EEFFECTS OF SUSTAIN PASSIVE STRETCHING AND MYOFASCIAL RELEASE ON PAIN AND DISABILITY IN GRADE 2 ADHESIVE CAPSULITIS

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Abstract

The study aimed to find out the effects of sustained passive stretching and myofascial release on pain in grade 2 adhesive capsulitis. Forty patients diagnosed with grade 2 adhesive capsulitis, aged between 40 years to 60 years, randomly assigned as per inclusion and exclusion criteria to either in group A ie. experimental (n = 20) or group B ie. control (n = 20) group. Group A had mean age of 53.15 years and group B had 52.15 years. Both groups attended 12 weeks study. Participants in the group A received sustained passive stretching of subscapularis, pectoralis minor and teres major and Group B received myofascial release of subscapularis, pectoralis minor and teres major. Both the groups were received conventional physiotherapy along with respective technique. Shoulder pain and disability was measured by shoulder pain and disability index (SPADI). The pre-test and post-test values of SPADI were 85.15 and 40.75 for group A and 87.25 and 53.30 for group B and mean improvement was 44.40 in Group A and 33.95 in Group B, which was significant. The post-test mean difference for SPADI scores between both groups was 10.45. It was resulted that both sustained passive stretching and myofascial release were effective on pain and disability in grade 2 adhesive capsulitis.

CONCLUSION: The study concluded that both sustained passive stretching and myofascial release were effective on shoulder pain and disability and can be effectively used for grade 2 adhesive capsulitis.

KEY WORDS: Adhesive capsulitis, shoulder, Sustain passive stretching, Myofascial Release, Conventional Physiotherapy

Introduction

Adhresive capsulitis is described as a painful shoulder condition of insidious onset that was associated with pain, stiffness, progressive loss of shoulder aive and passive range of motion and difficulty sleeping on the affected side. In 1945, Naviesar used the term “Adhesive Capsulitis”.[1]

It commonly affects the peoples more than 40 years of age and peak age is 56 year. Females are commonly affected than male.[2] Primary adhesive capsulitis is reported to affect 2% to 5.3% of the general population. The prevalence of secondary adhesive capsulitis related to diabetes mellitus and thyroid disease is reported to be between 4.3% and 38%.[3]

Grade 2 adhesive capsulitis, known as the “painful” or “freezing” stage, it may last for 3 to 9 months and presents with a gradual loss of motion in all directions due to pain. Arthroscopic examination reveals aggressive synovitis / angiogenesis and some loss of motion.[4]

Travell and Simons (1983) reported that Subscapularis trigger points and shortening are the key to a "frozen shoulder" syndrome. Subscapularis trigger produces referred pain in the posterior deltoid area and may extend medially over the scapula, down the posterior aspect of the arm and then skip to a band around the wrist. This may results in progressive painful restriction of abduction and lateral rotation of the shoulder.[5]

The length of the muscle tissues plays an important role in the effectiveness and efficacy of human movement. Shortening of muscle form a major element of this condition and restricted flexibility is the key element and a contributing in many skeletal problems.[6]

Multiple interventions, various exercises and physical therapy modalities help to relief pain, maintain range of motion and restore functions.[7] Sustained passive stretching has been the treatment of choice to maintain the normal flexibility and to treat tightness of musculatures.[8] Myofascial release is a soft tissue mobilization technique. In this gentle sustained pressure into the Myofascial connective tissue restrictions to eliminate pain and restore motion.[9]

Sustain passive stretching and myofascial release techniques were proved as effective techniques in rehabilitation for elongated shortened muscle tissues and increase range of motion, there are limited studies comparing the effectiveness of these techniques on adhesive capsulitis of shoulder. Hence, in present study an attempt was made to find out the effectiveness of sustain passive stretching and myofascial release techniques on grade 2 adhesive capsullitis by comparing both techniques.

MATERIALS AND METHODS:

Forty patients diagnosed with grade 2 adhesive capsulitis, aged between 40 years to 60 years, randomly assigned as per inclusion and exclusion criteria to either in group A ie. experimental (n = 20) or group B ie. control (n = 20) group. Group A had mean age of 53.15 years and group B had 52.15 years. Patients of both the groups attended 12 weeks study.

Written consent form from all the patient was collected before commencement of the study. Clinical examination was done on each patient and demographic data regarding age, gender, occupation, address, duration of problem, site of problem, medical and surgical history was obtained. On the first day of the treatment, the patients were assessed for pain and disability by Shoulder Pain and Disability Index (SPADI). A brief introduction about the treatment procedure was explained to all the patients. Group A treated with sustained passive stretching of subscapularis, pectoralis minor and teres major and Group B treated with myofascial release of subscapularis, pectoralis minor and teres major. Both the groups received conventional physiotherapy along with respective technique. The data was obtained from both the groups at beginning of the study as pre-test and at the end of twelve weeks as post-test. Mean, standard deviation, paired and unpaired "t" test was used for data analysis. The differences between pre-test and post-test values were found. Paired 't' test was used to analyze the efficacy of treatment within the groups and unpaired 't' test was used to analyze the efficacy of treatment between both groups. An alpha level of $p<0.05$ was used as level of significance for the test.

