

CASE REPORT

Interception of digit sucking by blue grass appliance a nonpunitive reminder

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ABSTRACT:

Digit sucking is a common childhood behaviour, 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 10 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, Open bite.*

Key Messages: *sucking habit is a common oral habit seen in children. and the adverse effects of habit are proclined and flared maxillary / mandibular incisors, development of anterior open bite, and Class II malocclusion etc. An approach using an appliance which is nonthreatening and which the dentist can employ easily is the subject of this report.*

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%.¹ This 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.^{2,6,7,8} The 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. 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. If inserted for several months, this type of device usually eliminates the habit in children who want to stop.^{3,4} 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.⁵ The method discussed in this paper utilizes a positive reinforcing approach to support the child. The appliance used is shown and

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explained to the child, and serves merely as a reminder. The parents are instructed to use only positive comments.

Case History:

A 10 yr old child accompanied by her father reported to our department with a chief Complaint of proclined front teeth. Detailed history and examination revealed that the patient had digit sucking habit. The patient used to suck her digits (right thumb finger), unconsciously in sleep or when idle from the primary dentition period. Callous formation was seen over her digit. She used to place her digits up to her second phalange touching both upper and lower incisors sucking in the cheeks. As duration and intensity of digit sucking was intense severe anterior open bite is seen (Fig -1). Patient had decayed pulpally involved upper second deciduous molars. Treatment was planned to intercept the habit as well as for treating the other dental problems.

Treatment of digit sucking habit was started by counselling the parent and the child regarding the ill effects of digit sucking on the developing dentition and fixed Palatal crib was given during the 1st visit (Fig - 2). By 2nd visit the child was willing to undergo to leave the habit so we planned a nonpunitive reminder therapy using blue grass appliance. Alginate impressions were taken for upper and lower arch, 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 first permanent molars). Child was asked the color preference (pink) and acrylic bead was made in our laboratory using dental monomer and polymer. 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 (Fig - 3, 4). 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 and open bite (Fig - 5, 6), but the appliance was left intact for 6 months after correction so that the habit does not relapse. The child was able to discontinue the sucking habit and showed no relapse or return to the habit during the 6 months of post-treatment follow- up period. After that period the appliance was removed.

Discussion:

Digit sucking is a common phenomenon in the paediatric 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)⁹. 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 mouth¹⁰

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. In our case, patient was aged 10 years, duration and frequency was intense and the

child and parent were willing to undergo treatment to intercept digit sucking habit and the child was in late mixed dentition period. So we had planned a combination of punitive and 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.¹¹

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.⁴ 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, which 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.¹¹

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 later¹⁰

This reminder therapy has been proven to be more successful 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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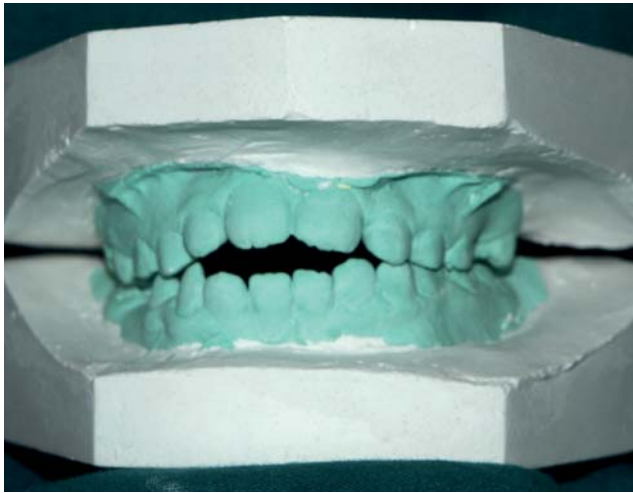


Figure - 1



Figure - 2



Figure - 3



Figure - 4

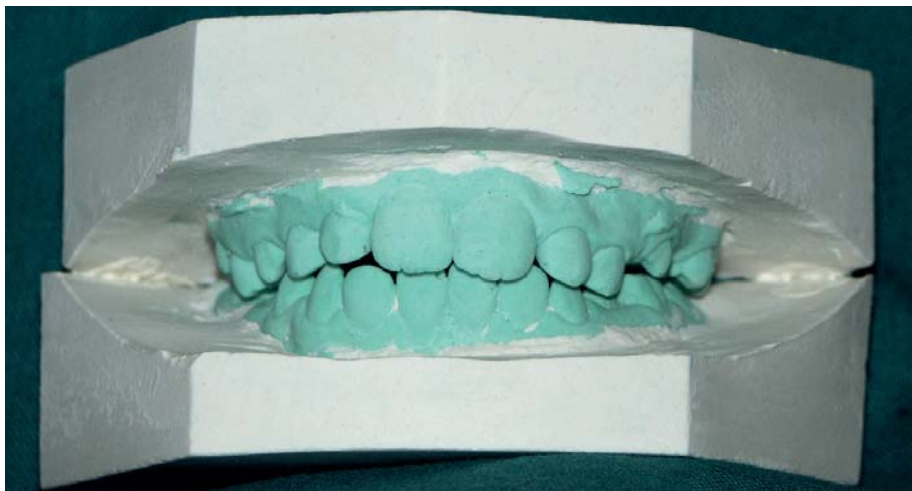


Figure - 5