

DELETERIOUS ORAL HABITS: A REVIEW

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ABSTRACT: Oral habit is a part of normal development in children and is a prime concern for parents. It is a learned pattern of muscle contraction with complex nature, which is a repetitive act, commonly seen from infancy and should diminish automatically as age advances. These habits can result in damage to dentoalveolar structure. Therefore, dentists play a crucial role in giving necessary information to parents.

KEYWORDS: Bruxism, Lip chewing, Nail biting, Oral habit, Thumb sucking.

INTRODUCTION

Oral habits may be a part of normal development, a symptom with deep rooted psychological basis or may be the result of abnormal facial growth. A wide variety of habits with varying aetiologies and clinical manifestations exist.^{1,2} Hence for proper management of these habits, proper understanding of each and every habit becomes important especially from dentist's point of view.

Definitions:

Moyers (1958)³: Oral habits are learned patterns of muscular contractions, which are complex in nature.

Classification:

Morris and Bohanna (1969)⁴ : pressure habits, non pressure habit, biting habits.
Earnest Klein(1971)⁵ : Abnormal pressure habits into intrinsic and extrinsic.
Finn (1975)⁵: compulsive, non compulsive, secondary habits.
Tandon (2001)⁶ :

- Intentional/meaningful e.g. Nail biting, digit sucking, lip biting.
- Unintentional/empty e.g. Abnormal pillowing, chin propping.
- Masochistic/self inflicting e.g. Gingival stripping.
- Functional e.g. Mouth breathing, tongue thrusting, bruxism.

Prevalence of oral habits :

Kharbanda et al (2003): 5-13 yr old children, Delhi -25.5% Tongue thrusting – most common (18.1%) followed by

mouth breathing (6.6%). Thumb sucking (0.7%) and lip biting (0.04%) - relatively less common. Shetty, Munishi Mangalore: 29.7% of children, Digit sucking (3.1%), pencil biting (9.8%) and tongue thrust (3.02%) highly prevalent among 3-6 yrs. Mouth breathing (4.6%) and bruxism (3.1%) - significant in 7- 12 yrs, lip/cheek biting (6%) and nail biting (12.7%) - more common in 13-16 yrs. Digit sucking, tongue thrust, mouth breathing and bruxism - more prevalent among boys. Lip/cheek biting, nail biting and pencil biting - more prevalent among girls.

Development of a habit

It has been stated that unconscious mental pattern of childhood develops from five sources namely instinct, insufficient or in correct outlet of energy, pain or discomfort, abnormal physical size of parts, imitation of or imposition of others.

Functional matrix theory (Melvin Moss): Buccinator, superior constrictor, pterygomandibular raphe harmonious pressure balance oral habits. Normal dentofacial and skeletal growth tongue lips abnormal soft tissue pressure, altered muscular contraction altered dentofacial and skeletal growth.⁷

Psychoanalytical theory (Sigmund Freud): Personality develops through a series of childhood stages during which the pleasure seeking energies of the id become focused on certain erogenous areas. This psychosexual energy, or libido, was described as the driving force behind behaviour.⁷

1. THUMB/ DIGIT SUCKING

Definition: Moyers (1958)³ Repeated and forceful sucking of thumb with associated strong buccal and lip contractions. Starts in I.U life and continues up to first 2 yrs; disappears with maturation.

Classification based on clinical observation:

1. Normal thumb sucking 2. Abnormal thumb sucking
A. Psychological B. Habitual

Subtelný's grading (1973) 1.Type A: 50%, 2.Type B: 13-15%, 3. Type C: 18% 4. Type D: 6%.

Theories:

Freudian theory (1905)⁸: Distinct phases of psychological development include oral and anal phases seen in first 3 years of life. In oral phase, mouth is believed to be oro-erotic zone and the child has tendency to place his finger or any object into the oral cavity. Prevention of such an act results in emotional insecurity and passes the risk of the child diversifying into other habits. Thumb sucking considered as manifestation of insecurity, maladjustment, internal conflicts.

Oral drive theory by sears and wise (1950)⁸: Prolongation of nursing strengthens the oral drive.

Benjamin's theory (1962)⁸: Thumb sucking arises from "rooting reflex", common to all mammilian infants. It is maximum during first 3months of life; if it persists, may lead to abnormal habit.

Incidence & Prevalence:

Popovich and Thompson (1973), kelley et al (1973): 11.7% girls and 8.3% boys. Subtenly (1973): equal distribution .Race: low incidence in negroid races. Etiology: Retained infantile swallow, Hereditary, Teething, Postnatal sucking reflex, Subclinical hunger, Insecurity attention, Inadequate sucking during feeding & Revenge.

Trident factors affecting thumb sucking: Graber and swain (1985)
Intensity, frequency & duration.

