



Research Article

A COMPARATIVE STUDY ON THE EFFECTIVENESS OF MYOFASCIAL TRIGGER POINT RELEASE AND MAITLAND TECHNIQUES IN ADHESIVE CAPSULITIS OF SHOULDER JOINT

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ABSTRACT

Adhesive capsulitis is a condition wherein the shoulder capsule of the glenohumeral joint becomes inflamed and stiff along with adhesion formation. Maitland mobilization and myofascial trigger point release techniques are important interventions in the management Both, Maitland mobilization and myofascial trigger point release are proven to be effective in treatment of adhesive capsulitis in the past. However logical thinking warranted the need to study the effects of prior use of Maitland mobilization of the shoulder joint, which primarily get affected in adhesive capsulitis, followed by myofascial trigger point release of shoulder joint. Thus our study compared the efficacy of treatment strategies to improve the extensibility of Maitland joint mobilization techniques in patients with adhesive capsulitis .

KEY WORDS: Maitland mobilization, Myofascial trigger point release techniques, Adhesive capsulitis, Visual analog scale, shoulder pain and disability index.

INTRODUCTION

Shoulder is one of the functional and rewarding joint necessary for normal daily activities occupational, performances and recreational activities, [cyrix 1978]. Its function comprises between stability and mobility which are mutually co-existent. It forms the base of all upper limb activities, which are skilled and powerful activities.

Duplay in 1872 was first credited with describing the painful stiff shoulder referring to the condition as 'Humero Scapular Periarthritis' codman in 1934, coined the name 'Frozen Shoulder' attributing the painful stiff shoulder to the short rotator tendinitis. Neviarar in 1945 gave name

Adhesive Capsulitis' approximately 7%-21% of the population suffer from painful stiff shoulder.

Patients with diabetic mellitus are at much greater risk for the development of limited joint motion, these is a 10%-20% occurrence of shoulder stiffness in diabetic patient and upto 36% who are insulin dependent.

Adhesive capsulitis is glenohumeral stiffness resulting from adhesion by capsular to the humeral head and to itself at inferior axillary fold leading to fibrosis of capsular structures and less of intra capsular volume, which accompanies, fibroblastic proliferation and changes in the connective tissue (owen's burkhan)

It has also been shown that patient with active trigger point have had higher disability and worse sleep quality treatment tailored to target the painful shoulder muscle with active trigger point could have lasting result in the long run. The solution to the problem various manual treatment have been report in the literature to treat patients with adhesive capsulitis. Recent research has shown the effects of trigger point therapy and post isometric relaxation on patients with painful adhesive capsulitis

Mobilization in stages of frozen shoulder is useful in improving the range of motion. Cyriax initially proposed that tightness in a joint capsule would result in a pattern of proportional motion restriction. He used the concept of a capsular pattern to differentiates in diagnosis between loss of motion secondary to bony and muscle or joint changes and that caused by the capsule.

Adhesive capsulitis has 3 stages namely painful stage (lasting from 10-36 weeks),frozen stage(lastng from 4-12 months) and thawing stage (lasting from 12-42 months).

Restriction of shoulder abduction and external rotation range of motion, is usually affected in stage -2 and stage-3 frozen shoulder and the primary goal of treatment in these stages is to minimize capsular restriction and improve range of motion these movements are important to perform daily activities.

The traditional principles of treatment of adhesive capsulitis are to relieve pain, maintain range of motion, ultimately to restore function. The treatment of adhesive capsulitis by means of physiotherapy all along consists of different modalities (eg. Shoulder Exercises,Electrotherapymassage) which can be achieved by massage, deep heat, ice, ultrasound, TENS(Transectaneous Electrical Nerve Stimulation)and LASER (Light Amplification by Stimulated Emissionof Radiations).

However, they probably offer little benefit; mostly these applications are adjunct to other treatment modalities like mobilization techniques.

Although adhesive capsulitis is generally considered to be a self-limiting condition that can be treated with physical therapy to regain the normal extensibility of the shoulder capsule, passive stretching of the shoulder capsule by means of mobilization techniques has been recommended.

