CASE REPORT

Treatment imprudence leading to missed tooth fragment

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pranamee.barua@gmail.com**SUMMARY**

Traumatic dental injuries (TDI) represent one of the most common oral health problems in children and adolescents. Dental trauma requires a special consideration when it accompanies soft tissue lacerations. Tooth fragments occasionally penetrate into soft tissues and may cause severe complications. This article describes the case of a 12-year-old girl with a fractured tooth fragment embedded in the lower lip for 4 months, which went unnoticed at her primary health centre. This report highlights the importance of proper radiographic diagnosis along with clinical examination after trauma in order to prevent any future complications.

BACKGROUND

The issue of unmet treatment needs and inadequate emergency management of traumatic dental injuries have surfaced up lately in the dental literature, indicating that sometimes such cases present late for treatment, which may alert the management to these injuries. A tooth fragment embedded in the lip or other soft tissues may go unnoticed until the child comes later with some discomfort. This case report highlights the essentiality of soft tissue exploration or examination and proper investigations even in late presentation of trauma cases. It also emphasises how inadequate handling of orofacial injuries at an acute phase can adversely affect future management, stressing the need to educate primary healthcare providers in the proper management and referral of orofacial injuries.

CASE PRESENTATION

A 12-year-old girl reported to the department of paediatric dentistry with fractured upper front teeth since the last 4 months. She gave a history of trauma due to a fall from the staircase 4 months previously. She immediately sought help from a nearby medical practitioner for emergency medical treatment where minor soft tissue wounds were sutured and she was prescribed systemic antibiotics. No treatment or advice was provided for the fractured tooth. Ever since that time, she did not complain of pain or discomfort. On reporting to our department, extraoral examination showed a slight swelling in the lower lip, which on palpation appeared to be a hard tissue mass (figure 1). Intraoral examination revealed an Ellis Class III fracture in relation to the maxillary right central incisor (11) and an Ellis Class II fracture in relation to the left central incisor (21) (figure 2).

Figure 1 Slight swelling in the lower lip.

The patient recalled no systemic illness and the bruises on her face had healed by this time.

INVESTIGATIONS*Intraoral periapical radiograph (IOPAR)*

- Of the lower lip revealed a radiopaque foreign body mass (figure 3).
- Of 11 and 21 revealed fracture approximating the pulp in relation to 11 (figure 4).

Pulp vitality tests—both maxillary right and left central incisors were non-vital.

TREATMENT

Under aseptic conditions, inferior alveolar nerve block anaesthesia was administered to the patient. Then a horizontal incision of approximately 1.5 cm was given over the area where the tooth fragment was palpated. Once the tooth fragment was exposed in the lip by applying constant thumb pressure from both sides, the fragment was squeezed out and removed with a tissue haemostat

Figure 2 Intraoral view of the fractured teeth.

To cite: Barua P, Chaudhary S, Kaur H, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-009154

Figure 3 Intraoral periapical radiograph of the lower lip showing a tooth fragment.

(figures 5 and 6). The wound was sutured and it healed uneventfully (figures 7 and 8).

Management of the fractured incisors was then considered in the subsequent visits. Root canal treatment was performed in relation to 11 and 21 (figure 9). As only one-third of the crown structure remained in relation to 11, it was decided to fabricate a post before restoring it with a crown.

A fibre post was cemented in relation to 11 owing to its durability, excellent translucency and shorter chair side time (figure 10). A core build-up was then done in relation to 11 and 21 with composite resin using the incremental technique.

Owing to the financial constraints of the patient, an acrylic jacket crown was fabricated and cemented in relation to 11 and 21, which was economical as well as aesthetically pleasing to the patient (Figure 11).

OUTCOME AND FOLLOW-UP

The patient was gratified with her appearance after cementation of the aesthetic crowns. The patient is asymptomatic since 2 months and is under follow-up.

DISCUSSION

Traumatic dental injuries are often associated with soft tissue injuries. It has been reported that 62.8% of all patients treated in a hospital emergency department for oral injuries had

Figure 4 Intraoral periapical radiograph of 11 and 21.

