

KAR'S THUMB GUARD- AN INNOVATIVE HABIT BREAKING APPLIANCE

Dipanjan Debnath, Sudipta Kar, Krittika Samaddar and Shabnam Zahir

Department of Pediatric and Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, 157/F Nilgunj Road, Panihati, Kolkata-700114, West Bengal, India

ARTICLE INFO

Article History:

Received 14th January, 2022

Received in revised form 29th

February, 2022

Accepted 05th March, 2022

Published online 28th April, 2022

ABSTRACT

Thumb-sucking habit is acquired in infancy, and can have negative consequences on facial growth, oral function and relationship, and aesthetics, leading to dental and skeletal deformities if it persists beyond preschool age. The present case report has described the management of such detrimental habit with an innovative and simple approach in a 9-year old child.

Key words:

Habit, thumb sucking, thumb guard, appliance, metal snap fastener button

Copyright©2022 Dipanjan Debnath et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Depending on factors such as duration, frequency, intensity, and facial pattern, the oral habits can interfere with the growth and normal development of the jaws, favoring the onset of malocclusion and changes in normal swallowing and speech patterns [1].

Subtelny (1973) described four types of pattern of thumb-sucking. Type A, is when the thumb is put into the mouth much beyond the first joint, and it accounts for 50 percent of cases. Type B occurs when the thumb is extended into the mouth around the first joint or just anterior to it with no palatal contact (found in almost 24 percent). When the thumb is fully inserted into the mouth, in touch with the palate but not with the mandibular incisors, it is classified as Type C (18 percent), and when the lower incisor contacts approximately at the level of the thumbnail, it is classified as Type D (8 percent).

Thumb sucking is deemed normal up to the age of four years, according to the American Dental Association and the American Academy of Pediatrics. Warren and Bishara had a different opinion and raised this age limit to six years old. [2] This habit can cause a variety of malocclusions, including increased overjet, anterior open bite, posterior crossbite, proclined and flared maxillary incisors, mucosal trauma, unusual root resorption, and abnormal facial growth. [3-6]

Case report

A 9-year-old boy accompanied by his parent reported to the department with a chief complaint of thumb sucking during his leisure time, and during sleep time for the past 1-2 years. The

child's parent stated that on repeated education and motivation from their part, the child was unable to restrain his thumb from sucking. [Fig. 1]

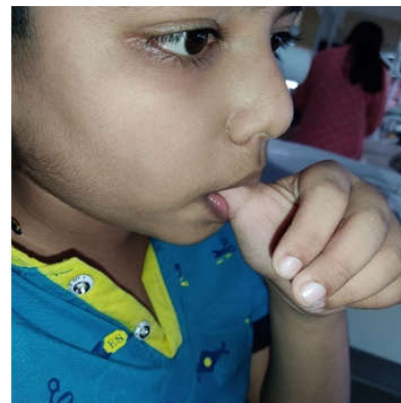


Fig 1 Patient having thumb-sucking habit

Extraoral soft tissue examination revealed short upper lip and digit examination revealed mild roughened callus formation on thumb's outside surface. [Fig.2,3] The boy had a convex profile and mesomorphic facial pattern with bilaterally symmetrical face. On intraoral examination, the tongue found to be of normal shape, size, and position and all other dentoalveolar structures were in health.

On following visit, the child was counselled regarding the detrimental effect of thumb sucking habit on facial aesthetics, soft tissue profile and orodental structures. However, the counselling method proved ineffective. He admitted to being

*Corresponding author: Dipanjan Debnath

Department of Pediatric and Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, 157/F Nilgunj Road, Panihati, Kolkata-700114, West Bengal, India

unable to break the habits. It was then planned to fabricate the conventional thumb guard for habit interception, but due to aggressive sucking habit of the patient, interference by the appliance was not of much use. The treatment was not that effective.

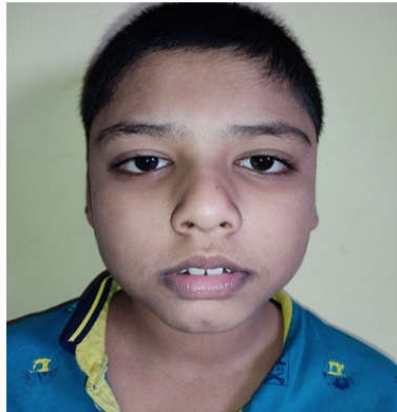


Fig 2 Pre- operative photograph of patient having short upper lip

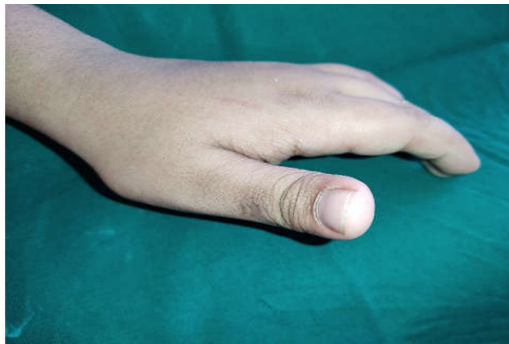


Fig 3 Mild callus formation on left thumb

Then, it was planned to fabricate a unique designed thumb guard having metal snap fastener button with ligature wire encirclement, all embedded in the acrylic thumb guard. [Fig.4,5,6]



Fig 4 Impression making of left thumb



Fig 5 Model made using Type II gypsum

The thumb guard was attached to the orthopaedic wrist band. [Fig.7] This innovative appliance was made to wear on patient's thumb and parents were asked to monitor his habit at home. [Fig.8] A spectacular result was witnessed after a three-month follow-up. Thumb sucking habit was completely stopped, and the orofacial condition was greatly improved. [Fig. 8]

