



RELATIONSHIP BETWEEN ORAL HABITS AND MALOCCLUSION- A SHORT REVIEW

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ABSTRACT Oral habits are considered as an important factors in the etiology of malocclusion. Dental occlusion will be affected due to oral habits and speech problems. Malocclusion will result in functional disorders and aesthetic problems. Digit sucking, tongue thrust swallowing, and mouth breathing are potential risk factors for development of malocclusion. Oral habits, if persist beyond certain developmental age, can pose great harm to the developing teeth, occlusion, and surrounding oral tissues. In the formative years, almost all children engage in some non-nutritive sucking habits. Clinicians, by proper differential diagnosis and thorough understanding of natural growth and developmental processes, should take a decision for intervening. Various oral habits such as thumb sucking, finger biting, or finger sucking, tongue thrusting, lip biting, or lip sucking, bruxism, mouth breathing can produce destructive effects on the dentoalveolar structures. Trident of factors, like duration of the habit per day, degree, and intensity of habit, are responsible for any habit to produce detrimental and lasting effects. Oral habits are one of the causes of malocclusion in a growing child. Early detection and elimination of the habit will go along a way in reducing and eliminating the incidence of malocclusion. Since habits can cause a change in the skeletal and dental pattern which become established at the end of growth that will require surgical procedures to correct the malocclusion. Hence early detection and elimination of the habit will help preventing the malocclusion. However these habits, when become excessive or continued, can result in the poor dental health or malocclusion. Interruption of these habits as early as possible is very important to prevent severe dentofacial problems.

KEYWORDS : Oral habits, Thumb Sucking, Tongue thrust swallowing, Lip biting, Malocclusion.

INTRODUCTION:

Oral habits are habits that frequently children acquire that may either temporarily or permanently be harmful to dental occlusion and to the supporting structures. They are associated with anger, hunger, sleep, tooth eruption and fear. Some children even display oral habits for release of mental tension. These habits might be thumb sucking, finger sucking, tongue thrusting, lip biting and bruxism. These habits can result in damage to dentoalveolar structure. It is still debated whether harmful habits have a role in the etiopathogenesis of malocclusions. Beyond this controversy, whenever these problems are found in association with malocclusion, it is of considerable importance for prognosis and they must be eliminated in order to ensure a functional environment adequate for physiological growth. If some neuromuscular activities are developed to compensate dentoalveolar or skeletal alterations, others have an aetiological role. Improper oral habits can interfere not only with the position of the teeth, but especially with the normal skeletal growth pattern. There is a significant association between sucking habits and anterior open bite, as well as posterior crossbite. Tongue thrust swallowing is more likely to be a contributing factor for anterior open bite development. Thumb sucking habit can result in a class II division I malocclusion.

A habit is a repetitive action that is being done automatically. The mouth 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 this region with tongue, finger, nail or cigarette can be a palliative action. Dental changes due to thumb sucking or finger sucking do not need any treatment if the habit is stopped before the age of 5 years, and as soon as giving up the habit, dental changes will be corrected spontaneously. Thumb sucking habit can be defined as the repeated forceful sucking of the thumb with associated strong buccal and lip musculature contraction.

Tongue thrusting can take place because of delayed transition between the infantile and adult swallowing pattern. Normally, the transition begins around the age of 2 years, and by the age of 6 years 50%, has completed the transition. Tongue thrust can also result in open bite, cross bite, overjet and Class II malocclusions.

The role of the dental surgeon is very important to achieve the desired result. Showing them photographs of damaged dentition may work as a deterrent. No treatment approach should be labeled as punishment. The child should be encouraged to visit the dental office and confide in dentist.

Anterior open bite can become a great source of embarrassment for kids resulting in lack of self-confidence. Clinician should play the role of friend, philosopher and guide to both parents and child indulging in damaging oral habits. Clinician should try initially to break the habit by non-invasive means and if not successful, then pursuing orthodontic correction.

