



## THE PREVALENCE OF TONGUE THRUSTING HABIT AMONG PERIODONTITIS PATIENTS :THE DYNAMIC RELATIONSHIP

<b>Dr. Anil Sharma</b>	Post Graduate. Department Of Periodontics & Implantology, Himachal Dental College, Sundernagar.
<b>Dr. Suman Rao*</b>	Post graduate, Department Of Periodontics & Implantology, Himachal Dental College, Sundernagar, *Corresponding Author
<b>Dr.Rupali</b>	Post Graduate, Department of Roga Nidana, Shri JG Cooperative Society's Ayurvedic Medical College and Hospital, Ghataprabha, RGUHS, Karnataka.
<b>Dr.Vikas Jindal</b>	H.O.D. Department Of Periodontics & Implantology, Himachal Dental College, Sundernagar.
<b>Dr.Ranjan Malhotra</b>	Professor, Department Of Periodontics & Implantology, Himachal Dental College, Sundernagar.
<b>Dr.Amit Goel</b>	Professor, Department Of Periodontics & Implantology, Himachal Dental College, Sundernagar.
<b>Dr.Malvika Thakur</b>	Senior Lecturer, Department Of Periodontics & Implantology, Himachal Dental College, Sundernagar.

### ABSTRACT

**Background:** Tongue thrust swallowing has been defined as the forward placement of the tongue lie between the incisors during deglutition. Tongue thrust are amongst the parafunctional habits that have always been considered as etiological factors for dental disorders by different investigators. **Aim:** The aim of this study was to evaluate the prevalence of tongue thrusting habit and their incidence on periodontal disease among patients referred to the Department of Periodontology and Implantology of Himachal Dental College and Hospital, Sundernagar, Mandi, HPU. **Material and Methods:** Four hundred and fifty patients, undergoing first phase of periodontal therapy, were selected. Among them, those patient which have tongue thrusting habit were diagnosed and periodontal indices (probing pocket depth, gingival recession, spacing and gingival enlargement) were measured. Also, crown-root ratio was measured for upper and lower anterior teeth. **Results:** Tongue thrusting was seen in 24.2% of patients, whereas 24.4% and 35.8% of them showed an increase in periodontal pocket depths in their upper and lower jaws, respectively. Gingival recession was found in the upper jaw in 14.98% and in the lower jaw in 48.25% of the cases. Crown to root length ratio in 22.6% of the upper incisors and 34.1% of the lower incisors were found to be higher than normal. Pathological tooth migration was observed between the incisors in 29.2% and 41.6% of the patients in the upper and lower jaws, respectively. Finally 34.2% of the patients showed gingival enlargement. **Conclusion:** The results of the present study revealed a considerable increase in the prevalence of various periodontal diseases among these subjects Tongue interposition and tongue thrust swallow lead to periodontal pocket, gingival recession, alveolar bone resorption, tooth mobility and diastema. Early termination of pernicious habits allows for prevention of periodontal problems and possibility of soft and hard tissues regeneration. To prevent the progression of periodontal diseases and to restrict the clinical problems of these patients by giving habit breaking appliance and maintaining good oral hygiene and regular dental check up are suggested.

**KEYWORDS :** Tongue thrust swallowing; Periodontal Diseases;

### INTRODUCTION :

A habit is the repetitive action which is being performed automatically. The face is the primary and permanent location for expression of emotions and is a source of relief in passion and anxiety in both children and adults, stimulation of mouth with tongue, finger, and nail can be a palliative action. Trident factors like duration of habit per day, intensity and degree of habit are responsible for any habit to produce detrimental and long lasting effects<sup>1</sup>. Tongue thrust swallowing has been defined as the forward placement of the tongue lie between the incisors during deglutition. Due to delayed transition between infantile and adult swallowing can lead to tongue thrusting habit. Normally the transition begins around the age of 2 years, and completed by the age of 6 years<sup>2</sup>. In a normal swallowing pattern, the dorsal part of the tongue touches the palate and the tip is placed on the back of the upper incisors. Where as in a tongue thrusting habit, the middle part of tongue does not touch the hard palate and the tip of the tongue is placed on the back of the lower incisors or between the teeth<sup>3</sup>. According to Schneider (1982) Tongue thrust is a forward placement of the tongue between the anterior teeth

