



COMPARISON OF IMMEDIATE EFFECT OF TRIGGER RELEASE AND POST ISOMETRIC RELAXATION TECHNIQUE FOR MYOFASCIAL PAIN IN UPPER TRAPEZIUS AMONG POST NATAL WOMEN.

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ABSTRACT

Background: Myofascial pain is one of the most common musculoskeletal pain disease and is characterised by myofascial trigger points, it is a hyperirritable nodule of tenderness in a palpable taut band of skeletal muscle that can refer pain to a distant point and also causes distant motor and autonomic effect.

objective: To compare the immediate effect of trigger release and post isometric relaxation exercise for myofascial pain in upper trapezius among post natal women.

Methodology: Study design: Quasi Experimental, Study type Comparative, Sampling method: Convenient sampling, Sampling size: 36, Study setting Department of Physiotherapy, Obstetrics and gynaecology, SRM Medical College Hospital and research center.

Inclusion criteria: Post natal women upto 3months, both lower segmental caesarean section and normal delivery, Age between 20-35 years, Visual analogue scale score 4-7.

Exclusion criteria: Patient not willing for the study, Cervicogenic headache, Patient with cognitive problem, Neurological problems associated with radiating pain.

Result Pre-test mean value of algometer is 1.4111 and post-test mean value is 1.7 for group A, where $P=.002$ which is statistically significant. Pre-test mean value of VAS is 5.3889 and post-test mean value is 4.5556 group A, where $P=.000$ which is statistically significant. Pre-test mean value of algometer is 1.3111 and post-test mean value is 1.9444 for group B, where $P=.000$ which is statistically significant. Pre-test mean value of VAS is 5.1111 and post-test mean value is 3.1661 for group B, where $P=.000$ which is statistically significant.

Conclusion: Trigger release is more effective than post isometric relaxation technique for treating myofascial pain of upper trapezius in post natal women.

KEYWORDS : Ultrasound, Triggerpoint, Algometer, Trapezius, Postnatal women, Neck pain

Introduction

One of the most common musculoskeletal pain disease is myofascial pain. Its characteristic feature is myofascial trigger points¹. Myofascial trigger points are hypersensitive nodule of tenderness which on palpation is a taut band of skeletal muscle that causes referred pain to a distant point and it also causes distant motor and autonomic effect².

In 1942, Dr. Janet Travell coined the term Trigger point which describes a clinical finding with the following features of pain irritable point in skeletal muscle or fascia, and is not due to acute local trauma, inflammation, degeneration, infection. The band can be felt as a painful point on the muscle and a twitch response can be seen on stimulation of the trigger point. The trigger point on palpation causes pain in the patient.

The term "myofascial" has evolved from the view that both muscle and fascia are likely to be contributors to the symptoms. Nomenclature from the past included "fibrositis", which means inflammation of the connective tissue lining muscle, along with chronic muscle pain these term have been replaced by term myofascial pain³.

In upper quadrant, myofascial trigger points are more common in postural muscles and particularly in upper trapezius muscle, trigger point in upper trapezius is common when compared to middle and lower trapezius because upper trapezius is an antigravity muscle⁴.

Causes for upper trapezius pain in post natal women is due to increase in breast size, having big breasts can put a lot of stress over the chest. Not enough support is received from the surrounding muscles of the body, the weight of the breasts make it difficult to maintain good posture, even leads to spinal deformities which in turn causes pain. Being self-conscious of their big breasts also make few women to hunch forward in an attempt to hide their chest, which in return worsens existing neck and upper back pain, leading to improper breast feeding technique. During pregnancy and in post natal women the breast weight nearly increases upto 500-800grams, it may leads to not only trapezius pain but also thoracic pain.

Active and latent trigger point are the two main types of trigger points. Active trigger points are those that may be responsible for the

presenting pain complaint. Latent trigger points presents itself with shorting of the muscles and pain on application of external pressure over that point. A variety of stimuli can activate the trigger point, which include poor posture, over use or imbalance of the muscles. In the latent forms, the pain induced is not constant and tends to be less severe⁵.

Trigger points form from excessive release of acetylcholine which constant depolarization of muscle fibers which leads to trigger points. Trigger point has an abnormal and increased composition of acetylcholine, noradrenaline and serotonin and a lower PH. Sarcomere of muscle has prolonged contraction, which further subsides the local blood supply in surrounding region compromising the blood supply. This crisis of energy causes pain in the muscle at neuromuscular junction. When trigger points are present in muscle there is often pain and weakness in the associated structures.

Barrier release concept is an indirect technique that is by applying gentle digital pressure to the trigger points, this is recommended by Travels and Simon. The contracted sarcomere is restored by applying a press and stretch technique, by which the sarcomere gets back to the normal length^{6,7}.