Figure 5 Exposed tooth fragment.

laceration of the lip.¹ The teeth may indirectly traumatise the lips, in which case the direction of the impact will determine the nature of the injury. If the impact is vertical, paralleling the long axis of the incisors, the incisal edge may penetrate the entire thickness of the lip causing lip laceration. When the incisal edge hits the impacting object, fracture of the crown will occur.² Therefore, a fractured incisor accompanying soft tissue oedema and laceration, especially involving the lip, should alert the physician to a possible displacement of the tooth fragments to the soft tissues.³ In such cases, clinical exploration of the laceration and soft tissue radiographs are necessary to rule out this possibility.^{2 3}

Owing to the various emotional factors associated with children, appropriate initial attendance of patients, particularly children and adolescents, is vital. In many cases, fragments are overlooked during emergency management by primary health-care workers. Failure to carefully examine for missed tooth structure at the time of treatment can lead to harmful sequelae.⁴

Tooth fragments embedded in soft tissues act as foreign bodies and may result in a breakdown of the suture line, persistent chronic infection and discharge and disfiguring fibrosis.¹ 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 orbicularis oris muscle, and might be displaced to sites that are somewhat distant from the point through which the lip was pierced.⁵ The worst complication is the aspiration of these foreign bodies, paving the way for chronic airway infection and subsequent death. Therefore, radiographic evaluation of the soft tissue structures is fundamental to finding and removing the embedded tooth fragment.^{5 6}

Figure 6 Tooth fragment after removal.

Figure 7 The sutured wound.

For cases in which dental trauma takes place concomitantly with soft tissue lesions, a detailed case history and meticulous clinical and radiographic assessment are mandatory.⁷ Besides, further diagnostic surveys should be performed if the plain radiographs fail to identify the inclusion, ingestion or aspiration of these fragments.⁸

Soft tissue injuries with possible embedded tooth fragments or foreign objects can be adequately assessed with intraoral radiographs taken using low exposure. The risk of radiation exposure has to always be weighed against the potential benefits. Thus, the clinician must use the least possible amount of radiographic exposure as indicated by the as low as reasonably achievable (ALARA) principle. Fortunately, intraoral radiographs need a very low radiation dose if correct technique and good x-ray equipment are used, making it ethically advisable to prescribe these radiographs, whenever the clinical examination indicates that a more severe dental injury might exist.

Intraoral films placed between the teeth and the mucosal surface of the lip can detect any foreign object suspected in the soft tissues. As the tooth fragment was clinically evident in the above-mentioned case, only an intraoral radiograph was sufficient. But if conventional radiographs are not enough, CT or ultrasound should be used to localise foreign objects in soft tissues. The optimal choice of radiographs, however, should be based on the outcome of the detailed history taking and clinical examination.⁹

Figure 8 Healed wound after 7 days.

Figure 9 Post obturation intraoral periapical radiograph of 11 and 21.

After a thorough clinical and radiographic examination, the teeth involved were treated by root canal treatment. According to the dental trauma guidelines provided by the International Association of Dental Traumatology (IADT), in patients with mature apical development, root canal treatment is recommended, although pulp capping or partial pulpotomy may also be selected. If the tooth fragment is available, it can be bonded to the tooth or the fractured crown may be restored with other accepted dental restorative materials.¹⁰

After endodontic therapy of the involved teeth, they were restored with fibre posts as teeth restored with fibre posts have a modulus of elasticity close to that of dentin and resist fractures better than teeth restored with metallic posts.¹¹

In conclusion, the ignorance of the patient on the whereabouts of the broken fragment and the negligence of the trauma care unit during the initial emergency care can lead to grave consequences. A systematic trauma care protocol should be followed to avoid any undesirable sequelae.

Figure 10 Intraoral periapical radiograph of 11 with a cemented fibre post.

Figure 11 Intraoral view after cementation of the acrylic jacket crown.

Learning points

- ▶ In case of any orofacial injury, both the hard and soft tissues must be examined with equal precedence. Nevertheless, to confirm the presence of any missed dental fragment, a meticulous case history, as well as clinical and radiographic examination, is essential.
- ▶ Clinicians must use the least possible amount of radiographic exposure indicated, with the as low as reasonably achievable principle.
- ▶ Intraoral radiographs are sufficient to diagnose a suspected foreign object in soft tissues. If conventional radiographs are not enough, then CT or ultrasound is indicated.
- ▶ Clinicians and primary health centre workers should be aware of the chances of inclusion of a fractured tooth fragment in any soft tissue of the orofacial region and the management protocol for the same.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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