

# The Use of Oral Screen in Children Patients with Mouth Breathing Habit: A Case Report

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**Abstract:** ***Introduction:** Bad habits of mouth breathing can affect the development and growth of the children's craniofacial and dentofacial. The use of an oral screen appliance will be able to help eliminate the bad habit of mouth breathing. **Case Report:** An 11-years-old girl came to Universitas Padjadjaran Dental Hospital with the purpose of having her teeth cleaned. The patient has a bad habit of mouth breathing, protrusive maxillary teeth, and lip incompetence thus causing a profile shape change. An intraoral examination found a high palate, 9 mm overbite, and 14 mm overjet. An oral screen appliance was then used as a treatment. After five months of usage time, the lips were able to be closed together, 3 mm overbite, and 14 mm overjet. **Discussion:** Oral screens were in contact with the maxillary incisors thus the muscle pressure actively concentrated in the maxillary incisors. Also, oral screen produces a lingual pressure on the maxillary teeth and the teeth inclination. Substantial occlusal relationship changes may occur, which can reduce the overbite and overjet. The effect of using an oral screen on the incisors often associated with changes in the muscle activity. **Conclusion:** The oral screen was effective for improving the bad habits of mouth breathing.*

**Keywords:** Bad oral habits, mouth breathing, oral screen

## 1. Introduction

The habit of mouth breathing can affect the complex development of dentofacial and craniofacial, especially during the growth period, and also interfere the learning and daily activities.[1,2] Mouth breathing has a multifactorial aetiology.[3] Sim and Finn classified mouth breathing into three categories included obstructive, mouth breathing habit, and anatomy, inability to maintain lips together, short upper lips which made it unable to be closed entirely.[4-6]

Research conducted on 92 children aged 6-12-years-old by the Bahtera Bandung Foundation, reported that around 50% of children have bad habits, with the prevalence of mouth breathing was 6.55%.[4] In Abaeté, Brazil, from 307 children with the prevalence of children aged 3-9-years-old, mouth breathing was found at the prevalence of 55%.[7] In India, mouth breathing is the second bad habit in children with the incidence rate of 7% and commonly found in girls.[8]

According to Paul and Nanda, mouth breathing resulted in jaw deformity, inadequate position or form of the alveolar process, and malocclusion, which can lead in the development of "adenoid face" or "long face syndrome".[9] Adenoid face is a narrow face, protrusive front teeth, narrow or V-shaped jaw arch, and opened lips posture at rest.[1,10] Mouth breathing can be associated with dry lips and oral cavities, dental caries, periodontal disease, halitosis, craniofacial deformity and malocclusion, and also abnormal swallowing.[2]

Overcoming bad habits of mouth breathing is done by using an oral screen. Oral screen is a functional tool applies the pressure from orofacial muscles and soft tissue on the cheeks and lips to prevent mouth breathing and lip posture deficiency.[11]

## 2. Case Report

An 11-years-old girl came with her sister to the Department of Pediatric Dentistry of Universitas Padjadjaran Dental Hospital, Bandung. The examination results showed that the general condition of the patient was well enough and have not experienced menstruation. The patient has a bad habit of mouth breathing and chewing food on the left side of the mouth. Also, the patient was having the history of bronchopneumonia at the age of 4-years-old and recurrent asthma in the cold weather. The patient has a congenital atresia abnormality which has been completely treated.

Extraoral examination result showed that the patient had a narrow and asymmetrical face type, convex face profile, hypotonic lips, and open lip relations. Intraoral examination result showed that the patient had moderate oral hygiene, caries in tooth number 36 and 46, high palate, class II right molars relation, class II right canines relation, class I left molars relation, class II left canines relation, 9 mm overbite, and 14 mm overjet.

Panoramic image showed a symmetrical condyle shape. The right condyle was lower than the left condyle (Figure 1.A). Cephalometric image showed a Cervical Vertebrae Maturation Stage (CVMS) with the results of CS 3 maturation stages (Figure 1.B). Steiner's analysis showed class II skeletal. Wits analysis showed class I skeletal. Jefferson analysis showed that the patient had retrusive bimaxillary malocclusion.



