

CORRELATION OF TOOTH CONTACT HABIT IN PATIENTS WITH SIGNS AND SYMPTOMS OF TEMPOROMANDIBULAR DISORDERS AND HEALTHY NORMAL SUBJECTS

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ABSTRACT

Purpose: Temporomandibular disorders are among the common musculoskeletal conditions affecting the individual. Modern day lifestyle and work environment may introduce abnormal habits like constant tooth contact habit which may have a role in the pathogenesis of temporomandibular disorder. This study aimed to correlate the prevalence of tooth contact habits in individuals suffering from TMD and compare them with that of normal individuals without any signs and symptoms of TMD. **Material and Methods:** 505 individuals were included in the study. They were divided into 2 groups. Group 1 consisted of 255 individuals who presented with signs and symptoms of temporomandibular disorders and group 2 consisted of 250 normal individuals. Detailed case history with emphasis on habits of constant tooth contact was recorded. Fischer's t test was used to compare the results between the two groups. **Results:** In group 1, 54.5% of males and 58.02% of females gave a history of tooth contact habit while in group 2 individuals 38.7% males and 39.8% females gave a history of this habit. There was no statistically significant difference between males and females of group 1 with regard to this habit. There was a statistically significant difference between group 1 and group 2 individuals (both males and females combined) with regards to this habit. ($p=0.0003$)

Conclusion: Individuals with temporomandibular disorders exhibited higher prevalence of tooth contact habit when compared to normal subjects.

Key words: Temporomandibular joint, Mastication, Temporomandibular disorders

INTRODUCTION

The temporomandibular joint (TMJ) is a diarthrodial joint located on either side of the head where the mandibular fossa of the temporal bone and the mandibular condyle articulate.¹ The condylar head and the articular surface of the temporal bone form the osseous components of TMJ. The articular disc, ligaments and muscles of mastication form the soft tissue components of TMJ. The well coordinated movement of these structures aid in smooth functioning of the TMJ. Any disturbance in these anatomic structures can lead to disturbance in the functioning of TMJ leading to temporomandibular disorders (TMD).

Temporomandibular disorders involve the TMJ, muscles of mastication, or both. TMD affects approximately 10% of the population and is more prevalent in women, and may present with pain,

restricted jaw movements, deviation of the mandible on opening or closing, crepitus, and in advanced cases, degenerative changes of the osseous components leading to functional disabilities and limitations.² The etiology of TMD is considered to be multifactorial which includes trauma, malocclusion, psychological disturbances, parafunctional habits, deranged occlusion and orthodontic treatment.³ Most of these factors are researched by various studies with varying results. Present day lifestyle and technological advancements have made life more easy and comfortable. On the other hand, the individual is always on the run to meet the expectations of the society. This fast paced life brings with it a baggage of stress and abnormal habits which may affect the body. One such habit is constant tooth contact habit (TCH). In an ideal situation, the teeth contact when the jaws are in function (mastication,

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speaking and swallowing). This help in avoiding excess pressure on the TMJ. On the other hand there are repetitive, aimless masticatory movements termed as parafunctional movements which differ from the normal physiological movements of the mandible.⁴ TCH is the light but prolonged contact of maxillary and mandibular teeth during resting of the jaws. This constant contact leads to activation of the muscles of mastication especially the Lateral pterygoid (LP) which in turn will exert undue pressure on the TMJ including the ligaments of TMJ leading to laxity of the ligaments and mayalgia and subsequent TMD. With this background, the present study aimed at investigating the presence of TCH in patients with signs and symptoms of TMD and correlating these findings with the individuals without signs and symptoms of TMD.

MATERIAL AND METHODS

Ethical clearance from the institutional review board was obtained for conducting the study. 505 subjects aged between 18-49 years were selected for the study. The subjects were divided into 2 groups. Group 1 comprised of 255 subjects with signs and symptoms of TMD and group 2 comprised of 250 asymptomatic subjects without any signs and symptoms of TMD. The asymptomatic subjects acted as controls. All the subjects were selected from the outpatient department of Oral Medicine and Radiology. After explaining the need for study their consent was obtained on a consent form. A detailed case history was recorded and clinical examination performed by using a structured case history format. The case history, along with other details, also focused on questions regarding habits such as contact of teeth during working or resting of jaws. All subjects were enquired about this habit. If the response was negative, the subjects were asked to relax the jaws and observe if the teeth were in contact. The responses were recorded in the case history sheet. Diagnosis of TMD was based on Research Diagnostic Criteria for TMD (RDC/TMD).⁵ The results were tabulated and Fischer's exact t-test was applied to analyze the data using IBM SPSS Statistics 19 package for Windows (SPSS Inc., Chicago, IL, USA).

