

## MISSED DIAGNOSIS OF TOOTH FRAGMENTS IN THE LOWER LIP FOLLOWING DENTAL TRAUMA

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### *Abstract*

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Lip wound following traumatic crown fractures may be repaired without examining lacerated soft tissue leading to failure to detect the tooth fragments. It is critical that every attempt should be made to locate the missing tooth structure before the wound is closed. This case report presents a child with fractured crowns of central and lateral incisors in which the fragments were embedded in the lower lip and went unnoticed for eleven months until the child presented for dental care. The otolaryngologist in the emergency department of a hospital failed to notice the presence of the tooth fragments in the lower lip which, highlighting the significance of soft tissue examination even in late presentation of trauma cases. The existence of crown fractures and lacerated lip should alert the clinician to their potential loss in the lacerated wound and therefore careful examination before closure using radiographs if necessary.

### **Introduction**

Falls are considered the most frequent cause of dental trauma with fractures of permanent teeth crowns the most common in children and adolescents (1,2). Overjet determine the severity of the crown fracture (3,4). Presence of overjet greater than 3mm doubled the occurrence of crown fracture of the anterior teeth whereas overjet greater than 6mm increased the occurrence fourfold (3). The fractured incisors often cause laceration of soft tissue, and lip laceration has been reported to be the most common (62.8%) injury of the oral cavity (5-8). Failure in detecting the teeth fragments in the lips by physicians who first see the child in the hospitals have been reported (7-11). It has been suggested that early and timely diagnosis and removal of the fragments embedded in the lip may preclude undesirable reaction and scarring due to the presence of foreign body (4,5). It has been reported that fragment embedded in the lower lip caused a swelling after two days (12) and irritation, pain, and tingling sensation in the lower lip for one year (13).

Unsatisfactory emergency management of traumatic dental injuries have been raised showing that management of traumatic injuries may be complicated when they do not present soon for treatment (11). Although teeth fragments embedded in the lip have been reported in the literature, few reports described the fragments, which went unnoticed for several months without any signs, or symptoms until the child seek dental care. This case report presents a child with fractured crowns of central and lateral incisors in which the fragments were embedded in the lower lip and went unnoticed for 11 months until the child presented for dental care. The objective of this report is to highlight the significance of the initial and early clinical and radiological examinations in detecting tooth fragments in the lower lip.

### **Case Report**

A ten-year-old male presented with his mother for restoration of his teeth following trauma about 11 months ago. After signing the informed consent by the mother, the medical and dental history were taken. Medical history was

none contributory. His mom mentioned that her son fell while riding his bike about 11 months ago and fractured his front teeth and wounded his lower lip. The child had been quickly taken to a local hospital for evaluation. The otolaryngologist in the emergency department performed the initial examination and sutured the lacerated lip. He prescribed an analgesic and a course of antibiotic. He referred the patient to the dental clinic for treatment of the fractured teeth. However, the mother indicated that she was not able to take her son to the dental office as he was not complaining of pain or discomfort to warrant the visit. She also mentioned that the child started orthodontic treatment about two months ago.

Clinical examination revealed no deviation of mandible on opening/closing and no palpable bone fracture. Mandibular right central incisor showed uncomplicated crown fracture and was intruded and positioned labially with no mobility. The mandibular right lateral incisor also showed minor uncomplicated crown fracture and no mobility. The mother was asked if the loose pieces of fractured teeth were located after trauma and she reported that they were not located. Cold and percussion tests were normal for all mandibular anterior teeth.

Intraoral photographs were taken (Figures 1 and 2). Periapical radiograph was taken and showed that the mandibular right central and lateral incisors have complete root development, no root fractures or pathological alteration in their apical regions. Since the parents could not account for the missing fragments, soft tissue radiograph for the lower lip was taken to rule out the presence of the pieces of fractured teeth. Soft tissue radiograph showed three small radiopaque pieces of the missing fragments of the fractured incisors (Figure 3). Temporary coverage of exposed dentin of the incisors was completed. The mother informed about the need to follow up with the orthodontist regarding the intruded mandibular right central incisor. Final restorations of the incisors were planned in future visit. The mother was instructed to call if any problems or concerns arise.

Parents were informed about the presence of these fragments in the lower lip and that they should contact the otolaryngologist in the emergency department who failed to notice the presence of the teeth fragments. Later the otolaryngologist was contacted and examined the child and he recommended to follow up and not to have these fragments surgically removed.

