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Reminder therapy for digit sucking: Use of a nonpunitive appliance - A case report.

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Virtual Journal of Orthodontics

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Iscrizione CCIAA n° 31515/98
ISSN-1128-6547
NLM U. ID: 100963616
OCoLC: 40578647

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To cite this article:

R. Neeraja, G. Kayalvizhi G. Sangeetha P Venkatesh. Reminder therapy for digit sucking: Use of a nonpunitive appliance - A case report.

Virtual Journal of Orthodontics [serial online] 2009 January 10; 8 (2):p. 5-8

Available from URL

<http://www.vjo.it/read.php?file=ema.pdf>

Abstract

Digit sucking is a common childhood behavior, which has an adaptive value for children up to the fourth year of life. It is usually associated with oral pleasure and self comforting behavior. Chronic practice may lead to dental and skeletal deformities. Reminder therapy using Bluegrass appliance has been proven successful to intercept digit sucking habit. We present here a case of a child aged 7 years with digit sucking habit intercepted by using a nonpunitive reminder therapy using Bluegrass appliance. This nonpunitive Bluegrass appliance proved to be very comfortable to the patient unlike other appliances and also it was successful in intercepting the habit within a short period of time.

Key words- Reminder therapy, digit sucking, nonpunitive, bluegrass appliance, malocclusion.

Introduction

Digit-sucking habit is a common oral habit seen in children. It is characterized by the placement of one or more digits to varying depths in the mouth. The prevalence of such habit in children in reports of different investigators varies from 1.7% to 47%.¹This habit may develop early in life and continue from infancy through primary, mixed and permanent dentition. If the habit continues into the mixed dentition a malocclusion may develop.²The adverse effect of digit-sucking habit can be seen in the child's dentition in the form of proclined and flared maxillary and/or mandibular incisors, development of anterior open bite, and Class II malocclusion. Other effects which can also arise from such habit are deviation in root morphology, swallowing pattern, speech defect and deformation of the child's digit. Two methods that belong to "reminder therapy" technique are often used on children to cease digit sucking habit. These are the response prevention and the appliance therapy. The former is usually applied by parents and involves the application of bitter taste solution, thumb guard, mitten, wearing socks and other methods. The latter involves the use of orthodontic appliance either fixed or removable of various designs in order to make the habit rather unpleasant and difficult to be practiced by affected children and is applied by the dentist.¹

The use of a corrective appliance to manage oral habits is indicated only when the child wants to discontinue the habit and needs only a reminder to accomplish the task.³ The dental practitioner is often met with stares of parental concern when the palatal crib with or without spurs is suggested as the habit breaking appliance of choice for digital sucking. Emotional problems, difficulty with speech and eating, and iatrogenically "self-inflicted" wounds can occur with such appliances. This type of appliance tends to be regarded as a punitive rather than a supportive treatment.² Here we present a case of digit sucking habit in a 7 year old child corrected by non-punitive reminder therapy using bluegrass appliance.

Case Report

A 7yr old child accompanied by her father reported to our department with a chief complaint of mobile milk tooth in the upper front teeth region. Detailed history and examination revealed that the patient had digit sucking habit. The patient used to suck her digits (right and left index and middle finger) alternatively, unconsciously in sleep or when idle from the primary dentition period.

Callous formation was seen over her digits. She used to place her digits up to her 1st phalanges touching both upper and lower incisors sucking in the cheeks. As duration and intensity of digit sucking was not intense not much dental malocclusion was seen on clinical examination. Patient had a few decayed teeth and pulpally involved upper second deciduous molars. Treatment was planned to intercept the habit as well as for treating the other dental problems. Full mouth rehabilitation was done by extracting the retained upper right anterior tooth, restoring decayed teeth and pulp therapy for pulpally involved molars. Treatment of digit sucking habit was started by counseling the parent and the child regarding the ill effects of digit sucking on the developing dentition during the 1st visit.

By 2nd visit the child was willing to undergo treatment so we planned a nonpunitive reminder therapy using blue grass appliance. Pulp therapy treated upper second molars required the placement of stainless steel crown. So tooth preparation was done, crowns were contoured, crimped and were placed over the tooth but not cemented. Alginate impressions were taken for upper and lower arch; crowns were transferred to the impression and stabilized. Casts were poured using dental stone over which appliance was fabricated by adapting 0.9mm stainless steel wire over the palate extending from molars on either side (upper 2nd deciduous).child was asked the color preference and acrylic bead was made in our laboratory using dental monomer and polymer by adding the child's favorite blue color. Later this bead was inserted into the stainless steel wire so that it overlies the rugae area of the palate; bends were placed in the wire on either side of the bead so that the bead doesn't slip while rolling. No contact should be established by the bead with the palatal tissues to fabricate its rolling. The wire was soldered to the stainless steel crowns by protecting the bead.

