



ORIGINAL RESEARCH PAPER

Physiotherapy

A STUDY TO EVALUATE THE EFFECT OF MYOFASCIAL RELEASE AND COUNTER STRAIN TECHNIQUE ON MYOFASCIAL TRIGGER POINT OF UPPER TRAPEZIUS MUSCLE

KEY WORDS: Myofascial Release Therapy, Strain Counter Strain Mechanism, Myofascial Trigger Point.

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ABSTRACT

Trapezius muscle is one of the common sites for development of trigger points, are capable of developing tenderness and referred pain on palpation and trigger points create a lot of difficulty in carrying out various day to day activities. These points are manageable through myofascial release and strain counter strain mechanism and relieving patients' pain. The aim of study is to compare the relief produced by myofascial release and strain counter strain mechanism in myofascial trigger point using NDI. The result was analysed by using statistical package social science (SPSS Inc.). Significance was defined as $p \leq 0.05$ paired t-test was conducted for all the variable of within the groups. It is concluded that the comparison of effectiveness of myofascial release and strain counter strain mechanism (both in combination with hot pack) in releasing trigger points were effective in relieving symptoms arising due to myofascial trigger point

INTRODUCTION:

The myofascial are often injuri or strain form trigger points. Trigger points of upper trapezius can have referred pain to the side of neck and stiffness, muscular tension, physical limitation and loss of normal functioning. These trigger points do not respond to anti-inflammatory medication, muscle relaxants or muscle strengthening, may have more than one trigger points. in the body. These muscular pains included in Myofascial Pain Syndrome (MPS) are classified under musculoskeletal disorders, leads to development of characteristic taut or hard band in muscle which is tenderness. It refers pain to distant site. Myofascial Pain Syndrome can localized or generalized. Chronic case of MPS turns to generalize.^[1,2]

Trigger points: It is a palpable nodule as taut bands of the fascia of skeletal muscles. It is a hyperirritable spot. Compression may elicit local tenderness, local twitch or referred pain at a distance from the spot. There is no common lab test or imaging to confirm diagnosis of trigger points.

Jump sign is a characteristic response to pressure over trigger points produce severe pain and involuntary response could be jerking the shoulder, head or some other body part not being palpated. **Local twitch responses** are visible or palpable contraction of muscle and skin, as tensed muscle fibres contract in response to pressure when applied.^[3,4,5]

MYOFASCIAL RELEASE THERAPY is apply pressure with finger or other instruments to trigger point with increasing pressure.^[1] It is capable of relieving stress, decrease pain, increase fluid mobilization, increase soft tissue mobility etc. Once trigger points are released, the muscle needs to be moved throughout its full range of motion.^[6]

Pain pattern might change during the procedure to returns to the normal. The treatment is to be supported by self-care program as advised by the therapist. Other factors can contribute in enhancing the recovery are minimizing stress, pacing activities, avoiding overexertion, good communication, patience and positive attitude. Rate of recovery would be determined by type of injury, fitness level of patient, perpetuating factors, skeletal abnormalities, psychological stability, patient's threshold, patient's compliance with self-care and eliminating or reducing perpetuating factors.

Counter Strain Technique:

Counter Strain Technique is a passive technique i.e. patient do not do anything voluntarily, rather therapist would be performing all the task. It is an indirect technique i.e. we

shorten up the muscle (muscle approximation) passively. Therapist had to make sure that first time when the technique is applied, the pain should reduce upto 70%.. Becouse-. 1. By counter strain mechanism their reflexes are inhibited by putting the tissue to antagonist of that reflex. 2. Strain counterstrain technique include aberrant neuromuscular activity mediated by muscle spindle and local circulation or inflammatory reactions influenced by sympathetic nervous system. Aberrant neuromuscular activity between muscle agonist and antagonist, called proprioceptive theory is the most appropriate theory explaining strain counter strain mechanism.

PURPOSE OF STUDY: There isn't enough study made in order to compare the effectiveness of myofascial release and counter strain mechanism for trigger points. Counter strain has generally proved more effective on tender points, but less effective of counter strain on trigger points. Hence by forming 2 groups: one treated with myofascial release and other treated with counter strain mechanism, give better results i.e. with more effectiveness if using NDI.^[7,8] NDI [Neck Disability Index] is a 10-item questionnaire which includes various aspects like personal care, lifting, recreational activities etc. It is used to evaluate patient's current status and improvement post treatment, assessment is made accordingly. "Zero" point [0%]: No activity limitation, 50 points [100%]: Complete activity limitation. This test holds sensitivity of 0.78 and a specificity of 0.80.

