BAD ORAL HABITS

Habit: is a fixed or constant practice established by frequent repetition. Useful habits include habits that are essential for normal physiologic function. For example, correct tongue posture, proper respiration and deglutition. While bad habits can interfere with the child's physical, emotional and social functions.

Etiological Agents in the Development of Bad Oral Habits

1. Anatomical

For example, posture of the tongue. Infantile swallow occurs due to a large tongue in a small oral cavity coupled with anterior openbite of gum pads.

2. Mechanical Interferences

Mechanical interferences lead to undesirable oral habits, such as when the permanent incisor is ectopically erupted or missed, this will lead to anterior tongue thrust to achieve the anterior oral seal.

3. Pathological

Certain conditions of oral and perioral structures can cause an undesirable oral habit, e.g. tonsillitis, hypertrophy of inferior nasal turbinates (can cause mouth breathing).

4. Emotional

Upset children regress towards infancy, assume infantile postures, e.g. digit sucking which gives the child a feeling of security.

5. Imitation

Young children are extremely observant and sensitive to environment and highly affected by parents and siblings. The child may imitate jaw positions/speech disorders of parents.

6. Random Behavior

Behavior appears purposeless if not completely accidental.

Digit Sucking Habit (Thumb/Finger-Sucking)

Repeated and forceful sucking of thumb/finger with associated strong buccal and lip contractions. Almost all children take up this habit, but eventually discontinue it spontaneously with age and maturation (Fig. 1).

There are essentially two forms of sucking:

1. ***Nutritive sucking:*** it is the sucking observed during breast/bottle feeding, which provides nutrition to the infant.

2. ***Non-nutritive sucking:*** it is the earliest sucking habit adopted by infants in response to frustration and to satisfy their need for contact. Children who neither receive breast feeding nor have access to a pacifier may satisfy their need with habits like thumb sucking which ensures a feeling of warmth and sense of security but may be harmful to their dentofacial development.

Main Effects of Digit Sucking

If these habits persist beyond the time that the permanent teeth erupt then it will cause the following effects:

1. **Extra-oral effects:** the offending digit is exceptionally clean, reddened or sometimes deformed. Fibrous roughened callus may be present on the digit and sometimes there may be viral or fungal infection.

2. **Intra-oral effects:**
   a) Proclination and spacing of upper incisors (Fig. 2).
   b) Retroclination of lower incisors (Fig. 2).
   c) Anterior openbite (usually asymmetrical) (Fig. 3).
   d) Narrow maxillary arch (posterior cross bite) (Fig. 3).

The *severity of malocclusion* caused by digit sucking depends on several factors:

a) *Frequency:* number of times/day habit is practiced.
b) *Duration:* amount of time spent on habit.
c) *Intensity:* amount of force applied to the teeth during sucking.

Diagnosis of Digit Sucking

1. History
2. Extra oral effect/examination
3. Intra oral effect/examination



Figure 1: Digit sucking habit.

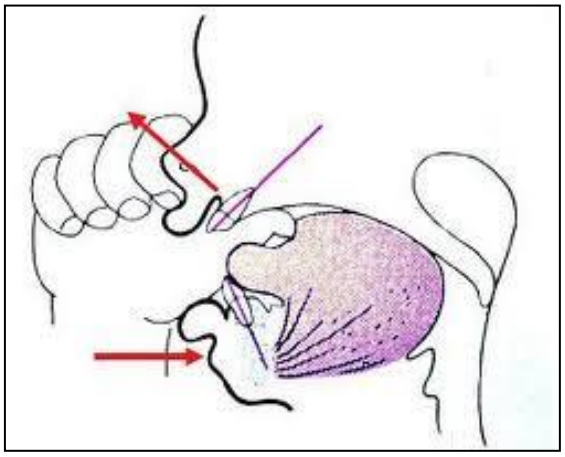


Figure 2: Proclination of upper incisors and retroclination of lower incisors due to digit sucking.



Figure 3: Anterior openbite and posterior crossbite due to digit sucking.

