



CASE REPORT

RURS' ELBOW GUARD AND VESTIBULAR SCREEN-AN INNOVATIVE COMBINED APPROACH FOR MANAGEMENT OF LIP PICKING AND LIP BITING HABITS

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ARTICLE INFO

Article History:

Received 06th April, 2018

Received in revised form

24th May, 2018

Accepted 19th June, 2018

Published online 30th July, 2018

Key Words:

Elbow Guard,
Lip Picking,
Lip Biting, Habit.

ABSTRACT

Lip picking is an impulse controlled psychological disorder characterized by the recurring urge to pick one's own lips and this problem is often to the level that harm is caused. It may co-exist with lip biting habit. Unless these habits are intervened they would manifest into more serious degrading oral health conditions. We present a case of these two habits co-existing in a pediatric patient, which were managed by the customized fabrication of a RURS' elbow guard to prevent the hand from reaching the lips fully. An oral screen was also fabricated to obstruct the dental arch from causing further damage to the lip due to self-induced obsessive biting habit. Significance of clinical application of these two appliances lie in the fact that they not only provide barriers to these repetitive habitual reflexes but they also serve as reminders for abstaining from such habits. Besides, these appliances are also quite simple to fabricate requiring commonly available dental materials.

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Citation: Dr. Shankhanil Dev, Dr. Abhishek Das, Dr. Sudipto Kar, Dr.(Prof.) Shabnam Zahir and Dr. (Prof.) Gautam Kumar Kundu, 2018. "Rurs' elbow guard and vestibular screen-an innovative combined approach for management of lip picking and lip biting habits", *International Journal of Current Research*, 10, (07), 71197-71200.

INTRODUCTION

According to Johnson (1975) a habit is an inclination or aptitude for some action acquired by frequent repetition and showing itself in increased facility to performance and reduced power of resistance (Singh, 2007). The mouth is the most important region for emotional expression and mental gratification of a child and various ways to effectively stimulate it are often done by children (Kamdar, 2015). These include habits like thumb sucking, tongue thrusting, lip biting, lip picking and so on. For any habit to produce its unfavourable and counterproductive effects a trident of factors is essential (Bhalajhi, 2013). These are the frequency, intensity and duration of the habit (Bhalajhi, 2013). Habits that involve manipulation of the lips and perioral structures are called lip habits (Damle, 2012). Lip habits such as lip biting or lip picking fall under the category of self-injurious behaviour (Karacay et al., 2006).

Self-injurious behavior (SIB) is defined as deliberate harm to one's own body without any suicidal intent⁽⁴⁾. In a study done by Loschen *et al*, it was concluded that any condition which produces pain like sinusitis, headache or dental problems can precipitate SIB (Loschen, 1992). Vishnoi P *et al* reported that the prevalence of lip biting habit was 8.3% among school going children of Mewar ethnicity in India (Vishnoi *et al*, 2017). Various treatment modalities are available to discourage the performance of these detrimental oral habits. Appliances such as lip bumper soldered on bands or stainless steel crowns can be used for this purpose (Loschen *et al*, 1992). Alternatively acrylic trays fabricated in a way to force the upper lips anteriorly can also be opted for (Loschen *et al*, 1992). Vestibular screen or oral screen is a myofunctional appliance that can be sought after by clinicians for management of lip biting habits (Bhalajhi, 2013). This appliance besides preventing the teeth from coming in contact with the teeth, also aids in correction of mild proclination of anterior teeth if any such exists (Bhalajhi, 2013). Another mentionable extra-oral appliance is the elbow guard. Elbow guards or pads are protective padded gears worn on the elbows to protect them against injury during a fall or a strike (Singh, 2007).

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With respect to management of deleterious oral habits RURS' elbow guard designed by Shetty *et al.* (2015) can be strapped on the elbow of the hand mostly involved in the practice of the habit. As a result, that hand fails to reach the oral region completely due to resistance felt on the elbow. This article presents a case report of a pediatric patient having lower lip biting habit as well as the habit of lower lip picking, managed by the customized fabrication of a vestibular screen and RURS' elbow guard.

Case Report: A 5 year old boy came to the Department of Pedodontics and Preventive Dentistry with the chief complaint of frequent biting of the lower lip accompanied by lower lip pulling. Extra-oral examination revealed orthognathic facial profile, competent lips both at rest and during deglutition and dry chapped lower lip. Intra-oral examination revealed absence of any dental caries, presence of 20 deciduous teeth, primate spaces were present in the maxillary arch but not so apparent in the mandibular arch, mesial step molar relation was present, internal surface of labial mucosa of lower lip was mildly inflamed and vermilion border was indistinguishable due to the grossly cracked appearance of the lower lip. The patient's medical history was non-contributory. On consultation with the parents, details about the oral habits were recorded. It was found that these habits were performed by the patient almost throughout the day at an interval of 2 to 3 minutes with aggressive picking of the lower lip along with its biting. Counseling was done in the same visit and the patient was informed about the deleterious effects of the habits on the dental and systemic health but the patient was not adequately motivated to abstain from the habit. Hence interventional therapy in the form of deterrent appliances was planned. The treatment plan was explained to the parents. It was decided that a vestibular screen along with an extra-oral RURS' elbow guard on the basis of design given by Shetty *et al.*, would be fabricated to restrict the practice of these habits. The treatment procedure is as follows:

- Impressions of the lower arch was made with alginate material (Algitex) while that of the upper arch was made with impression compound (since the patient exhibited severe gag reflex).
- Impression compound of sufficient amount was kneaded and pressed against the elbow of right hand to make a special tray.
- To this special tray, alginate was mixed and loaded and impression of the elbow was registered.
- All the three impressions were poured with Type III dental stone (Kaistone) and working casts were obtained.
- Both the upper and lower arches were occluded and a wax spacer of baseplate wax was adapted all around the labial and buccal surfaces of both the arches ensuring coverage of both the upper and lower vestibules. A metal loop of 22 gauge was inserted in the labial portion of the spacer.
- To the above wax spacer, self-cure clear acrylic resin was added by sprinkle-on method and the vestibular screen with a metal loop was fabricated.
- For the RURS' elbow guard, a wax spacer of 1mm thickness was adapted on the cast.
- Two stainless steel wires of 23 gauge were placed vertically side by side on the spacer while another two

stainless steel wires of same gauge were placed horizontally side by side on the wax spacer.