## Discussion

Fragments of teeth implanted in soft tissue following trauma are difficult to detect during clinical exam as bleeding of the lacerated wound and coverage by the orbicularis oris muscles may not allow clear clinical examination (4,5). A thorough history of the accident is critical to identify where the missing fragments of teeth and appropriate debridement is extremely vital before clinical examination (4,5,8). Soft tissue radiographs are needed and are essential to confirm the presence of tooth fragments in the lip (4,5). This is performed by positioning the radiographic film between the lip and the maxillary or mandibular arch and using one-fourth (25%) of the normal exposure time (4). If needed, a lateral radiograph may be taken using one-half (50%) of the normal exposure time to see fragments relative to the mucosal and cutaneous surfaces of the lip (4).

Failure in detecting the fragments in this case may be related to the emergency conditions, complexity and nature of the trauma, and unawareness of the physicians for the importance of examining lacerated soft tissues. The clinician should inspect soft and hard tissues carefully, even if the patient was treated earlier by another health care professional (5,14). Presence of tooth fragments and foreign bodies in the soft tissue was suggested to exaggerate the risk of damaging vascular and nervous sheaths, infection, foreign-body reaction, and fibrous scar tissue formation (2,9). Surgical removal of tooth fragments from soft tissues on time is suggested as the treatment of choice to avoid complications (5,7,14). However, their late removal may represent a surgical challenge due to nearby vital structures as well as difficulty in accessing (15). A study evaluated the retained fragments in wounds from traumatic injuries and concluded that it may take months to years for the fragments to result in complications (16). However, in the present case no complications were seen 11 months after the trauma and therefore, the otolaryngologist recommended to follow up and not to have these fragments surgically removed.

In the present case, tooth fragments in the lower lip were not detected and the otolaryngologist sutured the wound. It has been reported that lip wounds due to tooth fragments were more likely repaired by physicians in the hospitals who fail in detecting their presence before consulting with the dentist (7-11). In the present case, the dentist detected the tooth fragments in the lower lip 11 months after trauma. Wound was healed and patient did not suffer any signs or symptoms up to 11 months following trauma. In contrast, a case has been reported in which a tooth fragments that were not located on physical examination following the trauma, were discovered six months later as hard, perforating papulonodules on the lower lip (17). Another case was also reported in which four tooth fragments in the lower lip were not detected and the one tooth fragment protruded through the skin 18 days later (18). As many cases of tooth fragments are unnoticed during soft tissue examination and the tissues were repaired in the hospitals, dental team may help by informing their medical team and physicians to anticipate such tooth fragments when fractured incisors and lip laceration is present.

The time elapsed from embedding the tooth fragments in the lips to their identification and treatment is directly related to the kind of resulted complications (5). Small tooth fragments may continuously move because of contraction of the orbicularis oris muscle and may result in discomfort of the patient to seek another evaluation (5,19). Another complication may result by breaking the suture line with infection and fibrosis (20). In the present case, tooth fragments extrusions or infections did not happen and the patient did not have any complications and did not feel discomfort as well as no signs or symptoms were reported up to 11 months following trauma. Dental history revealed that the patient started antibiotic treatment on the day of trauma as prescribed by the otolaryngologist. Other reported cases had not been given antibiotic treatment, because of lack of any signs of infection (5).

### Summary

Traumatic dental injuries require a distinctive consideration when it is involved with soft tissue lacerations and missing tooth fragments. This case report describes a case of a 10-year-old boy with a tooth fragment inserted in the lower lip for 11 months, which went unnoticed during initial management in the emergency department and the otolaryngologist recommended to keep the pieces of teeth fragments in place and follow-up with no intervention. This report highlights the significance of proper clinical and radiographic examinations after trauma in order to prevent occurrence of such results. In conclusion, the necessity to examine and explore all soft tissue lacerations with the existence of tooth fractures is emphasized.

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### Conflicts of interest

There are no conflicts of interest..

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**Figure 1**



*Figure 1. Photograph shows the traumatized fractured and intruded right central incisor and fracture lateral incisor.*

**Figure 2**



*Figure 2. Photograph shows the lower lip and maxillary and mandibular teeth.*



**Figure 3**



*Figure 3. The soft tissue radiograph shows the radiopaque images of tooth fragments in the lip*