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Case Report

Management of Penetrating Soft Tissue Injury Involving Maxillary Labial Vestibule in a Pediatric Patient

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Abstract

In this research paper, the management of soft tissue injury in a 4-year-old Indian boy child is presented. Patient along with his parents reported to a private dental clinic complaining of intra oral soft tissue injury happened due to penetration of pencil while child playing. The foreign object, 'sharp pencil' got stuck inside the upper labial vestibule resulting in a deep penetrating wound. Following radiographic examination, no evidence of incorporation of any pencil parts inside the wound was confirmed and the labial vestibular soft tissue injury was successfully managed.

Keywords: *Foreign Object; Maxillary Labial Vestibule; Penetrating Soft Tissue Injury; Surgical Management*

Introduction

In pediatric dentistry, Intraoral soft tissue trauma is commonly encountered in children during clinical practice. The soft tissue injuries can occur from various factors such as hard food, sharp edges of the teeth, hot food, vigorous tooth brushing, iatrogenic damage during dental procedures, tooth bite or sometimes due to foreign objects [1]. Therefore, the causes which lead to soft tissue injuries occurring in the oral cavity in children have been categorized as physical, thermal, chemical or electrical injuries [2]. A recent systematic review reported occurrence of facial and intra-oral trauma of 49% in infants and 38% of toddlers who have been physically abused [2]. A torn upper labial frenum is also considered as the most common abusive injury to the mouth [3]. Preschool children exhibit an increased frequency of traumatic dental injuries involving soft tissues because of lack of motor coordination, and underdevelopment of physical and emotional growth. Based on epidemiological studies the prevalence of primary tooth injuries ranged from 4% to 30% and approximately 40% of children had their first visit to a dentist due to traumatic injuries rather than dental caries [2,3].

In children another important habit seen is the playing and keeping foreign body objects inside the oral cavity [4,5]. Various case reports have been published showing different types of foreign objects found/embedding in the teeth or soft tissues of children such as beads, stapler pin, paper pin, match stick piece, safety pain and seeds. The presence of foreign objects inside the tooth most of times go unnoticed until signs and symptoms develop as a consequence from these foreign bodies. The phenomenon of this type of behaviour seen in children alerts not only parents but also clinicians regarding thorough clinical examination and diagnosis of the condition [4,5].

Therefore, in this manuscript occurrence of such an unusual finding is presented showing maxillary labial vestibular penetrating deep injury occurring in a 4-year-old Indian boy caused by a foreign object like 'sharp pencil' and its successful management.

Case Report

A 4-year-old boy child was reported along with his parents to a private dental clinic complaining of trauma to the upper dental arch while playing. Parents were in panic situation due to trauma happened to their young child. History was elicited from the parents about how trauma occurred in a child. It was found that when child was playing with the pencil while doing his school assignment, accidentally the sharp pencil got penetrated inside upper labial vestibule making a deep wound. Physical examination was carried out for the child which revealed normal built and moderately nourished with no any signs and symptoms of systemic disorders. On extra oral examination the upper lip was swollen moderately without any lacerations. Intra oral examination was performed which showed presence of soft tissue injury including deep seated penetrating wound resulting in a small hole in the labial vestibule (Figure 1). Teeth were examined for presence of any luxation injury which revealed absence of any luxation. The deep wound was examined for the presence of any broken pencil parts inside the soft tissue cavity which found negative. Radiographic examination was done which showed no dentialveolar fracture and fracture involving anterior teeth (Figure 2). There was no incorporation of pencil fragments on the radiographic examination. The wound was closed using 3-0 black silk suture after thorough cleaning of the soft tissue using 10% betadine solution under local anaesthesia (Figure 3). Patient was advised to take soft and no spicy or hot diet for a period of one week and antibiotics and analgesics were prescribed. Patient was followed up after a week and successful soft tissue healing was ensured and suture removal was performed (Figure 4).

Figure 1: *Intraoral photograph showing deep penetrating wound involving upper labial vestibule due to pencil penetration.*

Figure 2: *Radiograph showing no fracture of the tooth and alveolus and no evidence of incorporated foreign body parts in the soft tissue.*

Figure 3: *Deep wound closure using 3-0 black silk suture.*

Figure 4: *Complete wound healing observed on follow-up and following suture removal.*

Discussion

Soares., *et al*. performed a retrospective study about soft tissue injuries occurring in children age ranged from 0 to 15 years who had been treated at the dental Trauma Surveillance Centre, School of Dentistry, Brazil and analysed for the frequency of soft tissue injury pertaining to gender, type of injury and its location [6]. Out of 543 patients examined, 56.2% had soft tissue injury, and 65.6% of males and about 39% of 0-3 year's age group were found with most affected. In the intraoral region, contusion (20%) and abrasion (19%) were more common to the upper lip and laceration to the lower lip (18.4%). In the intra-oral region, the injury was more frequent to the gums (415) and lips were the most frequently affected by abrasion (12%) and laceration (24%) [6]. Another Croatian Retrospective study [7] carried out research on children age ranging from 1 month to 6 years. The main cause of teeth injury was due to fall (67%) and 51% of injuries occurred at home. The distribution of soft tissue injuries by gender was not statistically significant. The highest percentage of preschoolers had soft tissue injuries at the age of 2 (25%). Out of the total number of children, 25% had an injury of the upper lip, 17% had injury to the upper lip and gingiva, 13% had injury to the gingiva and only one patient had a tongue injury [7].