Variables influencing:

Age, sex, race, pacifier, feeding methods, siblings, parental status & working mother.

Clinical features :

Digits, Lips, Facial form analysis, Dentofacial changes, Effects on mandible, Effects on inter-arch relationship, Lip incompetence, Other habits, Middle ear infections, Enlarged tonsils, GI disturbances, Speech defects (lisping).

Diagnosis :History, Emotional status, clinical features.

Treatment considerations:

Psychological status of the child, age factor, motivation of child, parental cooperation, friendly rapport, emotional significance, status of the child's occlusion

Treatment:

- A. Dunlop's hypothesis
- B. Six steps in cessation of habit
- C. Three alarm system
- D. Reward system
- E. Ace bandage approach
- F. Thumb buddy to love
- G. Thumb - home concept
- H. Chemical treatment
- I. Remainder therapy
- J. Thumb guard
- K. Parent counseling

Intraoral approaches : Blue grass appliance, modified blue grass appliance, Quad helix, Palatal crib, spurs, triple loop activator, tongue connector appliance.

2. TONGUE THRUSTING

Definitions:

Proffitt (1972)⁹: It is the placement of the tongue tip forward between incisors during swallowing.

Incidence:

Milton 1978 : 97% newborns 80% 5-6yrs 3% 12 yrs

Classification

Moyers [1955] :

- A. Simple : Normal tooth contact during the swallowing act, anterior open bite, good intercuspation of teeth, the tongue thrust forward to establish anterior lip seal and abnormal mentalis muscle activity.
- B. B) Complex :Teeth apart during swallow, diffuse or absent anterior open bite (bimaxillary protrusion), absence of temporal muscle constriction during swallowing, contraction of the circum oral muscles during swallowing and poor occlusion of teeth.

Examination and differential diagnosis (Moyer's):

Infantile or visceral swallow: The jaws are apart, with the tongue between the gum pads, the mandible is stabilized primarily by contraction of the muscles of the 7th cranial nerve and the interposed tongue, the swallow is

guided and to a great extent controlled by sensory interchange between the lips.

Mature swallow: By 18 months of age the mature swallow characteristics listed by moyers are observable, the teeth are together, the mandible is stabilized by contraction of the mandibular elevators, which are primarily 5th cranial nerve muscles, the tongue tip is held against the palate about and behind the incisors and peripheral portions flow between opposing posterior segments and there are minimal contractions of the lips during the mature swallow.

Transition from infantile to mature swallow: begins at 1st year of life: complete development of mature swallow: 6-7years of life growth of mandible & maxilla developed jaw muscles to stabilize eruption of primary teeth introduction of semisolid foods.

If the transition of infantile to mature swallow does not take place with the eruption of teeth, then it leads to tongue thrust swallow.

Etiology: Retained infantile swallow, upper respiratory tract infections, neurological disturbances, feeding practices, functional adaptability to transient change in anatomy, other oral habits, hereditary tonsils and adenoids, lingual frenum, brain injury, faulty surgical procedures.

History: sucking habits, neuromuscular problems, Determine swallow pattern of siblings & parents (hereditary etiology) and determine whether remedial speech therapy was provided.

Clinical manifestations:

Extra oral : Lip posture, mandibular movements, speech disorders, facial form.
Intra oral: Tongue movements, tongue posture, malocclusions associated with tongue thrust.

Diagnosis:

Examination of tongue, check for size, shape and movements, functional examination - a) observe for tongue position while the mandible is in rest position b) observe the tongue during various swallows -1. Conscious swallow 2. Command swallow of water 3. Conscious swallow during mastication.

Palpatory examination :

1. Place water beneath the patients tongue tip and ask him to swallow a. Normal: mandible rises and teeth are brought together but no contraction of lips or facial muscles b. Tongue thrusting: marked contraction of lips and facial muscles.

2. Place hand over temporalis muscle and ask to swallow
a. Normal: temporalis contracts & mandible- elevated b. Tongue thrusting: no temporalis contraction.
3. Hold the lower lip with thumb.

Treatment considerations: Self correcting by 8-9 years: by the time permanent teeth erupt.

If associated with other habits: associated habit should be treated first

- 1) Myofunctional therapy
- 2) Orthodontic elastics tongue tip is held against the palate using elastics of 5/16” and sugarless fruit drop.
- 3) Lemon candy exercise
- 4) 4s exercise

Other exercises:

Whistling, reciting count from 60-69, gargling, yawning, peanuts exercise, water holding exercise (infront of mirror) repeat 20 times / day, lip exercises, tug of war and button pull exercise

Sub conscious therapy

Pre orthodontic trainer for myofunctional training

Speech therapy

Mechanotherapy:

Removable appliances: Hawley's appliance, hawley's appliance modifications- acrylic cut in anterior hard palate region, cribs or rakes employed in anterior part advantages, increased anchorage value, the crib can serve as a reminder.