Treatment of Digit Sucking

1. **Discussion:** the simplest approach to habit therapy is a straightforward discussion between the child and the dentist that expresses concern and includes an explanation by the dentist. This "adult" approach is often enough to terminate the habit but is most effective with older children.
2. **Reminder therapy:** best suited for those patients who desire to stop the habit but need assistance to do so. Includes adhesive tapes, bandages to offending digits, or distasteful liquid/ointments like hot-flavored, bitter-tasting or foul-smelling preparations, placed on the thumb or fingers that are sucked (Fig 4).
3. **Reward system:** if the reminder approach fails, a reward system can be implemented that provides a small tangible reward daily for not engaging in the habit. In some cases, a large reward must be negotiated for complete cessation of the habit.
4. **Appliance therapy:** either removable appliance with tongue guard/crib or fixed appliance like quadhelix or maxillary lingual arch with palatal crib (Fig. 5).

In general, if the child is younger than 3 years, no active intervention regardless of type and severity of malocclusion because of general emotional immaturity, most children outgrow the habit by 5 years of age, and malocclusion is self-correcting if ceased by the time of eruption of permanent teeth.

The patient should be at least 7 years old to receive an appliance therapy to reason and understand the need for an appliance. Always parents support and encouragement is necessary to help the child through the treatment period. When sucking ceases, appliance should be retained for approximately 3 months to ensure that the habit has truly stopped.



Figure 4: A reminder placed on the thumb to remind the child not to suck.

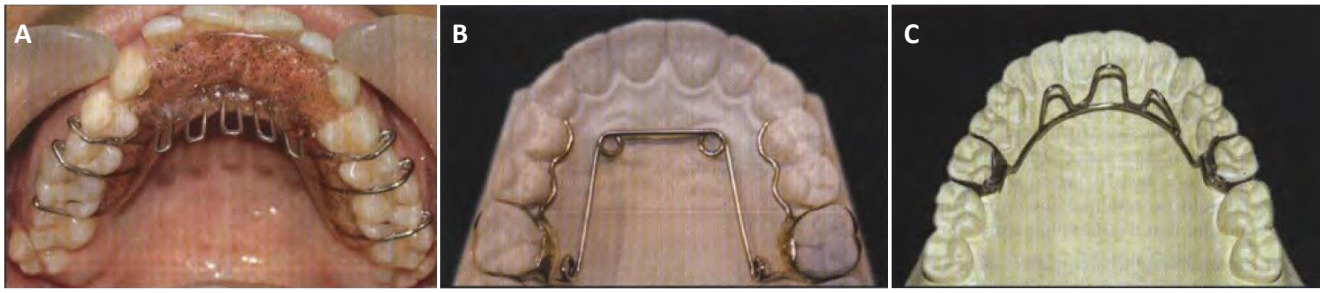


Figure 5: A: Removable appliance with tongue crib. B: Qaudhelix appliance. C: Maxillary lingual arch with palatal cribs.

Tongue Thrusting Habit

It is a condition in which the tongue protrudes between the anterior or posterior teeth during swallowing with or without affecting tooth position.

Classification of Tongue Thrusting

1. Etiologic classification

a. Physiologic tongue thrust

This comprises of the normal tongue thrust swallow of infancy.

b. Habitual tongue thrust

The tongue thrust is developed due to repeated placement of the tongue.

c. Functional (Adaptive) tongue thrust

The tongue thrust is an adaptive behavior developed to achieve an oral seal.

d. Endogenous tongue thrust

The tongue thrust is due to neuromuscular mechanism.

e. Anatomic tongue thrust

The tongue thrust is due to macroglossia (enlarged tongue).

2. Backlund classification

a. Anterior tongue thrust

Forceful anterior thrust leading to anterior openbite (Fig. 6).

b. Posterior tongue thrust

Lateral thrusting in case of missing posterior teeth leading to posterior openbite (Fig. 6).

3. Moyers classification

a. Simple tongue thrust (teeth are together)

The buccal teeth are together with a forward positioning of the tongue between the anterior teeth during swallowing, this usually results in production of an incomplete overbite or anterior openbite.

b. Complex tongue thrust (teeth are apart)

The buccal teeth apart during swallowing, the tongue is positioned between them and does not fill the upper jaw, pressure of muscles of the cheek narrowing the upper arch, leading to buccal crossbite usually unilateral.

c. Retained infantile thrust (endogenous tongue thrust)

Persistence of infantile swallowing reflex even after permanent teeth appear.

In a small proportion of subjects, the swallowing activity is accompanied by an anterior thrust of the tongue which appears to be a basic neuromuscular mechanism. This so-called 'endogenous' tongue thrust is sometimes associated with an anterior *lisp* (sigmatism) during speech. It usually affects the developing teeth to the extent of preventing the full vertical development of the anterior dento-alveolar segments, so that an incomplete overbite or, more usually, an *anterior openbite*, develops. The upper and lower incisors may be *proclined* by the action of the tongue. Occasionally this type of swallowing activity appears to have no adverse effect on the developing occlusion.

