



COMPARATIVE STUDY IN BETWEEN EFFECTS OF ULTRASOUND AND MYOFASCIAL RELEASE IN THE PATIENT WITH TRAPEZITIS-AN EXPERIMENTAL STUDY

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ABSTRACT **AIM:** To compare the effects of ultrasound and MFR on pain and ROM in trapezitis patients.
CONTEXT: Trapezitis is an inflammation of trapezius muscle, which results from the over loading and injury of muscle tissue, leading to involuntary shortening of localized fibers. US is used for the treatment of soft tissue injuries.^[1] MFR acts by relaxing contracted muscles, increasing circulation and lymphatic drainage and stimulating the stretch reflex of muscles and overlying fascia.^[2]
METHODOLOGY: 40 subjects were selected on the basis of inclusion and exclusion criteria. They were divided into 2 groups that is 20 subjects each receiving treatment with ultrasound and MFR. Treatment was given for 6 consecutive days. VAS, NDI and ROM were assessed and compared.
OUTCOME MEASURE: Visual analogue scale (VAS), Cervical ROM, Neck disability index (NDI).
RESULT: Significant pain reduction ($p < 0.05$) and significant improvement in ROM ($p < 0.05$) were seen in both groups but in Group B there is more significant difference in pain and ROM than Group A.
CONCLUSION: Myofascial Release technique is more effective than Ultrasound in reducing pain and improving ROM in patients with trapezitis.

KEYWORDS : Trapezitis, ultrasound, MFR, NDI, VAS, cervical ROM.

INTRIDUCTION

Trapezitis is defined as inflammation of trapezius muscle.^[3] Trapezius is triangular and flat muscle it takes origin from medial one third of superior nuchal line of occipital bone, ligamentum nuche, spinous process and from supraspinous ligament of all twelve thoracic vertebrae. Upper fibers are inserted into posterior border of lateral one-third of clavicle. Middle fibers are inserted into medial border of acromion and upper lip of crest of spine of scapula and lower fibers are inserted by a recovered tendon of deltoid tubercle.^[4] Bad posture is frequently incriminated as the cause of trapezitis. Watching television or working on a computer with an awkward posture or even use of pillow can cause neck spasm. The stress that gives rise to this condition is often a combination of tension on and contraction of the muscle. Trapezius muscle helps with the function of neck rotation, side bending and extension. Tightness in the muscle can decrease the range of motion of the neck. The decrease in motion can negatively affect the mobility of the cervical joints.^[5]

Physical therapy has proven effective in trapezitis pain. There are various treatment modalities like Ultrasound, LASER, TENS and IFT available. Treatment of trapezitis requires a multifaceted approach. In the short term, the aim is to abolish the taut bands. Trigger points and tender points for pain relief. In the long term flexibility has to be restored to the muscle. So as to reduce the recurrence rate.^[6]

Ultrasound has been widely popularized and recognized as a non-invasive treatment in the clinical and physiotherapy field. US is composed of piezoelectric crystals that use high-frequency alternative current to transform electrical energy to mechanical oscillation energy.^[6] The thermal and non-thermal effects of Ultrasound would transiently increase the flexibility of tendons, ligaments and joint capsules, which consequently decreases joint stiffness, pain and accompanying muscle spasm and temporarily increases blood flow.^[7]

Myofascial release is a soft tissue mobilization technique, defined as "the facilitating of mechanical, neural and psycho physiological adaptive potential as interfaced via the myofascial system."^{[8][9]} MFR therapy involves the myofascial complex, intended to restore optimal length, decrease pain and improve function.^[10] Myofascial release utilizes the manual traction and prolonged stretching of the fascia and muscle to break down the adhesions, thus helps to decrease the pain and increase flexibility and thereby increase ROM.^[11]

OBJECTIVES OF THE STUDY

1. To find out the effect of ultrasound on pain and ROM in trapezitis patient.
2. To find out the effect of myofascial release technique on pain and

ROM in trapezitis patient.

3. To compare the effects of ultrasound and myofascial release technique on pain and ROM in trapezitis patient.

HYPOTHESIS

NULL HYPOTHESIS

- There is no significance difference between the effects of ultrasound and myofascial release technique in trapezitis patient.

ALTERNATE HYPOTHESIS

- There is significant difference between the effects of ultrasound and myofascial release technique in trapezitis patient.

