ORIGINAL ARTICLE

Comparison of Manual Therapy Techniques in Adhesive Capsulitis

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ABSTRACT

Objective: To compare the effectiveness of sustained-stretch-mobilization against oscillatory-mobilization in the management of adhesive capsulitis.

Study Design: It was Randomized control trial.

Place and Duration of Study: The study was conducted at Physiotherapy Department of National Institute of Rehabilitation Medicine Islamabad from September 2015 to February 2016.

Materials and Methods: Thirty Seven patients were included in the study and convenient sampling technique was used for randomization. Nineteen patients were treated with sustained-stretch-mobilization Technique and 18 patients were treated with oscillatory-mobilization. Patients with the capsular pattern in frozen and thawing stage with Apley's scratch test positive, age between 3060 were included in the study. Patients with limited range of motion due to secondary cause i.e. followed by cervical spondylosis, rotator cuff tendinitis or trauma etc were excluded. Pre-treatment and post-treatment values of range of motion, Numeric pain rating scale and Shoulder pain and disability index were analyzed by SPSS 21.

Results: Both manual therapy techniques are equally effective for external rotation, internal rotation, Numeric pain rating scale and Shoulder pain disability index but abduction showed that oscillatory-mobilization was more effective.

Conclusion: Sustained-stretch-mobilization and oscillatory-mobilization are equally effective for patients with adhesive capsulitis to relieve pain and restore range of motion.

Key Words: *Adhesive Capsulitis, Oscillatory-Mobilization, Sustain-Stretch-Mobilization.*

Introduction

Adhesive capsulitis is a condition of unknown etiology affecting shoulder mobility and function including stiff and painful shoulder with decrease range of motion in every direction. DUPLAY (1896) was first investigator who recognized this extra articular disorder and designated the clinical term “Scapulo-humeral periarthritis”.[1] CODMAN (1934) described the unknown etiology and termed this condition as "Frozen shoulder".[2] Later Naviesar (1945) used the term “adhesive capsulitis. Adhesive capsulitis is common among patients in sixth decade of life, and onset before the age of 40 is rare and more common in women than men. The uninvolved shoulder also becomes affected, usually within five years, and after the first has recovered. The non-dominant shoulder is more likely to be affected. An increased prevalence of adhesive capsulitis was confirmed in female patients as well as those who had a longer duration of diabetes mellitus.[3]

Adhesive capsulitis of the shoulder is clinically described as having three phases:

FREEZING or painful phase that usually lasts from 2 to 9 months, FROZEN or progressive stiffness phase that lasts for 10-36 weeks, THAWING or resolution phase that typically lasts for 15-24 months in non-operative cases. The symptoms may persist for as long as 6-10 years from onset.[4] Adhesive capsulitis can be of two type's primary in which patients have symptoms but the etiology is unknown and secondary type in which symptoms are due to definite cause like after surgery, post traumatic, joint or soft tissues injuries.

The pathology of adhesive capsulitis remains unclear. Arthroscopy and open exploration of the capsule shows that the condition affects the glenohumeral capsular tissue and is particularly localized to the coracohumeral ligament.[5]

Sign and symptoms of adhesive capsulitis are Pain which starts slowly and is felt at the insertion of the deltoid, inability to sleep on the affected side, little

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local tenderness, Restriction of both AROM and PROM in a specific capsular pattern with external rotation limited more than abduction and abduction more than internal rotation. Radiographs are usually normal.

Many treatment modalities are used for this condition and the fundamental goal of treatment is to restore and maintain function.[6] Treatment strategies include Physical Therapy, Non-steroidal anti-inflammatory drugs, Corticosteroid injections, Suprascapular nerve block, manipulation under anesthesia, arthroscopy and open surgery, or combination of these modalities. In physical therapy pain is relieved by electrotherapy, hot pack and range of motion is gained by joint mobilization. There are different schools of thoughts about joint mobilization.

