

IMMEDIATE EFFECTS OF TRIPLANAR MYOFASCIAL RELEASE VS SUBOCCIPITAL RELEASE IN SUBJECTS WITH NON-SPECIFIC NECK PAIN: A CLINICAL TRIAL

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ABSTRACT

Background: Cervical spine pain is a common musculoskeletal problem affecting 70% of individuals within their lifetime which can significantly affect physical and social function. Myofascial pain syndrome is characterized by muscle pain caused by MTrPs. Myofascial therapy defined as “the facilitation of mechanical, neural, and psychophysiological adaptive potential as interfaced in the myofascial system. suboccipital release is also known as cranial base release. Muscle of the neck and upper back attach to the base of the occiput and often contains many hyperactive trigger points.

Materials and Methods: The study was performed on 30 subjects, both male and female between age 20 years to 45 years old. Subjects were randomly selected for collection of data. Assessment of physical parameters were noted such as, height, weight and BMI. Subjects were divided into 2 groups as follows: Group A (n=15) received Triplanar myofascial release technique and Group B (n=15) received suboccipital release technique. Pain assessment, NDI, PPA was done pre and post intervention.

Results: Among the 30 subjects, the mean age group the participants in group A 24.60±5.36, the means age group of participants in group B was 26.33±7.62. the results showed high significance in the group B.

Conclusion: Study shows decreased in the pain and disability in group B.

KEY WORDS: Myofascial Release, Trigger Points, Suboccipital Release.

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INTRODUCTION

Cervical spine pain is a common musculoskeletal problem affecting 70% of individuals within their lifetime. Many neck disorders can significantly affect physical and social function [1]. During any 6-month period, 54% of adults suffer from neck pain and 4.6% experience important activity limitations because of neck

problems. Most affected individuals recover and few develop chronic neck pain and disability. However, in 5-10% of patients with non specific neck pain will develop to a chronic pain disorder [2]. The cervical spine is divided into upper and lower cervical spine. The muscles of entire back of neck are grouped into four layers from superficial to deeper. Trapezius, Latissimus dorsi,

Levator scapulae, Erector spine which splits into iliocostalis, longissimus, spinalis, multifidus, interspinales and suboccipital muscle. The suboccipital region is between the occipital and spine of the axis vertebra, the four muscular layers are represented as trapezius, splenius capitus, semispinalis, and longissimus [3].

Myofascial pain syndrome is characterized by muscle pain caused by MTrPs. Myofascial therapy defined as "the facilitation of mechanical, neural, and psychophysiological adaptive potential as interfaced in the myofascial system. Causes for myofascial pain-poor posture, direct trauma, over use of unconditioned muscle, stress, arthritis, spinal degenerative disease and nerve compression [4].

suboccipital release is also known as cranial base release. Muscle of the neck and upper back often contains many hyperactive trigger points. Occipital release is another technique that may be useful for treating trigger points. It has also been called as 'inhibitive cervical manual traction'. A mild manual traction is applied to the posterior cervical musculature and ligaments. Direct pressure is applied at the musculotendinous junction of the cervical muscles at the base of the skull, which facilitates relaxation of muscles [5].

The Triplanar MFR technique will be the clavi-pectoral indirect soft tissue three-planar fulcrum release. The fingers are spread so as to engage as much tissue. Once contact established, the therapist gently moves both hands in opposite directions in one plane at a time. The therapist moves his hands in sagittal, coronal, and then transverse planes establishing a fascial fulcrum over the glenohumeral joint and clavi-pectoral region [6].

Pain perception thresholds is assessed with the pressure algometer. The apparatus consists of a 1 cm diameter hard rubber tip, attached to the plunger of a pressure (force) gauge. The dial of the gauge is calibrated in kg/cm². The inter-examine reliability was found to be good, with a mean intra-class correlation coefficient (ICC) of 0.75. Intra-examiner reproducibility was excellent (mean ICC .0.84) [7].

MATERIALS AND METHODS

Institutional review board approval: The study

was approved by the Institutional review board and was conducted in conformity with the ethical and human principles of research.

Participants: A total of 30 subjects were recruited from October 2015 to December 2015 from the KLE hospital and its constituent hospital, Belagavi.

