

## An aid to stop thumb sucking: the "Bluegrass" appliance

Bruce S. Haskell, DMD, PhD John R. Mink, DDS, MSD

### Abstract

*A nonpunitive fixed appliance utilizing a Teflon™ (E.I. du Pont de Nemours and Co., Inc., Wilmington, DE) roller is described. The appliance is used in conjunction with a program of positive reinforcement in managing thumb sucking in children 7–13 years of age. It has been used successfully in 24 children, with no cases requiring reinsertion.*

### Introduction

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 (Davidson et al. 1967; Haryett et al. 1970). 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 (Massler and Wood 1949). An approach using an appliance which is nonthreatening and which the dentist can employ easily is the subject of this report.

Thumb sucking may develop early in life and continue from infancy through the primary dentition and into the mixed and permanent dentition. In many cases, if the thumb habit continues into the mixed dentition a malocclusion may develop (Kaplan 1950; Ruttle et al. 1953; Graber 1959).

The dentist, in discussing the problem of a persistent oral habit, must try to determine if it is a habit which the child enjoys or if there are emotional problems that may be the cause (Korner and Reider 1955). If the habit is due to emotional problems, the dentist should be reluctant to interfere. It is very important that the relationship of the dentist to the child is supportive and positive and not adverse. For any approach to work in controlling a thumb-sucking habit, the child must express a strong interest in stopping the habit (Gellin 1978).

The method discussed in this paper utilizes a positive reinforcing approach to support the child. The appliance

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

### Use of the "Bluegrass" Appliance

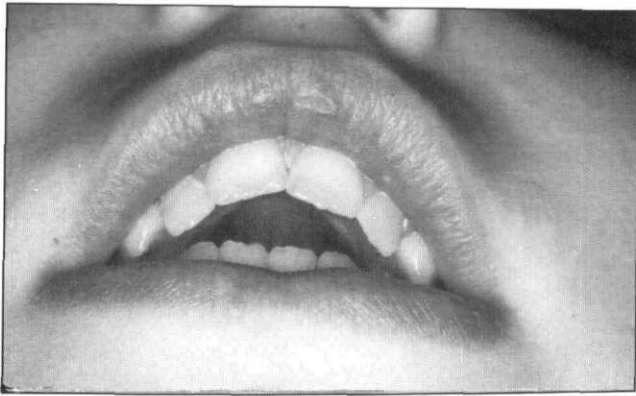
The appliance is indicated for those children who have continued a thumb-sucking habit which is affecting the mixed or permanent dentition (Figs 1 and 2, see next page). The use of any habit-type appliance should be discussed with the parents and children with a thorough explanation of the purpose of the appliance. Children also should indicate that they want to stop the habit and are willing to try the appliance as an aid to help them stop. Figure 3 (see next page) demonstrates the changes in one patient with an anterior open bite following successful use of this appliance.

The initial placement of the appliance was made in selected cases of thumb sucking in the pediatric dentistry clinics of the University of Kentucky and the University of Louisville. Considerable success was reported initially (anecdotally) by all clinicians using the appliance. The best results were reported in patients in the mixed dentition with a history of unsuccessful attempts at controlling the oral habit. A habit appliance was not previously used in these patients.

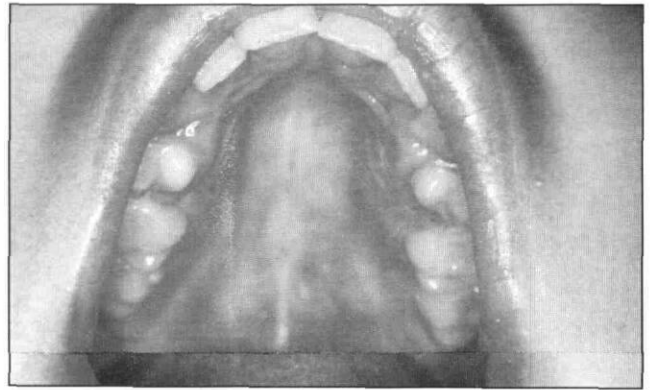
The roller appliance was cemented in place and left in the mouth for a period of three to six months. The initial reaction of the children to the appliance was uniformly positive and enthusiastic, without the hostile reaction frequently seen with the hay-rake appliance.

The patients believed they had acquired a new "toy" with which to play with their tongues, as instructions were given to "turn the roller" instead of sucking a digit. Digit sucking often stopped immediately. All of these patients expressed a desire to stop their oral habit.

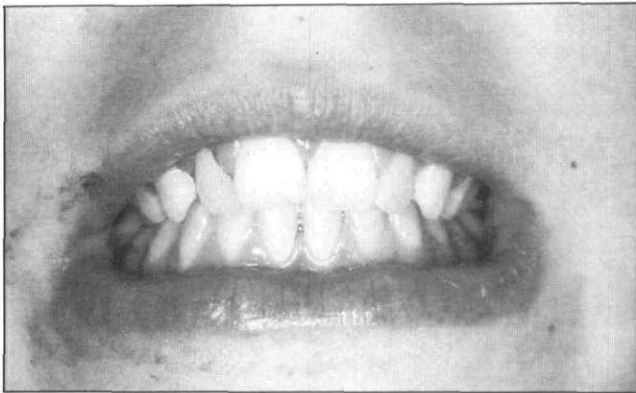
The initial favorable response usually waned after the first eight weeks to mere tolerance of the appliance. Digit sucking did not recur. The roller was kept in the mouth for about six months to ensure that the habit did