The international Maitland Teachers Association (IMTA) defines the Maitland concept as a process of examination,assessmentand treatment of neuro musculoskeletal disorderby manipulative physiotherapy.

Grade I and grade II of Maitland mobilization techniques are primarily used for treating joints limited by pain. The oscillations may have an inhibitory effect on the perception of painful stimuli by repetitively stimulating mechanoreceptors that block nociceptive pathways at the spinal cord or brain stem levels. These non-stretch motions help move synovial fluid to improve nutrition to the cartilage manoeuvres. Appropriate selection of

mobilization techniques for treatment can take place after a thorough assessment and examination.

This is a non- invasive way of administering medications to tissues below the skin; perfect for patients who are uncomfortable with injections likeCortisone, used to reduce inflammation, is one of the more commonly used substances delivered in this way.

Travel and Simson define a trigger point as “a highly irritable localized spot of exquisite tenderness in a nodule on a palpable taut band of muscle tissue”

The technique used in this study is myofascial trigger point release which was administered over a period of 4 weeks to reduce pain and stiffness of shoulder joint.

Myofascial tightness and muscular adhesions contribute to prevention of necessary upward rotation and create a mechanical block of humeral elevation; these restrictions can be decreased by myofascial trigger release techniques. Myofascial trigger points are present in these specialized soft tissue restrictions, this prevent smooth muscle contraction throughout the length of the muscle.One of the myofascial release techniques is trigger points release,that is a very effective manual therapy used for release of trigger point. Hence there is a need for this study on Maitland mobilization and Myofascial trigger point release technique is effect in adhesive capsulitis of shoulder.

The purpose of this study is to compare the effectiveness of the myofascial trigger point release and Maitland techniques in subjects with adhesive capsulitis to reduce pain, to improve the functional ability, improve the mobility.

OBJECTIVES OF THIS STUDY

- i. To evaluate the effectiveness of myofascial trigger point release techniques for reducing pain and improving functional activity& ROM in patients with adhesive capsulitisof shoulder.
- ii. To evaluate the effectiveness of for Maitland mobilization techniques for reducing pain and improving functional activity& ROM in patients with adhesive capsulitis of shoulder.
- iii. To compare the effectiveness of myofascial trigger pointrelease techniqueand Maitland mobilizationin reducing pain and improving functional activity& ROM in patients with adhesive capsulitis of shoulder.

STUDY SETTING

Clinical setting

DURATION OF THE STUDY

Thrice a week for four weeks (12 sessions)

DURATION OF TIME

- i. Maitland mobilization : 5 minutes with 5 sets of glides per session.
- ii. Myofascial trigger point release : 5 and 15 seconds for each MTrPs with rest period of 30seconds.

SAMPLE SIZE

- i. Both male and female between 40 -60 years of age group
- ii. n=30
- iii. Group A= 15
- iv. Group B = 15

VARIABLES

Independent variable

- i. Maitland mobilization (Grade I and Grade II)
- ii. Myofascial trigger point release techniques

Dependent variable

- i. Pain
- ii. Range of motion
- iii. Functional ability

SELECTION CRITERIA

Inclusion criteria

- i. Shoulder pain with 3 months duration without any major trauma.
- ii. Unilateral symptoms
- iii. Both males and females within age group of 40 yrs to 60 yrs.
- iv. ROM restriction of external rotation and abduction of shoulder joint.
- v. Normal finding in the X-ray at Glenohumeral joint.
- vi. Restriction of active and passive Glenohumeral and scapula thoracic joint movements for atleast three month duration.

Exclusion criteria

- i. Shoulder surgeries
- ii. Cortico steroid injections in the affected shoulder taken 1 month before study.
- iii. Conditions like Osteo arthritis and Rheumatoid arthritis, labral tears, malignancies and Osteoporosis in the shoulder region.
- iv. Stroke with residual upper limb involvement.
- v. Unhealed fractures and implants in the shoulder region.

SAMPLING METHOD AND SAMPLE SIZE

Based on the selection criteria 30 patients were randomly assigned for the treatment into two groups.