REVIEW OF LITERATURE

1. Divya Sanjay Raja P.T., Parag Kulkarni P.T. and Ajay Kumar P.T (2018) conducted Comparative study between the effects of Ultrasound and Phonophoresis in patients with trapezitis and concluded that Ultrasound and Phonophoresis both are beneficial in reducing pain, whereas, there is significant improvement in ROM using Phonophoresis than compared to Ultrasound.^[1]

2. Ravish V.N, Shridhar, Sneha Helen (2014) conducted To compare the effectiveness of Myofascial release technique versus Positional release technique with laser in patients with unilateral Trapezitis and concluded that both groups has shown significant improvement in reduction of pain, functional limitation and improved range of motion. However, MRT with LASER has shown a better improvement than PRT with LASER when the subjects in both the groups are compared.^[5]

MATERIAL AND METHODOLOGY

- **Study setting:** Shri U.S.B. College of Physiotherapy, Abu road.
- **Source of data:** Various colleges in Surat and Abu Road.

Method of collection of data:

- **Study population:** Patients with trapezitis
- **Subjects size:** 40
- **Sampling method:** Randomized control trial
- **Study design:** An experimental study

Material to be used:

- Electrotherapy modality Ultrasound
- Ultrasonic gel
- Cotton
- Pillow
- Chair
- Goniometer

- NDI questionnaires
- Consent form

INCLUSION CRITERIA

- Young adults of ages 18 to 25 diagnosed with trapezititis.
- Both male and female were included.
- Patients having neck pain.
- Pain of minimum 3/10 on VAS.
- Restriction in cervical lateral flexion

EXCLUSION CRITERIA:

- Traumatic neck injury
- Fracture of cervical vertebrae
- Cervical radiculopathy
- Any degenerative condition of cervical spine
- Malignancy of upper trapezititis
- Torticollis
- Neurological deficit
- Inflammatory disease
- Skin allergic condition

OUTCOME MEASURES:

1. **VAS:** The VAS consists of a continuous horizontal line, usually of 10 cm in printed length, and two descriptive phrases at the two extremities. The scale is commonly ranged from 0 (left, least extreme) to 10 (right, most extreme).^[12]
2. **Cervical ROM:** The universal goniometer (UG) is the most common and inexpensive tool used in clinical settings to record joint ROM during physical assessment. The UG is a 180° or 360° protractor with a single axis joining two arms. One arm is movable around the axis while the other arm is stationary.^[13]
3. **NDI:** The neck disability index (NDI) is one of the most commonly used questionnaires to measure neck pain and disability,^[14] providing a standard measure to be used in clinical practices and research studies while allowing clinicians and researchers to share knowledge, study result of interventions.^[15]

PROCEDURE

Group A:

This will consist of 20 patients of both gender and they will be treated with Ultrasound at the continuous mode.

- **Intensity:** 1.5W/cm², variable according to pain but within 1.5W/cm².
- **Time duration:** 6 min.

First patient should be seated comfortable on a chair with back rest. Only treatment area should be exposed and rest of the body should be covered. Then applied some gel on the area to be treated. Put the transducer head and move with circular motion on the treatment area while switch on the machine. Increase the intensity to 1.5W/cm² for duration of 6 min. The machine should kept on continuous mode.

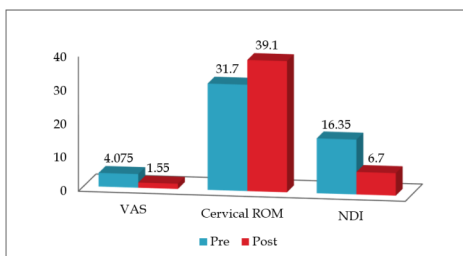
Group B:

This will consist of 20 patients of both gender and they will be treated with Myofascial release technique.

- Patient should be seated comfortable on a chair with supported back, elbow should be flexed with forearm placed on a pillow.
- A sustained deep pressure with thumb to upper trapezititis for 30 seconds will be applied.
- Pressure will be released when there will be decreased tension in upper trapezius muscle.
- The therapy will be given for 5 min.

RESULT

All statistical analysis was done by SPSS statistic version 20.0 for windows software. Microsoft excel was used to generate graphs and tables.

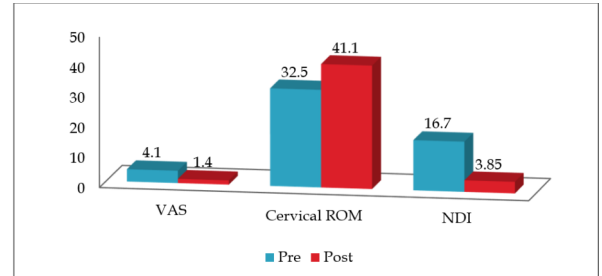


Graph 1.1 Comparison of Pre and Post readings of Group A

Table 1.1 Comparison of Pre and Post readings of Ultrasound

	Pre-treatment		Post-treatment		t value	p value
	Mean	SD	Mean	SD		
VAS	4.075	0.7656	1.550	0.514	16.656	p<0.05
ROM	31.70	4.857	39.10	4.141	11.748	p<0.05
NDI	16.35	7.809	6.70	4.736	7.515	p<0.05

INTERPRETATION: The above data states that there was significant difference (p<0.05) between pre and post readings of pain on VAS and NDI, there was also significant improvement in cervical lateral flexion ROM.