Systemic reviews done by Matthew j page (2014) conclude that a combination of manual therapy and exercise are not so effective when compare with intra articular injections in short term relief. For long term result we need high-quality RCTs to establish the benefits and harms of manual therapy and exercise interventions that reflect actual practice.[7]

Kaltenborn technique of manual therapy gives sustained glides in three grades (I, II, III).Grade I and II are used for pain management and grade III is more effective in improving range of motion, Choi W-SP et al[8] interpreted the effectiveness of Kaltenborn mobilization by measuring the acromion-humeral distance (AHD) whereas inferior glide is applied in grade II and grade III to increase the abduction range of motion. Results showed that grade III mobilization was more effective in improving range of motion

In Maitland-mobilization oscillatory glides are given in five grades. Grade I and II of Maitland mobilization techniques are primarily used for treating joints limited by pain. Grades III and IV are primarily used as stretching maneuvers. Shrivastava Ankit et al conducted a randomized control trail to compare the effectiveness of mulligan and Maitland - mobilization. Results showed that extension improved more with Mulligan technique while all other ranges showed equal improvement with both techniques. Both techniques were also effective for pain relief but Mulligan gave slightly better result.[9]

Adhesive capsulitis is challenging condition therefore it is difficult to decide which treatment technique is more effective. Many treatment strategies are available now a days but the purpose of the current study was to compare the effectiveness of sustained-stretch-mobilization against oscillatory-mobilization in the management of adhesive capsulitis.

Materials and Methods

A randomized controlled trial was conducted at the department of physiotherapy, National Institute of Rehabilitation Medicine Islamabad from September 2015 to February 2016.

The inclusion criteria of study were Patient following the capsular pattern of adhesive capsulitis, Frozen and thawing stage, Apley's scratch test positive, Age 3060 and 50% limited ROM. All patients had restriction of movements in all directions. Patients were excluded if they had Adhesive capsulitis followed by cervical spondylosis, Limited ROM other than adhesive capsulitis and Patients with Rotator cuff tendinitis. Thirty seven diagnosed adhesive capsulitis patients with age between 30 and 60 were taken. Convenient sampling technique was used to collect the data. After the initial assessment, written informed consent forms were obtained from the participants who met the inclusion criteria. The selected subjects were randomly allocated to two different groups: Kaltenborn mobilization group having 19 patients and Maitland mobilization group having 18 patients. Variables include Numeric Pain Rating Scale (NPRS) for pain and Shoulder Pain and Disability Index (SPADI) for functional outcome measurement and shoulder ROM including external rotation, abduction and internal rotation. ROM was measured by goniometer. After the assessment and the data collection, participants were given the therapeutic intervention according to their groups. Patients were assessed at the 1st and the 10th visit.

In order to compare the effects of two treatment techniques, patients are treated with mobilization and home exercise plan. Glides given included anterior, posterior and caudal glides in Grade III with 10 seconds hold, 10 reps, and 3 sets 5 days a week in mid-range position for 10 days. Before giving glides distraction with 10 seconds hold, 10 repetitions were given and Scapular glides (superior, inferior and medial, lateral) were also included.

Maitland mobilization group (n=19) were treated with Maitland mobilization and home exercise plan.

This group received Oscillatory glides at the rate 2oscillation per sec for 1 minute with 3 sets for 5 days a week. Direction of glides was anterior, posterior and inferior. Total numbers of sessions were 10. Using SPSS 21 Paired sample t-test was used to analyze within-group variables and Independent sample t-test was done to analyze between-groups variables.

Results

The mean age of the study participants was 50.65± 6.413. The onset of pain was gradual in 89.19% patients while 10.81% had sudden onset, 94.59% patients had diurnal variation of symptoms worsening at night.

Table no I shows the pre-treatment and post-treatment values of sustained mobilization group while that for the oscillatory-mobilization group is shown in the table no II and both of which show significant differences.

Table no III shows the comparison of abduction, internal rotation, external rotation, NPRS and SPADI mean values for both sustained mobilization group and oscillatory-mobilization group which shows statistically no significant difference except for abduction where oscillatory-mobilization is considered far better.

