

NON-NUTRITIVE SUCKING HABIT–THUMB SUCKING

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Abstract

Oral habits is any repetitive behaviour that utilizes the oral cavity. Oral habits are learned patterns of muscular contractions. When habit cause defect in orofacial structure it is termed as pernicious oral habit.

Oral habits in infancy and early childhood can be considered normal. The presence of an oral habit in the 3 to 6 year old is an important finding in the clinical examination. An oral habit is no longer considered “normal” for children near the end of this age group, because it may produce harmful effects on the development of maxillofacial complex. The lecture gives valuable information about causative factors, prevalence and development of sucking oral habits.

Clinical features and effects on the dentofacial complex caused by thumb sucking are presented and commented in detail. The lecture focuses on the management and treatment modalities of thumb sucking. At the end more information about pacifier sucking are commented.

The identification and assessment of an abnormal habits and its immediate and long term effect on the craniofacial complex and dentition should be made as early as possible to minimize the potential deleterious effect on dentofacial complex.

Key words: oral habits, thumb sucking treatment

Introduction

Oral habit is any repetitive behaviour that utilizes the oral cavity. Oral habits in infancy and early childhood can be considered normal. The presence of an oral habit in the 3 to 6 year old is an important finding in the clinical examination. An oral habit is no longer considered “normal” for children near the end of this age group. When habit cause defect in orofacial structure it is termed as pernicious oral habit [1, 2].

The types of changes in the dentition that an oral habit may cause vary, depending on the trident of habit factors: 1.duration- amount of time spent practicing the habit 2.frequency- number of times that habit is practiced through the day and 3.intensity- amount of force that is applied to the teeth while performing the habit. All those factors together should be considered, but duration plays the most important and critical role in tooth movement. Many experimental evidences suggests that 4 to 6 hours of force is needed daily to cause tooth movement [3].

Basic etiology of habits are [4, 5]:

- Over protection
- Loneliness
- Isolation
- Pain and discomfort
- Abnormal physical size of parts
- Imitation or imposition of others

Prevalence of oral habits

Oral habits are highly prevalent among 3-6 years. Among 5-13 years old children the prevalence is 25,5%. Tongue thrusting is most common (18,1%), followed by mouth breathing (6,6%). Thumb sucking (0,7%) and lip biting(0,04%) are relatively less common. There is no significant difference between boys and girls'. Digit sucking, tongue thrust, mouth breathing and bruxism are more prevalent among boys. Lip/cheek biting, nail biting and pencil biting are more prevalent among girls [6-9].

SUCKING HABITS

Sucking habit is one of baby's inherent reflex occurring in oral stage of development and disappears during normal growth between 1-3 1/2 years. This is the first co-ordinate muscular activity of the infant. It is natural normal infant habit which gives the baby a feeling of security, pleasure and nutritional satisfaction [10,11].

Classification of sucking habits [12].

1. NUTRITIVE- provide essential nutrient to the infant (breast feeding bottle feeding)
2. NON-NUTRITIVE- habit adopted by infant in response to frustration and to satisfy their urge and need for contact.

Theories to explain the occurrence of NNS habit-thumb sucking [13].

- Freudian theory (1905)
- Benjamin theory (1962)
- Learning theory (Davidson,1967)
- Oral drive theory (Sears and Wise 1982)

Freudian theory (Sigmund Freud, 1905) according to this theory, especially during first year of life oral cavity is the primary sensory site which derives pleasure from sucking. Oral phase is phase when mouth is believed to oro-erotic zone. Hence it is considered normal for child to perform this habit..The child have tendency to place his finger or any object into the oral cavity.Thumb sucking considered as manifestation of insecurity, maladjustment, internal conflict [13].

Benjamin theory combines the psychoanalytic theory of S. Freud and learning theory. This theory states that all children posses an inherent biologic derive for sucking. Rooting and placing reflex **theory** (by Johnson and Larson1993) — whenever anything is placed in mouth it initiates sucking reflex. This reflex is common in infants of all mammals.It's max.during first 3 months of life.Disappears in normal infants around 7-8 months of age.If persists may lead to abnormal habit [13].

Learning theory (Davidson,1967) this theory advocates that sucking habit habit stems from an adaptive response. Infant associates sucking with hunger, satiety and being held.These events are recalled by finger or thumb [13].