GROUP A [n-15]

Myofascial trigger point release technique

GROUP B [n-15]

Maitland mobilization technique (Grade I and Grade II)

OUTCOME MEASURE SCALE

- i. Pain was measured with VAS scale.
- ii. Range of motion of shoulder joint with goniometry
- iii. Functional status was measured using SPADI scale.

PRE TREATMENT ASSESSMENT FOR BOTH THE GROUPS

The subject of the both group were assessed for the pain,ROM and functional activity before intervention the treatment was carried out for 4 weeks in 3 session per week. For measuring the severity of pain VAS was used. Functional activity was assessed using SPADI and Range of motion was measured by universal Goniometer.

VISUAL ANALOGUE SCALE (VAS)

VAS is standard measurement tools in pain research in clinical practice and has been shown to have linear scale for properties for mild to moderate pain. The VAS is self-reported instrument that consist of 10cm straight line of either horizontal or vertical orientation. The left end of line represent "NO PAIN" and right most "Unbearable pain" the patient is presented with a 10cm line on a piece of paper and a pen

They are instructed to mark these perceived level of pain intensity on the line. The instrument is then scored by the clinician measuring, with a scale. The distance in centimeter from "No pain" anchor to the mark placed on the line the patient. The resulting measure represents the patient's level of pain.

SHOULDER PAIN AND DISABILITY INDEX

The SPADI is a shoulder pain disability index, which contains 13 items describing common situation that may induce symptoms in patients with shoulder disorder. All items refer to the preceding 24hrs. Response options are either "YES", "NO" or "NOT APPLICABLE". The not applicable category should be used when the situation at issue has not occurred during the preceding 24hrs, A final score calculate by dividing the number of positively scored items, by the total number of applicable items, and subsequently multiplying the score by 100, resulting in the final score ranging between 0 (no disability and 100 all applicable items positive).

UNIVERSAL GONIOMETER

A Goniometer is an instrument that either measures an angle or allows an object to be rotated to a precise angular



position. The goniometer is used to measure the total amount of available motion at a specific joint. Goniometer can be used to measure both active and passive range of motion.

MATERIAL USED

- i. Visual analogue scale (VAS)
- ii. Shoulder pain disability index (SPADI)
- iii. Goniometer
- iv. Pillow
- v. Towel
- vi. Couch