- Clear self-cure acrylic resin was added on it by sprinkle-on method to fabricate the elbow guard.
- Both the appliances were trimmed of excess resin with slow-speed tungsten carbide burs and polished with pumice powder.
- A single layer of sponge was added on the inner aspect of the elbow guard and it was covered by a cloth which was then stitched and velcro straps were also added for tying around the elbow.

Both the appliances were then delivered to the patient. The elbow guard was strapped on the elbow. The parents were advised to make the child wear the elbow guard throughout the day and remove it during eating. For the vestibular screen, it was advised that the appliance be worn for 2-3 hours during the day and at night excluding the times of eating and sleeping. Regular follow-up was done.

DISCUSSION

Many treatment modalities are available for management of lip biting and lip picking habits. Initial counseling of the patient in the form of proper guidance and education with positive reinforcements is of utmost importance for stopping the deleterious habit (Singh, 2007). It is a clinical rule of thumb that a habit can be terminated by the conscious effort of the child himself/herself guided by the dentist and the parent⁽⁹⁾. This is possible only if the child is mature enough psychologically and wants to break the habit (Singh, 2007). In our case, the patient was not mentally ready to give up the habit and could not be motivated adequately by counseling. Other than counseling other options like application of a bitter tasting substance on the nails in the form of denatonium benzoate (Femite) or tying adhesive tapes on the fingers to stop the lip picking habit can also be looked into (Shetty *et al.*, 2015). But they also have their own limitations. Side-effects produced by denatonium benzoate include irritability, confusion, difficulty in sleeping and so on (<https://www.lybrate.com/medicine/femite-1-w-v-solution>). Application of adhesive tapes could hinder blood circulation on the fingers and cause excessive perspiration and infection (Shetty *et al.*, 2010). The remaining other possible substitutes are extra-oral and intra-oral appliances. Intra-oral appliance like lip bumper can be prescribed for management of lip biting habit. Unfortunately, it being a fixed appliance requires banding of the molars which could lead to decalcification of enamel and increased susceptibility to dental caries and gingivitis (Shetty *et al.*, 2015). Hence removable intra-oral appliance like vestibular or oral screen can be fabricated for managing the lower lip biting habit (Bhalajhi, 2013). An oral screen is a simple myofunctional appliance which eliminates abnormal forces of lips and the perioral musculature allowing the lingual forces to aid in dentoalveolar expansion (Arora *et al.*, 2013). This method of intervention was aptly defined by Kraus as 'inhibition therapy' that is inhibiting the initial underlying cause (Arora *et al.*, 2013). This appliance helps to achieve an artificial template for lips and cheeks to mold them thereby correcting the function of the perioral musculature enclosing the developing dentition (Shetty, 2010). Besides, it is also easy to fabricate and less likely to produce iatrogenic damage (Arora *et al.*, 2013). The RURS' elbow guard is an effective extra-oral appliance to aid in termination of oral habits.



Fig. 1.Pre-operative photograph



Fig. 2. Making impression of the right elbow with impression compound and alginate



Fig. 4. Maxillary and mandibular casts alongwith cast of the right elbow



Fig. 5. Wax spacer adapted on working cast of right elbow



Fig. 6. Placement of four stainless steel wires vertically and horizontally followed by addition of self-cure acrylic resin leading to the fabrication of elbow guard



Fig. 7. Placement of elbow guard on the patient's elbow



Fig. 8. Vestibular screen after fabrication with self-cure acrylic resin



Fig. 9. Patient wearing the vestibular screen



Fig. 10. Follow-up photograph after 6 months showing normal lip appearance

Uniqueness of this case lies in the fact that till now literature reports the use of this appliance with regard to management of

But here it has been employed in the case of management of a self-injurious behavior like lower lip picking. Multiple advantages are associated with the use of this deterrent appliance. Firstly, making impression of the elbow is simple (Shetty *et al.*, 2015). Secondly, the child thinks of the elbow guard as a fashionable accessory (Shetty *et al.*, 2015). Thirdly, acceptance and compliance of its use is high both for the parent and the child (Shetty *et al.*, 2015). It has to be removed only during eating⁽¹⁰⁾. The elbow guard was adequately firm in preventing the hand from reaching the lower lip, but it was also loose enough to maintain blood circulation (Shetty, 2010).

Conclusion

Oral screens are useful intra-oral functional appliances in terms of maintaining the balance between the forces of the perioral facial musculature and the tongue thus aiding in the proper development of the dentoalveolar complex by eliminating harmful forces from deleterious oral habits. RURS' elbow guard on the other hand, serve as a rightful adjunct in preventing the hand from reaching the lower lip by restraining the full form mobility of the elbow joint. Thus it saves the lip from the brunt of trauma received from the hand during performance of the picking habit.

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