The ROMA Index is commonly used as a guide to clinical signs of malocclusion in paediatric patients. Depending on how many signs are detected, there is a greater or lesser need for orthodontic intervention. The most severe characteristic is identified for any particular patient during examination, and the patient is then categorised on the index risk factor scale according to this most severe characteristic. As in the world following list, categories are ranked in order of seriousness, thus also indicating the level of urgency with which orthodontic diagnosis/treatment is required:

Grade 1 → Minimum risk No predisposing conditions to malocclusion are detected. In this case, treatment is unnecessary and it is sufficient to carry out periodic examinations, in order to monitor the normal course of development and to detect possible pathological factors promptly. Grade 2 → Low risk This includes easily controlled factors having only limited effects on cranio-facial development. Diagnostic investigations and preventive interventions to promote correct cranio-facial development are planned, but they are delayed until there is a temporal correspondence between the etiological agent and growth acceleration in the affected region. Grade 3 → Moderate risk There are non-severe alterations in dental and/or skeletal relationships, but most tending to persist and some- times worsen with growth. The timing of intervention is dependent on the patient's age, i.e., on the active growth phases of the affected areas, so as to achieve good treatment response. Orthodontic treatment is combined with orthopaedic-functional therapy to be performed after undertaking appropriate diagnostic investigations. Grade 4 → High risk It includes major cranio-facial skeletal malformations and alterations of the occlusion. Alternatively, there can be systemic problems likely to worsen prognosis that justify immediate treatment, independent of the rhythm of growth of the different cranio-facial components. Both orthopaedic therapy and orthodontic interventions are required to correct the problems caused by the malocclusion and hindering harmonious maxillary growth. Grade 5 → Extreme risk Diagnosis comprises congenital facial malformations and major systemic malformation syndromes. Treatment, to be performed in collaboration with paediatricians and other specialists (multidisciplinary care), is required as early as possible.

The Oral habits related to malocclusion are,

- Thumb sucking
- Finger sucking
- Tongue thrusting
- Pacifier or dummy sucking
- Lip biting
- Nail biting
- Cheek biting
- Foreign object sucking
- Lip sucking
- Clenching
- Mouth breathing
- Bruxism
- Occupational habits

Crowding and diastema:

Crowding and diastema were recorded for the anterior as well as for the posterior segments. A midline diastema was considered to be present when there was a space of at least 2 mm between the maxillary central incisors.

Dental crowding or malocclusion is a hereditary condition that occurs when there is an insufficient amount of space for all the teeth to properly fit within your mouth.

Your teeth may become displaced if they are too large to fit in the available space. Losing your primary teeth too early or the improper growth of teeth can also cause crowding. There are several risks associated with teeth crowding, which include:

- Gum disease
- Tooth decay
- Ineffective teeth function
- Pain or discomfort
- Difficulty chewing or speaking
- The prevention of proper teeth cleaning
- Lack of self-confidence and desire to smile

THUMB OR FINGER SUCKING:

During the first few months after birth, infant finger sucking happens more during sleep [1]. However, by the end of the first postnatal year, more infants suck their fingers while awake during the day. There is no difference in the rate of the behaviour between boys and girls, although girls may have more trouble stopping the habit [2].

Dental changes in primary, mixed and secondary dentition include malocclusions, such as posterior cross bite, anterior open bite, and excessive over jet. It can also result in a class II division 2 malocclusion. However, children who suck their thumbs chronically have a higher incidence of herpetic whitlow, and accidental ingestion and rarely digital deformities that require surgery. Older children who suck their thumbs are subject to social stigma [3][4][5]. They may be ridiculed by peers as well as their parents, and they may be treated as immature and less socially acceptable. There was a significant association between sucking habits and anterior open bite, as well as posterior crossbite.



Treatment for thumb sucking should not be pursued before the child is 4 years of age. Once the child and parent are aware of when the sucking habit occurs, a competing response can be used as an alternative to the thumb or finger entering the mouth. For example, squeezing an object whenever the child feels the impulse to suck the thumb or finger can prevent the unwanted behaviour [6]. An appliance, either a palatal crib

or rake, can be an excellent reminder not to suck the thumb or finger. Palatal appliances ideally should be placed during the spring or summer. Usually 3 months with the appliance is sufficient to change or eliminate the thumb sucking, although some children may need longer. A fixed appliance is more effective than a removable palatal appliance [7][8].

