

# Modified RURS' Elbow Guard: An Extraoral Appliance for the Digit Sucking Habit

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## Abstract

Digit sucking is the most common oral fixation seen in children. Some situations that stimulate digit sucking are fatigue, boredom, excitement, hunger, fear, physical, and emotional stress. If these habits persist beyond the preschool age when permanent teeth start to erupt, they may be implicated as an important environmental etiological factor associated with the development of malocclusion. This article presents a case report of a 9-year-old female patient with thumb sucking habit since childhood and describes the steps in the fabrication of the modified RURS' elbow guard appliance for more efficient function.

**Keywords:** Digit sucking, habit breaking appliance, modified RURS' elbow guard

## INTRODUCTION

The influence of nonnutritive sucking habits has an impact on the growing dentofacial complex.<sup>[1]</sup> Digit sucking may also have a negative impact on the learning process whether or not the child sucks his/her digit at school. Various intra- and extra-oral appliances are available in the management of thumb sucking habit. Moreover, these appliances act as a punishment for indulging in this childhood activity.<sup>[2]</sup> Recently, in a case paper, a new appliance, i.e., RURS' elbow guard was introduced to eliminate the thumb sucking habit in a special child. Based on the concept of elbow guard, this appeared to be a suitable replacement for various extra- and intra-oral appliances in the management of thumb sucking habit even in healthy children. The objective of this paper was to present a case of thumb sucking habit that was successfully managed with modified RURS' elbow guard.

## CASE REPORT

A 9-year-old female patient was brought by her caretaker with a chief complaint of anterior open bite. Intraoral examination revealed a mixed dentition status, an anterior open bite along with anterior tongue thrusting habit. Extraoral examination revealed the presence of an ovoid callus on dorsal surface of the left thumb measuring 2 cm × 2 cm in

size. Detailed history revealed, the patient has thumb sucking habit (primary habit) since she was 2 years of age and now that had led to the development of a secondary habit in the form of tongue thrusting. She had a habit of thumb sucking only during the sleep hours that is in the subconscious state of mind. The etiology of this thumb sucking habit was fairly correlated with psychological stress within her family as reported by the caretaker but detailed introspective evaluation could not be possible. However, the detrimental effects of the thumb sucking habit over a period of 7 years showed anterior open bite, increased overjet, decreased overbite, and lip incompetence.

It was brought to the notice of caretaker that child's habit needed to be intercepted at the earliest to prevent further untoward effects on the dentofacial complex. The caretaker and the child were ready for the treatment for interception of the habit but were not willing for any intraoral appliance due to esthetic and speech problems. So as an alternative, RURS' elbow guard was considered. The following steps

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were considered in fabrication of the traditional RURS elbow guard:<sup>[3]</sup>

- Step 1: The patient was prepared for impression making with elbow kept at 45–60° angulation and the impression was made using double layer of the modeling wax which served as a spacer [Figure 1]
- Step 2: A sheet of modeling wax was added vertically to both ends of the prepared impression to make a box-shaped structure, and the dental stone was poured to make a cast
- Step 3: The skeleton of RURS' elbow guard was prepared with self-cure acrylic
- Step 4: Dewaxing was carried out in a hot water bath tub for 10 min and the excess acrylic was trimmed followed by the polishing
- Step 5: A layer of sponge was fixed on the inner surface of the skeleton for cushioning effect
- Step 6: A velvet cloth with four Velcro straps were attached on elbow guard for better rigidity, strength and to further restrict the elbow movements
- Step 7: The conventional RURS' elbow guard was tried but we noticed that it was not effective in restricting the movement in our patient. Hence, the length of the appliance was extended at both the ends by 2.5 inches and delivered [Figure 2]. The instructions were given for wearing and removal of appliance. The hand movement was checked for the restriction of the thumb reaching the oral cavity [Figure 3]. The patient as well as caretaker were comfortable and satisfied with the modified RURS' elbow guard.

Interappointment frequent reminders and reinforcement through telephonic conversations were provided regarding the regular use and handling of the appliance. The patient and caretaker mentioned about the quick acceptance of the appliance. The patient was recalled after 3 months, and there was a substantial reduction in the open bite and tongue thrust habit. The callus present on the dorsal surface of the left thumb had also begun to regress.

