

# Customized Bluegrass Appliance

<sup>1</sup>Sharmila Surendran, <sup>2</sup>Deepti Amarlal, <sup>3</sup>Sharath Asokan, <sup>4</sup>Eapen Thomas

## ABSTRACT

**Background:** Digit sucking is a common childhood behavior, which has an adaptive value for children up to the fourth year of life. Chronic prolonged habit may cause deleterious effects on dentofacial structures. Reminder therapy using blue grass appliance has been proven successful to intercept thumb sucking habit.

**Methods:** Four cases of digit sucking were corrected by nonpunitive reminder therapy using customized blue grass appliance.

**Results and conclusion:** Four patients' digit sucking habit ceased after the insertion of the customized bluegrass appliance. These appliances were very comfortable to the patient and successful in intercepting the habit within a short period of time. It is an effective treatment option with limited treatment complications.

**Keywords:** Habit, Thumb sucking, Remainder therapy, Blue grass appliance.

**How to cite this article:** Surendran S, Amarlal D, Asokan S, Thomas E. Customized Bluegrass Appliance. *World J Dent* 2014;5(1):64-66.

**Source of support:** Nil

**Conflict of interest:** None

## INTRODUCTION

Thumb sucking has been described as a common childhood behavior, manifestation or habit that is considered normal up to the age of 3 to 4 years. The treatment of thumb-sucking by the dentist is appropriate when the child is older than four, the problem is chronic, and the problems associated with thumb-sucking are incipient and/or the child has requested help in stopping the habit. The habit is termed chronic if it occurs over two settings (home, school and daycare) and during both day and night. Dentoalveolar changes associated with chronic, prolonged thumb sucking include

malocclusions, anterior open bite, unilateral crossbite, atypical root resorption, mucosal trauma, abnormal facial growth.<sup>1</sup>

Wide ranging methods have been proposed for helping children to quit their habit. They fall under the general heading of operant procedures, sensory attenuation procedures or habit awareness technique. The operant procedures include contingency reinforcement and reframing, while the sensory attenuation methods are designed to interrupt the sensory feedback experience with digit sucking habits either by appliance therapy or response prevention.<sup>2,3</sup>

Four cases of thumb sucking habit, corrected by nonpunitive reminder therapy using designs of modified and customized blue grass appliance are presented here. First follow-up was done 2 weeks after placement to evaluate patient tolerance and treatment progress in all the cases. Recall checkups were scheduled every 2 months. All the appliances were removed after a minimum period of 6 months and patient was under review thereafter.

## APPLIANCE DESIGN

Clinicians modify and design their own appliances for the cessation of digit sucking habit. Haskell and Mink (1991) introduced the Bluegrass appliance to stop thumb sucking in children. It uses a hexagonal Teflon roller on a cross-palatal wire. It is based on the principles of positive reinforcement. The idea came from the equine industry where a bit with copper rollers is used to distract irritable horses. This works through the counter conditioning response to the original conditioned stimulus for thumb sucking.<sup>2</sup>

Korrodi Ritto and Leitaio (1998) introduced a similar appliance called lingual pearl for retraining the tongue.<sup>4</sup> Chris Baker (2000) modified the bluegrass appliance utilizing 4 mm beads which encouraged higher neuromuscular stimulation than the hexagonal Teflon roller of the conventional type. Another advantage of this appliance is reduced bulk.<sup>5</sup>

Four cases of thumb sucking habit corrected by using customized bluegrass appliance are presented in this case series. The modified blue grass appliance given by Chris Baker was used in the first case; the second case used an additional U-shaped loop to prevent the sideward displacement of the bead and enhances the stability of the appliance. The third case's design used a larger bead and additional wire for stability. A larger bead was chosen as the patient had tongue thrusting habit in addition to

<sup>1</sup>Tutor, <sup>2,3</sup>Reader, <sup>4</sup>Professor

<sup>1</sup>Penang International Dental College, NB Tower, Butterworth Penang, Malaysia

<sup>2,4</sup>Department of Pediatric Dentistry, Meenakshi Ammal Dental College, Alapakkam Main Road, Chennai, Tamil Nadu, India

<sup>3</sup>Department of Pediatric Dentistry, KSR Dental College Tiruchengode, Tamil Nadu, India

**Corresponding Author:** Sharmila Surendran, Tutor, Penang International Dental College, NB Tower, Butterworth, 12000 Penang, Malaysia, e-mail: drsharmee@gmail.com

thumb sucking and a smaller bead might not refrain tongue thrusting. This design was similar to the lingual pearl which would help in retraining the tongue as well. In the last case, the design incorporated the bead along with the Nance design to provide additional stability of the appliance. The advantage of this design was the acrylic button prevented the distortion of the archwire.