The endogenous tongue thrust is fortunately not common, appearing in only 3.1% of the population. A tongue thrust associated with a noticeable lisp and a wide anterior openbite may reasonably be assumed to be of the 'endogenous' type, particularly if a parent has the same condition. This type would not be modified by orthodontic treatment and it must be realized that re-positioning the teeth would not be likely to alter the tongue activity, and any openbite caused by the tongue thrust would be likely to recur (treatment *will not* always be successful).



Figure 6: Anterior tongue thrust (left), posterior tongue thrust (right)

Management of Tongue Thrusting

Situation	Treatment considerations
Up to 7-8 years old (by the time the permanent anterior teeth erupt completely)	▪ Self-correcting (no treatment) ▪ Reassures parents
Tongue thrusting without malocclusion or speech disturbance	▪ Treatment is generally not recommended
Tongue thrusting with malocclusion	▪ Orthodontic correction of the malocclusion caused by tongue thrusting will usually eliminate the tongue thrusting habit
Tongue thrusting with other oral habits	▪ If the patient has both thumb sucking and tongue thrusting, the thumb sucking should be treated first

Treatment Options

- **Correction of malocclusion:** using removable, myofunctional therapy, or fixed appliances.
- **Muscle exercises:** This can be done by asking the patient to place the tip of the tongue in the rugae area for 5 minutes and then swallow or by using appliances like orthodontic trainer) (Fig. 7).
- **Habit breaking appliances:** for example, removable appliances with tongue cribs, oral screen, Nance palatal arch with tongue cribs, tongue tamer (Fig. 8,9,10).

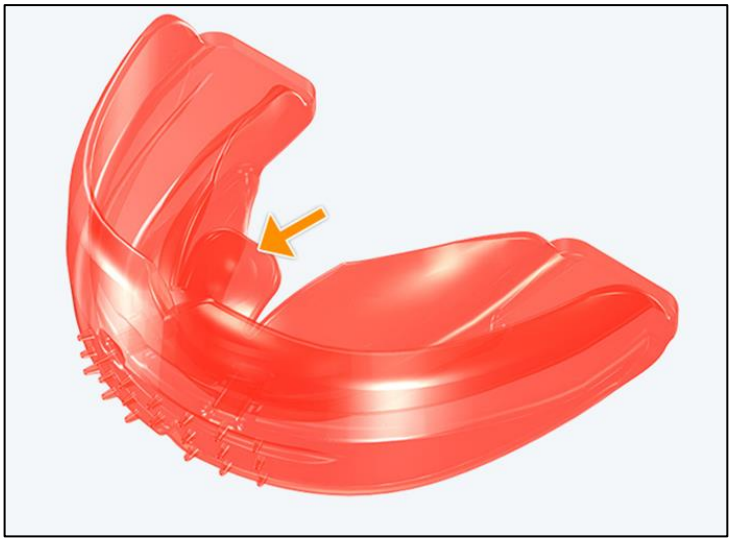


Figure 7: Orthodontic trainer



Figure 8: Oral screen.