The Inclusion criteria were- Both male and female age group between 20 to 45, Subjects willing to participate in the study. Exclusion criteria: Previous and recent traumatic injury to the neck, Any recent surgical interventions, Systemic illness or neurological illness, recent corticosteroid injection and the subjects who agreed signed an informed consent form and their demographic data and medical history were recorded.

Instrumentation: The pressure algometer used in this study is a hand-held instrument. It consists of a 1 cm diameter rubber-tipped plunger mounted on a calibrated spring. The gauge is calibrated in kg/cm² and ranges from 0 to 11 kg/cm² in 0.1 kg/cm² divisions. The pressure algometer was placed perpendicular to the area to be tested and a steady, increasing pressure of 1 kg/sec was applied, The gauge holds the maximum applied pressure.

Procedure: The participants were recruited from October to December 2016. The study was conducted in Physiotherapy OPD, Dr. Prabhakar Kore Hospital and MRC and KLE University's Institute Of Physiotherapy. A brief history was taken as per inclusion criteria and exclusion criteria. The study protocol explained and a written informed consent was obtained from all the patients. All subjects were screened based on the inclusion and exclusion criteria prior to their enrolment into the study. Baseline values for all the outcome measures in all the patients were noted prior to the beginning of the study. Subjects were randomly selected for collection of data. Prior assessment demographic data was noted, which included age, gender, weight, height, BMI. The subjects were divided into 2 groups.

Group A: Tri Planar Myofascial Release:

In group A (n= 15), subject were instructed to be in prone position, therapist is seated at the head of the table. The therapists shoulders are

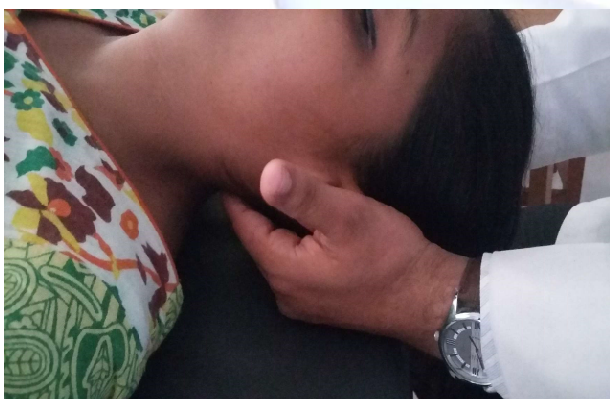
directly over the point of contact with elbow in full extension and forearm in neutral position is maintained. Therapist applies direction of force along the muscle fiber in all the three planes. The technique was administered once for 3 minutes. The MFR technique will be directed to the clavi-pectoral fascia for soft tissue release.

Fig. 1: Showing the Tri Planar Myofascial Release technique.



Group B: Suboccipital Release: In group B subjects (n=15) were instructed to be in supine on the table with the therapist seated at the head of the table. The finger pads should be placed over the suboccipital muscles bilaterally, just inferior to the superior nuchal line down at approximately the level of C2. Traction is then applied with the fingers in an anterior, lateral, and cephalad direction. Therapist then uses two-handed combination moved with greater ease.

Fig. 2: Showing the Suboccipital Release technique.



Data analysis: Neck disability index, numeric pain rating scale, pressure pain threshold means and standard deviations were calculated for the pre-test, post-test and difference scores. Statistical analysis was done manually by using Mann-Whitney U test and Wilcoxon matched pairs test

RESULTS AND TABLES

This study was done to estimate the immediate effect of triplanar myofascial release and

suboccipital release in nonspecific neck pain. Neck disability index, pain pressure algometer and numeric pain rating scale values were taken pre and post intervention. Out of 30 participants, the mean age of the participants in group A was 24.60±5.36 the mean age of participants in group B was 26.33±7.62. The gender distribution in each group was such that 1 male and 14 female subjected in triplanar myofascial release and the suboccipital release group included 11 female and 4 male subjects.

Table1: Comparison of group A and group B with respect to Neck disability index scores at pre and posttest by Mann-Whitney U test.

Groups	Pretest		Posttest		Changes	
	Mean	SD	Mean	SD	Mean	SD
Group A	24.13	12.39	8.27	3.53	15.87	12.88
Group B	27.6	11.96	8.8	6.75	18.8	10.47
% of change in A					65.75%#	P=0.0007*
% of change in B					68.12%#	P=0.0006*
Z-value	-1.0577		-0.1659		-1.0784	
P-value	0.2902		0.8682		0.2809	

*p<0.05 significant, # applied Wilcoxon matched pairs test

Table 2: Comparison of group A and group B with respect to NRPS scores at pre and posttest by Mann-Whitney U test.