Management of patients with myofascial trigger points constitutes one of the most important problems encountered in clinical practice. Now a days there is an increase in demand for faster recovery among trigger point patients, since it affects the functional activities

Muscle energy technique is one of the management of trigger points and is a manual technique in which controlled, voluntary isometric contractions of the muscles are targeted and it is useful for lengthening a shortened muscle, improving range of motion at a joint and increasing drainage of fluids from peripheral region⁸.

The extensibility of shortened muscle is increased by post isometric relaxation procedure than static stretching. Post isometric relaxation is commonly utilised for achieving tonus release in a muscle before stretching. This involves an isometric relaxation through the influence of Golgi tendon organs. It may also be given to the antagonistic muscle group, producing reciprocal inhibition in the preferring agonistic

muscle⁹.

Post isometric relaxation technique is a class of soft tissue osteopathic (originally) manipulation methods that incorporate precisely directed and controlled, patient initiation, isometric and tractions, designed to improve musculoskeletal function and reduce pain.

Post natal period is a demand placed on the new mother where she has to adopt for the new environment and new role to look after the baby. This period of pain is further challenged by the number of cultural beliefs and practices in India which hampers the psychology of the mother, the newly adopted positions for breast feeding when not properly educated among women by physiotherapist which is very lacking in Indian practice. Mothers in postnatal ward complains of pain in upper trapezius region mostly due to improper breast feeding position. Also there are very few studies to report on the management of myofascial pain in post natal women. No literature strongly supports the appropriate management for the management of myofascial pain among postnatal women, so this study is done to bring awareness about the physiotherapy management on myofascial pain in post natal women.

Therefore the aim of this study was to compare the immediate effect of trigger release and post isometric relaxation technique for myofascial pain in upper trapezius among post natal women.

Methods

Quasi Experimental design, pre-test post-test type, Post natal women up to 3months, both lower segmental caesarean section and normal delivery. Age between 20-35 years. Visual analogue scale score 4-7 were included in the study. Diagnosed cases of cervicogenic headache, patient with cognitive problem, Neurological problems associated with radiating pain were excluded from the study.

Procedure

According to inclusion and exclusion criteria 36 post natal women upto 3months from the date of delivery, were selected from Department of Physiotherapy, Obstetrics and Gynaecology Ward, SRM Medical College Hospital and research center and divided conveniently into group A (n=18) and group B (n=18). Hence patients suffering from trigger points in upper trapezius muscle were selected as samples for this study, the subjects were clearly explained about the study and they voluntarily accepted to be the subjects for the study. Pre-test values Visual analogue scale values were noted according to the level of pain to the subject, and algometer readings were noted for this the trigger points were palpated and pressure pain threshold is calculated using algometer values were noted and after the intervention post-test values of both VAS and algometer were taken after 90mins to compare the pre and post-test values.

For finding algometer readings, patient were asked to sit upright, by noting trigger points, pressure should be applied to the trigger point till the patient feel the pain and the moment patient feels the pain values in the algometer should be noted as kgs or lb.

POST ISOMETRIC RELAXATION TECHNIQUE

For treating the patients with post isometric technique, in sitting position participants neck is passively flexed towards the opposite side where they feel the pain and rotate on to the same side of the pain until tension is felt by the therapist and a moderate stretch was felt by the participant and against the therapist hand for 7 – 10seconds. Followed by 3seconds of relaxation, this is repeated for 5times in a session. At the end of the session Cryotherapy is given by using ice pack for 15minutes with intervals in between.

TRIGGER POINT RELEASE

Subjects in sitting position, after locating a taut band of muscle and placing fingertip at right angles, the finger was moved in circular manner to roll the underlying fibers with the muscle at light lengthened position, which elicited a local twitch response. While palpating jump sign will be elicited. Three trigger points were noted and measured with algometer, the trigger point which had less pressure pain threshold is treated first and then followed by other 2 trigger points. The same pressure was maintained until release of the tissue barrier was felt. This process was repeated until there was no TrP tension/tenderness. After trigger release Cryotherapy is given by using ice pack for 15minutes with intervals in between. The outcome measures were Visual Analogue Scale and Pressure Algometer.

Results

Post-test mean value of Algometer and VAS shows statistically significant difference after the management with post isometric relaxation technique (Table -1). Post-test mean value of Algometer and VAS shows statistically significant difference after the management with Trigger release (Table 2). The p value of post-test Algometer readings of group A verses group B is 0.136 where it is not <0.05 which is not statistically significant. The value of post-test visual analogue scale readings of group A versus group B is 0.00 where it is <0.05 which is statistically significant.(Table 3).