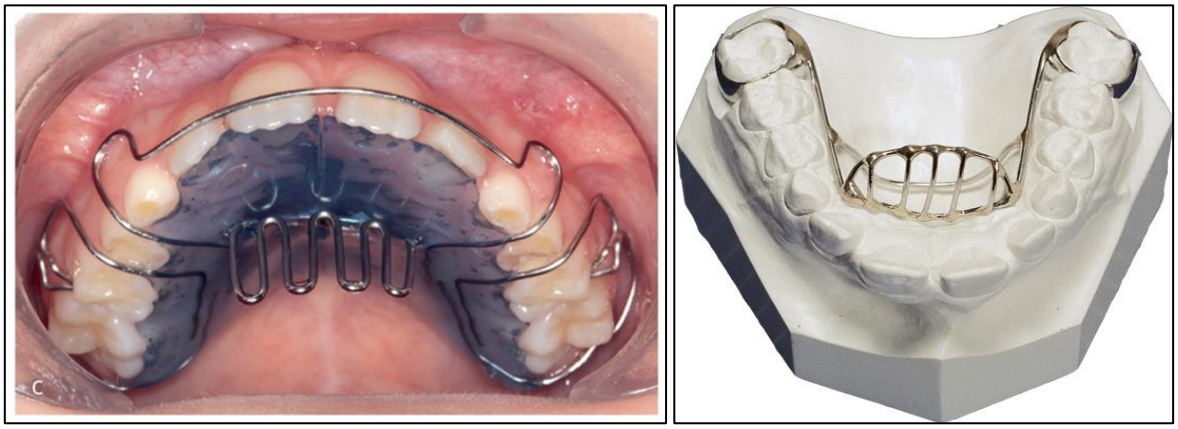


Figure 9: Removable habit breaker with tongue cribs (left), Nance palatal arch with tongue cribs (right)



Figure 10: Tongue tamer (spikes)

Mouth Breathing Habit

It is the habitual respiration through the mouth instead of the nose. The main causes of mouth breathing habit are related to *nasal obstruction* which may be due to hypertrophy of pharyngeal lymphoid tissue (adenoids), defects in the nasal septum, polyps, allergic rhinitis, etc. It may be also *habitual* mouth breathing when it continues even after the obstruction has been removed.

Effects of Mouth Breathing Habit

1. 'Adenoid Facies' appearance characterized by long narrow face with underdeveloped paranasal area and small nostrils (Fig. 11).
2. Increased facial height.
3. Mandible would rotate down and back
4. Posterior teeth would overerupt
5. Anterior openbite and increased overjet
6. Posterior crossbite, constricted maxilla with narrow shaped palate
7. Incompetent, dry, and fissured lips
8. Gingival hypertrophy

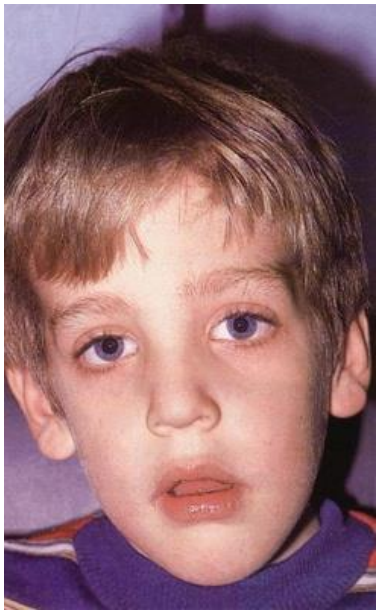


Figure 11: Adenoid Facies.

Diagnosis of Mouth Breathing Habit

In addition to the clinical features, mouth breathing habit can be diagnosed by the following tests (Fig. 12):

a) **Ask the patient to take a deep breath:** Most mouth breathers respond to this request by inspiring through the mouth without changing the size or shape of external nares.

b) **Mirror test:** a double-sided mirror is held between the nose and mouth. Fogging on the nasal side of the mirror indicates nasal breathing while fogging on oral side indicates mouth breathing.

c) **Cotton test/Massler's butterfly test:** butterfly shaped cotton strand is placed over the upper lip below nostrils. If the cotton flutters down, it is a sign of nasal breathing. This test can be used to determine unilateral nasal blockage.

d) **Water test:** the patient is asked to fill the mouth with water and retain it for a period of time. Mouth breathers find this task difficult.

