

# Autogenous bonding of tooth fragment retained in lower lip after trauma

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## Abstract

In cases of trauma, dental fragments occasionally penetrate into the soft-tissues and may cause severe complications, if neglected. Clinical and radiographic examinations can provide a diagnosis and help in the surgical removal of any dental fragment embedded in soft-tissue. This case report concerns an 8-year-old boy who was diagnosed with a fragment of a fractured permanent central incisor crown located in the lower lip. The patient was seen initially at a general hospital, where the dental fragment went unnoticed. After 2 days, the patient was seen at the pediatric dentistry clinic, where a fragment embedded in the lower lip, causing a large swelling, was diagnosed. The fragment was removed surgically and bonded to the fractured tooth. A mouth guard was prescribed for sports. The importance of soft-tissue exploration even post-trauma was highlighted in this paper.

**Keywords:** Child, crown fracture, dental injuries, lip, tooth fragment

## Introduction

Crown fractures account for the majority of dental trauma in permanent dentition and represent 26-76% of dental injuries.<sup>[1,2]</sup> The incisors, especially when fractured, often cause laceration of the soft tissue, which may be cut or perforated by the injured tooth.<sup>[3]</sup> Clinical and radiographic exams of the soft tissue have to be carried out to locate any object embedded in the lesioned areas. When a fragment is found, it can be bonded to the fractured tooth. However, in cases where a fragment is not discovered, its presence can cause local swelling, pain, and fever.<sup>[4]</sup> This paper describes the diagnosis and treatment of a patient with a fractured permanent incisor and a fragment of the traumatized tooth embedded in the lower lip.

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## Case Report

A 10-year-old male patient came to the Trauma Project clinic at the Federal University of Rio of Janeiro with the complaint of a fractured tooth. The patient had been seen initially at the emergency department of a nearby general hospital where anti-inflammatory medication was prescribed. No treatment was given for the fractured tooth or for the laceration of the lower lip. Also, the dental fragment embedded in the lower lip went unnoticed. The mother reported that the child had sustained an orofacial trauma 2 days ago due to a fall during a soccer game on asphalt. The medical history was non-contributory and all the recommended vaccines had been taken.

During the extraoral and intraoral examination, soft-tissue edema and laceration involving the lower lip alerted the possibility of the presence of a tooth fragment in the soft tissue. Palpation of the lower lip revealed a hard mass and the patient complained of pain in the region. Intraoral examination showed an enamel and dentin crown fracture without pulp exposure of the upper left permanent central incisor [Figure 1] that was sensitive to thermal stimulation.

A radiographic film was placed between the lower lip and mandibular incisor to verify the presence of an object. The radiographic exposure dose was 25% of that used for standard periapical radiographs. This radiographic exam revealed a large radiopaque foreign body suggestive of the coronal fragment of the fractured incisor [Figure 2]. There was no evidence of root fracture, pathological periapical lesion or periodontal ligament tissue injuries of the upper anterior teeth [Figure 3].

The patient remained 1 week under anti-inflammatory and antibiotic medicines to reduce the swelling and risk of infection. After this, he was submitted to a surgical excision of

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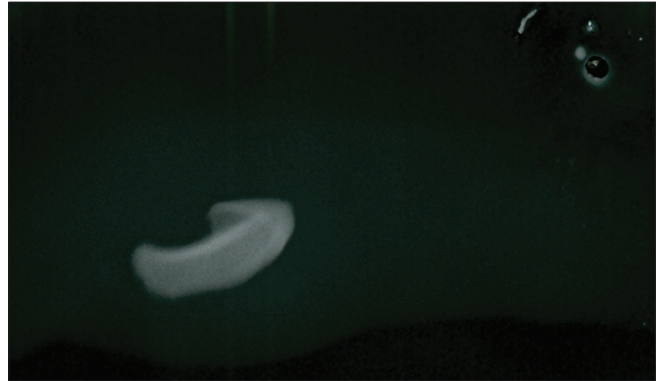
the fragment under local anesthesia [Figure 4]. The fragment was stored in a saline solution.

After 8 days, the lower lip was healed. The fragment and the fractured tooth were etching with phosphoric acid 37%

for 20 s, washed with water, and curing adhesive under rubber dam. The fragment was positioned on the tooth with a nano-hybrid resin layer and the excess was removed before photopolymerization [Figure 5]. After, a mouth-guard was made, which was recommended to use during sports practice to protect against any new traumas [Figure 6]. The patient



**Figure 1:** Clinical aspect of enamel and dentin crown fracture without pulp exposure of upper left permanent central incisor



**Figure 2:** Radiographic exam revealed a large radiopaque foreign body suggestive of the coronal fragment of the fracture incisor



**Figure 3:** Radiographic periapical exam shows no evidence of root fracture, pathological periapical lesion and periodontal ligament tissue injuries of the upper anterior teeth



**Figure 4:** Surgical excision of the fragment under local anesthesia



**Figure 5:** Final aspect of restored tooth



**Figure 6:** Mouth guard made to use during sports practice

is attending follow-up visits to accompany the tooth both clinically and radiographically.

## Discussion

Inadequate emergency treatments of dental injuries with laceration of soft-tissues are important problems that can contribute to increase complications such as infections and other disturbances.<sup>[5]</sup> Usually a fractured or missed incisor does not pose any problem in diagnosis. However, when there is also soft-tissue laceration, the possibility of tooth fragments should be investigated. Occlusal, periapical, and lateral radiographs help in the detection of any tooth fragments in the oral regions, especially if the laceration and bleeding make the clinical examination difficult.<sup>[1]</sup>

In our case, the first attendance at the hospital did not observe the presence of the fragment in the lower lip and the patient was directed for restoration of the lower lip. This caused an exacerbation of the inflammation as was seen at our clinic. We located the tooth fragment by placing a radiographic film between the lower incisors and lip. This radiographic evaluation is extremely important, since tooth fragments may become foreign bodies in soft tissues causing pain, difficulty in speech or eating and edemas. Also, antibiotics are important to prevent systemic and local infection as well as the use of chlorhexidine gluconate 0.12% to clean the area. Anti-inflammatory drugs are indicated to reduce edemas and provide increased comfort to the patient.

The most conservative treatment option for a crown fracture, when a fragment is encountered, is the bonding of the fragment to the fractured tooth. This technique produces good, lasting esthetic results, as it maintains the original anatomic shape, color, and texture of the tooth.<sup>[1,3]</sup> It is important to maintain the fragment in the aqueous mediums

such as normal saline 0.5% until the bonding procedure. In our patient, we recuperated the fragment and it was bonded with success. Although lip tissue is an unusual medium to preserve a tooth fragment, the coronal fragment embedded in the lip of our patient for 10 days maintained the conditions and color of the fractured incisor crown. Moreover, according to Tosun *et al.*,<sup>[6]</sup> the reattachment of tooth fragments can successfully benefit periodontal health, aesthetic needs and normal functioning.

After treatment, we recommended the use of a mouth guard during the practice of sports to prevent new dental injuries and to conserve the restoration. It should be noted that dento-alveolar traumatism affects the patient's individual quality of life, interfering with normal daily activities.

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