Oral derive theory (Sears and Wise 1982) according to this theory oral derive is established by prolonged breast feeding. Hence according to this theory digit sucking habit is not due to frustration of weaving but is due to prolong nursing which established very strong oral devices for sucking¹³

OTHER FACTORS that can explain the occurrence of NNS habit-thumb sucking, are: parent's occupation- parents from high socioeconomic status, working mother , increased number of siblings, later order of birth of child, social adjustment and stress-scolding parents, feeding practices and age of child [13].

THUMB SUCKING

Thumb sucking is placement of the thumb or one or more finger in varying depths into the mouth.This is repeated and forceful sucking of thumb with associated strong buccal and lip contractions.. Thumb sucking can be seen even at 29 week of intrauterine life, it is normal in first two years, because it

brings feeling of euphoria, sense of security, warm and being wanted and it disappears with maturation. If it persists and if it is not controlled at this age may cause deleterious effect on dentofacial structures [10,11].

This non-nutritive sucking habit is considered to be the most prevalent of oral habits with the reported incidence that ranges from 13% to almost 100% at some time during infancy. The prevalence of digit habits decreases with age and most children give up this activity by 3.5 to 4 years of age. On occasion, individuals may continue to exhibit a digit habit throughout childhood and may even extend this behavior into the adult years. The continuation of oral habits has been attributed to boredom, stress, hunger, hyperactivity, sadness, and pleasure etc [14,15].

Gellian reported a 45% prevalence of digit sucking in 3-4.5 year olds, 13.6% in 6 yr old and 5.9% in children of 7-11 year and 16% and 4.5% prevalence is reported for children between 3 and 12 year of age. Nanda and others have found the habit to be significantly more common among females. If the digit sucking continues beyond the age 6-7 months, it is difficult to break until the child is 4 or 5 years old¹⁶

According to Popovich and Thompson there is a higher incidence in girls than boys: 11.7% girls and 8.3% boys [17]. There is a low incidence in negroid races according to Brenchley [18].

In another study conducted by Luzzi et al. in 2011 there was a higher prevalence rate of children with a posterior cross bite who had sucked the pacifier and the children with increased overjet who had sucked their finger [19]. A study conducted by Varas F showed a significant increase in malocclusion in the primary dentition of children who prolonged the habit of pacifier sucking [20]. If this habit was abandoned early, anterior open bites improved, while posterior cross bites which remained or even got worse.

Non-nutritive sucking habits can cause undesirable effects on the dentition and even affect the bone of the anterior part of the mandible. Continuous presence of thumb or finger in the oral cavity can exert sufficient pressure to deform the maxillary arch or palate or both. There is a strong agreement that the digit sucking habits that persist while permanent teeth erupt can have detrimental effects on the dentofacial development. For the first 3-4 years of life, the damage to the occlusion is confined largely to the anterior segment. These damages are usually temporary, provided the sucking habits are discontinued before 6 year of age. In case the habit is discontinued after 6 year of age, such children invariably have malocclusion at 12 years of age.

Classification of thumb sucking based on clinical observation is:

1. Normal thumb sucking
2. Abnormal thumb sucking

Classifications of thumb sucking are [11]:

TYPE A: is more common and represented by 50%. Whole digit is placed inside the mouth with the pad of the thumb pressing over the palate and thumb contact with maxillary and mandible anterior is maintained.

TYPE B: is represented by 13-15%. Thumb is placed into the oral cavity without touching the vault of the palate and thumb contact with maxillary and mandible anterior is maintained.

TYPE C: is represented by 18%. Thumb is placed into the mouth beyond the first joint, contacting the hard palate and thumb contact is maintained with only maxillary anterior.

TYPE D: is represented by 6% . Little portion of the thumb is placed into the mouth.

CLINICAL FEATURES CAN BE SEEN ON [21-25]:

- Digits
- Lips
- Facial form
- Dentofacial changes

Digits can be reddened, short clean finger/thumb nail (dish pan thumb). Fibrous roughened callus on superior aspect of finger nail and grooves on thumb can be also seen. Upper lip is short and hypotonic, and passive or incompetent during swallowing. Lower lip is hyperactive.

Facial form analysis revealed maxillary protrusion, mandibular retrusion, high mandibular plane with straight/convex facial profile and saddle nose (due to pressure of thumb sucking [21]).

Dentofacial effects can be seen on maxilla, mandible and on inter-arch relationship [22].

Effects on maxilla: proclined maxillary incisors with high palatine arch, trauma to maxillary central incisors, increased maxillary arch length, and clinical crown length of maxillary anterior. Atypical root resorption can be found in primary central incisors [22-24].

