



ORAL SCREEN: AN EFFECTIVE MYOFUNCTIONAL APPLIANCE - A CASE REPORT

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ABSTRACT

Functional Appliances refer to variety of appliances designed to alter the arrangement of various muscle groups that influence the function and position of the mandible in order to transmit forces to the dentition and basal bone. The oral screen is a simple and versatile myofunctional appliance used in early interceptive treatment of dental arch deformities. The present case report discusses the effective correction of developing malocclusion and orthopaedic effects achieved with the use of oral screen in an 8 year old female patient.

KEYWORDS: Mouthbreathing, Orthopaedic effects, Oral screen.

INTRODUCTION

Development of dentition is influenced by balance of orofacial musculature and its function. Equilibrium of opposing forces from buccal soft tissue and tongue maintain the dentition in pleasing form and function. Disruption of the balance effects developing dentition and sets in malocclusion of varying degrees.^[1] The oral screen was first introduced by Newell in 1912 and it was routinely used in England before Second World War and specially used in malocclusion aggravated by faulty muscle function. The oral screen prevents the pressure from the cheeks to act on the dentition helping the tongue to exert force on constricted dental arches and this causes passive expansion of the arches.^[2]

Mouthbreathing habit was the second most prevalent habit and the incidence rate is 7%. There was a significantly greater number of boys with the mouth breathing pattern than girls. Oral respiration, low tongue posture and elongation of lower anterior facial height are apparent at 3 years of age but more commonly detected after the age of five. The deleterious impact of decreased naso-respiratory function is virtually complete by puberty.^[3] There is some evidence that oral screen effects on incisor position may be due to only mechanical pressure on the upper incisors. However in many cases, assumed to be induced by hypotonic mimic muscles and stopped by subsequent open mouth situations.^[4] The purpose of the present article is to present efficacy of oral screen in producing orthopaedic effects and correction of malocclusion.

CASE REPORT

An eight year old girl reported to the Department of Pedodontics with the chief complaint of forwardly placed upper front teeth. At initial presentation, her height was 120cm and weight was 30kg. She was healthy and no complications had been reported at birth. Post natal physiological events were in normal range. Medical and family history were non-contributory. On extraoral examination, convex facial profile, hypotonic upper lip, hyperactive mentalis muscle activity and incompetence lips were noticed. Intraoral examination revealed mixed dentition stage with end on molar relation bilaterally, upper anterior proclination and spacing and an overjet of 5mm. she had occlusal caries in 16, incisal fracture in relation to 21 and mild deposits all over the teeth. Based on the clinical examination and ENT consultation, the mouth breathing habit was confirmed. Patient was initially treated with oral prophylaxis, silver amalgam restoration in 16 and composite restoration in relation to 21 and oral screen was fabricated and delivered subsequently to the patient. Lip exercises also had been instructed. Oral hygiene instruction was given and the patient was counselled and motivated for regular follow up.



Fig – 1. Showing proclined upper anterior



Fig – 2. Oral screen appliance



Fig – 3. Insertion of oral screen

DISCUSSION

Mouthbreathing has been stated to have serious effects on the development of the facial skeleton and occlusion of teeth on account of the displacement of normal lateral, buccal and lingual muscular forces. It is believed to cause disfigurement of feature and the undermining of general health. Mouth breathing is a habit in which the lower jaw is dropped, the lips are parted and the tongue depressed from its normal position. Enlarged adenoids and tonsils are regarded as common causes. In mouth breathing, the air is received directly into the lungs without being cleansed, warmed and moistened and it tends to lift the palate high.^[5]

It is common for a three to six year old to be slightly lip incompetent. Other children have been labelled mouth breathers because of a suspected nasal airway obstruction. When nose breathing is disrupted by adenoid and tonsil hypertrophy, rhinitis, nasal septum deviation, there is a prevalence of mouth breathing. There is much evidences that mouth breathing produces deformities of the jaws, inadequate position or shape of the alveolar process and malocclusion and results in the development of 'Adenoid facies' or 'Long face syndrome'.^[6] Oral respiration, low tongue pressure and elongation of lower anterior facial height are apparent at 3 years of age but more commonly detected after the age of five. The deleterious impact of decreased naso-respiratory function is virtually complete by puberty.^[7]

Children who breathe predominantly through their mouth pose difficult problems for healthcare professionals. The head posture is the result of a complex and delicate balance between the muscles involved in the cervical-mandibular-cranial system designed to maintain the pharyngeal airway. Hence the forward head posture, commonly related to mouth breathing is described, as an adaptation to expand and facilitate the airflow through oropharynx. Upper airway obstruction and mouthbreathing can cause sleep disorders and sleep apnea. Studies have shown that children with sleep disorders have problem paying attention in school, are often tired and may exhibit behaviour problems. Many of these children often are misdiagnosed with Attention Deficit Hyperactivity Disorder (ADHD).^[8]

Mouthbreathing in many instances is self-correcting after puberty. This can be attributed to the increase in nasal passages as the child grows, thereby relieving the obstruction caused due to enlarged adenoids. An otorhino laryngologist examination may be advised to determine whether conditions requiring treatment are present in the tonsils, adenoids or nasal septum. If habit continue after removal of cause, then it is habitual.^[9]

Mouthbreathing can be intercepted by use of an oral screen. It is a functional appliance by virtue of the fact that it produces its effects redirecting the pressures of the muscular and soft tissue curtain of the cheeks and lips. It works on the principle of the force appliances and force elimination. For example anterior teeth proclination can be corrected utilizing the principle of force application. The oral screen comes into contact with the proclined teeth so that the forces from the lips are transmitted directly to the proclined teeth through the oral screen. Posterior crossbite can be corrected utilizing the principle of force elimination by providing a space between the teeth and the oral screen.^[10]

CONCLUSION

Oral habit can be intercepted before child needs to undergo corrective treatment. Oral screen may prove useful in timely intervention of developing deleterious malocclusion. As success of any removable appliance

therapy is correlated to patient compliance, so is the case with oral screen. Treatment with oral screen not only yielded effective clinical results but also had strong influence on patients psychological bearing, instilling in them confidence and positive attitude.

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