RESULTS:

PRE-TEST VALUES BETWEEN GROUPS:

The pre-test values of shoulder pain and disability index (SPADI) for both groups were homogenous. Mean of pre-test values of shoulder pain and disability index was 85.15 in group A and 87.25 in group B. P value was 0.5872, which was non-significant at $p>0.05$. (Table 1)

TABLE 1

	Group	N	Mean	SD	SEM	MD	T	P
PRE-TEST	A	20	85.15	11.39	2.55	2.10	0.5476	0.5872
	B	20	87.25	12.82	2.87			

POST-TEST VALUES BETWEEN GROUPS:

The mean of post-test values of shoulder pain and disability index was 40.75 in group A and 53.30 in group B. The mean difference was 12.55. The 'P' value was 0.0113, which was significant at $p<0.05$. Thus, it found that group A treated with sustained passive stretching was more effective on pain and disability than group B treated with myofascial release for grade 2 adhesive capsulitis. (Table 2)

TABLE 2

	Group	N	Mean	SD	SEM	MD	T	P
SPADI	A	20	40.75	10.99	2.45	12.55	2.661	0.0113

	B	20	53.30	18.01	4.03			

PRE AND POST-TEST VALUES WITHIN GROUP A AND B:

The mean of pre and post test values of shoulder pain and disability index was 85.15 and 40.75, respectively in group A and 87.25 and 53.30, respectively in group B. The mean difference was 44.40 in group A and 33.95 in group B. The 'P' value was <0.05 in both groups, which was significant. Thus, it found that both group A treated with sustained passive stretching and group B treated with myofascial release was effective on shoulder pain and disability in grade 2 adhesive capsulitis. (Table 3)

TABLE 3

	N	**Mean**	**SD**	**SEM**	**MD**	**R**	**T**	**P**
GROUP A								
Pre-test	20	85.15	11.39	2.55	44.40	0.5676	19.084	0.0001
Post-test	20	40.75	10.97	2.45				
GROUP B								
Pre-test	20	87.25	12.82	2.87	33.95	0.5676	11.625	0.0004
Post-test	20	53.30	18.01	4.03				

Thus, present study resulted that group A treated with sustain passive stretching with conventional physiotherapy and group B treated with myofascial release with conventional physiotherapy was effective in relieving shoulder pain and disability of patients having grade 2 adhesive capsulitis. On comparison of both groups, study revealed that group A treated with sustain passive stretching with conventional physiotherapy was more effective on shoulder pain and disability in grade 2 adhesive capsulitis.

DISCUSSION:

Adhesive capsulitis of shoulder is characterized by painful stiffness of the shoulder that may persist for several years. It is considered as a serious complication as it restricts the overhead shoulder movement and adversely affects the activities of daily living.

The purpose of present study was to analyse and compare the effect of sustain passive stretching and myofascial release techniques on grade 2 adhesive capsulitis patients.

This study included 40 patients, of which 20 were males (50%) and 20 were females (50%). Each group had 10 males and 10 females. Group A treated with passive stretching had mean age 53.15 years, and group B treated with myofascial release had mean age 52.65 years. When compared using chi-square tests it found that age and gender distribution was homogenous (P>0.05).

Group A treated with sustain passive stretching showed improvement in shoulder pain and

disability. Passive Stretching attributes to improving the muscle extensibility due to tensile stresses on the viscoelastic, non contractile connective tissue in and around the muscle.[12] Stretching also inhibits the contractile components of muscle by the golgi tendon organ that contributes to reflexively relax the muscle thus enabling the muscle to elongate against less muscle tension. Hence, improving the functional status and reducing the pain.[13]

Group B treated with myofascial release also showed improvement in shoulder pain and joint range of motion. This improvement may possibly be attributed to the fact that when myofascial release is used, local chemistry changes due to blanching of nodules followed by hyperaemia. This flushes out trapped metabolic waste products in the surrounding tissue and blood stream, which eliminates the fascia's excessive pressure on the pain sensitive structure and reduce pain.[14]

The chief objective of this study was to compare the effect of sustain passive stretching and myofascial release techniques on pain and disability in grade 2 adhesive capsulitis shoulder patients. The study revealed that both groups obtained successful outcomes within groups, as measured by significant reduction pain and disability post-treatment. Subjects in experimental group (sustain passive stretching) showed more decrease in value of shoulder pain and disability index as compared to control group (myofascial release). These results suggest that clinical interventions consisting of sustain passive stretching along with conventional physiotherapy which includes ultrasound, moist pack and shoulder exercises was more effective for reducing pain and disability in patients of grade 2 adhesive capsulitis. This improvement may possibly be attributed to the fact that sustain passive stretching increased muscle extensibility and effective in increasing joint range of motion. Increases in range of motion after stretching are attributed to an increase in tolerance to the stretch, a decrease in muscular stiffness, alterations in musculotendinous visco-elasticity and reflex activity.[15]

CONCLUSION:

The present study concluded that both sustain passive stretching with conventional physiotherapy and myofascial release with conventional physiotherapy was effective on pain status and reducing shoulder stiffness, improving physical functions and disability in grade 2 adhesive capsulitis of shoulder but sustain passive stretching was more effective.

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