



The effect of mulligan technique in osteoarthritis of temporomandibular joint

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Abstract

Background: Osteoarthritis of Temporomandibular Joint is a condition which can adversely affect the activities daily living like chewing and talking. Problem of TMJ hampers routine of individual so there is a need for understanding the importance of the joint and the ways of conservative management. Various techniques have come up for conservative treatment but Mulligan Technique for Osteoarthritis of Temporomandibular Joint has been one of the best methods. So the study is carried to understand the technique to increase the range of mouth opening and decrease the effect of pain while resting, chewing and talking in Temporomandibular Joint.

Objective: The study is undertaken to determine the effect on pain on rest, on chewing, on talking and range of mouth opening by use of Mulligan Technique on Osteoarthritis of Temporomandibular Joint.

Materials and Methods: The study included 30 participants according to the inclusive criteria. The Mulligan Technique was performed for intervention of 3 days per week for 3 weeks. Pre and Post measurements for range of mouth opening were taken by measuring tape. Pre and Post measurements for pain on rest, on chewing and on talking were taken by Visual Analogue Scale

Result: The participants treated with Mulligan technique in paired 't' test showed highly significant results on rest. ($p < 0.0001$, $t = 21.215$, d. f. = 29), on chewing ($p < 0.0001$, $t = 32.311$, d. f. = 29) and on talking ($p < 0.0001$, $t = 35.182$, d. f. = 29) on VAS for pain. And there was highly significance of result in range of mouth opening ($p < 0.0001$, $t = 26.012$, d. f. = 29)

Conclusion: This study concludes that Mulligan Technique on Osteoarthritis of Temporomandibular Joint has highly significant effect on pain while resting, chewing and talking and also range of mouth opening.

Keywords: osteoarthritis, temporomandibular joint, mulligan technique

Introduction

Osteoarthritis, a form of arthritis is categorized by chronic degeneration of the various hard and soft tissues round the joint. This results in anatomical modifications in the joint and joint pain due to alteration in peripheral and central pain processing mechanisms. Stress bearing joints of the body such as knee, hips, spine, and fingers are most frequently affected. Osteoarthritis can also affect other joints in the body such as wrist, shoulder, ankle and Temporomandibular joint (TMJ). TMJ osteoarthritis marks the cartilage, subchondral bone, synovial membrane, and added hard and soft tissues causing deviations such as TMJ remodeling, articular cartilage abrasion and descent. Osteoarthritis localized to the TMJ may also be a part of this isolated condition. Osteoarthritis can occur at any age, although, it occurs with greater frequency as age increases^[1].

The temporomandibular joint (TMJ) is unique in the human body; it is in near continuous use, is engaged in actions such as chewing, speaking and swallowing, and is constantly adapting to movements of the head, to posture and even to emotions^[1].

In osteoarthritis of TMJ, clinical evidence of the disease occurs in 8-16 % of people TMJ Osteoarthritis may be unilateral or bilateral. Agreeing to the American Academy of Orofacial Pain, TMJ Osteoarthritis is classified into primary and secondary. Primary TMJ osteoarthritis is characterized by

the presence of any distinct local or systemic factor. Secondary TMJ osteoarthritis is though associated with a earlier traumatic event or disease.¹In healthy beings mouth opening is around 3-5cm. But when the mouth opening is lacking to a maximum of 20mm the individual is said to have a condensed mouth opening or trismus. Decreased mouth opening is a common clinical trouble and many individuals experiencing OA have it at least once in his or her life and most dental practitioners see patients with restricted mouth opening quite often. Temporomandibular joint majorly adds in mouth opening. Rest is complemented by the muscles and ligaments around the joint^[11].

Internal derangement (ID) of the temporomandibular joint (TMJ) is one of the most common forms of temporomandibular disorders (TMD). The term ID includes anterior disc displacement with or without reduction, perforation of the articular disc or of the retrodiscal tissue, and various degenerative changes of the disc and/or the articulating surfaces. Anterior disc displacement of the TMJ represents an intracapsular different conditions are recognized: anterior disc displacement with reduction (DDWR), where the proper relationship between the disc and condyle is restored during maximum mouth opening; and anterior disc displacement without reduction (DDWOR), where the disc stays anterior to the condyle and prevents maximum mouth opening. DDWOR is clinically apparent by

reduced mandibular movement and pain. The TMJ is used 1500-2000 times a day, which shows how great discomfort is carried by the pathologies in jaw movements [3]. Different grading systems have been developed to describe the degree of internal derangement and osteoarthritis [12].

In a physiologic joint, the disk is positioned between the mandibular head inferiorly and the articular eminence anteriorly and superiorly when the jaw is closed. The attachments of the disk prevent luxation during opening. The disk does not move in the coronal plane when the joint is intact. There positional changes of the osseous and soft-tissue structures of the jaw during jaw opening [12].