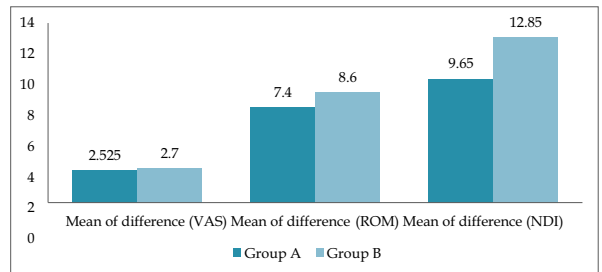


Graph 1.2 Comparison of Pre and Post readings of Group B

Table 1.2 Comparison of Pre and Post readings of Group B

	Pre-treatment		Post-treatment		t value	p value
	Mean	SD	Mean	SD		
VAS	4.100	1.0208	1.400	1.1425	16.483	p<0.05
ROM	32.50	6.031	41.10	5.600	7.743	p<0.05
NDI	16.70	12.637	3.85	4.308	5.767	p<0.05

INTERPRETATION: The above data states that there was significant difference (p<0.05) between pre and post readings of pain on VAS and NDI, there was also significant improvement in cervical lateral flexion ROM.



Graph 1.3 Comparison of mean of difference between Group A and Group B

	Group A		Group B	
	Mean of difference	SD of difference	Mean of difference	SD of difference
VAS	2.525	0.6781	2.7	0.7326
ROM	7.4	2.8172	8.6	4.9672
NDI	9.65	5.7425	12.85	9.9645

Table 1.3 Comparison of mean of difference between Group A and Group B

INTERPRETATION: The above data states that there was significant difference between group A and group B in pain on VAS and NDI and cervical ROM. Myofascial release technique is more effective in VAS, NDI and ROM.

DISCUSSION

The purpose of the study was to compare the effects of ultrasound and myofascial release technique on pain and RO in patients with trapezititis. Various electrotherapy and manipulative procedure aim to reduce the pain, muscle spasm and increase the muscle strength and restore mobility. However, few studies have verified the effect of these therapeutic interventions. Hence, this study aims to investigate the effects of ultrasound and Myofascial release in trapezititis.

40 subjects, who fulfilled the inclusion and exclusion criteria, were assigned randomly to one of two groups, with each group consisting of 20. Group A (n=20) with an age range of 18-25 years were treated with ultrasound. Group B with an age range of 18-25 years (n=20) were

treated with Myofascial release technique. Before the commencement of the treatment and at the end of the program, both groups were evaluated for pain intensity using VAS scale and NDI, and for ROM using goniometer. The treatment was continued for 6 consecutive days. Comparison of pre and post treatment value were statistically done using Paired 't' test. The t value of pre and post test analysis of VAS in Group A is $t=16.656$ and in Group B is $t=16.483$ with the 'p' value is $p<0.05$, pre and post test of analysis of ROM in Group A is $t=11.748$ and in Group B is $t=7.743$ with the 'p' value is $p<0.05$, pre and post test analysis of NDI in Group A is $t=7.515$ and in Group B is $t=5.767$ with the 'p' value is $p<0.05$.

Further comparison between group A and group B were done using mean of difference of both groups. The average improvement in VAS score in Group A is 2.525 and Group B is 2.7. The average improvement in ROM in Group A is 7.4 and Group B is 8.6. The average improvement in NDI in Group A is 9.65 and Group B is 12.85.

The result of the present study proved that both the groups showed significant improvement but when further comparison performed using mean of difference, group B (treated with MFR) showed higher range of improvement in VAS, NDI and ROM in patients with trapezitis. Hence statistically it proves that MFR is more effective than US in treatment of trapezitis.

CLINICAL IMPLICATION

Results suggest that from both the technique i.e. US and MFR it is proved that MFR is more effective than US for the trapezitis patients. So, MFR can be more beneficial for this group of participants.

LIMITATIONS

- In this study the researchers have used the small sample of size. Bigger sample size have lead to some difference in the result.
- There was no follow up after treatment
- Duration of the study was only 6 days.
- Subjects were not matched by age , sex , height , weight , body mass index which may influence the result.

RECOMMENDATIONS FOR FURTHER STUDIES

- Further studies can be done using large sample size.
- Duration of the study can be more than 6 days.
- Further studied can be done including other Physiotherapy treatment modalities and exercises.

CONCLUSION

- This is randomized trial study, which was conducted to compare the effects of US and MFR in the patients with trapezitis.
- As a result we conclude that MFR is more effective than US in reducing pain and improving cervical ROM in patients with trapezitis.

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