## CASE REPORTS

### Case 1

A 5 years old child accompanied by her mother reported with a chief complaint of digit sucking habit. A nonpunitive reminder therapy was planned using modified bluegrass appliance. It was fabricated by adapting a 0.9 mm stainless steel wire over the palate extending from the primary maxillary second molar on either side. Three brown colored beads (4 mm) were inserted into the cross palatal bar which was soldered to the bands adapted on the primary maxillary second molars (Fig. 1). The child was instructed to roll the bead with her tongue whenever she felt like sucking her thumb. The mother reported the cessation of the habit on the very first day.

### Case 2

A 7 years old boy accompanied by his brother reported with a chief complaint of thumb sucking habit and a secondary habit of pulling his left lower eyelid. No related malocclusion was seen. An additional U loops were incorporated in the wire component of the modified blue grass appliance with three beads (Fig. 2). The cessation of thumb sucking and secondary habit happened on the first day but the child continued thumb sucking unconsciously during the night which subsequently stopped over the week.

### Case 3

A 7 years old child accompanied by his father reported with thumb sucking and tongue thrusting habit. Intraoral examination revealed pseudoanterior open bite as the incisors did not complete eruption. Reminder appliance therapy was opted for cessation of the habit. The wire component was modified. Modified palatal arch design was followed with a single large bead on a horizontal bar soldered to the palatal arch as shown in Figure 3. This enhances the support and stability of the appliance. The father reported the cessation of habit during the first follow-up visit.

### Case 4

A 5 years old girl accompanied by her mother reported with a chief complaint of thumb sucking habit especially when she was watching television and unconsciously during



Fig. 1: Modified bluegrass appliance



Fig. 2: Customized bluegrass appliance (two U loops added)



Fig. 3: Customized bluegrass appliance (modified palatal arch design with a single large bead)

sleep. There was no related malocclusion. A nonpunitive reminder therapy using customized blue grass appliance with a modified Nance palatal design was followed in which a horizontal bar with a bead was soldered to the arch bar

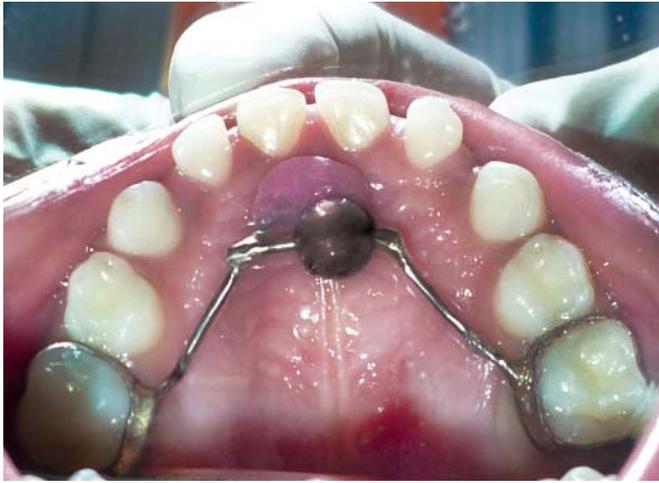


Fig. 4: Customized blue grass appliance (modified Nance design)

(Fig. 4). The mother reported the cessation of the habit in the first week.

### CONCLUSION

The modified blue grass appliance is a comfortable, hygienic and virtually invisible appliance that not only stops the sucking habit but retrains the tongue. An additional benefit is the availability of various colors for the beads. Children can be told to play with the bead using their tongue.<sup>5</sup> The initial reaction of the children to the customized blue appliance

was uniformly positive and enthusiastic without the hostile reaction frequently seen with the punitive appliances. Patients believed they had acquired a new toy with which to play with their tongues as instructions were given to roll the beads instead of sucking a digit. Long-term familiarity reduced the oral gratification and dependency on appliance use. No incidence of the purposeful destruction of this appliance was observed.

Modified bluegrass appliance can be incorporated with a Nance palatal design and also with a Quad helix in patients with posterior cross bite and retained thumb sucking habit. Through these case reports, it was established that customized bluegrass appliance is a useful tool in the early cessation of thumb sucking and tongue thrusting habit.

### REFERENCES

1. Greenleaf S, Mink JA. Retrospective study of the use of the Bluegrass appliance in the cessation of thumb habits. *Pediatr Dent* 2003;25:587-590.
2. Haskell BS, Mink JR. An aid to stop thumb sucking: the "Bluegrass" appliance. *Pediatr Dent* 1991;13:83-85.
3. Adair S. The Ace TM Bandage approach to digit sucking habits. *Pediatr Dent* 1999;21:451-453.
4. Ritto AK, Leitao P. The lingual pearl. *J Clin Orthod* 1998;32:318-327.
5. Baker C. The modified Bluegrass Appliance. *J Clin Orthod* 2000;34:535-537.