Table I: Pre-Treatment and Post-Treatment Mean and Standard Deviation Values for Sustained Mobilization Group With P Values

Study Variables	Pre-treatment Mean ± SD	Post-treatment Mean ± SD	*P* value
Abduction	52.32±12.356	81.74±20.653	.001
Internal rotation	39.37±8.221	60.32±8.699	.001
External rotation	41.47±12.554	64.95±113.451	.001
NPRS	8.736±.805	2.52±.772	.001
SPADI	82.389±6.817	24.312±7.351	.001

Table II: Pre-Treatment and Post-Treatment Mean and Standard Deviation Values for Oscillatory-Mobilization Group With P Values

Study Variables	Pre-treatment Mean ± SD	Post-treatment Mean ± SD	*P* value
Abduction	68.06±10.166	93.61±10.550	.00
Internal rotation	51.67±8.423	66.28±6.220	.00
External rotation	51.17±15.885	71.50±11.142	.00
NPRS	9.11±..676	2.61±..689	.00
SPADI	86.84±6.646	28.33±6.453	.00

Table III: Comparison of Sustained-Stretch-Mobilization and Oscillatory-Mobilization Groups

Study Variables	Sustained-Stretch-mobilization Mean ± SD	Oscillatory-mobilization Mean ± SD	Mean Difference	*P* value
Abduction	81.74±20.653	93.61±10.550	11.87 ± 10.103	.011*
Internal rotation	60.32±8.699	66.28±6.220	5.96 ± 2.479	.068
External rotation	64.95±13.451	71.50±11.142	6.55± 2.309	.336
NPRS	2.53±.772	2.61±.698	0.08 ± 0.074	.628
SPADI	24.31±7.351	28.33±6.453	4.02 ± 0.898	.345

Discussion

The result of current study shows that sustained-stretch-mobilization and oscillatory-mobilization are equally effective in terms of SPADI, NPRS, external rotation and internal rotation in patients with adhesive capsulitis except abduction which responds better to oscillatory-mobilization.

In a previous review on adhesive capsulitis conducted about phases of adhesive capsulitis (freezing, frozen and thawing) and their recommended treatment, it is concluded that pain reducing medications and steroid injections must be used in freezing phase and manual therapy along with exercise in frozen and thawing phases. In resistant cases which show no improvement other surgical treatments are recommended. In current study patients in frozen and thawing phases were divided into two groups and given different manual mobilization therapies and significant improvement has been noticed. [10]

An RCT done by Shruti Naik et al (2015) to compare the two different manual therapy techniques in adhesive capsulitis concluded that MDT and Maitland mobilization were equally effective in reducing pain, improving the range of motion and also the functional scores in individuals with stage II adhesive capsulitis.[11] In this study we also observe the improvement in both groups.

A randomized multiple treatment trials were organized by Jing-lan Yang et al for the comparison of different mobilization techniques such as mid-range mobilization, end-range mobilization, and Mulligan's mobilization. Results of the study showedthat end-range mobilization and mulligan mobilization were more effective than mid-range mobilization. In current study mid-range

mobilization was used in control group and significant improvement was observed in NPRS (p=.00).[12]

Syed Shakil-ur-Rehman et al conducted an RCT to make a comparison between kaltenborn mobilization and scapular mobilization in patients of adhesive capsulitis with abduction range of motion above 90o. The results of this study show that sustained-stretch-mobilization is more effective than scapular mobilization. In current study patients have been given sustained stretch glides and significant (p=.00) improvement was observed in NPRS and SPADI scale.[13]

Gokhan Doner Pet al conducted a study assessing the effectiveness of Maitland mobilization in comparison to exercise. It is concluded that exercise with Maitland mobilization is far better than exercise alone. In current study oscillatory-mobilization has been used and found significant improvements in NPRS (p=.00) and SPADI (p=.00) has been observed.[14]

Conclusion

The result of current study concluded that both sustained-stretch-mobilization and oscillatory-mobilization are equally effective. The SPADI, NPRS, external rotation and internal rotation responds better thanoscillatory-mobilization.

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