Agreeing to the American Academy of Orofacial Pain, TMJ Osteoarthritis is classified into primary and secondary. Primary TMJ osteoarthritis is characterized by the presence of any distinct local or systemic factor. Secondary TMJ osteoarthritis is though associated with a earlier traumatic event or disease [2]. Physical therapy treatment aims to relieve osteomuscle pain, reduce inflammation and restore oral motor function. The most recommended physical therapies to control CMD are therapeutic exercise and manual therapy techniques. Among the various manual therapy techniques, Mulligan’s stands out. This technique was developed by physical therapist Brian Mulligan in 1954, in New Zealand [4].

Movements used in the extremities are called MWM (mobilizations with movements). Manual therapy techniques are generally used for the treatment of musculoskeletal conditions; among them is Mulligan’s technique. Mobilization with movement is a manual therapy approach makes use by health care practitioners specializing in the care of patient with musculoskeletal pain. Physiotherapists, and physical therapists are trained in the Mulligan Concept can improve movement limitations, pain with movement, and functional constraints. Mulligan practitioners seek to progress patient’s movement with the use of pain free hands on techniques. Both the clinician and the patient can quickly assess the value of this approach. If the technique(s) are indicated an immediate relief in pain and movement will be observed. The Mulligan

Concept is not a passive treatment approach and many individuals benefit from self-treatment at home.

Methodology

Study Design- Pre and Post test

Source of Data - The source of data will be collected from patients with OA of TMJ from Department of Oral Medicine, College of Dentistry, Loni, Taluka-Rahata, District-Ahemadnagar-413736, Maharashtra

Study duration and Study Duration- 30 and 3 months with intervention of 3 days per week for 3 weeks

Materials used - data collection sheet, measuring scale and Visual Analogue Scale.

Inclusion criteria

- Patients having OA of temporomandibular joint
- Age Group - 40-60 yrs. both male and females confirming OA of TMJ
- Range of Mouth opening less than 3cm.
- Dental X-ray (OPG) findings: flattening of the superior surface,

Loss of joint space of the affected joints,
 Bird-beaking, generalized sclerosis of the articular surfaces
 Changes to the articular joint surfaces.

Exclusion criteria

- Patients who have snapping sounds in the jaw; headaches; closing or locking of the jaw due to muscle spasms (trismus) or displaced disc; pain in the ears, neck, arms, and spine; tinnitus; and bruxism (clenching or grinding of the teeth)
- Patients who have used painkillers and/or muscle relaxants up to 8 hours prior to the study procedure and who have hypermobility in the cervical region and/or in mouth opening.

Data analysis and interpretation

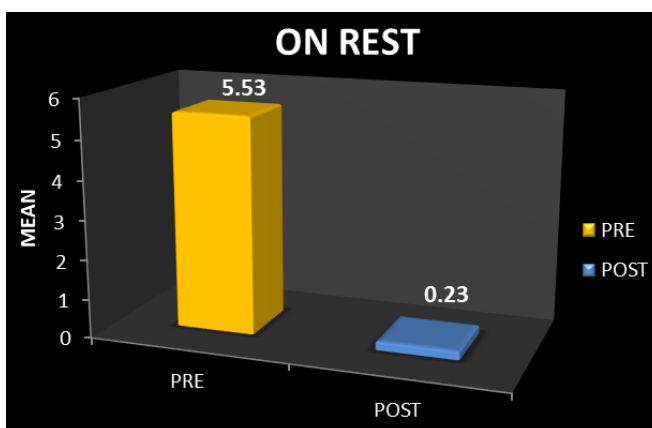


Fig 1: Represents comparison in Pre and Post treatment for pain on rest

Table 1

	Pre	Post	P value	T value	Result
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Mean±SD	5.53333±1.548	0.233333±0.4302	<0.0001	21.215	Extremely Significant
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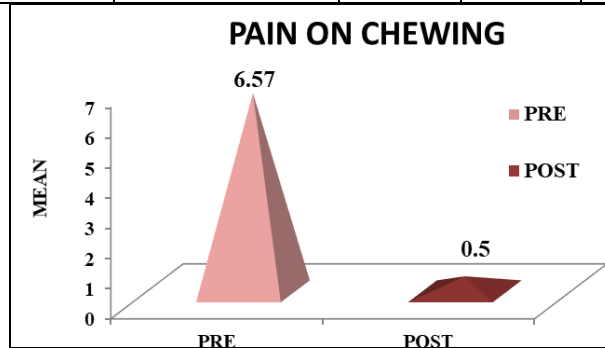


