Self-inflicted Orodental Injury in a Severely Burned Child

S. Burcak Cehreli, DDS, PhD *Burak Bayram, DDS*

ABSTRACT

The purpose of this report was to describe the case of a self-inflicted oral injury in a 1½-year-old child that may be related to chronic pain caused by a severely burned body. In the present case, the patient lost his mandibular primary incisors due to continuous teeth clenching. He further traumatized the socket, resulting in severe ulceration. Extraction of the maxillary central and lateral incisors under local anaesthesia was performed to prevent further injury and additional medical problems. (J Dent Child 2007;74:133-5)

KEYWORDS: SELF-INFLICTED INJURY, DENTAL INJURY, BURN

Self-mutilation is a repetitive behaviour that results in physical damage to the person. Self- inflicted orofacial injury has been related to biochemical disorders, syndromes, and genetic conditions that include: (1) Lesch-Nyhan syndrome; (2) De Lange and Tourette's syndromes; (3) hereditary sensory and autonomic neuropathy (HSAN); (4) Hallervorden-Spatz disease; (5) learning difficulties; (6) autism; (7) physiological disturbances; and (8) schizophrenia.[1-3] Patients who are in a comatose state originating either from brain stem injury (eg, herniation), head trauma, or diffuse cortical injury—such as toxicity, anoxia, or metabolic imbalance— may display self-injurious type of behaviors.[4-6] Self-inflicted injuries are classified as neuropathological chewing when they are correlated with comatose or decerebrate patients.[4-6] Self-destructive types of behaviour may also be observed in some infectious diseases, such as encephalitis.[3] To date, the association of teeth grinding and tongue and lip biting during a burn treatment has not been documented in the dental or medical literature.

The purpose of the present report was to describe the case of a self-inflicted oral injury in a 1½-year-old severely burned child.

CASE REPORT

A 1½-year-old boy was admitted to the Intensive Care Department of Baskent University in Ankara, Turkey, with a diagnosis of severe burn (52%) due to his fall into a hot jelly cauldron. Burns involved almost all body parts, except the head and face region. The patient was transferred to the hospital's burn unit for medical management.

Healthy skin prevents loss of fluid from the tissues underneath and serves as a very effective barrier to infection. Injuries like burns cause extensive skin damage, leading to fluid, protein, and blood loss. Prevention of infection and fluid replacement are integral to the success of the patient and his or her surgical reconstructive procedures. In the present case, fluid improved was accomplished and the patient was administered systemic antibiotics (Rocephin 400 mg, 2x1) due to the high infection risk. Burns involved the epidermis and part of the skin's dermis layer. Skin grafts and flaps were not indicated. After cleaning, topical antimicrobial dressing was applied on the burned areas, which were then covered with pressure wraps to avoid bleeding. By the sixth week of hospitalization, the pediatrician noticed the patient starting continuous movements of the lower jaw in a back-forward direction. Because the movements were reportedly associated with tooth clenching and grinding, the pediatrician referred to the patient pediatric dentistry clinic for a consultation.

The dental examination was performed in the hospital's burn unit. The patient expressed a state of agony, with continuous tooth clenching and repeated tongue thrusting. Intraoral examination revealed that the patient had an incomplete primary dentition comprised of 12 fully erupted teeth (central and lateral incisors and the first molars). Mandibular primary central and lateral incisors displayed severe mobility and vestibular displacement due to chronic occlusal trauma as a result of continuous tooth clenching. Due to the risk of aspiration, the excessively mobile man-

Dr. Cehreli is assistant professor and Dr. Bayram is research assistant, Faculty of Dentistry, Department of Oral Surgery, Baskent University, Ankara, Turkey.
Correspond with Dr. Cehreli at seviburcak@yahoo.com

dibular central and lateral incisors were extracted with use of topical anaesthesia (Hurricaine Gel with 20% benzocaine, Beutlich LP, Waukegan, Ill) at the same visit. A mouth prop was utilized during the procedure.

Five days following the extractions, the pediatrician called for another consultation reporting that the clenching had not ceased and that the extraction site was ulcerated. The intraoral examination held in the hospital confirmed the physician's findings. Following extractions, the patient had begun traumatizing the extraction site with his maxillary incisors, resulting in a wide ulceration over the entire extraction site (Figure 1). The number and type of teeth in the maxillary arch was not suitable in terms of retention to enable fabrication of an appliance that would inhibit any further tissue damage. Therefore, extraction of the maxillary central and lateral incisors was deemed necessary to prevent further injury and additional medical problems. Due to his wounds, the patient was nearly immobilized lying in his bed. Extraction of 4 teeth was performed at the hospital with administration of 1 ml of infiltrative anaesthesia, (prilocaine, Citanest, AstraZeneca-Eczacibaşi, İstanbul, Turkey) without sedation or general anaesthesia. Care was taken not to touch his body or neck. A mouth prop was utilized during the procedure.

The healing period was uneventful, demonstrating a rapid reduction of clenching activity and tissue reorganization at the ulceration site (Figure 2). Complete healing was observed on day 25 (Figure 3). The parents were informed about the future treatment plan, which included re-establishment of the anterior dentition by means of removable dentures when the patient demonstrated full recovery as well as completion of the primary dentition.

Figure 1. The extent of injury caused by the maxillary incisors.

Figure 2. Seven-day postextraction view of the ulcerated site. Note reorganization of the soft tissue.

