TITLE PAGE:

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EFFECT OF CONSERVATIVE TREATMENT ON LIMITED MOUTH OPENING IN THE PATIENT WITH TEMPOROMANDIBULAR PAIN DYSFUNCTION SYNDROME

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ABSTRACT:

The objective of this study was to evaluate the efficacy of conservative treatment on limited mouth opening in the patients of temporomandibular pain dysfunction syndrome. For this, descriptive case series was carried out at the de'Montmorency College of Dentistry, Lahore, Pakistan from October 2009 to April 2010. 75 diagnosed patients of TMD were included in this study. Mouth opening was measured at initial examination with the help of Boley's gauge. Conservative treatment was then given to the patient and mouth opening again measured at 2, 6 weeks and 6 months after the treatment was started. The efficacy was measured by increase of 10mm or more of mouth opening after six months. Conservative treatment was found to be effective in 76% of the patients of temporomandibular pain dysfunction syndrome with limited mouth opening. It was concluded that conservative treatment should always be the first line of treatment in temporomandibular pain dysfunction syndrome.

KEY WORDS: Temporomandibular disorder, limited mouth opening.

INTRODUCTION:

Temporomandibular pain dysfunction syndrome TMD is defined as “discomfort or dysfunction resulting from hyperactive, uncoordinated muscle function that is triggered by deflective occlusal interferences to physiological jaw movements and noxious habit”1. Cardinal signs of temporomandibular pain dysfunction syndrome are orofacial pain, clicking, limited mouth opening, deviation in opening and closing of mouth, headache and neckache.2

Normal jaw movements require coordinated elevator and depressor muscles activity3. Any occlusal interferences will result into hyperactivity of these muscles which leads to fatigue, increase in metabolites and pain. To protect the affected joint or muscle spasm, muscles react by more protective co-contraction that leads to limitation of mouth opening4. Conservative treatment is given to produce neuromuscular balance causing release of the muscular tension by reducing abnormal muscle activity and recovery of the physiological muscular coordination5,6,7. Conservative treatment includes counseling, physical therapy, pharmacological therapy and occlusal splints8,9.

In this stressful and mechanical era TMD is increasing day by day (42%) in Pakistan and limited mouth opening occur in 12.2 % of these TMD patients10. Limited mouth opening is challenge for dentist to treat. The purpose of this study was to evaluate the effect of conservative treatment on limited mouth opening in TMD patients to measure the treatment success in management of temporomandibular pain dysfunction syndrome so as to avoid unnecessary invasive procedures.
METHODOLOGY:

This descriptive case series study was conducted in the Department of Prosthodontics at de'Montmorency College of Dentistry Lahore/Punjab Dental Hospital Lahore from October 2009 to April 2010. 75 diagnosed TMD patients fulfilling the inclusion criteria (Diagnosed patients of temporomandibular pain dysfunction syndrome according to Research Diagnostic Criteria for Temporomandibular Disorders- University of Washington, dentate patients with no missing teeth, age range 16-35 years, patients with 25mm or less mouth opening) were enrolled in the study with non-probability purposive sampling technique after taking informed consent. Patients requiring surgical interventions as assessed by oral and maxillofacial surgeon, patients having history of trauma, medically compromised patients especially having bone diseases as assessed by medical specialist and diagnosed psychiatric patients by specialist. were excluded. Their demographic information (name, age, gender, occupation and address) was recorded. No ethical issue or risk was involved to the patient. Mouth opening was measured at initial examination. It was measured from mesial incisal edge of maxillary central incisor to mesial incisal edge of mandibular central incisor with the help of Boley's gauge.

Conservative treatment was then given to the patient. It includes counseling, medication, physical therapy and Stabilization splints. In physical therapy joint mobilization by exercises and massage of masticatory muscles were advised to patients. In Medical therapy, non steroidal anti inflammatory drugs and muscle relaxants were used. Mouth opening was then again measured at 2, 6 weeks and 6 months after the treatment was started. Effect was measured by increase of 10mm or more of mouth opening after six months. It was measured with the help of Boley's gauge.

Data entry and analysis was done using SPSS version 11, computer based software programme. Quantitative variables like Age were presented as mean and ± standard deviation. Qualitative variables like Gender and Efficacy of conservative treatment was presented as frequency and percentages.

RESULTS:

A total of 75 patients with temporomandibular pain dysfunction syndrome were included in the study. Table No. 1 shows the percentage distribution of the patients according to their age group, majority of the patients 34.66%(n=26) were recorded between 21-25 years of age, 26.67%(n=20) were found with 16-20 years and 26-30 years, while only 12%(n=9) were found between 31-35 years of age. The mean age was recorded as 24.25 with 5.08 standard deviation.
Table No. 2 analyzed gender distribution in the population included in this study and found that females were found in majority i.e. 60% (n=45) as compared to males which were found 40% (n=30).

Table no.3 analyzed the improvement of mouth opening after conservative treatment was given to the patient. In majority of the patients 76% (n= 57) mouth opening increased to 10mm and more, while increase of 6-9mm was found in 16% (n= 12) while only 8% (n= 6) patients got increase of 2-5mm of mouth opening.

Table No. 4 recorded the efficacy of conservative treatment in patients with temporomandibular pain dysfunction syndrome with limited mouth opening and the treatment was found effective in 76% (n=57) of patients.