A recent systematic review of Pediatric oral and dental injuries related to abuse did not find evidence of a pathognomonic pattern, although oral injuries should include further evaluation for additional injuries [8]. Injuries to lips may be the most common oral injury in abuse, and bruising to the face and neck, in particular the left ear (from a right strike), may increase the likelihood of the injury being non-accidental. Labial frenulum tears have traditionally been identified as a potential sign of non-accidental injury from forcing of a bottle or pacifier, however, an isolated tear does not seem to be more common in abused children. It is important to know pediatric milestones like while children can roll or walk to help judge the likelihood of the described injury mechanism [1-3].

There is a lack of evidence available to explain on whether labial frenulum tears require acute management. Suturing is generally not required, and most will need only a temporary soft diet. If the laceration extends into the vestibular fold which is a border of gingival and oral mucosa, then repair is likely necessary and may require an oral and maxillofacial surgeon depending on the severity [8,9].

Pediatric tongue lacerations and their management are mostly consensus based. In general length of the tongue laceration, is the most significant factor for clinicians to determine if a wound can be managed conservatively [9-11]. Most lacerations managed by secondary healing do extremely well with a week. Scarring is seen in about one-third of patients managed conservatively and in just more than one-half of cases managed by sutures and rates of complications including infection is very low regardless of management strategy. Usually, Zurich Tongue scheme [10] is advised as a guide in the management decisions. Gaping injuries to the tip of the tongue as well as injuries to the dorsum of the tongue that have gaping and more than 2 cm in length, should be closed primarily. It is important to examine the tongue in the resting position while assessing for gaping. Further, wounds with active haemorrhage or wounds that bisect the tongue may require repair. If a laceration has been determined to require intervention, deep absorbable sutures closing all layers in a single stitch should be used. Local analgesia might include gauze soaked in 4% lidocaine placed over the wound, local injection of lidocaine with epinephrine, or a lingual nerve block. Many children will require sedation increasing the both time and risks of repair [9-11].

It is commonly observed finding that children present with habit of keeping foreign objects in side the oral cavity or playing with objects keeping inside the mouth such as pencils, pen, safety pin, paper pin, glass beads, stapler pins and even neck chains [5]. Recently Nagaveni., *et al*. [4] reported a case of lodgement of long huge metallic neck chain into the uvula of the soft palate which was got stuck when child was playing with it. This was successfully removed. The same author also reported few series of cases showing foreign body lodgement inside the tooth such as stapler pin, glass bead, paper pin etc. In this classical article author has reviewed in detail pertaining to different aspects of foreign body lodgement [5]. The present case alerts not only parents but also clinicians about the dangerous habit of playing with foreign objects encountered in children.

There are reports showing embedding of fractured tooth fragments in the soft tissues of mouth including lip following trauma to the teeth. Nagaveni., *et al*. [12] presented a case of tooth embedding in the lower lip which was detected after 10 months following trauma in a 10-year-old Indian patient. Patient was not aware of presence of tooth fragment inside the lower lip as patient did not have any discomfort from this. But gradually patient developed hard indurated small swelling in the lower lip which on palpation causing pain. Clinical examination of the lower lip, showed scarring and discoloration over the lower lip and presence of hard mass was felt on palpation. Radiograph of lower lip was taken which revealed a radiopaque structure similar to the shape of missing fractured tooth fragment inside the soft tissue of the lower lip. Upon elicitation of history, patient explained that he had trauma to the upper front teeth following fall almost 10 months back. On clinical examination, fracture involving enamel, dentin was evident with respect to maxillary right central incisor, and hence based on clinical and radiographic examination the case was diagnosed as Elli's class II fracture. Following confirmation of tooth fragment in the lower lip, surgical removal was planned under local anaesthesia. After infiltration of 2% lignocaine, straight incision was given over the indurated area, followed by exposure of the tooth fragment. Using tissue holding forceps, the tooth fragment was removed and the wound was closed using 3-0 black silk suture. After one week of follow-up examination suture was removed and the wound was healing completely. This case report clearly indicates proper clinical and complete radiographic examination of both hard and soft tissues following dental trauma to rule out such occurrences [12].

It is also emphasized that it is essential to do a detailed physical and radiographic evaluation of patient following orofacial trauma [5]. Particularly in cases of dental trauma that presents with soft tissue injuries such as lip laceration and vestibular injuries, both hard tissue and the adjacent soft tissue should be carefully examined, even if the soft tissue has been sutured and treated by another health professional during the emergency care. Because of the magnitude of soft tissue trauma associated with a minor tooth structure, the pediatric dentist may often be the first health provider to see the child. Therefore, the pediatric dentist should look for missed tooth fragments in a child with such injuries [4,5,12].

Conclusion

Penetrating injury occurring to the soft tissue like maxillary labial vestibule in children requires a careful clinical evaluation of the wound, proper history and thorough investigation using appropriate radiographs to rule out presence of foreign objects and also to provide utmost care.

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