Fig 2: Represents comparison in Pre and Post treatment for pain on chewing

Table 2

	Pre	Post	P value	T value	Result
Mean±SD	6.5±1.408	0.5±0.6297	<0.0001	32.311	Extremely Significant

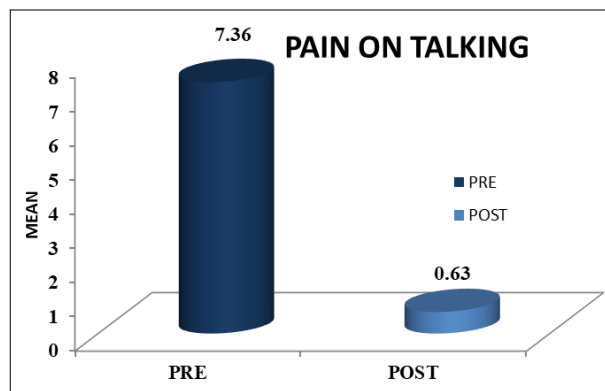


Fig 3: Represents comparison in Pre and Post treatment for pain on talking

Table 3

	Pre	Post	P value	T value	Result
Mean±SD	7.36±1.273	0.63333±0.6149	<0.0001	35.182	Extremely Significant

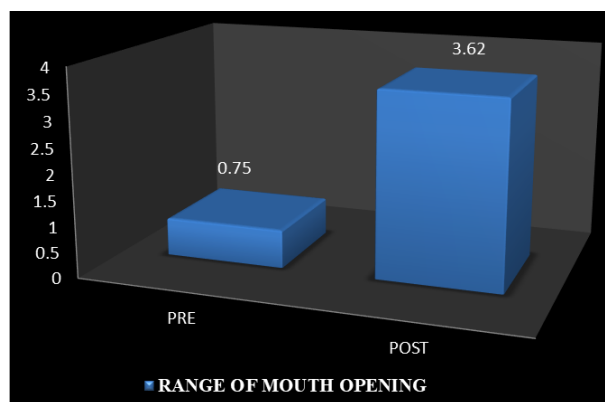


Fig 4: Represents range of mouth opening in Temporomandibular Joint

Table 4

	Pre	Post	P value	T value	Result
Mean±SD	0.7566±0.3002	3.6233±0.5456	<0.0001	26.012	Extremely Significant

Result

Results No. 1: The above graph shows comparison of mean of

Pain on REST in pre and post Visual Analogue Scale (VAS) where t value is 21.215 and p value <0.0001 which is

extremely statistically significant.

Result No. 2: The above graph shows comparison of mean of Pain on Chewing in pre and post using Visual Analogue Scale (VAS) where t value is 32.311 and p value <0.0001 which is extremely statistically significant

Result No. 3: The above graph shows comparison of mean of Pain on Talking in pre and post Visual Analogue Scale (VAS) where t value is 35.182 and p value <0.0001 which is extremely statistically significant.

Result No. 4: The above graph shows comparison of mean in pre and post Range of Mouth Opening where t value is 26.012 and p value <0.0001 which is extremely statistically significant

Discussion

The study showed highly significant effect of pain while resting, chewing, talking and also on range of mouth opening by use of Mulligan technique on Osteoarthritis of Temporomandibular joint. Osteoarthritis of Temporomandibular Joint is a condition which can adversely affect the daily living. Temporomandibular Joint is used every day like in eating and talking and therefore is the most important joint of the body. Problems of TMJ hamper daily routine of individual so there is a need for understanding the importance of the joint and the ways of treatment. The study was undertaken by screening participants according to the inclusive and exclusive criteria. The sample size of the study was 30 participants. The technique was explained to the participants. The participants were assessed on the first day for the severity of pain and range of mouth opening. The patients were given Mulligan technique for duration of intervention of 3 weeks alternatively 3sessions per week - 30 mins per session. The results concluded that there was decrease in pain and increase in range of mouth opening after the intervention was completed.

Mulligan Technique is one of the best conservative method which helps to increase the range of mouth opening easily and decrease the pain by avoiding analgesics and with minimum efforts. Mulligan technique of mobilization with movement treatment aims to relieve osteomuscular pain, reduce inflammation and restore oral motor function. This helps to improve the range of mouth opening and minimizes the pain. No adverse effects of the treatment have been identified. The numbers of patients experiencing no pain at rest are 80%.This therapeutic treatment protocol seems to be useful treatment for the symptoms of clinical dysfunction in OA of the TMJ.²

The results of manual therapy trials for this condition suggest that manual therapy is a viable and useful approach in the management of TMD. Manual therapy has also been shown to be more cost effective and less prone to side effects than dental treatment. So according to the study manual therapy has significant effects on Osteoarthritis of Temporomandibular Joint.

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