

Intra oral fixed appliance for management of habit onychophagia - A Pediatric Case Report

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Introduction

Nail Biting or onychophagia can be defined as the putting one or more fingers in the mouth and biting on nail with teeth. (1). Although Nail biting (NB) is a common, but still it is one of the unresolved problem in psychiatry, psychology, medicine and dentistry. Usually NB does not manifest before the age of three or four years (2). Up to ten years of age, the incidence of nail biting is relatively equal in all gender, but thereafter it is observed that boys are significantly higher than girls as nail biters (2). Prevalence of NB varies from 20% to 33% in childhood (2). Nail biting is not a pathological condition in all cases. In Diagnostic and Statistical Manual of Mental Disorders, NB is not considered as mental disorder. (3). So, Nail biting can be considered as a self-injurious behavior such as pathological skin-picking or as a stereotypic movement disorder (2). Patients with nail biting can chew off nail beds, which causes chronic scarring along with red inflamed fingers (4). It is also associated with some complications, including infection of the nail beds, notably onychomycosis and onycholysis (5). Dental complications mostly seen in chipping off incisal edges of anterior teeth, and alveolar bone destruction, apical root resorption. Minor crowding, rotation, proclination of maxillary anterior teeth and temporomandibular joint dysfunction can also be noticed (5). When this habit reached severe type it may cause entrapment of bitten-off finger nails in the gingival (6). Treatment modalities mostly varies from restriction of performance by of this act through application of barrier or bitter tasting solutions on finger nails to psychotherapy and pharmacotherapy. A case is presented here, where nail biting habit in a pediatric patient was successfully treated by an intraoral fixed deterrent appliance.

Case Report

A 9-year-old boy reported to the Department of Pediatric and Preventive Dentistry, with his parents complaining of their boy being engaged in biting of nails of fingers during study. Extraoral examination revealed reveals short hypotonic, incompetent upper lip, curly, voluminous lower lip. Intraoral examination showed supernumerary teeth in between upper central incisors, protruded upper left central incisor. Radiographic examination revealed protruded maxillary incisors. On general examination revealed that the boy had mutilated finger nails.

At first counseling was attempted but after 3 weeks follow up showed that the patient was not sufficiently motivated. After obtaining informed consent from parent, it was decided to treat with an interceptive fixed intraoral deterrent appliance. Efficacy of this treatment was decided to be determined by clinical appearance of nail and parents observation.



Figure 1: Patient performing habit



Figure 2: Pre operative nail views



Figure 3: Preoperative intra oral view



Figure 4: Pre-operative intra oral radiograph

To prepare working casts maxillary and mandibular impressions were made in alginate. The appliance was fabricated on the mandibular cast. It was made with twisted 26-gauge stainless steel round wires. These were adapted along the incisal edges of the mandibular anteriors in the cast.

At first oral prophylaxis and proper isolation was done intraorally. Following etching and application of a bonding agent, the appliance was fixed in its desired position with light-cured composite resin.



Figure 5: Wire attachment adapts in working cast



Figure no 6: intraoral view with wire component



Figure 7: After 6 weeks of treatment the nail views.

Discussion

Nail-biting is a common, generally harmless child behavior that is self limiting and does not require intervention. Requirement of treatment should be determined by risk potential, and the dentist can play a pivotal role in identifying dental complications and risk.

It is difficult to find out a definite cause of NB. Anxiety and stress, family trend, psychodynamic disturbance – these are the possible causes suggested by various authors (2). It disappears spontaneously with age, thus it is not a concern-raising habit (2). It becomes more complex when associated with other problems and then it requires specialized help (2).

Various treatment modalities are available for nail biting. Most of them are based on the psychological and dermatological principal (5). The appliance described provides a mechanical restraint as well as a reminder to the patient.

By punishing every attempt of nail biting, this fixed appliance functions as an aversion-based behavioral modification technique (5). Reinforcement learning forms a core element of aversion technique but it also constitutes a reminder that is self-terminating, requiring reactivation (5).

There are four phases of nail biting (5). Firstly the finger is inspected visually and palpated by the other finger followed by placing it in front of the mouth. Then the mandible is positioned in a laterotrusive edge-to-edge contact. Thirdly, the fingers are quickly tapped against the front teeth and trying to bite nails by a series of quick spasmodic biting actions. At the same time fingernails are pressed tightly against the incisal edges, followed by withdrawal of the fingers.

This intraoral appliance prevents the third phase, i.e. the biting phase. The horizontal component of this appliance placed along the incisal edges to restrict the placement of the nails between the incisal surfaces of the maxillary and mandibular anterior teeth. Factors such as frequency, duration, intensity of the habit definitely influenced the treatment as well as cooperation of the patient are essential for the treatment to be successful (5).

Conclusion

NB as a behavior cannot be ignored, given the type of circumstances and stress present in today's life. Timely and proper treatment can intercept this habit. An innovative fixed intraoral interceptive appliance like this one, described in this case report would effectively train the individual to quit the deleterious habit and help in self-reminder of one's actions in order to live a healthy life.

References:

1. Ghanizadeh A. Nail Biting; Etiology, Consequences and Management. *Iran J Med Sci.* 2011;36(2):73-79.
2. Juneja A et al. Nail biting: A body focused repetitive behavior case report. *J Behav Health.* 2016;5(1):33-37. doi:10.5455/jbh.20150826024242
3. Ghanizadeh A. Association of nail biting and psychiatric disorders in children and their parents in a psychiatrically referred sample of children. *Child Adolesc Psychiatry Ment Health.* 2008; 2: 13.

4. Sachan A, Chaturvedi TP. Onychophagia (Nail Biting), anxiety, and malocclusion. *Indian Journal of Dental Research*. 2012;23(5):680-682. doi:10.4103/0970-9290.107399
5. Marouane O et al. New Approach to Managing Onychophagia. *Case Reports in Dentistry*. 2016. doi:10.1155/2016/5475462
6. Hodges DE et al. Nail-biting and foreign body embedment: a review and case report. *Pediatric Dentistry*. 1994;16(3):236-238.