The appliance was cemented using type I glass ionomer cement. The patient was instructed to roll the bead with her tongue whenever she feels like sucking her digits. The patient was kept under observation by recalling her every 2 months for check up. The child was very comfortable with the appliance and played by rolling the beads with the tongue. By the end of 4 months patient had discontinued the habit with the disappearance of callous formation in her digit, but the appliance was left intact for 6months after correction so that the habit does not relapse.

The child was able to discontinue the sucking habit and showed no relapse and return to the habit during the 6 months of post-treatment follow-up period. After that period the appliance was removed by cutting the wire component with the bead, retaining the stainless steel crowns.

Discussion

Digit sucking is a common phenomenon in the pediatric age group, which represents the earliest form of habitual manipulation of the body. Langford first described finger sucking as a harmless habit. Nowadays, it is well known that finger sucking can cause palatal, dental, and occlusal deformities with less frequent occurrence of finger deformities (index fingers).⁴

The age of the child, the duration, frequency of the habit, child cooperation and motivation are all important factors to be considered for the success of any intervention. Ample time should be given for the child to stop the habit on his/her own.

Appliance therapy should be considered after consultation with the parent of the child. The idea of using appliances is to make the habit physically difficult to be continued and reminds the child to remove the digit from the mouth.⁵ Many punitive appliances have been designed to accomplish habit cessation such as palatal crib, palatal arch, lingual spurs and Hawley retainer with or without spurs.² In our case, patient was aged 7 years, duration and frequency of the was not intense and the child and parent were willing to undergo treatment to intercept digit sucking habit and the child was in mixed dentition period. So we had planned a nonpunitive reminder therapy using bluegrass appliance. This appliance was described by Haskell and Mink in 1991 an easy to wear appliance that did not have the problems associated with traditional palatal cribs. This device was called the blue grass appliance which uses hexagonal Teflon roller on a cross palatal wire.⁶ The idea came from the equine industry; where a bit with copper rollers were used to distract irritable horses. A modified, six-sided roller machined from Teflon™ was constructed to slip over a 0.045 stainless steel wire which was soldered to molar orthodontic bands previously fitted in place on a poured plaster model. The roller was placed in the most superior aspect of the palate. This position does not cause obstruction with eating and presents minimal disturbance to speech, unlike hayrake and cage-type appliances (Haryett et al. 1970).



Figure1 -Child placing the index and middle fingers up to the first phalanges in her mouth.

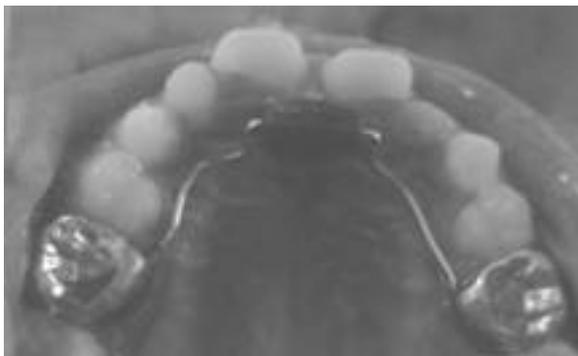


Figure2- Intra oral view of Bluegrass appliance



*Figure3
Wire component with acrylic bead
after its removal*

This device works through a counter-conditioning response to the original conditioned stimulus for thumb sucking. This appliance is indicated in children in the early or late mixed dentition who have been consulted and have a desire to stop their digit sucking. Their usual sucking habits are at night or when they are tired or upset. It almost ends a sucking habit within several days if not immediately. 2

In our case the appliance was fabricated similar to the one done by Haskell and Mink except for soldering the wire component to stainless steel crown and child preference for a blue color bead, resulted in positive reinforcement such that the child played with her tongue by rolling the beads. It also served as a distraction therapy when the child was idle. As recommended by Haskell and Mink the appliance was left in place even after correction of the habit to avoid reappearance.6 The advantage of the Bluegrass appliance is the use of the roller instead of cribs/ rakes. The smaller size of the appliance due to the roller allows it not to be seen from outside the mouth. An additional advantage is that the roller can act as a neuromuscular stimulant for the tongue, which can aid patients in speech therapy. Though it has a few disadvantages like eating and speech difficulties few days after placement it subsides later.s

This reminder therapy has been proven to be more successful2 and effective in eliminating the habit with limited complication.

Conclusion:

This nonpunitive Bluegrass appliance proved to be very comfortable to the patient unlike other appliances and also it was successful in intercepting the habit within a short period of time.

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