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Facial and dental injuries due to dog bite in a 15-month-old child with sequelae in permanent teeth: a case report

CASE REPORT

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Abstract – This article reports a longitudinal follow-up of a 15-month-old child with dental trauma resulting from an attack by a dog. The injury consisted of laceration of the facial tissues and loss of the upper central deciduous incisors, in addition to loss of bone tissue in the same area. A malformation of the crown of the right central permanent incisor and complete change of the shape of the left central permanent incisor were observed. The etiological factors of childhood injuries as well as the importance of dental emergency care are discussed and the 14-year clinical and radiographic follow up of the case is presented.

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Dental injuries represent an important problem for general health since they result in medical, esthetic, and psychological consequences for the child and his parents, especially when care seeking is delayed (1).

According to Zerfowski & Bremerich (2), most studies regarding facial trauma in children focus only on severe injuries (bone fractures), whereas the high incidence of minor injuries (lacerations, hematomas, excoriations, and dental injuries), which mainly occur in children below the age of five, is neglected.

The most common etiological factors of injuries to the deciduous dentition are related to falls in different situations such as changing clothes, being on the mother's lap, amusement parks, and car and bicycle accidents, among others (3, 4).

Animal bites are less frequent injuries, with dog bites showing the highest incidence. The availability of a specific mechanism of injury code (E code 906.0) for dog bite in the *International Classification of Diseases* (ICD) considerably enhances the possibilities for describing and monitoring deaths and hospitalizations and for making international comparisons (5).

In a retrospective study of a 10-year period between January 1991 and December 2000, Mendez Gallart et al. (6) registered 654 patients under the age of 14 years, treated for dog bite-related injuries. The mean age was 5.09 years. A greater number of boys had been bitten than girls (2.75/1). Sixty-five percent of the bites were located on the head, face, and neck, especially in patients aged less than 4 years (6).

Wright et al. (7) reported a high frequency of dog bites in children between 0 and 9 years of age, especially boys, with the face, neck, and head being the most common sites of attack.

According to Ozanne-Smith et al. (8) the highest rate of serious injury from dog bite is to children under 5 years of age and the body region affected shows different patterns for children and adults. The face and the scalp represent 51% of bites to children, while 50% of adult bites presented to emergency departments were to the upper extremity (8).

A comparative study of dog bite injuries in younger and older children treated in a pediatric emergency department demonstrated that children younger than 6 years constituted 52.8% of the sample. As compared with older children, a higher proportion of younger children were bitten by their family dog in their own homes and the injuries typically involve severe lacerations to the face (9). The determination of the treatment to be instituted should always take into account possible injury to the deciduous and underlying permanent teeth and the patient's family should be aware of this fact. The aim of this article is to report a longitudinal follow-up of a 15-month-old child with dental trauma resulting from attack by a dog.

Case report

The patient, a 15-month-old girl, was seen at the Dental Pediatrics Clinic from School of Dentistry UNESP, Araçatuba – Brazil, for emergency treatment of injuries resulting from an attack by a dog suffered at the child's house.

The attack resulted in laceration of facial tissues involving the upper lip and nose (Fig. 1). According to the mother's report, on that occasion the girl was treated at a hospital for surgical correction of the facial lacerations and received anti-inflammatory, analgesic, and antibiotic drugs, in addition to anti-tetanus and anti-rabies vaccine. Intraoral clinical assessment revealed the loss of the upper central deciduous incisors and of bone tissue in the same area. The patient was submitted to antisepsis, hemostasis, and suture. Radiographic control after 3 years (Fig. 2) demonstrated a malformation of the crown of the germ of the right central permanent incisor and complete alteration in the shape of the left central permanent incisor. Over the following years, the patient was seen for follow-up visits at 6-month intervals.

Fig. 1. Facial aspect of patient after the emergency visit in hospital. Hematoma in left infraorbital area, laceration of nose and upper lip.

