked¹⁴. Cyriax proposed that tightness in a joint capsule would restrict motion in a predictive pattern that is the capsular pattern, for the shoulder capsular pattern is one in which the external rotation is more limited than internal rotation⁸.

Currently no standard medical or surgical or therapy regimen is universally accepted as the most

efficacious treatment for restoring motion in patients with adhesive capsulitis, While physical therapy is most commonly prescribed for adhesive capsulitis⁹. A considerable number of patients with adhesive capsulitis are treated with non steroidal anti inflammatory drugs (NASIDs), intra-articular cortico steroid infections and physiotherapy. In persistent cases, more aggressive interventions such as arthroscopic release, hydrodilatation, or mobilization under anesthesia have been used, with respect to physiotherapy treatments, variety of interventions are being used like hot-packs, ultrasound, interferential therapy, transcutaneous electrical neuromuscular stimulation, active and passive range of motion, exercises, peripheral neuromuscular facilitation and various mobilization techniques¹⁰.

In many physical therapy programs, mobilization techniques are an important part of the interventions. Identifying the stage of adhesive capsulitis in which a patient is presenting, it is important to determine the appropriate treatment regimen. Exercises are the key to any treatment protocol for adhesive capsulitis.

In the present study comparison between the clinical efficacy of the two methods of mobilization that is Cyriax Capsular Stretch versus Posterior Glide of the glenohumeral joint in patients with adhesive capsulitis of the shoulder and to infer which immobilization techniques gives better and early increase in range of motion and reduction in pain in patients with adhesive capsulitis of the shoulder.

METHODOLOGY

The subjects were selected from Physiotherapy OPD's of Banarsidas Chandiwala Institute of Medical Sciences and Banarsidas Chandiwala Institute of Physiotherapy. 35 patients were selected for the study of which 28 were included as per the inclusion criterion. The 28 selected were randomly assigned into the experimental and the

control groups respectively.

Inclusion Criteria

Age Group 30-60 years, Unilateral Adhesive Capsulities, pain and restriction of range of motion of more than 3 months, Capsular pattern of restriction of range of motion, Diabetics with shoulder pain were included.

Exclusion Criteria

Rheumatoid Arthritis, Osteoarthritis of the Shoulder, Neurological Diseases, Cervical RadiculoPathies, Presence of medical conditions such as cardiac diseases, infections, coagulation disorders, Post traumatic fracture and dislocation of the shoulder, elbow and hand. Reflex

Sympathetic Dystrophy, Rotator Cuff Tears, Soft tissue injuries around the shoulder complex ,Manipulation under anaesthesia for adhesive capsulities of shoulder, intraarticular steroidal in filtration of the shoulder, Malignancies, Osteoporosis and all the conditions contraindicated for mobilization.

The subjects were randomly assigned to two groups the Experimental group/Group A and the Control group/Group B. Group A: The subjects were given hot packs along with Cyriax capsular stretch for 15 minutes along with active and passive exercises at the affected shoulder daily for 14 sittings and SPADI and VAS were noted on the 1st, 7th & 14th day. Group B: The subjects were given hot packs along with Posterior glide of the shoulder along with active and passive exercises

RESULTS

Table 1. Comparison of Extent of Ranges in Two groups at different time intervals

Movement	Time interval	Group A		Group B		"t"	"p"
		Mean (in degrees)	SD	Mean (in degrees)	SD		
Flexion	Day 1	131.4	13.6	120.4	22.4	1.579	0.126
	Day 7	153.2	11.0	138.6	21.3	2.288	0.030
	Day 14	170.7	9.2	154.3	20.8	2.700	0.012
Abduction	Day 1	100.0	20.3	92.1	15.9	1.141	0.264
	Day 7	123.2	18.3	110.4	19.3	1.813	0.081
	Day 14	155.4	12.0	123.9	21.4	4.791	<0.001
Internal Rotation	Day 1	50.7	14.7	45.8	11.6	0.988	0.332
	Day 7	66.8	9.9	54.0	12.5	3.001	0.006
	Day 14	76.8	6.4	61.1	14.0	3.814	0.001
External Rotation	Day 1	23.9	9.4	18.6	9.3	1.513	0.142
	Day 7	41.1	13.2	28.2	9.9	2.916	0.007
	Day 14	58.6	9.1	40.0	12.4	4.521	<0.001