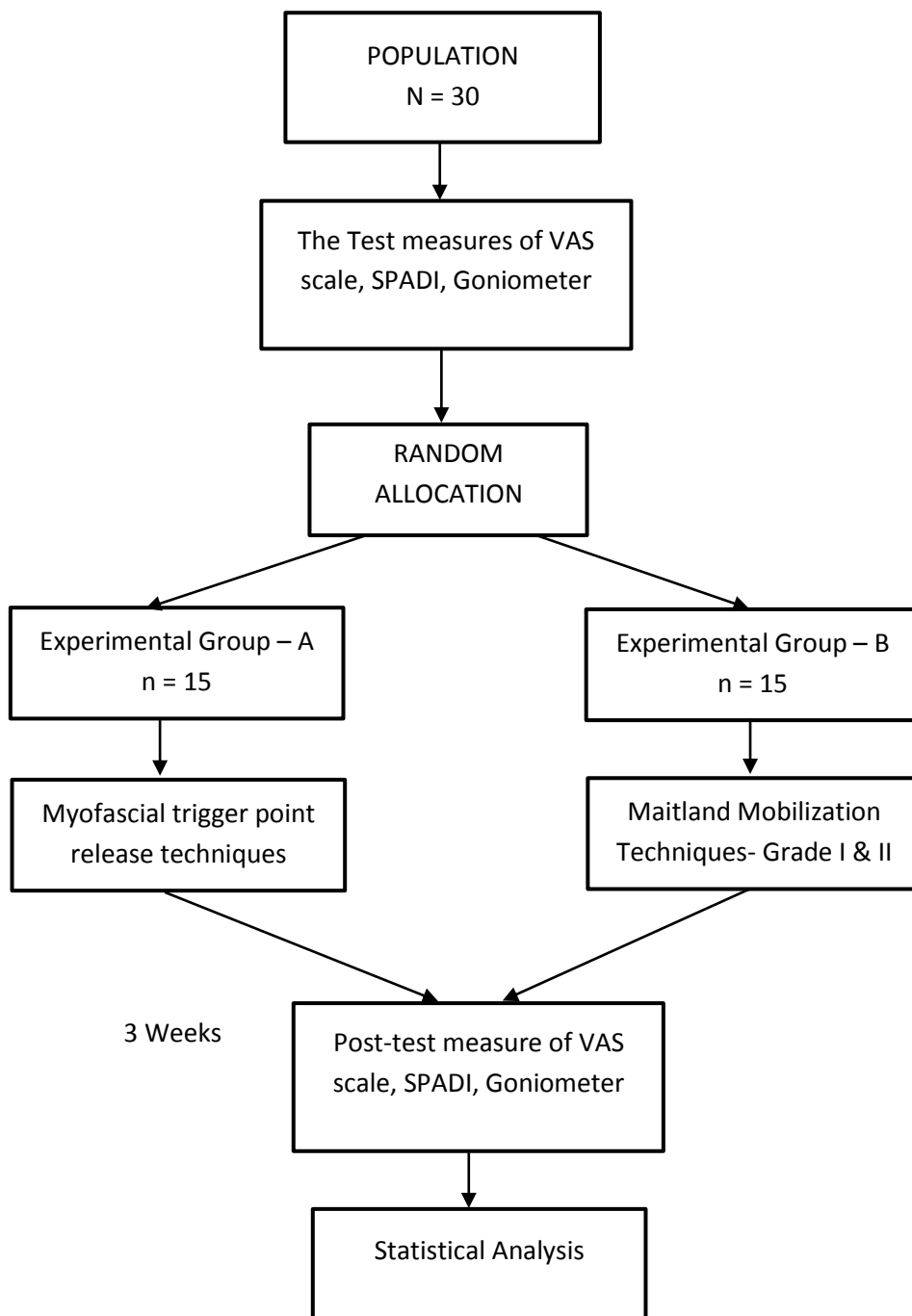
DURATION OF TREATMENT: 4weeks

DURATION OF EXERCISES

MYOFASCIAL TRIGGERPOINT RELEASE
TECHNIQUE : 5 and 15 secondsforeach MTrPs.