and against the lower lip while swallowing. In infants when teeth are not erupted, during infantile swallow infantile the tongue is moved between the gum pads. After eruption of deciduous teeth around 6-7 months of life, several developmental growth events occurs that alter the functioning of the oro-facial musculature with the arrival of incisors, the tongue assumes a retracted posture. If the transition of infantile to mature swallow does not takes place with the eruption of teeth, then it leads to tongue thrust swallow. In a normal swallowing pattern, the distal part of the tongue touches the palate and the tip is placed on the back of the upper incisors. Whereas in patients of tongue thrusting habits the middle part of the tongue disturbs the balance occur between forces exerted upon the teeth and results in various dental problems and disorders.<sup>4</sup> Carranza states that during swallowing with a tongue thrusting pattern, the tongue is pushed forward and exerts a force on the incisors, leading to inclination and lateral displacement of the teeth. The exerted forces can be harmful to the periodontium. An alteration in the angulations of incisors in the dental arch, as compared to the normal position, leads to a change in the direction of

functional forces, not being parallel to the long axis of the teeth. Consequently, lateral pressures increase, which finally result in labial drift of the incisors and a production of labial-lingual rotational forces. Disruption of the equilibrium between forces exerted from the lips and tongue leads to tooth mobility. Tooth angle alteration results in accumulation of food debris in the gingival margin and a lack of tooth contact causes food impaction.<sup>5</sup> The prevalence of oral habits in high school and primary school students have been reported as 34% and the most prevalent was 18% of tongue thrusting habit. The reason attributed was the constant change over the teeth in mixed dentition, often leading to open spaces, thereby prompting a habit of tongue thrusting<sup>6</sup>.

**Aims:** The aim of this study was to evaluate the prevalence of tongue thrusting habit and their incidence on periodontal disease among patients referred to the Department of Periodontology and Implantology of Himachal Dental College, Sundernagar, Mandi.

#### Materials And Methods :

The present cross sectional study was an observational study. Inclusion criteria included subjects requiring first phase of periodontal treatment without any age or sex limitations. A total of 450 patients was selected through examining all patients referred to the Department of Periodontology And Implantology of Himachal Dental College & Hospital Sundernagar from November 2018 to February 2020. An informed consent form was obtained from the patients after thorough explanation of the study. The study was conducted after obtaining an institutional ethical committee clearance.

**Inclusion criteria:** Those patients who required phase one periodontal therapy without any age or sex limitation. All these patients initially undergone thorough routine periodontal examination including measurement of probing depth, gingival recession, presence of spacing between incisors and crown-root length ratio. The results were recorded for each patient while cases with tongue thrusting were diagnosed. For such a diagnosis, the following assessments were made:

1. Examination of phonetics: Patients with tongue thrusting are not able to pronounce sibilant sounds (s, z ...) correctly. All patients were asked to count from 60 to 70. Among those with this problem, a whistle sound is heard upon pronunciation of the letter/S/7.

2. Evaluation of the activity of the mentalis muscle:

a) Upon swallowing, hyperactivity of the mentalis muscle is observed. If the lower lip of these subjects is pulled out, they will not be able to swallow.

b). Patients were asked to sit upright on a chair so that their spinal column would be perpendicular to the horizontal plane. In such situations, severe contraction of the mentalis can be observed on swallowing<sup>8</sup>.

Periodontal conditions were evaluated on the basis of the following parameters:

1- Probing depth, determined at six sites using a Williams probe: (mesiobuccal, buccal, distobuccal, mesiolingual, lingual and distolingual). The deepest measurement was considered as the probing depth for each tooth.

2- Gingival recession, measured as the distance from the gingival margin to the CEJ on the buccal and lingual aspects of each tooth using a Williams probe. The mean value between these two scores was recorded.

3- The existence of space between the anterior teeth, as a qualitative variable, which was observed and recorded as

presence or absence of space.

4- Crown-root length ratio (C/R Ratio), obtained by dividing the distance between the incisal tip and crest of the alveolar bone to the length of the root inside the alveolar bone. This ratio was determined by linear measurement of parallel periapical radiographs.

5- Gingival enlargement, as a qualitative variable, which was evaluated through direct observation and by comparing it with the normal position of the gingival margin (maximally at 1 mm coronal to the CEJ). All the mentioned variables were measured on the upper and lower incisors. In order to minimize any possible kind of mistake, the evaluation of the above mentioned periodontal variables and the presence of tongue thrusting were recorded individually.

#### RESULT:

In this investigation, the total number of 450 patients was studied, among them 58 patients were Having tongue thrusting (24.2%). Among these 105 subjects, the following results were obtained:

In the upper jaw of 44 patients, the probing depths of the four investigated teeth were less than 3 mm, whereas in the other 61 patients, the average probing depth was found to be  $\geq$  3mm, implying that totally 24.8% of these patients had an increase in maxillary periodontal pocket depths. The range of maxillary probing depth was recorded as 0.5-5 mm. In the lower jaw of 42 patients, none of the four investigated teeth showed probing depths of  $\geq$  3 mm. In 63 cases (35.8%) increased periodontal pocket depths were observed. Mandibular probing depths ranged from 0.5 mm to 5.5 mm.