Groups	Pretest		Posttest		Changes	
	Mean	SD	Mean	SD	Mean	SD
Group A	6.27	0.8	3.07	1.16	3.2	1.01
Group B	7.2	1.26	3.17	1.67	4.03	1.54
% of change in A					18.50%#	0.0007*
% of change in B					23.19%#	0.0006*
Z-value	-1.9495		-0.1452		-1.4725	
P-value	0.0512		0.8846		0.1409	

*p<0.05 significant, # applied Wilcoxon matched pairs test

Table3: Comparison of group A and group B with respect to PPA scores at pre and posttest by Mann-Whitney U test.

Groups	Pretest		Posttest		Changes	
	Mean	SD	Mean	SD	Mean	SD
Group A	2.57	1.69	4.11	1.54	1.55	1.29
Group B	2.9	2.13	4.1	2.01	1.2	0.84
% of change in A					-60.26%#	P=0.0007*
% of change in B					-41.38%#	P=0.0010*
Z-value	-0.3318		-0.56		-0.1867	
P-value	0.74		0.5755		0.8519	

*p<0.05 significant, # applied Wilcoxon matched pairs test

DISCUSSION

The present study was conducted to compare the effect immediate effect of triplanar myofascial release versus suboccipital release

in subjects with non specific neck pain. Cervical spine pain is a common musculoskeletal problem affecting 70% of individuals leading to many neck disorders can significantly affect physical and social function [1]. During any 6-month period, 54% of adults suffer from neck pain and 4.6% experience important activity limitations because of neck problems. However, in 5-10% of patients with non specific neck pain will develop to a chronic pain disorder [2].

Till date the gold standard treatment for non specific neck pain was electrotherapy, manual therapy, soft tissue release techniques and combination of exercises. Keeping this into consideration all the subjects in the present study were given soft tissue myofascial release technique for 3 min for one session.

A study was done by William P. Hanten, Melinda Barrett on Effects of active head retraction with retraction/extension and occipital release on the pressure pain threshold of cervical and scapular trigger points [9] in which one treatment session was no significant changes in trigger point sensitivity but in this study one session was shown to be clinically effective in reducing the trigger point on pain pressure algometer.

Another study was done by Jay Kain on Comparison of an indirect tri-planar myofascial release (MFR) technique and a hot pack for increasing range of motion [7]

in which 31 participants were recruited where MFR technique was given once for 3 minutes and the results showed that MFR was shown to be as effective as hot packs in increasing range of motion similarly in this study both the groups were effective however, tri planar myofascial release was effective in reducing pain pressure sensitivity.

A Comparative Study of Myofascial Release and Cold Pack in Upper Trapezius Spasm was done by Ekta S. Chaudhary in which 45 subjects with upper trapezius spasm were selected the results showed that MFR shows greater effectiveness as compared with cold pack and exercises in treatment of upper trapezius spasm and reducing trigger point sensitivity [8].

Similar results were obtained in this present study where pain pressure sensitivity was reduced.

In the present study suboccipital release group showed clinically improvement in reducing functional disabilities and reducing pain where as triplanar myofascial release showed clinically significant in reducing tender point.

According to review of literature, there were no studies have been compared. There is paucity in the literature where a comparative study of triplanar myofascial release and suboccipital release are done.

In the present study when intergroup comparison was done, both the group showed clinically significant, However subject with suboccipital release group were shown to be more effective in reducing functional disabilities and pain.

Limitations: In the present study the sample size was small, both male and females were taken in the study, Duration of treatment session was less.

Future Scope: In the present study both the males and females were taken . this study can be performed using homogenous group. Also studies can be performed on subjects with specific condition of the neck pain, since in this study non specific subjects were taken. This study can be also performed for long duration/ multiple sessions

CONCLUSION

The study concluded that immediate effect of triplanar myofascial release and suboccipital release were effective in terms of reducing functional disabilities, pain and tender point however the suboccipital group showed more significant improvement.

Conflicts of interest: None

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