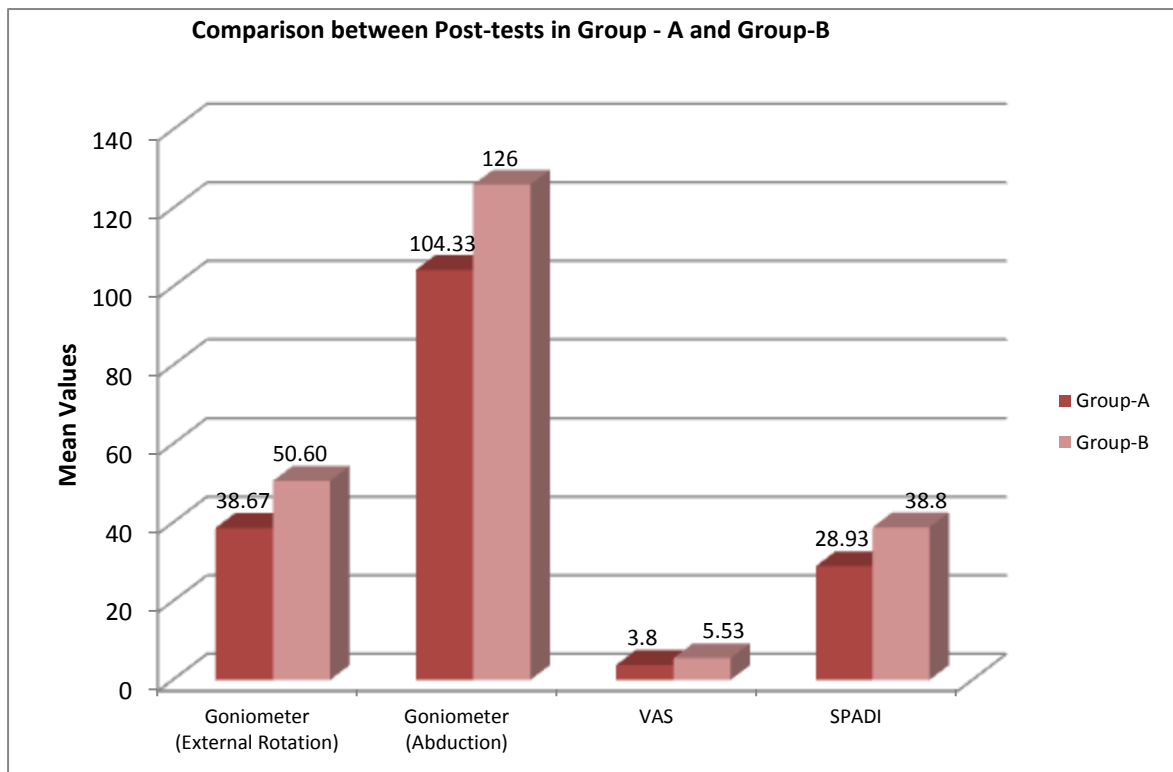
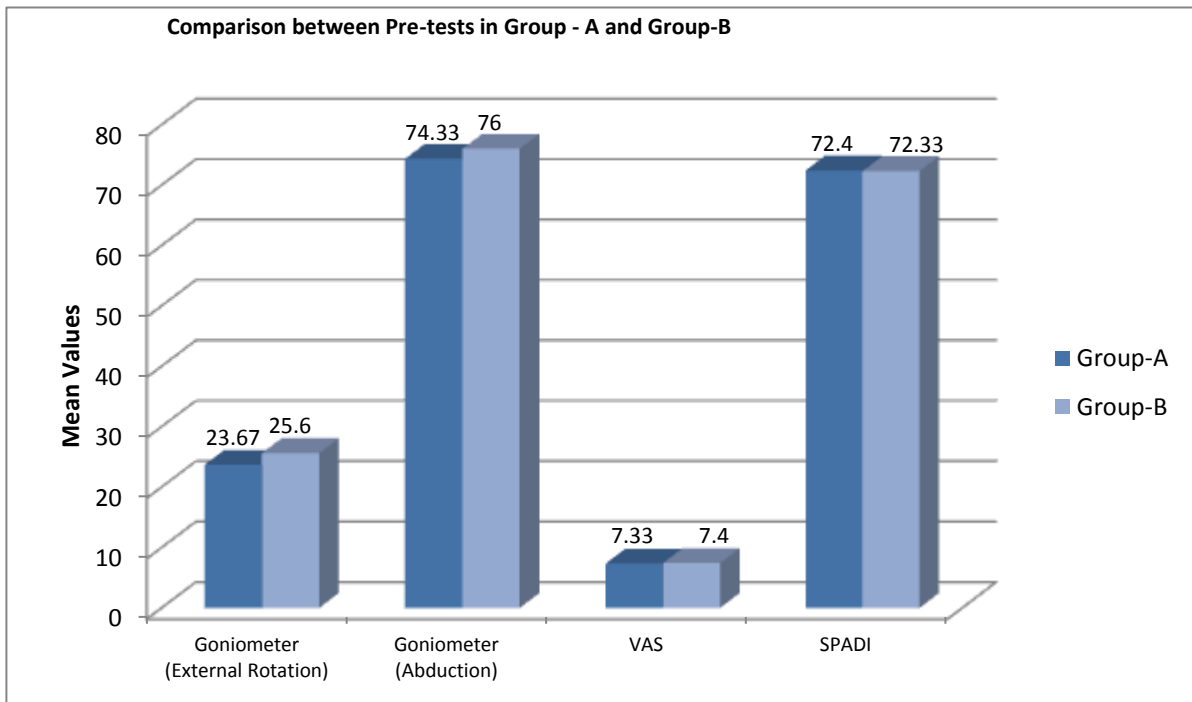
MAITLAND MOBILIZATION 5 minutes with 5 sets of glides per session.