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### TABLE No. 1

AGE INCIDENCE OF THE SUBJECTS

<table>
<thead>
<tr>
<th>Age (in years)</th>
<th>No. of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-20</td>
<td>20</td>
<td>26.67</td>
</tr>
<tr>
<td>21-25</td>
<td>26</td>
<td>34.66</td>
</tr>
<tr>
<td>26-30</td>
<td>20</td>
<td>26.67</td>
</tr>
<tr>
<td>31-35</td>
<td>09</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>100</td>
</tr>
<tr>
<td>Mean &amp; S.D.</td>
<td>24.25± 5.08</td>
<td></td>
</tr>
</tbody>
</table>
Table No. 2

DISTRIBUTION OF THE PATIENT ACCORDING TO THEIR GENDER
(n=75)

<table>
<thead>
<tr>
<th>Gender</th>
<th>No. of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>Female</td>
<td>45</td>
<td>60</td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>100</td>
</tr>
</tbody>
</table>

Table No. 3

IMPROVEMENT OF MOUTH OPENING AFTER CONSERVATIVE TREATMENT

<table>
<thead>
<tr>
<th>Mouth opening before treatment (mm)</th>
<th>Mouth opening after treatment (mm)</th>
<th>Increase of mouth opening (mm)</th>
<th>No. of patients N=75</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>100</td>
<td></td>
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</tbody>
</table>
Mean & SD = 9.68±2.21

Table No. 4

EFFICACY OF CONSERVATIVE TREATMENT

<table>
<thead>
<tr>
<th>Efficacy</th>
<th>No. of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>57</td>
<td>76</td>
</tr>
<tr>
<td>No</td>
<td>18</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>100</td>
</tr>
</tbody>
</table>

(n=75)
DISCUSSION:

Temporomandibular disorder (TMD) has been an area of increased clinical and scientific inquiry in dentistry. This is due to increased patient awareness and desire for treatment as well as scientific advances in the fields of epidermology, neurobiology and diagnostic imaging\textsuperscript{11}. This study has measured the treatment success in the management of temporomandibular pain dysfunction syndrome.

The present study has shown that majority of the patients 34.66\%(n=26) were recorded between 21-25 years of age, 26.67\%(n=20) were found with 16-20 years and 26-30 years, while only 12\%(n=9) were found between 31-35 years of age [table 1]. The mean age was recorded as 24.25 with 5.08 S.D. which is in accordance with previous study by Baloch Q\textsuperscript{10}. This study has shown that the percentage of women with TMD was higher(60\%) than that of men (40\%) . Similar results have been reported by other study\textsuperscript{12}. The high prevalence of temporomandibular disorders (TMD) in women than men indicated the multifactorial role for gender-related differences in the etiology of TMD, physiological hormonal differences, inflammatory response to stress and sociocultural differences in response to pain\textsuperscript{13}.

The present study has shown the improvement of mouth opening after the conservative treatment was given to the patient. Majority of the patients 76\% have improved their mouth opening to 10-12mm . Some patients 16\% have improvement of 6-9mm while others 8\% have only 2-5 mm improvement in their mouth opening with mean increase of 9.68+ 2.21. Other studies also found improvement in TMPD sign and symptoms after conservative treatment was given to the patients\textsuperscript{14,15,16}.

The present study has also shown that conservative treatment is effective in 76\% of our study subjects with increase of 10mm or more of mouth opening. we used conservative treatment which include counseling, medication such as non – steroidal anti inflammatory drugs and muscular relaxants, physical therapy and occlusal stabilization splints. These results were in agreement with results reported by Stiesch-Scholz M who found 65\% improvement of symptoms of TMD patients with 11.2 mm in mouth opening after conservative therapy was given to the patient\textsuperscript{14}. However Edward F. Wright in his study found that conservative treatment was effective in 41.9\% of TMD patients with mean increase of 5.3 mm of mouth opening. The difference in results may be due to small sample size, difference in age group and short duration.
of treatment (four weeks only)\(^{17}\). Naikmasur V has also showed an increase of 10.02 mm improvement in mouth opening with a mean increase of 7.4 mm in 65% of the patients after the use of conservative therapy (splint)\(^{18}\). Schiffman assessed the effectiveness of four different treatment strategies and found that conservative treatment was very effective and superior to surgery as just two of 52 patients after conservative treatment, received surgery for persistent pain and restricted function\(^{19}\). Similar results were found by Dimoltrius G that non surgical treatments such as counseling, pharmacotherapy and occlusal splint therapy was the most effective way of managing over 80% of patients\(^{20}\). So the primary treatment for patients with TMD should always be conservative.

**CONCLUSIONS:**

Within the limitation of study the conservative treatment was effective in 76% of the patients of temporomandibular pain dysfunction syndrome with limited mouth opening. Conservative treatment should always be considered as a first line of management in patients with temporomandibular pain dysfunction syndrome. The use of this approach will avoid unnecessary invasive procedures.

**REFERENCES:**


Letter of Undertaking

This is to confirm that the original Article titled “EFFECT OF CONSERVATIVE TREATMENT ON LIMITED MOUTH OPENING IN THE PATIENT WITH TEMPOROMANDIBULAR PAIN DYSFUNCTION SYNDROME” submitted for
publication in has not been published in any other journal and if accepted for publication, it will not be published in any other medical journal in Pakistan or overseas.

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