Effects on mandible: retroclination of mandible incisors, decreased clinical crown length of mandible anteriors, increased mandibular inter molar distance, uncontained arch and retrusion on mandible [21, 22, 24].

Effects on inter-arch relationship show anterior open bite, with decreased o.b and posterior cross bite. Patients with thumb sucking can usually have increased o.j, and unilateral or bilateral Class II malocclusion [21, 22, 25].

Pacifier Sucking

Children who do not have access to unrestricted breast feeding or who are bottle fed may satisfy their instinctive sucking urge with a pacifier.²⁰ It has been reported that children who use a pacifier are less likely to develop a digit habit. It may also be that a pacifier is easier for the child to give up and that use ends at a younger age [20].

If a pacifier is being used, it is important to make parents aware of the following :

- Anatomic pacifiers are more preferred
- Should be sturdy one-piece construction
- Should have an easily grasped handle
- Should have mouth guard of adequate diameter and with ventilating holes
- Should not have any detachable strings and ribbons
- Should never be tied around the child's neck or affixed with any material capable of becoming wrapped around the neck.
- Should never be dipped in sugar, honey or other sweetened material to encourage sucking.
- Should be kept clean

MANAGEMENT AND TREATMENT OF THUMB SUCKING

If digit sucking causes malocclusion and the habit is discontinued between the ages of 4-5 yrs, self-correction of malocclusion can be expected. Self-correction also depends on the severity of the malocclusion, anatomic variation in the perioral soft tissue and the presence of other habits such as tongue thrusting, mouth breathing and lip habits. When digit sucking continues after 6 years or into the mixed dentition, there is an increased probability that the habit induced malocclusion will not self correct [19,21]. The treatment can be broadly divided into the following [16,22,26]:

- Preventive therapy
- Psychological therapy
- Reminder therapy
- Reward therapy
- Appliance therapy

Preventive therapy include first to feed the child whenever he is hungry and let him eat as much as he wants and also to feed the child the natural way. Breast feeding must be considered as the best method of feeding and prevention of malocclusion is one additional benefit of breast-feeding. For bottle feeding always use of physiologically designed nipples should be preferred than conventional nipples. Prenatal dental education is necessary for the parents [27].

Psychological therapy consist of diverting the child's attention toward play and toys and motivating the child for co-operation and willingness to discontinue the habits. Parents should be counseled to provide with adequate love and affection

Reminder therapy is appropriate for those who want to stop the habit but need some help to stop completely. The “reminder” must be neutral and not perceived as only form of punishment. The therapy recommends the use of hot flavored, bitter, sour tasting or foul smelling preparation as chemicals placed on the finger that is sucked. A commercially available product Femite (Denatonium benzoate) is also used for prevention of digit sucking [28-30].

Mechanical restraints applied to the hand and digits are splints, adhesives, tapes and thumb guard. Using of long sleeve nightgown-during the sleep “My special shirt”and hand puppets are kind of mechanical therapy.

Reward therapy is a contract agreed upon between the child and parent or between the child and dentist. The child will receive a reward if he/she will discontinue the habit for a required period. The reward does not need to be extravagant but special enough to motivate the child.

Appliance therapy is using different type of removable and fixed appliance to break the habits-habit breakers [31].

Oral screen is a functional appliance. Its effects by redirecting the pressure of the muscular and soft tissue curtain of the cheeks and lips.

Removable appliance used may be: palatal crib, Hay Rake appliance designed with a series of fence like lines that prevented sucking.

Fixed appliances used may be: fixed palatal crib, Blue grass- fixed appliance using a teflon roller together with reinforcement, and Quad helix used to expand the constricted maxillary arch [32].

Conclusion

Habits, both good and bad are patterns of behavior which are actively learnt by the child. Teaching of good habits to children and elimination of bad one is one of the important skills for the parent to learn. Parents should be educated about benefits of the exclusive breast feeding in the first 6 months of age on mixed dentition. The activity of non-nutritive sucking should be diagnosed in a timely manner in order to reduce the development of posterior cross bite, anterior open bite, and Class II molar relationship.

The identification and assessment of an abnormal habits and its immediate and long term effect on the craniofacial complex and dentition, should be made as early as possible to minimize the potential deleterious effect on dentofacial complex.

The attention is called to the fact that dentists have responsibility and task to diagnose as early as can be the oral bad habits and that the adequate therapy in time in co-operation with other specialists helping the child get out of bad habits, preventing the development of severe anomaly.

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