Oral screen: Restriction of tongue thrusting habit, alignment of maxillary anterior teeth, correction of open bite and lip muscle exercises performed with ring attached in anterior part of appliance.

Fixed habit breaking appliance: crowns and bands on first permanent. Molar,0.040inch stainless steel 'u'-shaped lingual bar adapted at the level of gingival margin, crib formed (3-4 'v' shaped projections), cut cribs as child weans the habit and Nance palatal arch (acrylic button).

Treatment of simple tongue thrust: Treatment of tongue thrust should not be begin until the incisors have been retracted. steps: a. Acquaint the patient consciously to correct swallowing pattern b. Reinforce subconsciously.

Treatment of complex tongue thrust: Poor prognosis due to poor occlusal fit, generalized open bite, neuromuscular problems - abnormal occlusal reflex , abnormal swallow a. Treat the malocclusion first b. Muscle training similar to that for simple tongue thrust.

3. MOUTH BREATHING

Definitions:

Chopra (1951) & Sassouni (1971): Habitual respiration through the mouth instead of the nose.

Classification: Finn (1987): 3 categories 1. Obstructive 2. Habitual 3. Anatomical

Etiology: Airway obstruction may be due to: 1. Enlarged turbinates 2. Intranasal defects: (more likely to manifest in adulthood) partial obstruction due to deviated nasal septum, localized benign tumours, thickness of sputum, bony spurs 3. Hypertrophy of pharyngeal lymphoid tissue. 4. Infection and inflammation of nasal mucosa, chronic allergic stomatitis, chronic atrophic rhinitis, enlarged adenoids and tonsils, nasal polyps 5. Short upper lip 6. Obstruction in bronchial tree or larynx. 7. Obstructive sleep apnea syndrome. 8. Genetically predisposed ectomorphs. 9. Thumb sucking or similar oral habits leading to underdeveloped or abnormal facial musculature. 10. cleft lip & palate.

General features: pigeon chest, eosophagitis, maxillary sinus and nasal cavity frequently becomes narrowed. Turbinates become swollen and engorged. Speech acquires a nasal tone and sleep apnea syndrome.¹⁰

Blood gas constituents:
20% more CO₂ and less O₂.

Appearance:

Adenoid faces is the characteristic feature of mouth breathers, Lips are held wide apart. There is lack of tone of oral musculature, Upper lip: short, Nose: tipped superiorly; bridge: flat, Long narrow face, Face: expressionless.

Dental and skeletal:

Low tongue position, narrow maxillary arch, protrusion: maxillary and mandibular incisors, palatal vault: high mandible hangs in a slack manner, anterior open bite, increased: caries, mucus and plaque: more tenacious chronic keratinized marginal gingivitis.

History: Parents can be questioned whether the child frequently adopts a lip apart posture. Frequent occurrence of tonsillitis, allergic rhinitis, otitis media should be questioned. Also whether the patient has restless sleep, snores wakes up feeling thirsty.

Diagnosis:

Mirror test: fog test, Butterfly test (Massler's), Water holding test, Rhinometry (inductive plethysmography) Cephalometrics.

E.N.T examination: Correction symptomatic treatment: the gingiva of the mouth breather should be restored to normal health by coating the gingival with petroleum jelly, applying preventive dentistry methods and clinically correcting periodontal defect that have occurred due to the habit in mixed dentition.

Treatment: Elimination of the cause, Lip exercises, Maxillothorax myotherapy, Oral screen, Construction of the membrane, Construction of cast another direct method, Correction of malocclusion (mechanical appliances). Depending on child's age severity of problem and economics, dentist may continue the present orthodontic treatment, institute a new interceptive treatment or refer the patient to orthodontist for more comprehensive care.

4. BRUXISM

Definitions:

Rjamford et al (1966): Bruxism is the clenching or grinding of the teeth when the individual is not chewing or swallowing.

Classification:

Olkimora (1972) divided bruxers into 2 categories. 1. Those whose bruxism was associated with stressful events. 2. No such association the non stress related group had more of hereditary influence.

According to time of occurrence: 1) Diurnal bruxism 2) Nocturnal bruxism

According to etiology 1) Primary (idiopathic) 2) Secondary (iatrogenic)

Etiology:

Rjamford and Ash (1974) stated that there are 3 mechanisms that interact to trigger bruxism: Emotional tensions, pain or discomfort, occlusal maladjustment. Based on contemporary information, nocturnal bruxism is considered to have a rather than peripheral occlusal origin.

