

Treatment of Proclined Anterior Teeth with Tongue Thrusting Habit Using Double Oral Screen: A Case Report¹Dr. Abhishek Das, ²Dr. Payel Agarwal, ³Dr. Sudipta Kar, ⁴Dr. Gautam Kumar Kundu^{1,2}Post Graduate Trainee, Department of Pedodontics and Preventive Dentistry, Gurunanak Institute of Dental Sciences and Research, Kolkata, West Bengal 700114, India³Reader, Department of Pedodontics and Preventive Dentistry, Gurunanak Institute of Dental Sciences and Research, Kolkata, West Bengal 700114, India⁵Professor and Head, Department of Pedodontics and Preventive Dentistry, Gurunanak Institute of Dental Sciences and Research, Kolkata, West Bengal 700114, India**Corresponding Author:** Dr. Abhishek Das, Post Graduate Trainee, Department of Pedodontics and Preventive Dentistry, Gurunanak Institute of Dental Sciences and Research, Kolkata, West Bengal 700114, India**Type of Publication:** Case Report**Conflicts of Interest:** Nil**Abstract**

The oral screen is a myofunctional appliance used in early interceptive treatment. It was first introduced by Newell in 1912. There are various modifications were fabricated by various researchers. In this case report, authors fabricated double oral screen for treatment of proclined anterior teeth and tongue thrusting habit.

Keywords: Double Oral screen, oral habits, tongue thrusting**Introduction**

The oral screen is a simple and versatile myofunctional appliance used in early interceptive treatment of dental arch deformities. 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. It was first introduced by Newell in 1912. Oral screen was routinely used in England before Second World War.^[1] Kraus invented

double oral screen and first differentiates the difference between oral screen and vestibular screen.^[2] Later oral screen has been advocated by Hotz^[3] Nord^{[4][5]} and Fingerhuth.^[6]

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 was non-contributory. On extraoral examination, convex facial profile, hypotonic upper lip, hyperactive mentalis muscle activity and incompetence lips were noticed (Figure 1). Intraoral examination revealed mixed dentition stage with class I molar relation bilaterally, upper anterior proclination and spacing and an overjet of 5 mm (Figure 2). Based on the clinical examination tongue thrusting habit was also confirmed. A custom - made acrylic double oral screen was planned for interception of tongue thrusting habit. Parents were

explained and educated about the treatment plan and consent taken.

Appliance Fabrication and Insertion

Upper and lower alginate impressions were recorded giving special attention to accurate reproduction of the depths of vestibular sulcus and labial fold and poured with dental stone .A construction bite with modelling wax was recorded, after guiding the patient to bite in proper occlusion. Wax construction bite was chilled and replaced on casts and mounted on articulator. Oral screen was outlined on the casts and fabricated from self-cure acrylic resin .double oral screen –appliance is made of clear acrylic and wire component. As the patients has tongue thrust habit, an additional screen was placed on the lingual aspect of the teeth. This additional screen is attached to the vestibular screen by means of a 19 gauze wire that runs through the bite in the lateral incisor region. This separate screen is fabricated lingual to oral screen with 0.9 mm wire bilaterally that passing through the bite in lateral incisor area .it was then finished and polished (Figure 3).

The appliance was then delivered to the patient (Figure 4).The patient was instructed to wear the appliance at night time and atleast for 2 hours at day time . Lip exercises also had been instructed. Oral hygiene instruction was given and the patient was counseled and motivated for regular follow up.

At the end of 6 months of treatment with the screen, difference in patients profile and facial form was appreciable. Lip competency achieved with elimination of liptrap. Overjet reduced and arch alignment attained(Figure 5).

Discussion

Parafunctional habits are proven as a major etiological factor for the development of dental malocclusion.^[7] One of the most common Parafunctional habit , Tongue thrust also called reverse swallow or immature swallow, a

human behavioural pattern in which the tongue protrudes through the anterior incisors during swallowing, speech and while the tongue is at rest. Tongue thrusting may be the primary cause of malocclusion or it may be secondary adaptive factor as in skeletal openbite.^[8] The causes of tongue thrust may be retained infantile swallow, upper respiratory tract infection, chronic tonsillitis, neurological disturbances, and transient change in anatomy, hypertonic orbicularis oris and macroglossia.^[9] tongue thrust can be of two types: simple and complex. Careful differentiation must be required among simple, complex tongue thrust, infantile swallowing pattern and faulty tongue posture. Prognosis is good for simple tongue thrust, not very good for complex one and poor for retained infantile swallowing pattern. Protracted tongue posture can be acquired which can be corrected and no certain treatment for endogenous. Habitual tongue thrust is present as a habit after the correction of the malocclusion. Functional tongue thrust develops to achieve an oral seal and anatomic tongue thrust occurs due to macroglossia.^[10] Clinical severity of tongue thrust habit depends on intensity, duration, frequency and type of tongue thrust. Extraoral manifestations of tongue thrusting habits are lip separation, more erratic mandibular movements, speech disorders and increase in anterior facial height . Intraoral abnormalities are jerky and irregular tongue movements, lowered tongue tip, proclination of maxillary anterior teeth with spacing, increased overjet anterior or posterior openbite, retroclination or proclination of mandibular teeth, posterior crossbite.^[11] Tongue thrust has always been considered as a complication in the diagnosis and prognosis of orthodontic treatment. Management of tongue thrust depends on the age of the patient, presence or absence of associated manifestation, speech defect and type of malocclusion. Double Oral screen can be used to intercept this tongue thrusting habit. It works on the

principle of the force appliances and force elimination. 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.^[12] It also reduces or eliminates hyperactive mentalis activity. It also corrects the faulty relationships of upper and lower lips and near normal lip seals become evident. It also helps to develop a proper functioning occlusion.^[13] It is useful in abnormal tongue position, tongue thrust and open bite cases. It is also used in the elimination of mouth breathing habit. So oral screen and their modification can be utilized with abnormal tongue and lip activity by restoring lip tone and proper lip and tongue posture. Though complete mechanotherapy is not possible with this appliance, it is only an initial assault or phase 1 correction of orthodontic problem. Regular checkup is needed, patient co-operation is most essential.



(A)



(B)



(C)

Figure 1: Preoperative Extra Oral Photograph : (A) frontal profile. (B) & (C) Lateral Profile.



(A)



(B)



(C)

Figure 2: Preoperative Intra Oral View (A) Frontal View (B) & (C) Lateral View



Figure 3 : Fabricated Double Oral Screen



Figure 4: Insertion of The Appliance



Figure 5: Follow Up After 6 Months

Conclusions

Successful orthodontic treatment is based on comprehensive diagnosis and treatment planning. It is possible to treat open bite malocclusions especially where the etiology lies as tongue thrusting by motivation and training of patient. Clinician should play the role of friend, philosopher and guide to both parents and child indulging in damaging oral habits. 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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