Lip biting:

Habit that involve manipulation of lips and peri oral structure are termed as lip habits. This problem happens mostly in inferior lip [7] and can cause the upper incisors to tip labially and the lower incisors to tip lingually with the lower lip wedged between the upper and lower anterior teeth [9]. This habit is related to dryness and inflammation of lip and in severe cases will cause vermilion hypertrophy and in some people can cause chronic cold sore or lip crack [10][11].



Lip protector can be used to prevent lip chewing and the lip bumper is used as an adjunctive therapy in both comprehensive and interceptive treatment. It is positioned in mandibular vestibule and serve to prohibit the lip from exerting excessive force on mandibular incisor and reposition the lip away from the lingual aspect of maxillary incisors.

Nail Biting:

Nail biting habit is otherwise called as ONYCHOPHAGIA. It is a common medical problem among children, even in adults [12]. This habit starts after 3 to 4 years of age and is in its peak in 10 years of age. Its rate increases in adolescence. This problem is not gender dependent in children less than 10 years of age, but its incidence in boys is more than girls among adolescents [12]. This problem is a reaction to the psychological disorders.

Nail biting will result in malocclusion of the anterior teeth, tooth root resorption [13], intestinal parasitic infections [14][15], bacterial infection and alveolar destruction [12], tempero-mandibular joint pain and dysfunction [16] and especially attention deficient hyperactivity disorder (ADHD) which occurs more in boys. This habit in higher age will be replaced with some habits such as lip chewing, gum chewing or smoking [9]. Nail biting can be treated by putting nail polish or distasteful liquids on nails.

Bruxism:

Bruxism, defined as the parafunctional grinding of teeth, is an oral habit consisting of involuntary rhythmic or spasmodic non-functional gnashing, grinding, or clenching of the teeth other than chewing movements of the mandible. The prevalence of bruxism is higher in young adults than in the elderly. The etiology of bruxism remains controversial. Recent reviews suggest that bruxism is mainly regulated by pathophysiological and psychological factors, rather than morphological ones. Intermittent bruxism, including clenching and grinding, is extremely common, but it usually poses no serious consequences for the oral structures.

It may lead to tooth wear, signs and symptoms of temporomandibular disorders, headache, toothache, mobile teeth, and various problems with dental restorations as well as with fixed and removable prostheses [17]. In the old people and people with sleep apnea, bruxism can reduce the quality of sleep [18]. Sleep bruxism has 2 types: Primary or idiopathic and secondary or iatrogenic. The first type is without any medical reason and the secondary type is whether with or without the use of drug [18].

The risk factors are 20% to 50% by patients with sleep bruxism have positive family history [19]. The prevalence of this habit decrease with age [11]. The prevalence of sleep bruxism in smokers is 1.9 times more than non-smokers [11]; use of alcohol and caffeine; tension and stresses [20].

Clinical findings of sleep bruxism includes report of grinding or impacting sounds of teeth; erosion of the teeth occlusal surfaces and breakdown of repairs; hypertrophy of masticatory muscles; hypersensitivity of teeth to cold air and joint sounds.

Treatment for bruxism are increasing awareness of the patient, intra oral appliances, behavioral treatment and drugs like diazepam and clonazepam have been reported to be effective [21].

Mouth breathing:

The scientific community acknowledges that bad habits and oral breathing have a role in the aetiopathogenesis of malocclusions, and their association is confirmed herein. Mouth breathing and bad habits can be considered as risk factors of malocclusion because they change the physiological balance of growth. However, while mouth breathing is always significantly associated with all occlusal problems examined, bad habits have a significant role only in some, probably because of their lower relevance than other factors implicated in the aetiopathogenesis of malocclusions. Thus, we can assume that the "risk of developing malocclusion" related to bad habits would be expressed in individuals more susceptible to genetic causes and unfavourable growth pattern.