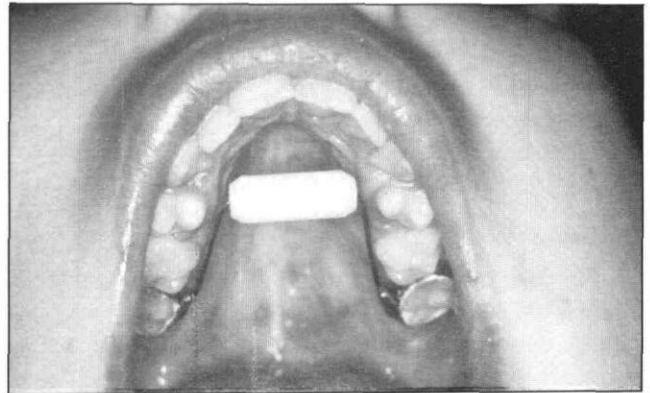
**Fig 1.** Anterior open bite due to thumb sucking. Amy S., 11 years old.



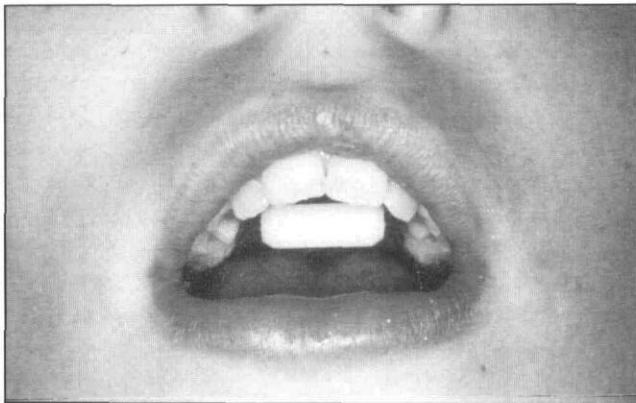
**Fig 2.** Palatal configuration of Amy S., 11 years old.



**Fig 3.** Change in anterior open bite following successful use of the appliance. Amy S., 11 years old.



**Fig 4.** Appliance cemented in place (occlusal view).



**Fig 5.** Appliance cemented in place (anterior view).

not resume (Haryett et al. 1970). Long-term familiarity with the roller reduced the oral gratification and dependency upon appliance use. Thus, the digit-sucking habit was eliminated and the dependency upon a positive-reinforcer substitute also slowly was removed.

While hay-rake and cage-type appliances frequently are mutilated or destroyed by habitual suckers, no incidence of purposeful destruction of this appliance was observed.

The high initial success rate encouraged additional study and testing of the appliance at the University of Kentucky Section of Pediatric Dentistry.

## Discussion

Utilizing the principles of positive reinforcement, we have constructed an oral appliance to eliminate thumb sucking. The idea came from the equine industry, where a bit with copper rollers is used to distract irritable horses.

A modified, six-sided roller machined from Teflon™ (E.I. du Pont de Nemours and Co., Inc., Wilmington, DE) to permit purchase of the tongue is constructed to slip over a 0.045 stainless steel wire which is soldered to molar orthodontic bands previously fitted and in place on a poured plaster model.

The bands can be placed on either the maxillary first molars or on the primary second molars. The roller itself is placed in the most superior aspect of the palate in the same general location as the plastic button of a "Hays-Nance" type appliance. This position does not cause obstruction with eating and presents minimal disturbance to speech, unlike hay-rake and cage-type appliances (Haryett et al. 1970). The Teflon rollers must not be

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in contact with the palatal tissue so that patients can roll them with their tongues (Figs 4 and 5, see previous page).

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 thumb sucking. Their usual sucking habits are at night or when they are tired or upset. The appliance has not been used in preschool age children at this time.

To date this appliance has been used on 24 patients at the University of Kentucky College of Dentistry and all cases have been successful. The age of the patients ranged from 7 to 13 years. The appliance was placed for approximately six months and then removed and kept with the chart in case of recurrence. To date, none have been reinserted.

Dr. Haskell is clinical professor, Department of Orthodontics, University of Louisville School of Dentistry, KY. Dr. Mink is professor and section leader, Division of Pediatric Dentistry, Department of Oral Health Practice, College of Dentistry, University of Kentucky, Lexington, KY. Reprint requests should be sent to: Dr. John R. Mink, Division of Pediatric Dentistry, Department of Oral Health Practice, College of Dentistry, University of Kentucky, Lexington, KY 40536-0084.

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## 1.2 million latchkey kids have access to guns in the home: survey

More than a million unsupervised children have access to firearms kept at home, according to a letter that appeared in the November 7, 1990 issue of the *Journal of the American Medical Association*.

In a letter to the editor, Robert K. Lee, RN, DrPH, and Jeffrey J. Sacks, MD, DrPH, of the Centers for Disease Control, Atlanta, GA, reported the results of a 1989 telephone survey of 1,005 Texas households. Fifty-four per cent of households with school-age children reported owning a firearm. Of these, 70% reported owning more than one gun. Fifteen per cent of households with both guns and elementary school-aged children reported that the children were unsupervised in the home after school.

The authors acknowledged that Texas firearm ownership figures are 10% higher than those in the rest of the country. However, they projected that there are firearms in 44% (8.2 million) of the 18.6 million households with children aged 5 to 17 years. The authors estimated that there are almost 1.2 million homes in the nation that combine the risk factors of a firearm and an unsupervised child.

The authors concluded that storing weapons in locked boxes, and using trigger locks, childproof safety catches, and loading indicators also may be important ways to reduce deaths involving firearms.