Table 2. Comparison of Change in range of motion in two groups at different time intervals (Percentage change from baseline)

SN	Parameter	Group A		Group B		"t"	"p"
		Mean	SD	Mean	SD		
1.	Flexion	30.8	11.0	29.9	8.7	0.249	0.805
2.	Abduction	35.9	11.3	34.6	7.2	0.360	0.722
3.	Internal rotation	65.2	56.3	38.9	32.7	1.512	0.142
4.	External rotation	206.2	234.3	150.3	108.2	0.811	0.425

Table 2. Comparison of Change in range of motion in two groups at different time intervals (Percentage change from baseline)

SN	Time interval	Group A		Group B		"t"	"p"
		Mean	SD	Mean	SD		
1.	Day 1	51.5	15.5	48.8	12.8	0.508	0.616
2.	Day 7	36.4	12.9	33.1	12.8	0.686	0.499
3.	Day 14	23.9	10.6	20.7	9.2	0.855	0.400

Table 4. Comparison of Percentage VAS in two groups at different time intervals

SN	Time interval	Group A		Group B		"t"	"p"
		Mean	SD	Mean	SD		
1.	Day 1	8.1	1.5	7.9	1.9	0.330	0.744
2.	Day 7	6.4	1.5	6.5	1.9	-0.220	0.828
3.	Day 14	4.5	1.6	5.0	2.1	-0.721	0.477

at the affected shoulder daily for 14 sittings and SPADI and VAS were noted on the 1st, 7th & 14th day

Percentage Improvement in Range of Motion Though the mean percentage change in Group A was higher as compared to Group B for all the variables, still for all the variables the difference between two groups was not statistically significant.

PAIN AND DISABILITY INDEX

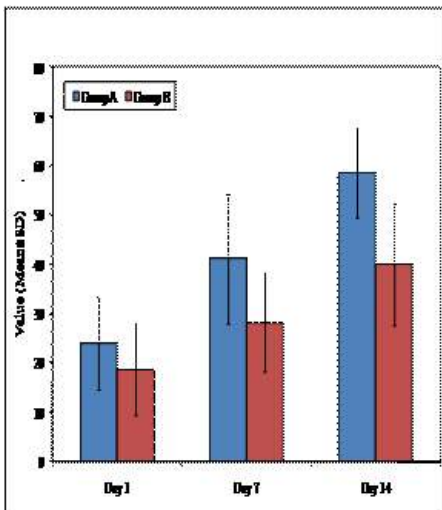
Extent of pain and disability in the two groups was assessed on two parameters: Shoulder pain and disability index, and Visual

Analogue Score for pain. Shoulder Pain and Disability Index (SPADI) was measured on a scale with maximum score 130, the scores being shown here are percentage scores. the difference between two groups was not significant, though at each time interval the SPADI of Group B was lower as compared to that of Group A ($p > 0.05$). VAS (Pain) the difference between two groups was not significant, though at each time interval the VAS of Group B was lower as compared to that of Group A ($p > 0.05$).

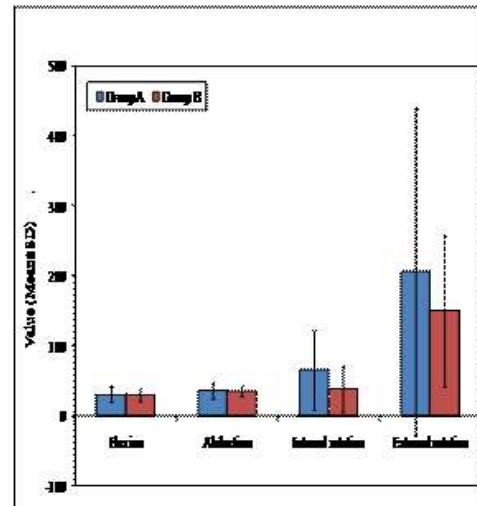
DISCUSSION

Goals of the treatment are to reduce pain ,increase range of motion and to improve

