

Australian Society
of Orthodontists



THE UNIVERSITY OF
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ORAL HABITS

Creating Brighter Futures

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ORAL HABITS

Oral Habits are repetitive patterns of behaviour involving the oral cavity. They include activities such as non-nutritive sucking, tongue thrusting during swallowing, nail biting, lip sucking and mouth breathing¹. It is normal for babies and infants to have a sucking habit as most sucking habits are initially pleasurable to engagers, providing a sense of warmth, happiness, and security.



Figures 1 and 2.

Thumbsucking in utero and babies is not abnormal.

The prevalence of oral habits varies among different populations. Within some it is virtually unknown, while in others it is reported to be as high as 88%². Most digit sucking habits are discontinued without any intervention by the age of 5, leaving minimal undesirable side effects³.

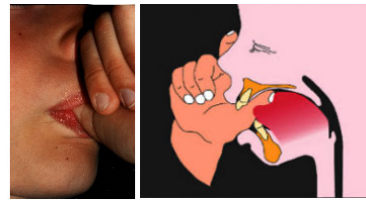
Oral habits that are present only in the primary dentition have little if any long-term effects. Whilst they will affect the position of the primary teeth and may lead to a malocclusion in the primary dentition, most resolve spontaneously by the permanent dentition^{4,5}.

If oral habits do extend beyond the eruption of the permanent incisors (typically 6-9 years of age), then their influence on the teeth depends on the duration (months/years), magnitude (hours per day), and the intensity of the habit. Research has shown that a minimum of 6 hours per day of force is required to induce tooth movement⁵.

Sucking habits

Non-nutritive sucking habits can include use of a thumb, finger, dummy, or other objects. Their effect on the teeth and occlusion depends on the location of the item being sucked within the mouth as well as the duration, magnitude and intensity of the habit. Not all patients with a sucking habit have a malocclusion.

A typical malocclusion, resulting from for example, thumb sucking, involves a posterior crossbite anterior open bite and increased overjet. The open bite results from a combination of the interference of the eruption of the incisors, due to the continuous pressure against the incisors from the thumb, and excessive eruption of the posterior teeth. Evidence suggests that for patients who do develop an anterior open bite from a sucking habit, it usually results in a dental rather than a skeletal malocclusion⁶.



Figures 3 and 4. Typical thumbsucking posture showing thumb pressure on teeth.

A sucking habit is also usually accompanied by a narrowing of the maxillary arch. A common misconception is that this results from negative pressure within the mouth due to the sucking habit. Rather, the arch form is affected by an imbalance of force against the upper posterior teeth between the cheeks and the tongue. In a non-sucking person, the cheeks pushing in on the posterior teeth are in balance or equilibrium with the tongue pushing out. Normally the tongue should be habitually located against the palate. In patients with a sucking habit, the cheek pressure is increased due to buccinator contraction during sucking and the tongue pressure is reduced due to its displacement inferiorly by the thumb. Cheek pressure is greatest at the corners of the mouth, and this probably explains the V shaped maxillary dental arch form often seen in intense thumb suckers.



Figures 5 to 7. Typical effects of active long term thumbsucking.

Dummy versus digit sucking

Comparing dummy to digit sucking, some evidence suggests that there is an increased incidence of posterior crossbite, due to greater mandibular arch width and shallower palate in dummy users, whereas the posterior crossbite of digit sucking is more often associated with a narrower maxillary arch. Dummy sucking is also less frequently associated with upper incisor spacing, increased overjet and anterior open bite⁷⁻⁹.

The prevalence of dummy and digit sucking reduces with age and is often no longer observed by the time children start school. Approximately 12% of children over 7 still have a sucking habit¹⁰. Of those that still do, the majority will have the desire to stop, often due to social pressures at home and school.

There is a small group who do not want to stop and appear immune from social pressures. If a child does not want to stop, then habit therapy (especially with appliances) is not indicated as it is extremely unlikely to be successful and may result in other dental side effects as well as a build-up of distrust between the clinician, patient and parents.

Treatment

Formal intervention for a sucking habit should be instigated in patients that meet the following criteria

1. The permanent incisors have begun to erupt
2. There is a desire from the patient to cease the habit
3. A malocclusion exists

Often, parents will not seek professional help until they have tried several home techniques without success. These psychological techniques centre around reminders of the habit and may include foul tasting nail varnish, punishment, bribery, calendars, gloves, commercially available thumb guards and band aids.



Figures 8 to 16. Some of the numerous products available or used by families to discourage digit sucking.

When a patient presents for help, it is important to determine what techniques have already been attempted at home. Speaking to the child privately may give clues about their true desire to cease, or whether their sucking habit is a coping mechanism for other issues, including psychological trauma. If this is the case, referral to a child psychologist may be warranted.

Psychological treatment, such as reminder management, should always be instigated before other techniques, such as orthodontic appliances, as they are cheaper, less invasive and equally as effective as constructed appliances¹⁰.

However, if a patient is not responding well to simple home intervention techniques or in the dental setting, orthodontic appliances should be considered as they are six times as effective as no treatment¹⁰. Further, active orthodontic treatment may be warranted where a malocclusion is not improving several months after cessation of the habit.



Figures 17 to 20. Some of the orthodontic appliances that can be used to remind patients not to suck their thumb.

