

University of Babylon
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5th stage

Orthodontics

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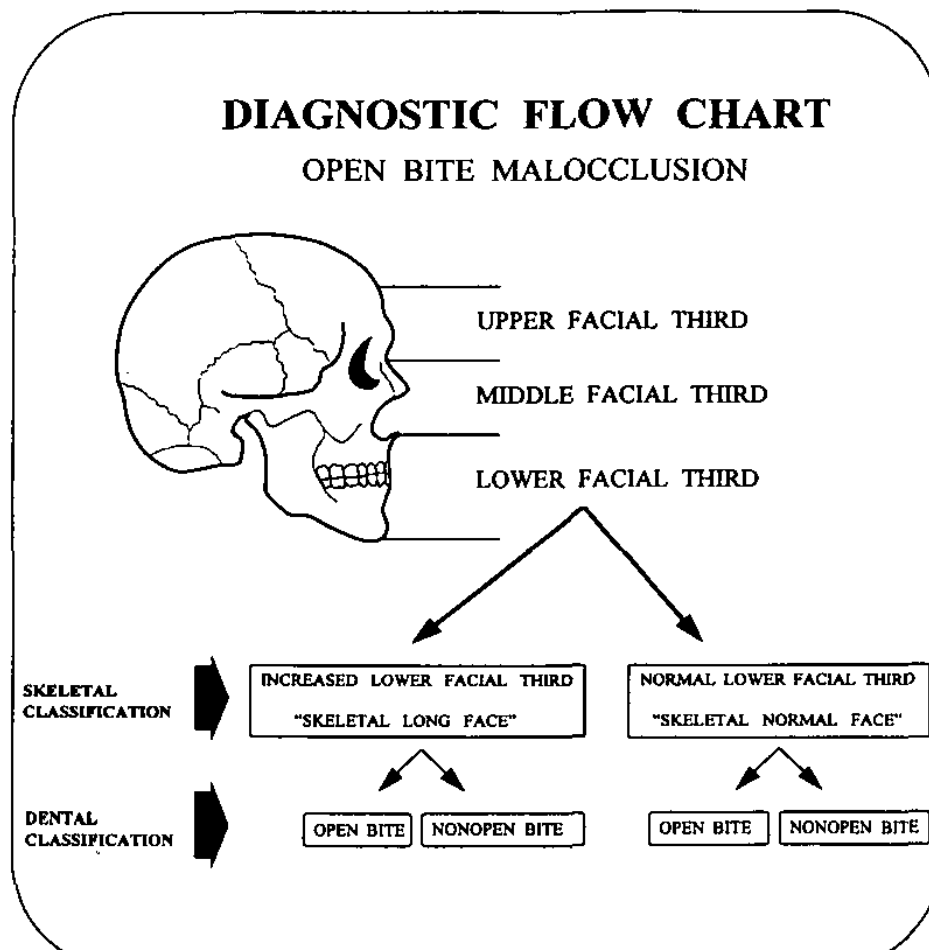
Open Bite

Open bite was defined as vertical opening between the incisal edges of the maxillary and mandibular anterior teeth (lack of dental over lapping), also loss of vertical dental contact can occur between the buccal segment.

It may be localized, affecting only a few teeth, or it may be caused by a divergence of the skeletal planes. Treatment is often required because the patient has trouble in **Incising the food** due to the lack of an anterior occlusion, and in **Speech** as an anterior open bite can be associated with lisping. We should keep in our mind that the treatment can improve both the occlusion and function, but there is no guarantee that speech will improve, as speech patterns are established early in life, long before establishment of the permanent dentition.

So there are either :-

- ❖ **Anterior open bite (AOB):** there is lack of the vertical overlap of the incisors when the buccal segment teeth are in occlusion.
- ❖ **Posterior open bite (POB):** there is no vertical contact between the posterior teeth.



Etiology of open bite

According to Dawson, the major causes of an anterior open bite are either due to **Skeletal growth abnormalities**, or from the forces of **Habits(Thumb/finger sucking and /or pacifier use)**; **Soft tissue pattern(Lip and Tongue habits)**; and **Mouth breathing** due to airway obstruction; inadequate nasal airway creating the need for an oral airway; allergies; septum problems and blockage from turbinates; enlarged tonsils and adenoids. However, we will demonstrate that one factor is unlikely to be the causative agent and a multifactorial etiology that most likely explains open bite problems.

1- Skeletal growth abnormalities :-

Individuals with a tendency to vertical rather than horizontal facial growth exhibit increased vertical skeletal proportions. When the lower facial height is increased there will be an increased in the inter-occlusal distance between the maxilla and mandible, and in this condition the teeth of the labial segment appear to be able to compensate this vertical increasing to a limited extent by further eruption, but where the increasing of the inter-occlusal distance exceeds this compensatory ability an anterior open bite will result.