TABLE 1
Pre and post test values of visual analogue scale and algometer readings among Group A – subjects treated with post isometric relaxation technique.

GROUP – A	Mean	N	Std. Deviation	Paired t test	p Value
Pre test Algometer	1.41	18	0.29	3.68	0.002
Post test Algometer	1.7	18	0.51		
Pre test VAS	5.38	18	0.91	6.87	0.000
Post test VAS	4.55	18	1.41		

TABLE-2
Pre and post test values of visual analogue scale and algometer readings among Group B– subjects treated with Trigger release

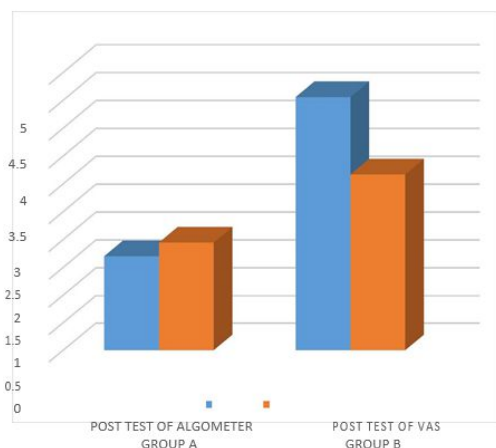
GROUP – B	Mean	N	Std. Deviation	Paired t test	p Value
Pre test Algometer	1.31	18	0.42	4.6	0.000
Post test Algometer	1.94	18	0.43		
Pre test VAS	5.11	18	0.83	7.43	0.000
Post test VAS	3.16	18	0.85		

TABLE 3
Post test values of Group A –subjects treated with post isometric relaxation and Group B – subjects treated with trigger release and with cryotherapy.

	N	Mean	Std. Deviation	t value	p value
POST TEST ALGOMETER GA Vs GB	18	1.7	0.51	1.52	0.136
POST TEST VAS GA Vs GB	18	4.55	1.04	4.36	0.00

GRAPH 3

Post test values of Group A –subjects treated with post isometric relaxation and Group B – subjects treated with trigger release and with cryotherapy.



Discussion

The main cause for upper trapezius pain in post natal women is due to increase in breast size, having big breasts can put a lot of stress over the chest. Not enough support is received from the surrounding muscles of the body, the weight of the breasts make it difficult to maintain good posture so to hide the increased breast size post natal women will adapt rounded shoulder position and faulty breast feeding position is also the main reason for upper trapezius pain. The results of this study shows a statistically significant increase in the value of algometer which was increased mean from 1.41 to 1.7 (p<0.05) and also there was a significant reduction in visual analogue scale from a mean of 5.38 to 4.55(p<0.05) which infers that there was a significant reduction of pain post immediate management of post isometric relaxation technique.

This can be explained by the Golgi tendon organs situated in tendon of the muscle to be stretched are sensitive to the stretch reflex and hence inhibits further muscle contraction while reacting to overstretch and thus have a lengthening effect due to sudden relaxation of the muscle under stretch. The muscle contraction against equal counterforce triggers the Golgi tendon organ during post isometric relaxation. During stretching blood supply to the muscle increases and taut band in the skeletal muscle gets lengthen. Due to increase in blood supply pain producing substances are washed away which leads to reduction of pain.

The result of this study goes in hand with Mehdikhani et al., 2012 who concluded that post isometric relaxation technique (MET) changes the pressure sensitivity in latent trigger point in upper trapezius muscle¹³.

This result is supported by Simons et al., 1999 who stated that stretching of a muscle with myofascial trigger points is effective since stretching can reduce the contraction knot and increases circulation to the stretched muscle, and this explains the mechanism of post isometric relaxation.

The results of this study shows that the algometer readings increases from the mean of 1.31 to 1.94 (p<0.05) and visual analogue scale was reduced from mean of 5.1124 and to 3.16 (p<0.05) among group B subjects post immediate management of trigger release.

On comparing both groups, trigger release was found to have a better effect on pain than Post isometric relaxation among postnatal subjects with upper trapezius pain (p<0.05). This shows trigger release is more effective than post isometric relaxation technique, where p value of algometer readings for post isometric relaxation technique is 0.002, and p value of algometer readings is 0.000.

Trigger release lead to pain reduction which may result from reactive hyperaemia in the local area of myofascial trigger points, counter irritant effects or a spinal reflex mechanism for the relief of muscle spasm.

Results of this study was supported by Simons who reported that manual pressure release may equalize the length of sarcomere with myofascial trigger points and reduces the palpable knot and pain¹¹.

According to Hou et al., 2002, pain reduction in myofascial trigger points following manual pressure release may result from reactive hyperaemia in the local area, due to counterirritant effect or a spinal reflex mechanism that may produce reflex relaxation of the involved muscle¹².