AIM & OBJECTIVES: To compare the effectiveness of myofascial release and strain counter strain technique in myofascial trigger point on upper trapezius muscle.

Objectives: -1. To see the effect of strain- counter strain technique in myofascial trigger point of upper trapezius muscle on activity of daily living involving neck movements.
2. To see the effect of myofascial release in myofascial trigger point of upper trapezius muscle on activity of daily involving neck movements.

3. To see the difference between the effect of myofascial release and strain counter strain techniques in myofascial trigger point on upper trapezius muscle using NDI

METHODOLOGY:

STUDY DESIGN: Randomized clinical trial.

(1) SAMPLE SIZE: 30

(2) PLACE OF RESEARCH: Physiotherapy OPD of SSMC&H Jabalpur M.P.

(3) SAMPLING METHOD: Simple random sampling.

- (5) STUDY DURATION: One year. Jan.2023 to Dec.2023
(6) TREATMENT DURATION: Seven days:

INCLUSION CRITERIA : Total 30 subjects between age group of 20 to 30 years, with a maximum 3 to 5 active myofascial trigger points which when palpated replicated their chief complaints in upper trapezius muscle (unilateral). They did not receive any treatment for their trigger points before a month prior to the study.

EXCLUSION CRITERIA: 1. Patients with; Fibromyalgia syndrome,
2. With active myofascial trigger points in bilateral trapezius muscle,
3. History of cervical spine surgery, History of whiplash injury, Cervical radiculopathy,
4. Open wounds, Sutures, Hematoma, Healing fractures, Systemic or local infection, Skin hypersensitivity, were excluded from the study.

PROCEDURE: 30 Subjects was selected from Physiotherapy OPD of S.S.M.C. & H, approved by Ethical committee. Before start the treatment, written consent was taken on the consent form and tell the clear procedure. The subjects was randomly divided into TWO groups. NDI [Neck Disability Index] score was taken pre-intervention at Day-1 and after termination of intervention (post intervention) at Day-7. NDI is a 10-item functional questionnaire that is used to measure patient's self-reported neck pain related disability. This questionnaire gives information about how the neck pain has affected ability to manage everyday life by assessing patient's functional limitations due to trigger points present at their cervical region. Both of the groups received "Hot Packs" [75 degree Celsius for 20 minutes] warped in two layers of towel at their cervical region for sustained heating effect. This was followed by GROUP-A treated with Myofascial Release and GROUP-B treated with Strain-Counter strain mechanism.

MYOFASCIAL RELEASE:

GROUP-A was treated for one week regularly. manoeuvres was performed by application of slow and light force. The complete procedure lasted not more than 20 mins. The treatment was given in four basic manoeuvres:

1. An assisted induction of fascia was performed in supine position. Patient's head was suspended with one of the therapist's hand placed under the neck and other on parietal region of the patient, until the perception of spontaneous movement, followed to its maximum amplitude.

2. Then the therapist proceeds to release the myofascial restrictions of suboccipital region from skull level by flexing metacarpophalangeal joints of index, middle and ring fingers to raise Atlas vertebra towards the ceiling.

3. For stretching sternocleidomastoid muscle, therapist placed one hand over the occipital region to make a smooth rotation of the patient's head. The second hand of the therapist was placed over the belly of sternocleidomastoid muscle with the thumb at the insertion in mastoid process. A rotatory movement with slight extension was performed with one hand and transverse sliding movement was performed on the restricted muscle zone using second hand.

4. Then finally to lengthen up the myofascial structures of posterior cervical region, patient's head was held at occipital area and slowly cervical spine was bent. The other hand-held contact with paraspinal muscles, by placing thumb on one side of spine and just across the proximal interphalangeal joint of index finger. While one hand held head, and the other performed a vertical downward sliding.^[63]