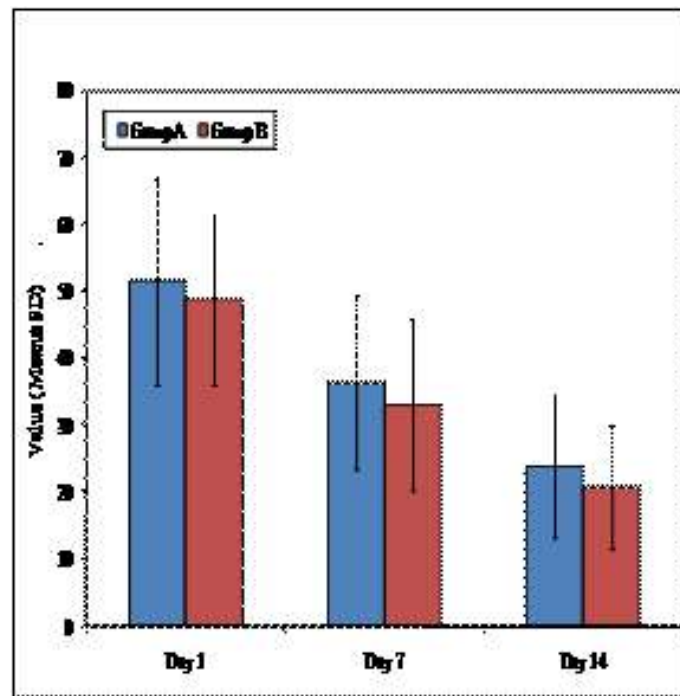
Graph 5. Percentage improvement in ROM



Graph 6. Comparison percentage SPADI



Graph 7. Percentage improvement VAS



function, although literature data lacks a consensus on non operative approach for the treatment of adhesive capsulitis, it is still the primary intervention .When this fails ,operative treatment which either be manipulation under anesthesia alone or in combination with arthroscopic capsular release may be reasonable options and appear to produce satisfactory results in most cases.⁴ The efficacy of treatment for shoulder symptoms have evaluated in randomized comparative studies so far. Based on the limited quality of high grade evidence , it has also been concluded that the treatment procedure have no superiority over each other in long term but difference may exist in early phase of treatment .⁴which is again proved by this study that there has been marked improvement in group A on day 7 and on day14. In comparing the external rotation in both the groups on day 7 and day 14, not only the mean extent of external rotation in Group A was higher as compared to Group B but the difference between two groups was statistically significant too ($p<0.05$). At day 7 the mean extent of external rotation in Group A was $41.1\pm 13.2^\circ$ while in Group B it was $28.2\pm 9.9^\circ$, showing a statistically

significant difference between two groups ($p=0.007$). At day 14, the mean extent of external rotation two in Group A was $68.6\pm 9.1^\circ$ while in Group B it was $40.0\pm 12.4^\circ$, once again showing a statistically significant difference between two groups ($p<0.001$),but when comparing both the groups in overall percentage improvement, the mean percentage change in Group A was higher as compared to Group B for all the variables, still the difference between the two groups was not statistically significant. Our results support the study of Griggs et al (2000) who reported that following a physical therapy programme consisting of passive stretching exercises patients demonstrated a reduction in pain score from $n1.57$ to 1.16 in a range from one to five points, improvements in active range of motion, and 64 patients reported a satisfactory outcome. The mechanism by which Capsular stretching caused improvement in shoulder range of motion and function could be elongation of tissues which could be the probable reason helping to improve range of motion and function after Capsular stretching. Conventional physical therapy

measures require instruments along with a therapist and the patients are strictly advised to attend their daily outpatient therapy in the hospital. However the treatment protocol might occasionally be interrupted due to problems of time and transportation. The Cyriax method requires fewer hospital visits, enabling the patients to proceed in their daily and professional activities. No special equipment is needed for the method but only an experienced health professional competent in the technique. The manipulation used during the Cyriax approach is mild and does not require anesthesia. It provides a health-care advantage during the active treatment period and this is of major importance for both the patient and the overloaded physical therapy clinics of referral hospitals.³

CONCLUSION

As per the results of the present study it can be concluded that there was no significant difference between the two approaches, so either of the techniques can be used for management of adhesive capsulities.

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