RESULTS

255 subjects presenting with signs and symptoms of TMD were included in group 1 and 250 subjects without any signs and symptoms of TMD were included as controls (group 2). In 255 group 1 subjects the age ranged from 18-49 years with a mean of 29.07 years. In group 2 the age ranged from 19-42 years with a mean of 30.12 years. In group 1, there were 174 males

and 81 females and in group 2, there were 147 males and 103 females. In group 1 54.5% of males and 58.02% of females gave a history of tooth contact habit while in group 2 individuals 38.7% males and 39.8% females gave a history of this habit. (Table 1). There was no statistically significant difference between males and females of group 1 with regard to this habit. (Table 1) Furthermore there was no statistically significant difference between males and females of group 1 and group 2 with regard to this habit. (Table 1) There was a statistically significant difference between group 1 and group 2 individuals (both males and females combined) with regards to this habit. ($p=0.0003$, Table 1).

Table 1

	Male	Female	Total
Group 1	95(54.5%)	47(58.02%)	142
Group 2	57(38.7%)	41(39.8%)	98

$p=0.0003$

DISCUSSION

The multifactorial etiology of TMD brings into focus, the role of psychological profile of the patient in causation and perpetuation of the disorder. The psychological hypothesis proposes that the TMD evolves as a result of the interplay between the stressful environment and psychological distress in an individual.³ Psychological stress may lead to parafunctional habits which may have a deleterious effect on TMJ. Parafunctional activities are non functional temporomandibular activities that includes clenching, bruxism, tooth grinding, cheek biting, lip biting, object biting etc.⁶ The parafunctional habits developed by the individual during stressful period can adversely affect the TMJ³ causing overloading of the joint and subsequently TMD. Studies have demonstrated the positive relationship between the parafunctional oral habits and signs and symptoms of TMD.^{7,8-14}

The results of the present study reveal 55.6% of the subjects with signs and symptoms of TMD gave a history of constant tooth contact habit as compared to 39.2% percentage of normal subjects. Various studies have estimated the prevalence of diurnal or day time clenching habit in general population to be around 6-29%^{15,15, 8,17-20} and around 52%-82% in patients with TMD.^{16,8} The results of the present study is in agreement with the above mentioned studies.

Constant clenching habit for a prolonged duration is thought to create more damage to muscles and joints than teeth grinding habit.²¹ Some studies have linked oral parafunctional habits to disturbances and diseases of the temporomandibular joint.²²

Tooth contact habit is found to increase the activity of masseter muscle²³ which may result in fatigue and spasm of muscles. These changes in the muscle lead to contracture, occlusal disharmony, internal derangement and degenerative changes in the joint.²⁴ Joint lubrication is one of the important factors responsible for the smooth functioning of the joint. Excessive load on the joint alters the lubrication mechanism.²⁵ Sustained contractions of the lateral pterygoid muscle induced by parafunctional habits can derange the function of upper head and the superior part of the lower head of lateral pterygoid muscle and lead to abnormal movement of the articular disc which can predispose the patient to TMD.¹ Huang et al suggested a possible relationship between muscle pain and diurnal clenching habit.⁸ In their study, Sato et al demonstrated a significant relationship between the TCH and TMJ pain.²⁶

In the present study many subjects were unaware of the TCH and realized the fact that they were indulging in the habit unknowingly. This should alert the clinician while eliciting the history from patients with TMD. TCH habit may be one of the predisposing or perpetuating factor for TMD and patient counseling regarding the habit and ways to overcome the same may help in managing patients of TMD.

CONCLUSION

The multifactorial etiology of TMD makes management of these disorders a challenging task. Without proper identification of the etiologic agent, management of TMD may become frustrating to both patients and the treating dental surgeon. Apart from the well known etiologic factors of TMD, the dentist should also be aware of the role of constant tooth contact habit in the causation and continuation of TMD. Moreover majority of the individuals with TMD are unaware about these habits in them which makes the issue more difficult. It is important to enquire about the constant tooth contact habit in all patients presenting with signs and symptoms of TMD. This move will help in timely and appropriate patient counseling which helps in managing these patients in a better way.

