

# A case report of an isolated traumatic dental injury in an 8-year-old child



Seyed Reza Habibzadeh<sup>1</sup>, Hamid Zamani Moghadam<sup>1</sup>, Neema John Mehramiz<sup>2</sup>, Mahdi Foroughian<sup>1\*</sup>

<sup>1</sup>Department of Emergency Medicine, Faculty of Medicine, Mashhad University of Medical sciences, Mashhad, Iran.

<sup>2</sup>Department of Psychiatry & Neurology, Banner University Medical Center, Tucson, Arizona, USA

**Received:** 12 July 2019  
**Accepted:** 29 September 2019  
**Published online:** 9 October 2019

**\*Corresponding author:** Mahdi Foroughian; Department of Emergency Medicine, Faculty of Medicine, Mashhad University of Medical sciences, Mashhad, Iran. Tel: 05138525312; Email: foroughianmh@mums.ac.ir

**Competing interests:** None.

**Funding information:** Mashhad University of Medical sciences supported the study.

**Citation:** Habibzadeh SR, Zamani Moghadam H, Mehramiz NJ, Foroughian M. Journal of Emergency Practice and Trauma 2019; x(x): x-x. doi: 10.15171/jept.2019.18.

## Abstract

**Objective:** Anterior teeth are of utmost importance with regard to chewing, speaking, and beauty. Therefore, any traumatic dental injury has psychologically undesirable effects on children and their parents. The present study reported a case of a traumatic dental injury induced by falling off a bike and referral to an emergency department as well as measures taken for dental reconstruction and patient's improvement.

**Case Presentation:** An 8-year-old child was taken to an emergency department due to falling off a bike following imbalance, while suffering from dental pain in his upper jaw due to dental subluxation. Afterwards, dental retaining paste along with a fixer wire was used to maintain the position of the teeth. The patient also received oral non-steroidal analgesia (acetaminophen) for proper control of the pain and was subsequently referred to a dentist to repair the teeth. The initial examinations revealed that the child was fully conscious. Considering the patient's severe pain and intrusion of the superior left primary first tooth and the subluxation of the superior right primary first tooth. Local anesthesia was performed using 1% lidocaine in the location of the given teeth using infiltration technique. Then they were brought into an alignment by extracting the plunged tooth and the child was referred to a dentist for advanced dental trauma care.

**Conclusion:** Dentists are not always present in hospital emergency departments; therefore, an emergency medicine specialist should be able to diagnose common traumatic dental injuries in order to manage them appropriately at the early stages, and if necessary, refer patients to dentists for further complementary treatments. This important fact will be done after full examination and ruling out critical causes of trauma in the emergency department.

**Keywords:** Child, Trauma, Injury, Tooth

## Introduction

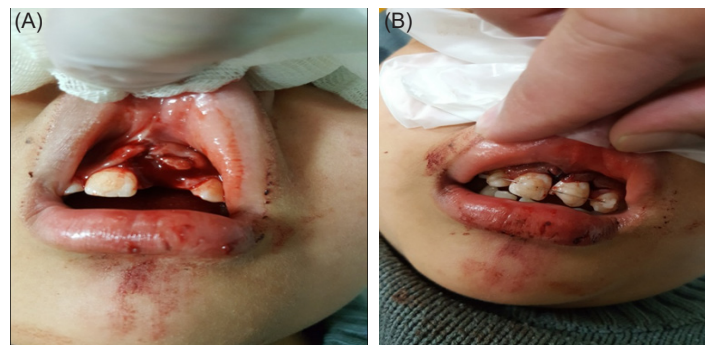
Traumatic dental injury not only can cause dental lesions, but also it can induce problems for the supporting tissues of the teeth. This injury can directly or indirectly have an effect on the lives of individuals in terms of changing appearance, speech, and position of teeth. Traumatic dental injury in children and adolescents is considered as a serious health problem worldwide (1-4). In this respect, anterior teeth are of utmost importance regarding chewing, speaking, and beauty. Hence, any injury to them has psychologically undesirable effects on children and their parents. Such injuries may occur at any age, but the probability of their occurrence is high at the age of 6-12 years due to hyperactivity of children and adolescents in this period (5). According to the International Association of Dental Traumatology (IADT), one out of two children aged 8-12 years may be affected with traumatic dental injuries. Besides, it has been assumed that immediate

and effective treatments of most traumatic dental injuries can prevent oral and beauty problems (6). Therefore, the present study reported a case of a traumatic dental injury induced by falling off a bike, referral to an emergency department, and measures taken for dental reconstruction and patient's improvement.

## Case Presentation

An 8-year-old child was taken to an emergency department due to falling off a bike following imbalance, collision with a stair edge, and knocking his face and teeth. The initial examinations revealed that the child was fully conscious with a mouth full of blood and there were symptoms of injury to the primary maxillary teeth in the form of intrusion and subluxation (Figure 1A). The patient had also no symptoms of other traumas. The patient's vital signs at the onset-to-admission time were as follows; BP:100/60 mm Hg; HR:112/min; RR: 22/min; BS: 82 mg/





**Figure 1.** (A) Dental injury in 8 years old child. (B) Treatment of dental injury.

dL; SPO<sub>2</sub>: 98%; (RA) and GCS: 15/15.