**Figure 1:** A) Panoramic Images; B) Cephalometric Images

Diagnosis of class II skeletal malocclusion and Angle II division 1 dentoalveolar malocclusion with hypotonic lips, along with protrusive maxillary and mandibular anterior crowding, 14 mm overjet, 9 mm overbite, and bad habit of mouth breathing. Aetiologies of malocclusion were bad habits, persistence, imbalance in growth and development of the maxillary and the mandible, and also genetic factors.

The patient has used an oral screen (Figure 2) for five months with a control period of 2 weeks - 4 weeks. After control, the hole was closed gradually. During the use of the appliance, the lips were instructed to be closed, and the appliance should be used for 1 hour during the day, night, and sleep. After five months of treatment, the lips were improving and were able to be closed, with 3 mm overbite, and 9 mm overjet (Figure 3 and 4).



**Figure 2:** Oral Screen Appliance

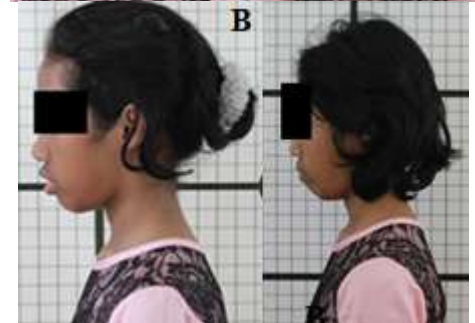


**C**

**Figure 3:** Occlusion Images Before and After 5 Months Treatment;  
 A. Frontal View; B. Right Side View; C. Left Side View



**A**



**B**



**C**

**Figure 4:** Extra Oral Profile Before and After 5 Months Treatment;  
 A. Frontal View; B. Left Side View; C. Right Side View

### 3. Discussion

Children with mouth breathing habit will have a craniofacial growth which follows their breathing habit. Changes in the facial muscles affect the arch and position of the teeth associated with disorders of the lips, tongue, palate, and mandible which are then associated with facial deformities. Mouth breathing decreases masticatory activity and giving a negative vertical effect on posterior teeth which can cause malocclusion.[2]

Bad habit of mouth breathing habits can disrupt dentofacial and craniofacial growth and development, such as long faces, lip incompetence, narrow/V-shaped jaw arch, deep bite, protrusive, and increasing overjet.[4,6,12]

This bad habit can be corrected with the use of functional appliances such as the oral screen. The use of an oral screen can effectively train patients to breathe using their nose, help

the patient's lips to be closed correctly, bring forward the mandible, and reduce overjet. Mouth breathing habit can be removed with an oral screen by giving a breathing hole in the labial part of the oral screen. The appliance is effective and useful as long as the patients cooperate on using it for 3 to 6 months and train their lips for 30 minutes every day and use it at night or during sleep.[13-15]

Oral screen is used to prevent pressure from the cheeks and act on the teeth to help the tongue force in the limited dental arch thus causing a passive curvature expansion.[8,13] Oral screen only come in contact with the maxillary incisors, so that the muscle pressure is actively concentrated on the maxillary incisors. Also, oral screen produces lingual pressure on the maxillary teeth and inclination of the teeth. Substantial occlusal relationship changes may occur, which can reduce overbite and overjet.[11] The effect of using an oral screen on the incisors often associated with changes in the muscle activity.[16]

Zreaqat recommends treatment begin before the age of 13 or 14-years-old or younger. Proper dental care carried out in the mixed dental period was performed in cases of class III, crossbite, and class II cases, where the cases were interfering the appearance.[17] Arora et al reported a case of 13-years-old boy with a class 2 molar occlusion relationship, class 1 canine relationship, and 9 mm overjet. After using the oral screen, the overjet reduced into 4.5 mm.[18] Kar used an oral screen on a 9-years-old boy with 5 mm overjet, and after using an oral screen, the overjet can be reduced.[13]

Lip incompetence occur in children with a bad habit of mouth breathing. In this case report, after using an oral screen, the patient was able to close her lips properly. Likewise, the case reports by Vasanthakumari, Kar and Arora et al, showed that after the use of an oral screen, the patients were able to close their lips properly.[8,13,18]

#### 4. Conclusion

Myofunctional appliance such as oral screen is proven to be effective for correcting bad habits of mouth breathing. In this case report, the second stage of treatment was using a fixed orthodontic appliance.

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