Local factors: within the stomatognathic system are prime factors of importance in development of bruxisms. 1. Faulty restorations. 2. Calculus and periodontitis. 3. Traumatic occlusal relationship: occlusal interferences/ defective occlusal contacts are triggers that elicit bruxism. 4. functionally incorrect occlusion. 5. Malocclusions: it is unclear whether clinching and bruxism cause malocclusion or are the results of malocclusion. The cause and effect relationship is not clear. Malocclusion interferes with proper occlusion of teeth thus resulting in bruxism. 6. dentigerous cysts. 7. Faulty eruption of deciduous or permanent teeth.¹¹

Systemic factors 1. Nutritional deficiencies. 2. Calcium and vitamin deficiencies 3. Intestinal parasite infection. 4. Gastrointestinal disturbances from food allergy. 5. Enzymic imbalances in digestion causing chronic abdominal distress. 6. Persistent, recurrent urologic dysfunction. 7. Endocrine disorder e.g., hyperthyroidism 8. Hyperkinetic children. 9. Pubertal growth spurt peak in boys and start of spurt in girls sees increase in bruxism. 10. Hereditary factors.

Psychological factors Nervous tension finds a most gratifying release in clenching and bruxism. Childhood bruxism may be related to other oral habits, such as, chronic biting and chewing of toys and pencils, digit sucking, tongue, thrusting and mouth breathing.

Occupational factors Athletes indulge in bruxism because of a great desire to excel over anxious students/ compulsive over achievers.

5. LIP HABITS

Lip sucking:

Most common presentation. In many patients, this occurs in conjunction with hyperactivity of the mentalis muscle. This places a lingually directed force on mandibular teeth and facial force on maxillary teeth. The result is protrusion of upper incisors and impedes forward development of lower anterior alveolar process, and causes lingual inclination of incisors leading to increased overjet. This can be recognized by the reddened, irritated and chapped area below the vermilion border. In fact, the vermilion border may be relocated farther outside the mouth due to constant wetting of the lips. Although this may occur with either lip, it is more commonly associated with the lower lip. An important variation of lip sucking is the mentalis habit.

Difference between lipsucking and mentalis habit: In lip sucking, the entire lip including the vermilion border is pulled into the mouth whereas in the mentalis habit, vermilion border of the lower lip is often everted, with the lingual aspect elevated into the mouth along with their lower lip eversion, a sub labial contracture line develops between lip and chin. Deep mentolabial sulcus is characteristic of a hyperactive mentalis muscle.¹¹

Management of mentalis habit:

Lip over lip exercise , playing bass instruments, lip bumper/shield, oral screen.

Lip wetting:

The tongue constantly wets the lips due to dryness/irritation which later becomes a habit.Lip biting it may involve either of the lips, with cuts and abrasions, marks of incisors on lips and reddening of lips

Etiology:

1. Malocclusion 2. Habits 3.Emotional stress 4. Cases of hyperactivity of mentalis muscle

Clinical features: Protrusion of maxillary incisors and retrusion of mandibular incisors with either of these habits in action is to wedge the lip between the upper and lower incisors thus, muscular imbalance is created If practiced with a sufficient intensity and frequency will cause

maxillary incisors to move labially and upward with interdental spacing and lower incisors to collapse lingually with crowding

Lip sucking:

Lip sucking can be recognized by: reddened, irritated and chapped area below the vermilion border. 2. The border may further be relocated farther outside the mouth due to constant wetting of the lips. 3. Most commonly seen with lower lips 4. Vermilion border becomes hypertrophic and redudant at rest. 5. In some cases, chronic herpes infection with areas of irritation and cracking of lip appears.

Management:

Correction of the habit is not within the province of the dentist, but lies with child psychologist, psychiatrist, or family counselor if there are psychological issues concerned. The dentists responsibility is to bring the habit to the attention of the parent and make recommendations for therapeutic counseling.

6. CHEEK BITING

May injure the soft tissues and may cause an open bite or an individual tooth malposition in the affected area. Clinical features: ulcer at the level of occlusion, open bite, tooth malposition in the buccal segment. Treatment: removable crib, vestibular screen

7. NAIL BITING

Nail biting is a habit that develops after the sucking age. Not a pernicious habit, does not assist in production of malocclusion since forces or stresses applied in nail biting are similar to those in chewing. Attrition of lower anterior teeth may rarely be seen. Nail biting is a normal tension release and although not socially acceptable. It is more likely to cause inflammation of nails beds.

Relationship with age: Not seen before 3 years of age. Incidence rises sharply from 4-6 years, constant btw 7-10 years and peak during adolescence. Persistent nail biting may be indicative of an emotional problem. As the child grows older, other objects are substituted for the fingers because every age has its own pacifiers eg. include chewing gum, pencils, erasers, cheeks, tongue cigarettes, etc.

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