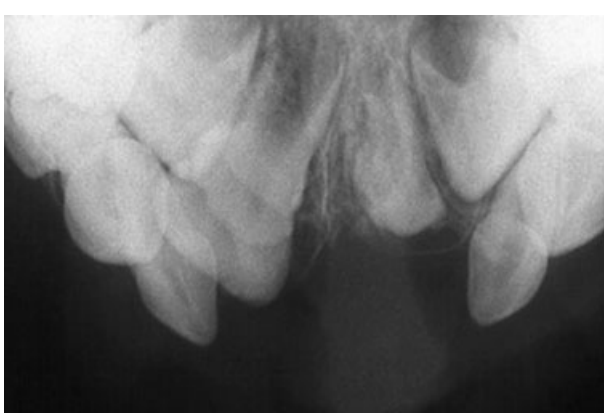

Fig. 2. Radiographic aspect after 3 years. Malformation in the crown of the right central permanent incisor and complete alteration in the shape of the left central permanent incisor.

After complete eruption of the right central permanent incisor, severe hypoplasia accompanied by the loss of enamel in the buccal portion of the tooth and exposure of dentinal tissue and no eruption of the left central permanent incisor were observed (Fig. 3). In the radiograph aspect the unerupted incisor presented a microtooth form (Fig. 4).

Fig. 3. Clinical aspect 7 years after the trauma, showing the right central permanent incisor with hypoplasia.

Fig. 4. Radiographic aspect presenting the left central permanent incisor with a microtooth form.

After esthetic rehabilitation of the hypoplastic incisor with composite resin, an orthodontics removable appliance containing an artificial tooth was installed for patient comfort (Fig. 5). The patient was clinically and radiographically followed up over a period of 10 years. During this period, no eruption of the left central incisor was observed and surgical removal was indicated. The facial aspect of the patient who is still using the functional appliance almost 14 years after the accident can be seen in Fig. 6.

Fig. 5. Clinical aspect of the rehabilitation after reconstruction of tooth 11 with composite resin and incorporation of an orthodontic removable appliance.

Fig. 6. Facial aspect 14 years after the trauma.

Discussion

Dental injuries resulting from dog attacks are highly uncommon and few reports are available in the literature. These accidents normally cause great physical and psychological damage to the patient, especially in the age group evaluated in the present study. Medical care is fundamental to prevent future infections and is aimed at reestablishing damaged structures to restore the patient's facial harmony. Since any amount of excess scarring due to infection would be unacceptable in the face, it seems prudent to administer antimicrobial prophylaxis (10). In fact, under antibiotic coverage, successful primary repair of infected dog bite wounds has been reported even 5 days after the traumatic incident. Moreover, tetanus and rabies prophylaxis must be evaluated in all dog bites.

A retrospective review of 44 children with dog bites was carried out at New Mexico Health Sciences Center between 1995 and 2000. The authors observed that the injured child is typically a 5-year-old boy attacked by a familiar dog at home or in the local neighborhood, and the most common injury in these children was a scalp laceration (57%), while the most common surgery (88%) was repair of multiple facial lacerations (11).

Although facial fractures are not commonly considered to be associated with dog bite injuries the index of suspicion for a fracture should be raised when the injury occurs near the orbit, nose, and cheek (12, 13). Since in the present case the accident involved deciduous teeth and provoked extensive bone loss, clinical and radiographic follow-up must be indicated. According to Christophersen et al. (14) and Holan (15) the age when the patient suffered the injury the germ of the permanent incisors was already forming. As observed later, the shape of both central permanent incisors was altered. One of the teeth could be maintained through rehabilitation with composite resin, whereas extraction was indicated for the other incisor due to lack of eruption and the extensive crown and root alteration, that made impossible a forced eruption by an orthodontic treatment.

In children with the related age, to loose a permanent tooth can provoke severe physical, aesthetic, and psychological effects who are of hard rehabilitation. In the present case the orthodontic functional removable appliance was indicated to avoid oral habits, like tongue interposition, and cooperate in a better aesthetic aspect, since it is very important for teens.

Injuries that occur in children younger than 3 years need to be followed up until complete eruption of the permanent teeth to permit the determination of possible alterations in tooth development and the institution of treatment at adequate times.

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