Also Cryotherapy applied to both the groups decreases nerve transmission in pain fibers, cold rises the pain threshold, and cold sensation may over-ride the pain sensation-known as pain gate theory and it also reduces muscle spasm by reducing the conduction velocity of sensory and motor nerves and the activity of muscle spindle cells which are responsible for muscle tone, resulting in a decrease in motor function.

Few limitations of the study were sample size was small, Treatment duration was short, Treatment was applied for only one session. Further recommendations are the treatment duration can be increased and number of sessions can be increased. Trigger points in other common muscles can be used in the study and Multi-session and long term effects can be done.

It can be further explained by the need of better cooperation in

isometric relaxation technique, whereas for trigger release is performed by the therapist, so altogether according to the results of this study, trigger release proves to have significant effect over pain than post isometric relaxation among post natal women.

Conclusion

Trigger release is more effective then post isometric relaxation technique for treating myofascial pain of upper trapezius in post natal women. This treatment can be included in the rehabilitation protocol during postnatal period for betterment of patients and to improve their quality of life.

ANNEXURE -1

INFORMED CONSENT FORM

I Mrsfreely and voluntarily agree to participate in the

study conducted on **“COMPARISON OF IMMEDIATE EFFECT OF TRIGGER RELEASE AND POST ISOMETRIC RELAXATION TECHNIQUE FOR MYOFASCIAL PAIN IN UPPER TRAPEZIUS AMONG POST NATAL WOMEN.”** done by MS P.DEEKSHITHA, BPT IV YEAR, SRM COLLEGE OF PHYSIOTHERAPY, SRM UNIVERSITY, KATTA NKULATHUR – 603203.

I was explained in detail about the procedure of the study and understood the requirements and benefits of this study.

I surely give consent to participate in this study.

DATE:
PLACE:SIGNATURE

ANNEXURE-2

ASSESSMENT FORM

NAME:
AGE:
OCCUPATION:
ADDRESS:
DATE OF ASSESSMENT:
OP/IPNO:
CHIEF COMPLAINTS:

HISTORY

PAST HISTORY:
PRESENT HISTORY:
MEDICAL HISTORY:
SURGICAL HISTORY:
OBSTETRIC HISTORY:

	NO OF	MODE OF	ANY	1 ST	2 ND
S.NO	DELIVERIES	DELIVERY	COMPLICATION	STAGE OF DELIVERY	STAGE OF DELIVERY

PAIN ASSESSMENT

ONSET OF PAIN:

TYPE OF PAIN:
 NATURE OF PAIN:
 AGGRAVATING FACTORS:
 RELIEVING FACTORS:
 DURATION OF PAIN:
 24 HOURS PATTERN:
 VAS SCALE:

pre-test

No Pain Maximum Pain

Post-test

No Pain

Maximum Pain

ON OBSERVATION

POSTURAL VIEW

ANTERIOR VIEW:

LATERAL VIEW:

POSTERIOR VIEW:

ON PALPATION

TENDERNESS:

WARMTH:

SWELLING:

ON EXAMINATION

ALGOMETER READING:

PRE TEST:

POST TEST:

ANNEXURE-3

MASTER CHAT

POST ISOMETRIC RELAXATION TECHNIQUE

s.no	pre algometer in kgs	post algometer in kgs	pre VAS in cm	post VAS in cm
1	1.2	2	5	4
2	1.6	2	6	5
3	1.7	2	6	5
4	1	0.8	6	7
5	1.5	2	7	6
6	1.4	1.4	4	4
7	1.4	1.6	6	5
8	1.2	1.2	7	6
9	1.6	1.6	5	4
10	1.2	1.4	5	4
11	1.2	1.4	4	3
12	1.4	2	6	5
13	1.6	2.2	5	4
14	2	2.2	6	5

15	1.2	1	5	4
16	2	2.8	5	4
17	1	1	4	3
18	1.2	2	5	4

ANNEXURE-4

MASTER CHAT

s.no	pre algometer in kgs	post algometer in kgs	pre VAS in cm	post VAS in cm
1	1.8	2.2	4	3
2	1.8	1.2	4	5
3	1.6	2.2	4	3
4	2	2.4	5	4
5	1.2	1.3	6	4
6	1.6	1.2	5	3
7	1.8	2	5	4
8	1.6	2.4	5	2
9	1.3	2	5	3
10	1	2.1	5	2
11	0.7	1.3	5	3
12	1.2	2.4	4	2
13	1.4	2	5	3
14	0.6	2.5	6	2
15	0.8	1.7	5	3
16	1.2	2	6	3
17	1.3	2.3	7	4
18	0.7	1.8	6	4

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