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Tooth fragments lodged in the lower lip after traumatic dental injury: a case report

CASE REPORT

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Abstract – Dental fractures are common trauma complications in the oral cavity. The efficient diagnosis and treatment of dental injury are important elements in clinical dentistry. This article describes a case study of trauma in central maxillary incisors with tooth fragments lodged in the lower lip. Radiographs of the soft structures proved themselves as an important tool in the detection and identification of occult tooth fragments, and play an important role in the establishment of the treatment to be adopted. Also, case follow-up is of fundamental significance in the preservation and maintenance of compromised structures.

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A significant number of children, teenagers, and adults are more and more involved in the most diverse kinds of accidents. Unfortunately, the majority of those accidents bring about craniofacial consequences which, in one way or another, affect the dental arch and/or supporting structures and soft tissues (1, 2). Tooth fractures are frequent complications following trauma in the oral cavity, and maybe ranked under three main groups: crown, crown-root, and root fractures. The first group comprises the most common dental trauma class observed in permanent dentition, and is most commonly caused by any such headfirst shock whose energy exceeds the shear stress of enamel and dentin (3). Several studies reported in the literature suggest that the maxillary central incisors are the teeth most commonly affected by trauma (4, 5), possibly because of the tooth's projection, position and inappropriate lip enveloping (2).

In order to gain better visualization of the site on which surgery is to be performed, the trauma suffered by soft tissues and lips justifies special attention. Careful inspection and meticulous observation may be of value to assist in the identification of edemas, sites of hemorrhage, crown and crown-root fractures, vertical root fractures, or some other alteration in tooth position (6).

This article presents the description and the 3-year follow-up of a case of dental trauma with soft tissue injury.

Case report

A 14-year-old white female patient was referred to the Emergency Room of the Faculty of Dentistry, Federal University of the State of Rio Grade do Sul (UFRGS), Brazil, with complaints of fracture in central maxillary incisors, occurred 3 days before. The fracture had been caused by a fall following a convulsion crisis, and after inspection was ranked class II according to Ellis (7). A detailed clinical examination revealed a lesion in the lower lip, already infected, and the reddening of the border of the lip and face skin, which extended to the oral mucosa (Fig. 1). A radiograph of the soft tissues revealed the presence of tooth fragments in the lower lip (Fig. 2). As the lesion in the lower lip suffered a secondary infection, fragments were initially not removed. The patient was prescribed a course of paracetamol 750 mg as pain-killer every 6 h, a 0.12% chlorhexidine digluconate mouthwash every 12 h for a 7-day period, and 500 mg amoxicillin every 8 h also for 7 days, after which period the patient had the lip lesion re-assessed.

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Fig. 1. Lower lip lesion with infection, showing the reddening of the border of the lip and face skin that extended to the oral mucosa.

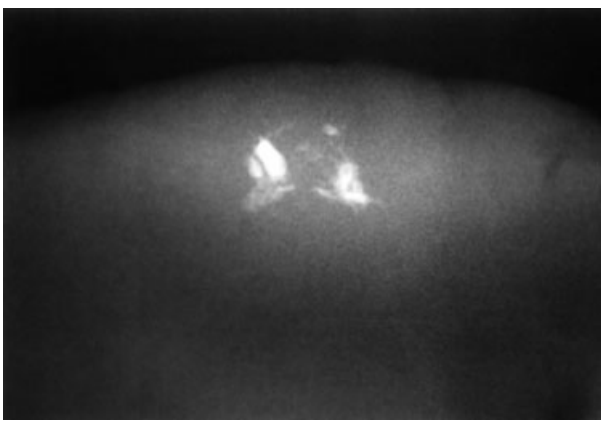

Fig. 2. Presence of tooth fragments in the lower lip revealed by periapical radiograph.

Fig. 3. Tooth fragments surgically removed from the lower lip.

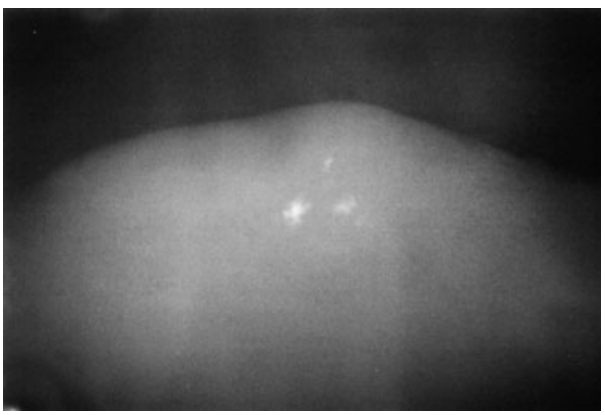

Fig. 4. Presence of the remaining tooth fragment in the lower lip revealed by periapical radiograph.

The radiographs taken did not evince any root fracture or periapical lesions in the teeth affected, which responded positively in the pulp sensitivity test, and presented no mobility. Thus, in the light of the clinical and radiographic findings taken together with the esthetical needs for this specific patient, the incisors affected were restored.

Nevertheless, only after six weeks had elapsed it was possible to carry out a surgical procedure to remove the embedded tooth fragments. This delay was due to schedule limitations in the service and to patient availability. The surgical procedure was carried out under local anesthesia. The lower lip was incised and the tissues raised by divulsion. Tooth fragments were visualized and individually removed. The procedure afforded the removal of five tooth fragments (Fig. 3). In order to confirm the removal of the fragments, radiographs of soft tissues were taken, whereupon one remaining fragment was revealed (Fig. 4). A scarring fibrosis encumbered the precise visual location and removal of the remaining fragment. Therefore, after appreciation of the feasible alternatives, the choice was made for the clinical and radiographic follow-up of the lodged fragment. A black 4.0 single-strand surgical thread was used to sow back the divulsed tissues.