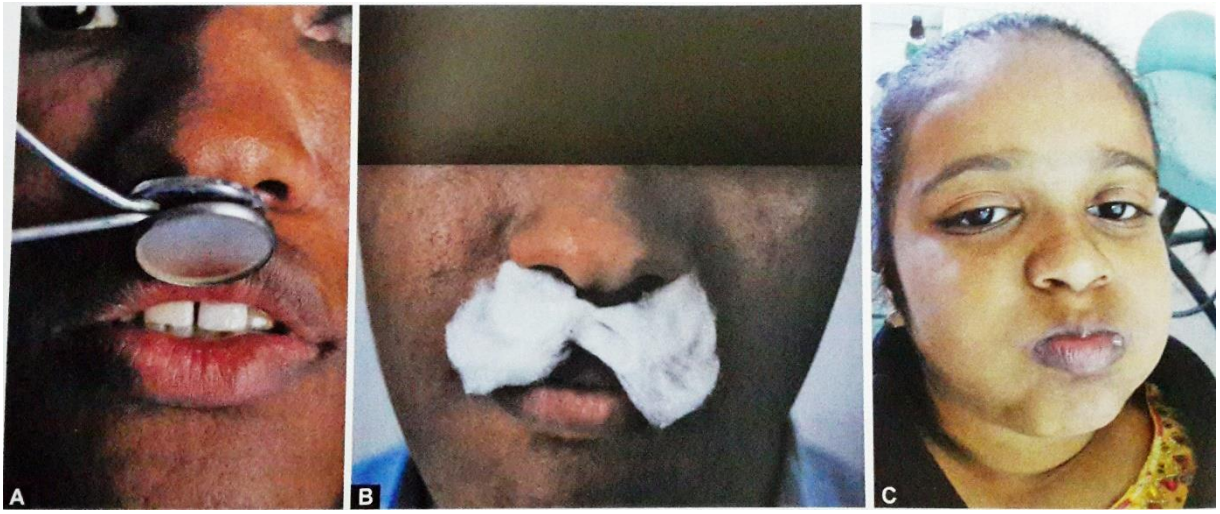


Figure 12: Diagnostic tests of mouth breathing habit. A: Mirror test, B: Cotton test, C: Water test.

Management of Mouth Breathing Habit

ENT referral for management of nasopharyngeal obstruction is necessary before any orthodontic treatment. *Maxillary expansion*, *myofunctional therapy* and *oral screen* can also used for treatment of mouth breathing.

Bruxism

It is the term used to indicate the non-functional contact of the teeth which may include clenching, grinding and tapping of the teeth. The main etiological factors are *occlusion defects* and *psychological factors*. It may cause occlusal wear, sensitivity, teeth mobility, fracture, and TMJ problems (Fig. 13).

Management of Bruxism

a) Determine the underlying cause and eliminate it.

b) Occlusal adjustment including restoration and occlusal splints/bite guards.

c) Psychotherapy like relaxation exercises.

d) Drugs like local anesthetic injections into TMJ for muscles, sedatives, and muscle relaxants.



Figure 13: Attrition of the teeth due to bruxism.

Lip-Sucking and Lip-Biting

Lip-sucking may appear by itself or it may be seen with thumb-sucking or as a compensatory activity that results from an excessive overjet and the relative difficulty of closing the lips properly during deglutition. In almost all-instances, it is the lower lip that is involved in sucking and biting, although biting habits of the upper lip are observed as well. When the lower lip is repeatedly held beneath the maxillary anterior teeth, the result is *proclination* of these teeth, often an *openbite*, and sometimes *retroclination* of the mandibular incisors (Fig. 14). Sometimes there may be *eczematous* appearance of the skin below the lower lip.

Management of Lip-Sucking and Lip-Biting

a) Lip over lip exercises.

b) Lip bumper: it could be fixed or removable with labial acrylic pads used to stop lip sucking or biting habits and eliminate the backward pressure of the lower lip on the lower labial dental segment (Fig. 14).

c) Oral screen.

d) Correction of malocclusion with removable or fixed appliances.



Figure 14: From left: lip sucking habit, lip biting habit, lip bumper appliance.

Nail Biting Habit

It is one of the most common habits in children and adults which may be due to *emotional* and *social* problems that may affect the psychology of the individual.

Clinical Features of Nail Biting Habit

1. Crowding
2. Rotation
3. Attrition of lower or upper incisors.
4. Effect on nails: inflammation of nailbeds and heavily cut nails (Fig. 15).

Management of Nail Biting Habit

1. No treatment in mild cases.
2. Treat the basic emotional factor causing the habit.
3. Encourage outdoor activities.
4. Reminders like nail polish.



Figure 15: Nail biting.

Notes and questions for the students

The essential features of normal swallowing of solid food and saliva are:

1. Closure of the lips.
2. Teeth in light occlusal contact.
3. Tongue elevated to the palate.
4. Momentary clenching of the teeth as food passes into the pharynx.

Sometimes, when the lips cannot produce the anterior oral seal (flaccid or short lips), so the tongue will do this job by thrusting between the teeth as an adaptive measure during swallowing (adaptive swallowing)

Q/ What are the types of bad oral habits?

Q/ The effects of bad oral habits on occlusion depend on what?

Q/ why crossbite occurs due to digit sucking?

Q/ What are the etiology of tongue thrust?

Q/ What are the effects of tongue thrust?

References

- Littlewood SJ, Mitchell L. *An introduction to orthodontics*. 5th edition. Oxford University Press. 2019.
- Phulari BS. *Orthodontics principles and practice*. 2nd edition. Jaypee. 2017.