STRAIN-COUNTER STRAIN TECHNIQUE: In GROUP-B, The upper trapezius was exposed, subject was in supine

position with cervical spine in neutral position. Active myofascial trigger points were identified using "Pincer palpation method". Most active trigger point was identified using Pressure Threshold Meter. A Pressure Threshold Meter called "Wagner Force Dial" FDK-20 was used. A pressure of 2.5Kg/cm square of pressure was applied by the therapist at various tender sites to identify most painful site (trigger point) and were asked to rate their pain and functional limitation at NDI.. After identifying most active point, the therapist applied gradual pressure, which keeps on increasing until the sensation of pressure become one of pressure to one of pain. Then subject was passively placed in a position that reduces tension under palpating fingers, causing subjective pain reduction by 75%. Here the position which reduced pain was ipsilateral side flexion of cervical spine with slightly contralateral cervical rotation i.e. 5-8 degrees. The subject's upper extremity was passively placed in 90degrees of abduction, for 90 seconds, then slowly and passively placed in neutral position.^[64]

RESULTS AND ANALYSIS The data collected along with the results of statistical analysis by using statistical package social science (SPSS Inc.,). Significance was defined as $p \leq 0.05$ paired t-test was conducted for all the variable of within the groups.

Table No .1: Showing Tabular presentation of before and after Myofacial release with Values of NDI score of Group-A & Group-B(30 cases in each group) with mean, SD and p value.

Group	Before giving Myofacial release Before give release with NDI score with Mean & SD	After the Effect of 7 days giving Myofacial release of NDI score Mean with SD	P- value
Group A	45.76 ±14.0	17.76±9.08	($p < 0.523$)
Group B	48.93± 12.75	12.66 ±5.05	$p < 0.067$

Table No. 2. representing comparison between before and after intervention due to giving strain-counter-strain NDI score of Group-A. and group B. with mean, SD and p value

Group	Before taking intervention of NDI score Mean with SD	After the Effect of 7 days o intervention f of NDI score Mean with SD	P value
Group A 30 case	45.76±14.01	17.78±9.08	($p < 0.543$)
Group B 30 case	48.93 ± 12.75	12.66± 5.06	$p < 0.452$

It have been observed in Group A statistically, there was a significant difference ($P < 0.05$) i.e. Myofascial release provided relief in pain and enhanced activity of subjects. Similarly, before & after values of Group B was significant too ($P < 0.05$) strain-counter-strain proved to be effective in relieving trigger points. Hence in this study both groups are equally significant..

DISCUSSION:

In this study, On analyzing the effect of myofascial release was compared with strain-counter strain mechanism for treatment of patients with neck pain. Improvement in pain and reduced disability of upper trapezius was seen in both myofascial release and strain counter strain groups, but none of them proved to be superior over other. The result was analysed on the basis of scores of NDI.

This comparative study was done over 7 sessions of Myofascial release versus strain-counter-strain mechanism in combination with hot pack, in 2 separate groups. Both of the groups were found to be effective in reducing pain over trigger points and increasing the activity level.

Neck pain is very common among demographic group of 20 to 30 years, due to various activities like prolong reading, driving etc, putting lots of strain over neck muscles, especially over upper trapezius. Few palpable nodules in taut bands of fascia over trapezius develops teamed as trigger points. These are hyper-irritable spots with radiating pain, resulting into activity limitation and painful neck with shoulder.^[9,10] Localization of trigger point is based on palpable observation of local twitch response. This elicits pain and causes radiation of pain toward the zone of reference. These are to be managed by NSAIDs, various physical manoeuvres like acupuncture, dry needling or using electrical modalities like Ultra Sound Therapy, Inter-Ferential Therapy etc.

“Effect of self-Myofascial release on myofascial pain, muscle flexibility and strength “found that SMFR [Self Myofascial Release] when applied using a foam roller over trigger points reduced pain, increased joint ROM with no loss in muscle force post treatment. Our finding were similar to Leonid Kalichman, Manuel Rodriguez-Huguet, E-Segura-Orti, S Prades-Vergara and Adam Perreault, Brent Kelln.^[11,12,13,14] Due to short interventions and observation periods, one can't infer that the positive effects obtained by these 2 techniques i.e. Myofascial Release & StrainCounter-Strain at the end of 7th session would sustain for longer duration. Further controlled studies with longer observation duration are required to assess long term improvement of symptoms in patients with active trigger points over trapezius muscle.

CONCLUSION:

This study provided evidence to support the use of Myofascial Release with Hot pack or Strain-Counter-Strain mechanism as an effective option for short term management of trigger points. However, going with the NDI scores Strain-Counter-Strain have given better results in relieving pains and enhancing activity level of the patient when compared with myofascial release. Still on comparing Group-A with Group-B, after treatment both were found to be effective and values thus obtained are not significant [P > 0.05]. Hence, null hypothesis accepted.

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