The patient returned for follow-up within 12, 24, and 36 months after the trauma. At all visits, soft tissues were radiographed, with no sign of the remaining tooth fragment (Fig. 5). It is believed that the fragment might have been spontaneously extruded from the tissues, in spite of the fact that the patient did not report the typical foreign body picture. Pulp sensitivity tests and periapical radiographs were taken at all the three visits made, both for the lower and upper dental arch. The sensitivity test produced positive results, and the radiographs did not reveal any changes in periapical tissues. Yet, tooth 11, at the 36th month visit, produced a negative response in the pulp sensitivity test and root resorption, which suggests pulp necrosis. Therefore, the cavity test was chosen for the confirmation of that result, with which the degree of sensitivity to the fragment was diagnosed.

Discussion

Dental trauma is significantly frequent in youngsters, and its occurrence exceeds even that of caries and periodontal disease (5). Injuries suffered by teeth and their supporting structures are the most common facial traumas. These traumas are the result of several different events, such as falls, violence, sport activities, accidents

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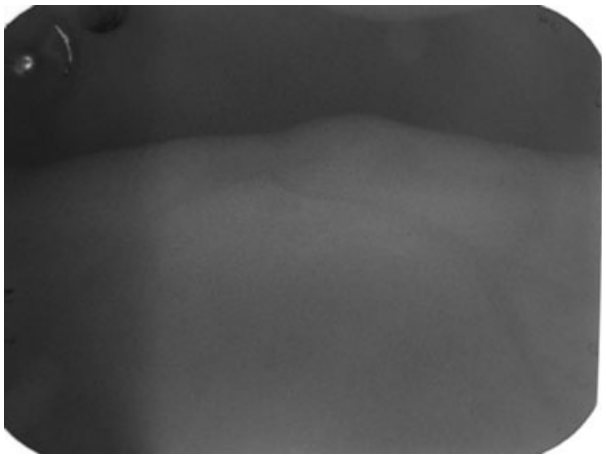

Fig. 5. Absence of the remaining tooth fragment as demonstrated by a case follow-up radiograph.

in general, self-inflicted bites, to mention but a few (2, 8). Indeed, it has been established that falls are the most common cause of traumas (2, 5), most significantly for 1–5 and 16–59 year-olds (5).

Several studies suggest that central maxillary incisors are the teeth most frequently affected by traumas (4, 5). This is explained by the incisor's projection, position and inappropriate lip enveloping (2). It has been reported that incisors are involved in between 10% and 20% of dental traumas (9), the most common of which being the fracture of the central maxillary incisor, with or without dentin exposure (10). A recent study investigated the medical records of patients treated in an emergency room of a hospital in the city of Recife, Brazil, and revealed that when one tooth only is involved in the trauma, the left central maxillary incisor is the tooth most commonly affected, whereas when two or more teeth are involved, the tooth most frequently damaged is the right central maxillary incisor (5).

Fractured incisors often cause injuries to soft tissues. In such event, considerable attention has to be spared to the tooth fragments resulting from the accident (2). At the same time that such fragments are not seldom lodged within the soft tissues, the effective detection of their presence is made difficult by a series of factors such as lacerations, bleeding, and edemas that may mask positive results and consequently produce biased results for the palpation check (2, 9). Thus, every effort has to be made towards spotting the missing tooth fragment before the injury site is sutured (11).

It has been well established that small tooth fragments lodged in the lower lip are constantly subject to movements, because of the contraction of the orbicular lip muscle. Thus, the fragments may end up in sites that are somewhat distant from the point through which the lip was pierced (8). The complications rinsing from an embedded tooth fragment may be serious and include infection, damaged vascular and nervous sheaths, and even aspiration of the unaccounted-for fragment, when not accurately located. Therefore, radiographic evaluations of the soft structures are fundamental to find and remove the embedded tooth fragment (2, 9, 11).

By reviewing the references on which the present research has taken support, it was observed that one study only prescribed the use of 250 mg penicillin V potassium, for 7 days (10). As for the other papers appraised (2, 9, 11), no antibiotic therapy was prescribed during postoperative treatment. In the present study, though, a course of antibiotic was administered prior to the surgical procedure, as the injury had been primarily infected.

Considering the necrosis hazard in teeth that suffered enamel and dentine fractures, it is advisable to control pulp conditions for at least 1 year (12). The protocol as followed in the present study and adopted in the Faculty of Dentistry, Federal University of the State of Rio Grade do Sul (UFRGS), establishes a minimum follow-up time of 3 years, with yearly visits, for cases of alveolar and dental trauma. Only one of the papers referenced in the presence study (11) describes the follow-up and the post-treatment of the clinical situations addressed. The other papers (2, 8–10) do not describe the follow-up of the cases studied.

Starting form the assessment of the several case studies reported in the literature, side by side with the present case study, the extreme importance of precise case history examination and the in-detail clinical and radiographic assessment is therefore proved. Such strategy is especially momentous for cases in which dental trauma takes place concomitantly with soft tissue lesions, and when imbedded tooth fragments are not located straight away.

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