It should also be noted that a persistent open bite into adolescence (except those related to a habit) almost always have a significant skeletal component.

Therefore, a careful orthodontic diagnosis is essential before any active orthodontic treatment is instigated.

Tongue thrust swallow

A tongue thrust is defined as the placement of the tongue tip forward between the upper and lower incisors during swallowing and is often cited as a cause of malocclusion despite numerous studies finding no such relationship⁵. These findings are supported when considering the magnitude of a force (how many hours per day) required for tooth movement. Pressure from the tongue during swallowing lasts for approximately 1 second. A typical individual swallows less than 1000 times per day, amounting to only a few minutes a day - not nearly enough to disturb equilibrium. Remember, a minimum of about 6 hours is required to achieve movement⁵.

A tongue thrust swallow is found primarily in two circumstances.

1. In a younger child with a normal occlusion, in whom it represents a transitional stage to normal physiologic maturation.
2. In a person of any age with displaced incisors, to form an oral seal for swallowing.

When there is a large overjet or anterior open bite, it can be difficult to seal the front of the mouth during swallowing to prevent food or liquid from escaping. Thus, a tongue thrust may be a useful physiological adaptation. The tongue thrust is a result of the displaced incisors, not the cause. The number of children with a tongue thrust is approximately 10 times greater than those with an anterior open bite, while 80% of 8 year olds with a tongue thrust and anterior open bite will self-improve without therapy by the age of 12¹¹.

What then is the link between the tongue and changes in tooth position? A forward resting tongue posture may also be present with a tongue thrust habit. This resting posture may provide the duration and magnitude of light pressure against the teeth to affect equilibrium¹¹.



Figure 21. Forward resting position of tongue reducing chance of self-correction of the overjet and open bite.

Nail biting and lip sucking

Nail biting is an obsessive-compulsive disorder and can be associated, to varying degrees, with several dental side effects including alveolar bone destruction, apical root resorption, chipping of incisal edges, minor crowding, incisor proclination and temporomandibular joint dysfunction¹².

Lip sucking, despite being less frequent than other habits, can cause a malocclusion if the duration and magnitude are high enough¹³. It is however often an adaptive response to increased overjet¹⁴. Case studies report the upper incisors tipping labially and the lower incisors collapsing lingually, resulting in maxillary protrusion and lip incompetence.

This can necessitate the physiological development of a tongue thrust to seal the oral cavity during swallowing.

A lip sucking habit is addressed through exercises and habit training to create an oral environment that makes lip sucking and biting difficult. With resolution of the habit, both the dental effects and tongue thrust swallow are usually eliminated¹⁵.



Figures 22 to 25. A tongue appliance being used to make it difficult for the tongue to be placed forward between the teeth. Self-correction of the open bite occurred naturally with time.

Mouth breathing

Respiratory pattern is a primary determinant of jaw and tongue posture. Mouth breathing requires lowering of the mandible and tongue to open a passage for the air and is typically accompanied by a 5-degree backward head tilt⁵. Whereas a typical nose breather, at rest, would not have the head tilt and their lips would touch or nearly touch. The facial muscles would not be involved as the mandible would not be lowered¹⁴.

During resting conditions, greater effort is required to breathe through the tortuous nasal passages as they warm and humidify the air. Increased physiological effort is acceptable up to a point before increased nasal obstruction transitions that person to mouth breathing.

Potential causes of chronic respiratory obstruction are reduced nares size, hypertrophic adenoids or tonsils, deviated nasal septum, inflamed turbinates and polyps etc. Total nasal obstruction is extremely rare in humans, but mouth breathing can become regular in individuals with a partial blockage, because of habit. It is also associated with sleep disorders such as obstructive sleep apnoea. Exercise will also produce mouth breathing; however, this is usually only for shorter periods during a 24 hour day.

The effects of chronic mouth breathing depend on the establishment of a new equilibrium of forces within the oral cavity. The tongue is not habitually placed against the roof of the mouth and the buccinator tonicity is increased, so the palate may develop less transversely, leading to maxillary constriction and posterior crossbites. The posterior teeth are less frequently in contact leading to their over-eruption and the patient may develop an increased lower anterior face height. The mandible rotates down and backwards, potentially leading to an anterior open bite and increased overjet¹⁴.

Due to increased evaporation of saliva and drying of the mouth, mouth breathing has been associated with other oral diseases and symptoms, including dental caries, gingivitis, and halitosis. Mouth breathing results in the loss of the protective and cleansing benefits of saliva and is associated with increased gingivitis particularly at the labial of the maxillary anterior teeth.

In both adults and children, the proportion of people with nasal obstruction are significantly higher in long face individuals. However, the relationship isn't as clear cut as theory predicts. Most long face individuals are still nasal breathers, indicating how much we really do not yet know about the aetiology of many orthodontic problems.

Conclusion

Current literature supports a balanced view on the aetiology of malocclusion, where the malocclusion is not solely a result of inheritance, environmental influences nor oral function. Oral habits cannot be regarded as the sole aetiological factor for most malocclusions. However, they may be a contributing factor in some patients. Clinically, it is important for dental practitioners to be aware of oral habits and to identify them in their patients through careful questioning and thorough examination, as part of their routine dental care.

References available on request

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