Figure 3. Twenty-five day postextraction view. Note complete healing of the gingiva as well as the erupting primary canine tooth.

DISCUSSION

Although local, systemic, and psychological factors have been attributed to teeth grinding, the precise aetiology is unknown.[7] Some investigators believe self-mutilation to be a reaction to chronic pain in animals.[8] Several case reports have described self-injurious behaviour arising from neuropathic pain in human adults and children.[9] A review of the literature including verbal young children and adults has shown that this type of behaviour occurs in the presence of uncomfortable or painful dysesthesias in humans who exclusively target the symptomatic part, which is generally unpleasant.[9] In addition, this behaviour seems frequently to be intermittent, associated with episodic increases of the underlying dysesthesias and pain.[9]

In the present case, the authors think that the painful healing period of the severely burned body might have induced an autotomy behaviour. The lack of posterior support in the molar region to hold the vertical height may have worsened the case by facilitating the intrusion of maxillary anterior teeth into the lower region. No further self-mutilation occurred when the boy's medical status improved dramatically.

When it comes to infants and children, management of self-inflicted injuries is usually complicated by their lack of compliance and communication disability. There is no standard method to prevent or treat orofacial self-inflicted injuries. An appropriate treatment plan is established according to the special circumstances of each individual case. A number of treatment modalities have been advocated to treat self-inflicted orodental injuries, including tooth extraction[2] and intraoral appliances.[3] Treatment with intraoral appliances is the most conservative method. It might

succeed solely, however, if the appliance is well-tolerated by the child and properly retained. When a conservative technique fails, extraction of the anterior teeth or full-mouth clearance becomes necessary to protect the child form further injury.[2]

In the present case, the number and type of teeth in the maxillary arch was not suitable in terms of retention to enable fabrication of an appliance that would inhibit any further tissue damage. Therefore, extraction of the maxillary anterior teeth was the treatment of choice. Indeed, 60% of the parents prefer tooth extraction as opposed to a conservative modality such as a mouthguard.[10]

In the present case, the parents were advised to attend recall visits for re-establishment of the anterior dentition using removable dentures. Although the anterior segment appears to be stable from canine to canine and no space maintanance is usually required,[11] some researchers have concerns about speech problems, articulation errors, initiation of a tongue thrust pattern, and esthetics.[12-14] One study demonstrated that children who had worn dentures from early childhood exhibited no articulation errors, while those who did not exhibited articulation errors directly related to dentition.[14] In conclusion, this study demonstrated that patients who received prosthetic dental appliances (2 years is optimal as related to speech) develop better articulation skills. Another study, by Riekman and El Badrawy,[15] found that loss of all maxillary primary incisors before age 3 years resulted in speech problems in some children.

REFERENCES

1. Altom RL, DiAngeli AJ. Multiple extractions: Oral self-mutilation reviewed. Oral Surg Oral Med Oral Pathol 1989;67:271-4.
2. Rashid N, Yusuf H. Oral self-mutilation by a 17-month-old child with Lesch Nyhan syndrome. Int J Pediatr Dent 1997;7:115-7.
3. Cehreli ZC, Olmez S. The use of a special mouthguard in the management of oral injury self-inflicted by a 4-year-old child. Int J Pediatr Dent 1996;6:277-81.
4. Silva DR, da Fonseca MA. Self-injurious behaviour as a challenge for the dental practice: A case report. Pediatr Dent 2003;25:62-6.
5. Ngan PW, Nelson LP. Neuropathologic chewing in comatose children. Pediatr Dent 1985;7:302-6.
6. Freedman A, Sexton T, Reich D, Berkowitz RJ. Neuropathologic chewing in comatosed children: A case report. Pediatr Dent 1981;3:334-6.
7. Lobbezoo F, Soucy JP, Montplaisir JY, Lavigne GJ. Striatal D2 receptor binding in sleep bruxism. A controlled study with iodine 123 iodobenzamide and single-photo-emission computed tomography. J Dent Res 1996;75:1804-10.
8. Kauppila T. Correlation between autotomy behaviour and current theories of neuropathic pain. Neurosci Biobehav Rev 1998;23:111-29.
9. Mailis A. Compulsive targeted self-injurious behaviour in humans with neuropathic pain: A counterpart of animal autotomy? Four case reports and literature review. Pain 1996;64:569-78.
10. Anderson LT, Ernst M. Self-injury in Lesch-Nyhan disease. J Autism Dev Disord 1994;24:67-81.
11. Christensen JR, Fields HW. Space maintenance in the primary dentition. In: Pinkham JR, ed. Pediatric Dentistry: Infancy Through Adolescence. 2nd ed. Philadelphia, Pa: WB Saunders Company; 1994:358-63.
12. Klapper BJ, Strizak-Sherwin R. Esthetic anterios space maintenance. Pediatr Dent 1983;5:121-3.
13. Waggoner WF, Kupietzky A. Anterior esthetic fixed appliances for the preschooler: Considerations and a technique for placement. Pediatr Dent 2001;23:147-50.
14. Coston GN, Salinas CF. Speech characteristics in patients with hypohidrotic ectodermal dysplasia. Birth Defects Orig Artic Ser 1988;24:229-34.
15. Riekman GA, El Badrawy HE. Effect of premature loss of primary maxillary incisors on speech. Pediatr Dent 1985;7:119-22.