The presence of obstruction of the airways, especially at the level of the nose and pharynx, forces the patient to breathe through the mouth [22]. Allergic rhinitis and adenotonsillar hypertrophy are the main cause of airway obstruction. They are usually associated with various symptoms which includes lack of nasal airflow, sneezing, itching, runny nose clear, but also snoring, possible obstructive sleep apnoea syndrome (OSAS) and increased respiratory infections such as ear infections, sinusitis and tonsillitis [23][24]. Mouth breathing due to airway obstruction leads postural changes such as lip incompetence, low position of the tongue in the mouth floor and increased vertical facial height for clockwise rotation of the jaw [25]

Children with mouth breathing have typical facial features: long face, dark circles, narrow nostrils, transverse contraction of the upper jaw, high arched palate and gummy smile associated with malocclusion of class II or, sometimes, class III, with a high prevalence of posterior crossbite and anterior open-bite [26][27][28][29]. The buccinator muscles are made tense by opening the mouth and tend to exert lingual pressure on the maxillary bicuspids and molars, which do not receive sufficient support from the tongue, so that the palate and the upper dental arch become quite narrow. Lip function is abnormal, the lower lip being large and bulbous and the upper lip short and functionless, with often lower lip forced up under the upper incisor, that are further protruded with increased overjet. Mouth breathers have longer faces with a narrower maxilla and retrognathic jaw [30][31] and allergic children who were mouth breathers had longer and more retrusive faces than nasal breather children [32]. In addition, the lack of thrust of the tongue on the palate and on the upper jaw may cause a sagittal and transverse maxillary skeletal deficit, a Class III malocclusion with reduced or reverse overjet.

Mouth breathing is closely related to increased overjet, reduced overjet, anterior or posterior crossbite, open-bite and displacement. Therefore, it is necessary to intervene early on aetiological factors of mouth breathing to prevent the development or worsening of malocclusion and, if already developed, to correct it by early orthodontic treatment to promote eugenic skeletal growth.

Tongue thrust:

Tongue thrust (also called reverse swallow or immature swallow) is the common name of orofacial muscular imbalance, a human behavioral pattern in which the tongue protrudes through the anterior incisors during swallowing, speech, and while the tongue is at rest. Nearly all infants exhibit a swallowing pattern involving tongue protrusion, but by six months of age most lose this reflex allowing for the ingestion of solid foods. [1]

Tongue thrust is normal in infants until approximately the age of six months. The loss of this normal infant behavior is one of the signs that the baby is ready to begin eating baby food. Tongue thrusting can adversely affect the teeth and mouth. A person swallows from 1,200 to 2,000 times every 24 hours with about four pounds (1.8 kg) of pressure each time. If a person suffers from tongue thrusting, this continuous pressure tends to force the teeth out of alignment. Many people who tongue thrust have open bites; the force of the tongue against the teeth is an important factor in contributing to "bad bite" (malocclusion). Many orthodontists have completed dental treatment with what appeared to be good results, only to discover that the case relapsed because of the patient's tongue thrust. [citation needed] If the tongue is allowed to continue its pushing action against

the teeth, it will continue to push the teeth forward and reverse the orthodontic work.

Speech is not frequently affected by the tongue thrust swallowing pattern. The "S" sound (lisping) is the one most affected. The lateral lisp (air forced on the side of the tongue rather than forward) shows dramatic improvement when the tongue thrust is corrected. However, lisping and tongue thrust are not always associated. Treatment for uncontrolled tongue thrust requires habit retraining in conjunction with a dental appliance.