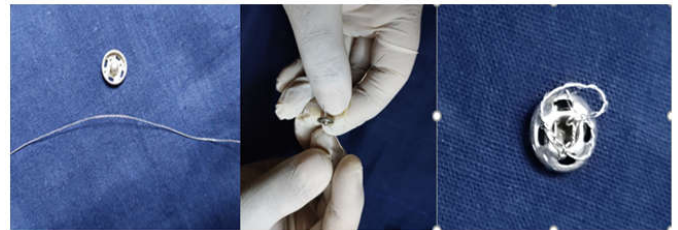


Fig 6 Metal snap fastener button and ligature wire for encirclement around the button as extra-retentive feature



Fig 7 Acrylic thumb guard incorporating stainless steel button, attached to orthopaedic wrist band using threads



Fig 8 Patient's photograph shot at home showing his inability to put his thumb in mouth due to appliance

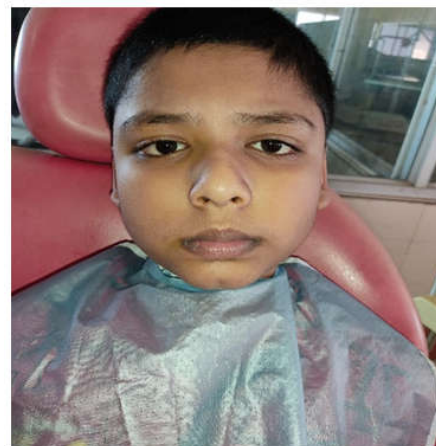


Fig 9 Post- operative photographs showing improved orofacial condition

DISCUSSION

The treatment approach for a detrimental oral habit is determined by the severity of the problem and the patient's needs. The consequence of harmful oral habits is determined by four factors: force duration, intensity, and frequency. [7] Emotional disturbances are one of the factors that contribute to the development of these oral habits. [8] As a result, child counselling plays a crucial part in habit control. When that fails, a dental surgeon may use incentive and reminder therapy, such as putting thumb wraps or gloves on the child's hands, to assist break the habit. When reminder and reward therapy fail, appliance therapy (removable and fixed cribs appliances, thumb guards, etc.) may be utilised. Thumb sucking may develop as a result of the pleasure gained from it and might occur as a result of hunger, restlessness, boredom, or fear. [2,9,10,11]

The introduction of metal snap fastener button in the present appliance improves its effectiveness. Two buttons were incorporated both on palmer and dorsal surface of the thumb guard. It prevents the thumb from entering the mouth. The advantage of this device is that it is simple to construct and inexpensive. The round end of the button causes interference and helped in habit interception and was more effective than conventional thumb guard. Moreover, the design of the button was less injurious than the cribbed thumb guard. The button was secured to acrylic part using ligature wire encirclement for extra-retentive feature. Two holes are drilled in the end of the acrylic component of the thumb guard, and threads are used to attach the thumb guard to the orthopaedic wrist band. This entire apparatus aids in the appliance retention on the thumb. Habit interception was done in a three month follow up which was less than a conventional method. The patient needs to be motivated properly to wear the appliance.

CONCLUSION

Adetrimental oral habit must be managed tactfully and as early as possible to prevent multifaceted ill effects on intra- and extra-oral structures. Newer effective innovations may help us to serve the patients in a better way.

References

1. W. R. Proffit, H. W. Fields, and D. Sarver, *Contemporary Orthodontics*, Elsevier Mosby, St. Louis, Mo, USA, 2007.
2. Warren JJ, Bishara SE. Duration of nutritive and nonnutritive sucking behaviors and their effects on the dental arches in the primary dentition. *Am J OrthodDentofacialOrthop*2002;121:347-56.
3. Lewis SJ. Thumb-sucking: A cause of malocclusion in the deciduous teeth. *J Am Dent Assoc*1930;17:1060-72.
4. Warren JJ, Slayton RL, Bishara SE, Levy SM, Yonezu T, Kanellis MJ. Effects of nonnutritive sucking habits on occlusal characteristics in the mixed dentition. *Pediatr Dent* 2005;27:445-50.
5. Bowden BD. A longitudinal study of the effects of digit- and dummy-sucking. *Am J Orthod*1966;52:887-901.
6. Bowden BD. The effects of digital and dummy sucking on arch widths, overbite, and overjet: a longitudinal study. *Aust Dent J* 1966;11:396-404.
7. Proffit WR, Mason RM. Myofunctional therapy for tongue-thrusting: Background and recommendations. *J Am Dent Assoc*1975;90:403-11.
8. Nanda RS, Khan I, Anand R. Effect of oral habits on the occlusion in preschool children. *ASDC J Dent Child* 1972;39:449-52.
9. Helle A, Haavikko K. Prevalence of earlier sucking habits revealed by anamnestic data and their consequences for occlusion at the age of eleven. *Proc Finn Dent Soc*1974;70:191-6.
10. Farsi NM, Salama FS. Sucking habits in Saudi children: Prevalence, contributing factors and effects on the primary dentition. *Pediatr Dent* 1997;19:28-33.
11. Yemitan TA, daCosta OO, Sanu OO, Isiekwe MC. Effects of digit sucking on dental arch dimensions in the primary dentition. *Afr J Med MedSci* 2010;39:55-61.

How to cite this article:

Dipanjan Debnath *et al* (2022) 'Kar's Thumb Guard- an Innovative Habit Breaking Appliance', *International Journal of Current Advanced Research*, 11(04), pp. 592-594. DOI: <http://dx.doi.org/10.24327/ijcar.2022.594.0130>