Gingival recession was observed in 14.3% and 38.2% of the patients, in the upper and lower jaws, respectively. The range of gingival recession measurements was 0 mm to 3.5mm in the upper jaw and from 0mm to 4 mm in the lower jaw.

In the upper jaw of 22 patients (18.6%), crown to root length ratio was observed to be higher than the ideal value (1/2) reported previously<sup>9</sup>. In the lower jaw of 24.2% of the cases, this ratio was higher than the ideal score.

Space between the anterior teeth was observed in 30.2% of the subjects. In all of these cases, both jaws were involved.

Patients were asked about their chief complaints; 52.9% of them complained from heavy calculus accumulation and its rapid formation on teeth. Gingival bleeding and halitosis were mentioned as chief complaints by 14% and 7.5% of the cases, respectively. The remaining 25.6% presented with other complaints such as tooth mobility, toothache, tooth staining and some were referred from other Departments of the Faculty of Dentistry.

#### DISCUSSION :

Tongue thrusting has always been considered as a major complication in diagnosis and prognosis of orthodontic treatments. Although numerous investigations have been conducted in this field, but less attention has been made on the potential effects of tongue thrusting on the periodontium. The present study investigated the prevalence of tongue thrusting among periodontal patients. The study group consisted of 450 patients, 105 of whom (24.2%) had tongue thrusting. According to the literature, the prevalence of tongue thrusting among the normal population was found to be about 3%<sup>10</sup>. The higher prevalence of this oral habit among periodontal patients is indicative of a possible correlation between this habit and periodontal diseases.<sup>11</sup> Heavy calculus accumulation in short periods, forces most of these patients to consult a clinician (52.9%), although, other complaints like gingival bleeding, halitosis and tooth staining

were also in close association with calculus formation. However gingival bleeding tendency and halitosis can be considered secondary to calculus accumulation. The incidence of all investigated variables were drastically higher in the lower jaw, indicating more pronounced effects of abnormal positioning of the tongue on the lower jaw as compared to the upper jaw. It should be mentioned however, that among the normal population, the highest amount of calculus formation is generally observed on the lower incisors. It is an interesting finding that spacing between anterior teeth was seen on both jaws simultaneously. This finding can emphasize the effects of tongue position on the force equilibrium which is an important factor in determining tooth position. According to the obtained findings, a higher prevalence of periodontal diseases in the lower jaws of subjects with tongue thrusting may result from a combination of the higher probability of calculus accumulation in the lower jaw and the possible effects of tongue position during swallowing.

#### CONCLUSION:

Considering the present findings, the necessity of preventing periodontal diseases among people with tongue thrusting habits becomes more obvious. Regular periodontal examinations, excellent oral hygiene measure using toothbrush, proxa brush and dental floss for the prevention of gingivitis and periodontitis, and also precise and systematic follow-up are highly recommended.

#### REFERENCES:

1. Shahraki N, Yassaeei S, Moghadam MG. Abnormal oral habits: A review. *J Dent Oral Hyg*. 2012;4(2):12-15.
2. Warren JJ, Bishara SE, Steinbock KL, Yonezu T, Nowak AJ. Effects of oral habits duration on dental characteristics in the primary dentition. *J American Dental Association*. 2001;132(12):1685-93.
3. Moyers RE. *Hand Book of Orthodontics*. 4th ed. St. Louis: Year Book Medical Publishers; 1998.
4. Sayin MO, Akin E, Karacy S, Bukakbasi N. Initial effects of the tongue crib on tongue movements during deglutition: A cine-Magnetic Resonance Imaging study. *Angle Orthod*. 2006;76:400-05.
5. Newman MG, Takei H, Carranza FA. *Carranza's Clinical Periodontology*. 9th ed. Philadelphia: WB Saunders; 2002.
6. Villa NL, Cisneros GJ. Changes in the dentition secondary to palatal crib therapy in digital-suckers: A preliminary study. *Pediatric Dent*. 1997;19(5):323-26.
7. Pound E. Let /S/ be your guide. *J Prosthet Dent* 1977 Nov;38(5):482-9.
8. Moyers RE. *Hand Book of Orthodontics*. 4th ed. St. Louis: Year Book Medical Publishers; 1998.
9. Schillingburg H, Hobo S, Whitsett LD. *Fundamentals of Fixed Prosthodontics*. 7th ed. Philadelphia: WB Saunders; 1997.
10. Andrianopoulos MV, Hanson ML. Tonguethrust and the stability of overjet correction. *Angle Orthod* 1987 Apr;57(2):121-35
11. Larsson E. Artificial sucking habits: etiology, prevalence and effect on occlusion. *Int J Orofacial Myology* 1994 Nov;20:10-21.