It should be noted that the patient had no tenderness in the middle of the neck and the lower back. There were also no symptoms of head trauma or nausea, vomiting, loss of consciousness as well as amnesia during examinations. It was about half an hour following the accident and no particular point was observed during the examination of the chest, the abdomen, the pelvis, and other organs.

After initial cleaning of the mouth with the mouthwash gum serum, bleeding and oral secretions were suctioned. No symptoms of active bleeding were also observed. The patient did not have a history of illnesses or medication use, and the history of the child's vaccination was complete. Considering the patient's severe pain and the symptoms of the intrusion of the superior left primary first tooth and the subluxation of the superior right primary first tooth, local anesthesia was performed using 1% lidocaine in the location of the traumatized teeth using infiltration technique. The teeth were brought into an alignment by extracting the intruded tooth and correcting the one with subluxation. Afterwards, dental retaining paste along with a fixer wire was used to maintain the position of the teeth (Figure 1B). The patient also received oral non-steroidal analgesia (acetaminophen) for proper control of the pain and was subsequently referred to a dentist to complete the treatment after being monitored in terms of an isolated mild head trauma for 6 hours according to routine advises. Necessary information and warning signs about head trauma were provided to his parents when discharging the patient.

### Discussion

Traumatic dental injuries are one of the most prevalent health problems in children in a way that most of these traumas are accompanied by inconveniences in other regions, especially in the head, the face, and the neck (7). The present study reported a case of severe traumatic dental injury referred to an emergency department, undergoing the required treatment measures.

Numerous investigations have been conducted regarding the injury to the anterior teeth and most reports have indicated that enamel-dentin fractures or complicated

crown fractures have been the most common dental injuries, and in most cases, trauma has occurred in the maxillary central incisor (8-11). In the present case study, there were symptoms of the intrusion of the left primary maxillary tooth and the subluxation of the right primary maxillary tooth in the child. According to the given reports; emergency treatments, restoration, and maintenance of anterior teeth in children require clinical skills, knowledge of diagnosing problems, practice of proper emergency treatments as well as long term follow-ups (12). Based on the American Academy of Pediatric Dentistry (AAPD) guideline for traumatic dental injuries, in immature teeth with trauma which are asymptomatic, normal percussion sound, and normal radiographic evidence pulp canal blockage have favorable outcomes (13). Examples of traumatic dental injuries include intrusion, extrusion, luxation, and elution. In the cases of extrusion, intrusion, and luxation; it is better to induce adequate numbness by practicing anesthesia for each tooth through the infiltration of the local analgesia and then realign the teeth. To retain the alignment of the teeth, they are fixed via wire and binding gum paste and then the patient is referred to a dentist for further complementary treatments after rejecting any other emergency measures. In cases of tooth elution, the tooth should be implanted in the dental cavity as soon as possible with the slightest manipulations in tooth root and following proper local anesthesia of the tooth and then refer the patient to a dentist for definitive treatments. In cases of milk tooth elution, there is no need to re-implant it since many complications such as bone fusion and injury to permanent teeth may occur in the re-implantation site. In cases where the extracted tooth is not present in the oral cavity, practicing an exploratory radiography is necessary to find the tooth (14-16). In this case study, local anesthesia was performed using 1% lidocaine at the site of the intruded and subluxated teeth through infiltration technique to correct dental alignment by extracting the intruded tooth and also modifying the alignment of the one with subluxation. Then; a dental retaining paste along with a fixer wire was used to retain the position of the teeth (Figure 1B). The patient received oral non-steroidal

analgesia (acetaminophen) for proper control of the pain, and then was referred to a dentist to complete treatment after being monitored in terms of a mild head trauma for a period of 6 hours. Therefore, during emergency situations, an emergency medical specialist should be able to check the symptoms of other traumas at the early stages, while examining the child completely, and managing the factors threatening body organs or life. In many trauma centers, which are the primary destinations for children affected with traumatic dental injuries, there is no resident dentist and thus an emergency medicine specialist is responsible for taking primary measures to manage the traumas. Time dependency for most of these measures to maintain tooth pulp vitality also doubles the importance of these primary care services and their accuracy (17). Fortunately, all the necessary measures and care services were accurately implemented by an emergency medicine specialist as well as medical staff in the present study. At the time of discharge from the emergency department, dangerous signs and warning symptoms in relation to head trauma as well as necessary points regarding dental care were taught to the patient and attendants.

### Conclusion

Dentists are not always present in an emergency department; therefore, all patients with traumatic dental injuries do not have the chance to be managed with such problems during their first visits by dentists. On the other hand, prognosis of many cases of such injuries is time-dependent. Accordingly, an emergency medicine specialist should be able to diagnose common traumatic dental injuries and manage them properly at an early stage, and if necessary, refer patients to dentists for further complementary treatments.

### Ethical issues

Informed consent statement was obtained from the patient for the publication of this report.

### Authors contributions

In this study case identification and treatment conducted by SRH and MF. Writing, revising and submitting done by SRH, MF, HZM, NJM. Finally all of the authors accepted the revised manuscript.

### Acknowledgment

We thank Mashhad University of Medical Sciences for financially supporting and the Clinical Research Development Unit of Peymanieh Educational and Research and Therapeutic Center of Jahrom University of Medical Sciences for revising the case presentation.

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