If the vertical, downwards, and backwards pattern of growth continues, the anterior open bite will become more marked. In this group of patients the anterior open bite is usually symmetrical and in the more severe cases may extend distally around the arch so that only the posterior molars are in contact when the patient is in maximal interdigitation.

In the table below there are clinical and cephalometric characteristic features of skeletal open bite

CLINICAL AND CEPHALOMETRIC CHARACTERISTICS OF SKELETAL OPEN BITE

<i>Clinical Characteristics</i>	<i>Cephalometric characteristics</i>
1. Excess anterior face height, particularly in the lower third.	1. Steep palatal plane and increased percentage lower facial height.
2. Lip incompetence (resting lip separation >4 mm).	2. Excess eruption of the maxillary posterior teeth.
3. Tend to exhibit class II malocclusion and mandibular deficiency.	3. Downward and backward rotation of the mandible
4. Anterior open bite (but not always, some incisors supra-erupt)	4. Excess eruption of maxillary and mandibular incisors
5. Tend to exhibit crowding in the lower arch.	
6. Tend to exhibit a narrow maxilla and posterior cross bite.	

2- Thumb/finger sucking and /or pacifier use:-

In younger children, the major cause of anterior open bite (excluding open bites associated with the transition from the primary to mixed dentitions) are non-nutritive sucking habits (NNS). The effects of a habit depend upon its frequency , duration and intensity. Prolonged thumb-sucking tends to create this malocclusion. A surprisingly large percentage (10-15%) children continue to suck a thumb, finger, or other object well into the elementary school years.

However, if a persistent digit-sucking habit continues into the mixed and permanent dentitions, this can result in an anterior open bite due to restriction of vertical development of the maxillary and mandibular incisors by the finger or thumb.

A typical thumb-sucker has a malocclusion characterized by an **asymmetrical anterior open bite** (unless the patient sucks two fingers) due to digit position and associated with **transverse constriction of the maxillary arch** that lead to buccal posterior crossbite. Constriction of the upper arch is believed to be caused by cheek pressure and a low tongue position. Other effects are **proclination of the upper incisors and may be retraction of lower incisor** that lead to increase the over jet.

After a sucking habit stops (preschool age) the open bite tends to resolve with out any intervention and it's called auto treatment, although this may take several months. During this period the tongue may come forward during swallowing to achieve an anterior seal. In a small proportion of cases where the habit has continued until growth is complete the open bite may persist.

3- Soft tissue pattern (Lip and Tongue habits):-

In order to be able to swallow it is necessary to create an anterior oral seal.

In younger children the lips are often incompetent and a proportion will achieve an anterior seal by positioning their tongue forward between the anterior teeth during swallowing. Individuals with increased vertical skeletal proportions have an increased likelihood of incompetent lips and may continue to achieve an anterior oral seal in this manner even when the soft tissues have matured.

This type of swallowing pattern is also seen in patients with an anterior open bite due to a digit-sucking habit. In these situations the behaviour of the tongue is adaptive. An endogenous or primary tongue thrust is rare, but it is difficult to distinguish it from an adaptive tongue thrust as the occlusal features are similar. However, it has been suggested that an endogenous tongue thrust is associated with sigmatism (lisp), and in some cases both the upper and lower incisors are proclined by the action of the tongue.

4- Mouth breathing:-

Patients with skeletally disproportionately long faces are often suspected of having an airway obstruction. These patients' facial appearances were characterized many years ago as adenoid facies: the cheeks are narrow, the nostrils are narrow and pinched, the lips are separated, and often there are exaggerated shadows beneath the eyes. This terminology prompted the erroneous notion that the familiar elongated facial pattern, with an open mouth and dull expression, was exclusively related or primarily related to an obstructive adenoid mass or some other respiratory impairment, and failed to take into account that the pathologic condition causing the obstruction could be related to disease or abnormalities of the turbinates, septum, and external nasal architecture, or an obstructing adenoid mass that may have resolved by the time an upper airway assessment is performed.

However, it has been suggested that the open-mouth posture adopted by individuals who habitually mouth breathe, either due to nasal obstruction or habit, results in overdevelopment of the buccal segment teeth. This leads to an increase in the height of the lower third of the face and consequently a greater incidence of anterior open bite. It would appear that mouth breathing does not play a significant role in the development of anterior open bite in most patients.

5- Other factors :- Open bite can be

- Transitional, as the permanent incisors are erupting.
- Secondary to local pathology such as a supernumerary tooth preventing eruption of the maxillary incisors.
- Secondary to generalized pathology such as poor soft tissue tone associated with muscular dystrophy or cerebral palsy.
- Secondary to **Localized failure of development** as in patients with a cleft of the lip and alveolus, although rarely it may occur for no apparent reason.