Cheek biting:

Cheek biting is a bad habit which occurs approximately in 3.44% of all white lesions and only one third of the patients are men, reported by Bouqot and Gorlin (1). Other authors such as Sewerin (2), in a study which included more than 8000 people, reported the prevalence of cheek biting in 0.5% of patients, while Axell (3) reported the prevalence of 4.7% of patients. Etiology of cheek biting is considered to be psychogenic, caused by wide range of emotions as reported by Walker and Rogers (4). Repeated biting leads to a chronically traumatized area which is sometimes thickened, scarred and paler than the surrounding mucosa. Habitual cheek or lip biting generally refers to a more superficial lesion produced by frequently repeated rubbing, sucking, or chewing movements that abrade the surface of a wide area without producing discrete ulceration. Such lesions feel rough to the examiners' fingers and appear as poorly outlined, macerated and reddened areas, usually with whitish patches of partly detached surface epithelium (5,6). Habitual cheek or lip biting may sometimes produce hemorrhagic bleeding of the oral mucosa (7). Habitual lip or cheek biting usually occurs as an unconscious habit. Alerting the patient to the bad habit is usually sufficient to discontinue the habit. However there are more severe cases in which a splint is recommended as well as sedatives, 5-10 mg diazepam. More severe cheek biting also occurs in association with uncontrolled tongue thrusting or chewing and grinding jaw movements in individuals with neuromuscular disorders such as tardive dyskinesia (8).

Therapy is based on the explanation that oral lesions are a result of biting because patients are usually unaware of the bad habit and advice is in most cases sufficient. In more severe cases sedatives are prescribed. If cheek biting occurs during the night the patient is supposed to have a splint overnight. Patients should be also sent for psychological help and treatment with relaxation, biofeedback or autogen training. In this case sanation of lesions occurred after causative explanation of the bad habit, use of sedative and keratolytic agents and vitamin A. Unconscious cheek or lip biting leads to hyperkeratotic exfoliation of the mucosa and can have erosions as a basis. The changes are the result of psychological disturbances in the patient. It is necessary to identify the bad habit and to treat patients with sedative. Locally applied therapy helps to eradicate the hyperkeratotic flakes and inflammation. Systemic use of vitamin A regenerates the oral epithelium.

Sucking habits at a very early age (until 3 years) are normal, but persistence of these habits beyond 3 significantly increases the probability of developing undesirable dental arch and occlusal traits at the end of the deciduous dentition stage. Prolonged sucking habits create a mechanical obstacle for the eruption of anterior teeth, in association with tongue-thrust swallowing. These alterations often result in an anterior open bite. However, studies on the extent to which sucking habits impact dental occlusion and lead to open bite are contradictory. A few clinical contributions from the past affirm that digit sucking cannot cause skeletal malocclusions, but it can add dentoalveolar problems to existing skeletal problems. Fukuta also investigated the relationship between sucking habits and malocclusion in the deciduous dentition, thumb- or finger-sucking group compared with age-matched controls without oral habits. Farsi and Salama studied the effect of sucking habits in Saudi Arabian children aged 3 to 5 years and found a strong correlation between the oral habit and open bite. Many of the studies that focus on the analysis of anterior open bite report a high prevalence of the hyperdivergent phenotype. There is no univocal appraisal of facial hyperdivergency in the development of dental open bite. Through the use of cephalometric parameters, it has been shown that most anterior open bite subjects do have traits of both dentoalveolar and skeletal increased vertical dimensions. Vice versa, skeletal open bite subjects do not necessarily have negative overbite. The influence of skeletal characteristics on overbite has been calculated to be less than 25% in the mixed dentition.

Conclusion :

The ratio of bad habits, mouth breathing and malocclusion is an important issue in view of prevention and early treatment of disorders of the craniofacial growth. While bad habits can interfere with the position of the teeth and normal pattern of skeletal growth, on the other hand obstruction of the upper airway, resulting in mouth breathing, changes the pattern of craniofacial growth causing malocclusion. Oral habits such as swallowing, thumb sucking, lip sucking and nail biting can have direct influence on quality of life and can affect the stomatognathic system of the body and it is assumed to have a correlation between the oral habits and malocclusion of deciduous dentition; it is been stated that 40% of the causes of malocclusion were found to be related to harmful oral habits. Since parents try to make their children stop sucking habits without knowledge of the process of child mental development, their actions may lead to the persistence of deleterious oral habits. Malocclusion will thus be more difficult to be corrected later. Such oral habits are much easier to control by early intervention and developmental advantages can be achieved by correcting the interference.

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