FLOW CHART OF PARTICIPANTS THROUGH EACH STAGE OF THE STUDY



DATA ANALYSIS

The collected data were tabulated and analyses using SPSS version 19 software. Mean and Standard Deviation are used to assess all the parameters. Paired 't' test was used to find out all the significant difference between pre and post-test values within the group. The following graphs gives the comparison between pre and post test in Groups A and B



GROUP A (MYOFASCIAL TRIGGER POINT RELEASE TECHNIQUES)

At the base line mean of goniometric values in pretest for external rotation was 23.67 and posttest was 38.67, abduction pretest was 74.33 and posttest was 104.33 all the value were found statistically significant with $p < 0.01$ and 95 % confidence interval.

The base mean value of VAS scale was 7.33 on pretest that reduced to 3.80 on post test

In the case of SPADI the pretest value on the pain score and disability 72.40 and posttest dropped to 28.93 respectively.

GROUP -B (MAITLAND MOBILISATION -GRADEI&GRADEII)

At the base line mean goniometric values in pretest for external rotation was 25.60 and Post-test was 50.60, abduction pretest was 76.00 and posttest was 126.00 all the value were found statistically significant with $p < 0.01$ and 95%confidence interval.

The base mean value of VAS scale was 7.40 on pretest that reduced to 5.53 on posttest.

In the case of SPADI the pretest value on the pain score and disability 72.33 and posttest dropped to 38.80 respectively.

FINDINGS

The Aim of the present study is to compare the effectiveness of Maitland mobilization technique and myofascial trigger point release techniques in adhesive capsulitis shoulder.

The Maitland mobilization significantly reduces symptoms of adhesive capsulitis shoulder by minimizing the pain and improves functional activity and ROM.

The parallel treatment observes by comparison of myofascial trigger point release techniques was also shows the significance in restoration of functional activity which is reduce because of pain.

Though two of the selected physiotherapy procedure proved its worth equality in reducing pain the later one(i.e.) Group A subjects is failed to significant graduation in functional activity and ROM.

So based on these back ground it may be observed that the Maitland mobilization techniques (Grade I&Grade II), will be better than the myofascial trigger point release for adhesive capsulitis shoulder.

The results of the study shows that there is significant improvement in minimizing the pain of the group B when compare to the group A.

The result of the study shows that there is a significantly reduced symptom of adhesive capsulitis shoulder by improvement in the functional activity and ROM. following Maitland mobilization techniques in Group B.

The comparison of post Mean score of pain over the group shows difference in the effectiveness to relieve pain, which explained that the pain reduction more or less to be same through two of the these methods.

The Mean post test score of group B comparatively more than Group A shows that functional activity and ROM is improved more by Maitland mobilization technique comparing to myofascial trigger point release techniques

Hence, the Group-B shows statistically better significant result than Group-A in reducing pain, improving ROM and functional activity in adhesive capsulitis shoulder.

RECOMMENDATION

- i. In future study movements like Flexion and Internal rotation can be done to find the effectiveness of mobilization techniques in this condition.
- ii. Grade III & Grade IV mobilization can be done to mobilize the thawing stage.
- iii. The study can be done in larger sample and increase duration of the study.
- iv. Follow up exercise can be continued after the treatment.

CONCLUSION

The present study concluded that a 4 weeks treatment program on subjects with adhesive capsulitis shoulder demonstrated that both Maitland Mobilization and myofascial trigger point release techniques were effective in reducing pain, improve functional activities and ROM. Further it was observed that Maitland mobilization technique (Grade I &GradeII) was more effective in improving functional activities and equally, effective in reducing pain and improve ROM, compared with myofascial trigger point release technique in subjects with adhesive capsulitis shoulder. Hence the findings of the study suggest that Maitland mobilization technique (GradeI&Grade II) may be more effective than myofascial trigger point release in adhesive capsulitis shoulder to reduce pain,improve the functional activity and improve ROM.

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