REFERENCES

1. Guhan D, Cenk K, Rifat G, Duzgun Y, Hasan G, Serap M. Evaluating the correlation between the lateral pterygoid muscle attachment type and internal derangement of the temporomandibular joint with an emphasis on MR imaging findings. *Journal of Cranio-Maxillo-Facial Surgery* 2012;40(5):459-463.
2. Beatriz P, Lucia C, David W, Hongtu Z, Ruixin G, Martin S. Clinical application of SPHARM-PDM to quantify temporomandibular joint osteoarthritis. *Computerized Medical Imaging and Graphics* 2011;35:345-352.
3. Blasberg B, Greenberg MS. Temporomandibular disorders. In: Greenberg MS Glick M, Editors. *Burket's Oral Medicine-Diagnosis and Treatment*. 10th ed. Ontario (Canada): BC Decker Inc; 2003. p. 271-306.
4. Michalak M, Miszczuk JW, Wilczak M, Paulo M, j Bozyk A, Borowicz J. Correlation between eye and ear symptoms and lack of teeth, bruxism and other parafunctions in a population of 1006 patients in 2003-2008. *Arch Med Sci* 2012;8(1):104-110.
5. Dworkin SF, LeResche L. Research diagnostic criteria for temporomandibular disorders:review, criteria, examinations and specifications, critique. *J Craniomandib Disord*. 1992;6(4):301-55.
6. Shetty S, Pitti V, Babu S, Kumar S, Deepthi BC. Bruxism: A Literature Review. *J Indian Prosthodont Soc* 2010;10(3):141-148
7. Moss RA, Garrett JC. Temporomandibular joint dysfunction syndrome and myofascial pain dysfunction syndrome: a critical review. *J Oral Rehabil* 1984;11:3-28.
8. Huang GJ, leResche L, Critchlow CW. Risk foactors for diagnostic subgroups of painful Temporomandibular disorders (TMD). *J Dent Res* 2002;81(4):284-288.
9. Velly am, Gornitsky M, Phillipe P. contributing factors to chronic myofascial pain: a case control study. *Pain* 2003;104:491-499.
10. Glaros AG, Tabacchi KN, Glass EG. Effect of parafunctional clenching on TMD pain. *J Orofac Pain* 1998;12:145-152.
11. Moss RA, Wedding D, Sanders SH. Comparative efficacy of relaxation training and masseter EMG feedback in the treatment of TMJ dysfunction. *J Oral Rehabil* 1983;10:9-17.
12. Moss RA, Lambardo TW, Villarosa GA. Oral habits and TMJ dysfunction in facial pain and non pain subjects. *J Oral Rehabil* 1995;22:79-81.
13. Egermark I, Carlson GE, Magnusson T. A 20 year longitudinal study of subjective symptoms of temporomandibular disorders from childhood to adulthood. *Acta Odontol Scand* 2001;59:40-48.
14. Magnusson T, Egermark I, Carlson GE. A longitudinal epidemiological study of signs and symptoms of temporomandibular disorders from 15-35 years of age. *J Orofac Pain* 2000;14(4):310-319.
15. Schiffman EL, Friction JR, Haley D. The relationship of occlusion, parafunctional habits and recent life events to mandibular dysfunction in a non patient population. *J Oral Rehabil* 1992;19:201-223.
16. Agerberg G, Carlsson GE. Symptoms of the functional disturbances of masticatory system. A comparison of frequencies in a population sample and in a group of patients. *Acta Odontol Scand* 1975;33:183-90.
17. Gavish A, Halachmi M, Winocur E. oral habits and their association with signs and symptoms of temporomandibular disorders in adolescent girls. *J Oral Rehabil* 2000;27:22-32.

18. Kononen M, Nystrom M, Klemola-Kujala E. signs and symptoms of craniomandibular disorders in series of Finnish children. *Acta Odontol Scand* 1987;45:109-114.
19. Winocur E, Gavish A, Finkelshtein T. Oral habits among adolescent girls and their association with symptoms of temporomandibular disorders. *J Oral Rehabil* 2001;28:624-629.
20. Nilner M, Kopp S. Distribution by age and sex of the functional disturbances and diseases of stomatognathic system in 7-18 year old. *Swed Dent J* 1983;7:191-198.
21. Pertes RA, Gross SG. Editor. Clinical management of temporomandibular disorders and orofacial pain. Chicago (USA): Quintessence; 1995. p. 59-68.
22. Barbosa Tde S, Miyakoda LS, Pocztaruk Rde L, Rocha CP, . Temporomandibular disorders and bruxism in childhood and adolescence: review of the literature. *Int J Pediatr Otorhinolaryngol*. 2008 Mar;72(3):299-314.
23. Rugh JD, Drago CJ. Vertical dimension: A study of clinical rest position and jaw muscle activity. *J Prosth Dent* 1981;45(6):670-675.
24. Rafael Poveda Roda, José V. Bagán, José María Díaz Fernández, Sergio Hernández Bazán, Yolanda Jiménez Soriano Review of temporomandibular joint pathology. Part I: Classification, epidemiology and risk factors. *Med Oral Patol Oral Cir Bucal* 2007;12:E292-8.
25. Daniele M. Etiopathogenesis of disc displacement of temporomandibular joint: A review of mechanisms: *Indian J Dent Res* 2009;20(2):212-21.
26. Sato F, Kino K, Sugisaki M, Haketa T, Amemori Yoko, Ishikawa T. et al. Teeth contacting habit as a contributing factor to chronic pain in patients with temporomandibular disorders. *J Med Den Sci* 2006;53:103-109.

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