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EFFECT OF ULTRASOUND THERAPY OVER TEMPEROMANDIBULAR JOINT

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ABSTRACT

The Temporomandibular joint disorders (TMD's) are the main source of orofacial pain of non-dental origin[1], found in 28% to 86% of the population. Diagnosis of TMD is based on clinical and radiographic investigations. There are varieties of imaging modalities available for TMJ including transcranial radiograph, panoramic radiography, conventional CT, corrected tomography of TMJ, cone-beam computed tomography (CBCT), magnetic resonance imaging (MRI) and arthrography. Up till now no single treatment modality for temporo-mandibular dysfunction (TMD) being effective, so the search for modification in or combination of treatment modalities have been tried The current study was designed to study the effect therapeutic ultrasound on TMJ joint. Fifteen patients were included in this study. Inter-incisal opening (in mm) and pain (evaluated by visual analogue scale (VAS))were measured preoperatively and postoperatively. Results showed that the ultrasound treatment is effective in pain relief only.

KEYWORDS: Temporomandibular joint, cone beam computed tomography, Therapeutic Ultrasound.

INTRODUCTION

Temporomandibular Joint diseases (TMD) and disorders refer to a complex and poorly understood set of conditions, manifested by pain in the area of the jaw and associated muscles and limitations in the ability to make the normal movements of speech, facial expression, eating, chewing and swallowing.[2] According to the Clinical Diagnostic Criteria for Temporomandibular Joint Disorders (CDC/TMD) scale; the most important symptoms of TMD are clicking, crepitation and reduction or closed lock of mouth opening movements.[3]

Different imaging modalities are available to evaluate the osseous component and the disc of TMJ. In our study we evaluated the osseous components of TMJ using the latest imaging modality ie cone beam computed tomography. Up till now no single treatment modality for temporo-mandibular dysfunction (TMD) is being effective, so the search for modification in or combination of treatment modalities have been tried. The current study was designed to study the effect of ultrasound on TMJ joint in TMJ disorders.

MATERIAL AND METHODS

Inclusion Criteria

1. Patients diagnosed with TMD based on TMD index
2. Patients with no missing teeth.
3. Patients willing for CBCT.
4. Patients willing to give a written informed consent and follow the schedule

Exclusion Criteria

(1) Patients with Maxillofacial trauma or any History of maxillofacial trauma.
(2) Patients with cysts, tumors or space infections in TMJ region.
(3) Patients with developmental disorders of TMJ.
(4) Patients not willing to participate.

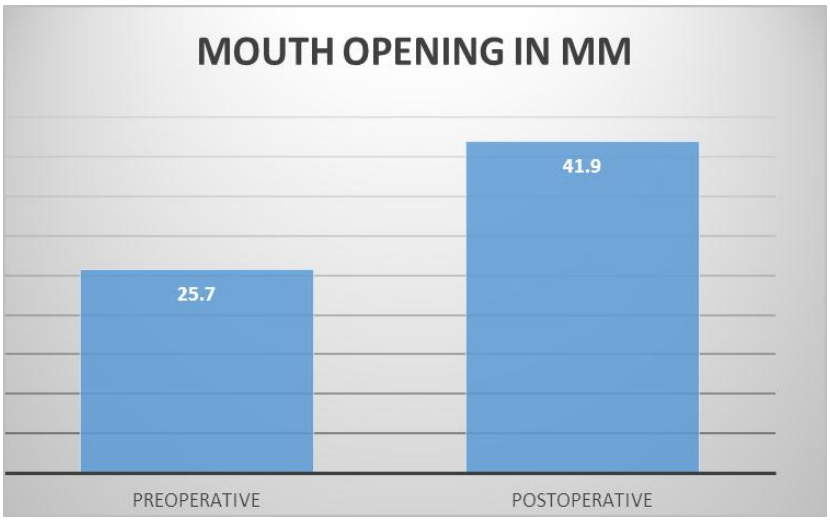
The pre-post experimental study is carried out on 15 patients of either sex between 20 years and 50 years. Out of fifteen patients thirteen were female and two were male. Patients are assigned to therapeutic ultrasound therapy and received the treatment for 10 days (5 times a week for 2 weeks).

Diagnosis of TMD is made based upon on anamnestic questionnaire and those patients with TMD value greater than 3 were included in the study.
The patients were then treated using therapeutic ultrasound with the following parameters: electromed, continuous mode, 1.5 w/cm^2 for 10 mins.

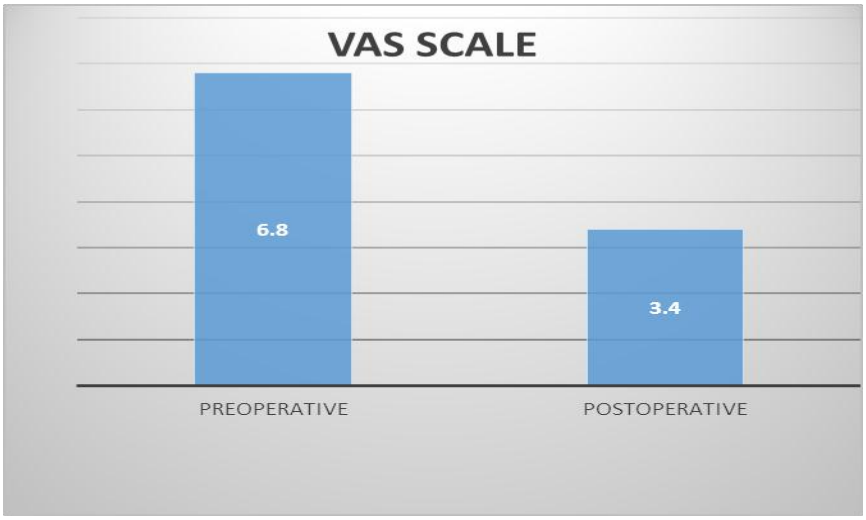
All the patients were evaluated for the following parameters before, and after every treatment session: mouth opening (mm) and subjective evaluation of muscle pain on VAS scale.

RESULTS

The data were analyzed using WinPepi software (version 14.0) and statistics analysis was done. For VAS scale, Wilcoxon test was used with p value < 0.001 and for mouth opening paired 't' test was used with p value < 0.001.



Graph. 1: showing mean value of mouth opening (in mm) pre and postoperatively.



Graph. 2: Analogue pain scale: pain assessment on VAS scale.

DISCUSSION

Musculoskeletal condition, like TMD are the major cause of non-dental pain in the orofacial region.[4] Epidemiological studies estimate that 40% to 75% of the population, have at least one sign of TMD, while 33% have at least one symptom such as facial or TMJ pain.[5]

The age distribution in the present study is consistent with other studies[6] where common age of occurrence was second to the fourth decades of life. Our results were in accordance with

studies by Dworkin *et al*.,[1] Isacsson *et al*.[7] who reported a female predominance, whereas contrary to the observations of Beaton *et al*.[8] which lacked significant gender differences in their study.

The VAS scores of muscle pain was statistically significant after treatment ($P < 0.001$). Also, there was statistically highly significant improvement in the mouth opening before and after ultrasound treatment. We agree with the study by El Fatih *et al*.[9] that the ultrasound treatment showed a higher success rate in pain improvement. Pain relief in ultrasound is related to washout of pain mediators by increased blood flow, changes in nerve conduction, or alterations in cell membrane permeability that decreases inflammation.

CONCLUSION

Ultrasound therapy is promising with little or no complications and can be used for pain relief in TMJ joint.

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