## DISCUSSION

There are several treatment methods available for the management of nonnutritive sucking habits such as age appropriate explanation, positive reinforcement, preventive technique, and mechanotherapy. Preventive methods include the application of a bitter solution, wearing socks, adhesive tapes, long sleeves gown and gloves.<sup>[4]</sup> Other appliances include thumb guard, acrylic shields,<sup>[5]</sup> and thermoplastic thumb post.<sup>[6]</sup> However, with the above-mentioned appliances, the disadvantages were that bitter solution had limited effect. The application of the adhesive tape causes sweating or infection and reduced blood circulation, even the tapes worn on the hand may easily be removed involuntarily during sleep. Alteration of the child's gown sleeves may cause wakefulness and irritability to the child. Intraoral appliances include fixed and removable habit breaking appliance such as tongue crib,



Figure 1: Modeling wax impression making of the left elbow.



Figure 2: Modified RURS' elbow guard.



Figure 3: Restriction of the elbow movement after delivery of the appliance.

oral screen, and bluegrass appliance,<sup>[7]</sup> which are esthetically not well accepted. Even deglutition and speech problems are reported by the patients using these intraoral appliances. Fixed orthodontic habit breakers could cause decalcification of enamel surfaces that may cause increased susceptibility to dental caries and gingival inflammation in the presence of poor

oral hygiene. In removable appliances, patient cooperation is required.

In the present case, RURS' elbow guard was considered because of the disadvantages of traditional habit breaking appliances.<sup>[2]</sup> The modifications in the fabrication of this RURS' elbow guard were the impression material, i.e., modeling wax was utilized which is easily available and economical. An addition layer of modeling wax at both the ends of the impression was attached to make a box form to contain the dental stone during the fabrication of cast. The number of Velcro straps were doubled in the present design to enhance the grip of the appliance over the elbow and also to further restrict the movement of the elbow.

Clinical observations revealed the following advantages over the conventional appliances: (1) intraoral changes were seen even though no additional intraoral appliance was given. (2) Patient compliance was better as it was only worn at bedtime. (3) This appliance could also be worn during the daytime under full sleeves and hence it had a psychological benefit as none of her peers were aware of her using any appliance. (4) This technique or appliance also ruled out the hassle of an intraoral impression of the arches in the child patient as this procedure is generally not well accepted by most of them especially the younger ones. Since this appliance only requires an extraoral impression of the elbow this definitely has an advantage as far as pediatric patients are concerned. There were no such disadvantages observed with this appliance during the course of treatment.

## CONCLUSIONS

The modified RURS' elbow guard has proved to be an additional useful appliance in the mechanotherapy armamentarium especially because of its better patient compliance and

exclusion of the need for an additional intraoral appliance as an adjuvant for the correction of the intraoral changes. However, further studies are required to draw a better conclusion.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

## REFERENCES

1. Ogaard B, Larsson E, Lindsten R. The effect of sucking habits, cohort, sex, intercanine arch widths, and breast or bottle feeding on posterior crossbite in Norwegian and Swedish 3-year-old children. *Am J Orthod Dentofacial Orthop* 1994;106:161-6.
2. Green SE. Confirmational study: A positive-based thumb and finger sucking elimination program. *Int J Orofacial Myology* 2010;36:44-59.
3. Shetty RM, Dixit U, Hegde R, Shivprakash PK. RURS' elbow guard: An innovative treatment of the thumb-sucking habit in a child with Hurler's syndrome. *J Indian Soc Pedod Prev Dent* 2010;28:212-8.
4. Punithavathy R, John B, Stalin R. Tiny tots and thumb sucking. *J Ind Acad Dent Spec* 2010;1:5-8.
5. Bengi AO, Karacay S, Güven G. A unique treatment of finger-sucking habit in children with mental retardation: Report of 2 cases. *Quintessence Int* 2007;38:e158-63.
6. Allen KD, Flegle JH, Watson TS. A thermoplastic thumb post for the treatment of thumb-sucking. *Am J Occup Ther* 1992;46:552-4.
7. Lenzi JM, Dutra AL, Pereira CM, Toledo OA. Etiology and treatment of anterior open bite. *J Health Sci Inst* 2011;29:92-5.