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The importance of soft tissue examination in traumatic dental injuries: a case report

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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 laceration of the lip (1).

The teeth may indirectly traumatize 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, and 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 which case, clinical exploration of the laceration as well as soft tissue radiographs are necessary to rule out this possibility.

In emergency situations, many injuries related to oral and dental structures may be overlooked. This article reports a case that highlights the importance of training emergency department staff and dentists on proper examination of soft tissues in acute, subacute and late presentation cases of orofacial trauma.

Case report

A 13-year-old female patient presented to the postgraduate dental clinics at Jordan University of Science and Technology for aesthetic restoration of her upper left central incisor upon advice from the visiting dentist of the school. The medical history was non-contributory. The mother reported that her child sustained orofacial trauma 18 months ago due to a fall on the floor at home, which caused bleeding from a laceration in the lower lip, but did not recall noticing the fractured tooth at the time of injury. The parents immediately sought help at the emergency department of a nearby hospital, where the soft tissue wound was sutured and the child was prescribed systemic antibiotics. No treatment or advice was provided for the fractured tooth. Ever since, the child did not complain of any pain or discomfort.

During our extraoral examination, 18 months later, a scar on the skin in the labiomental sulcus area was noticed (Fig. 1); palpation of the lower lip revealed a hard mass. Upon stretching of the lower lip, a foreign body was noticed (Fig. 2). A radiograph placed between the lower lip and the lower incisor teeth was taken to verify the presence of the object with a radiographic exposure dose of 1/4th of that used for standard periapical radiographs. The radiograph revealed a radiopaque foreign body suggestive of the coronal fragment of the fractured incisor (Fig. 3). Intraoral examination showed Ellis class II fracture of the upper right permanent central incisor that was not sensitive to air or thermal stimulation; however, electrical sensitivity test of the tooth revealed that it was vital.

There was evidence of neither root fracture nor pathological periapical lesion on periapical radiograph of the upper anterior teeth (Fig. 4). The exposed dentin of the fractured tooth was covered with a thin layer of glass ionomer liner (Vitrabond[™]; 3M-ESPE Dental products, St Paul, MN, USA); then, the tooth was restored by incremental placement of composite resin (Filtek[™]; 3M-ESPE Dental products, St Paul, MN, USA).

A horizontal incision was then made in the lower lip under local anaesthesia, the tooth fragment was removed surgically (Fig. 5) and fibrous tissue surrounding the fragment was also excised. The incision was sutured with 6.0 polyglactic acid (Vicryl®) suture. Systemic penicillin



Fig. 1. Extraoral view of lip injury.



Fig. 2. Intraoral view of the lip showing foreign body.



Fig. 3. Soft tissue radiograph showing tooth fragment in the lower lip.

(amoxicillin 500 mg, three times a day for 5 days) was prescribed to the patient as recommended (2).

The patient was scheduled for follow up at 1 week and thereafter, at 1, 3, 6 and 12 months. At the first follow up, healing of the lip wound was uneventful, and the



Fig. 4. Intraoral view of the tooth injury.



Fig. 5. Tooth fragment removed from the lower lip.

patient did not have any complaints; patient did not return for coming follow ups.

Discussion

In managing soft tissue injuries, a systematic approach is necessary to optimize healing. When soft tissue injuries are accompanied by dental injuries, it is recommended to manage intraoral injuries first to keep soft tissue manipulation to a minimum (2). In emergency situations, however, the nature and complexity of the injuries, as well as unawareness of emergency department staff of the nature of orofacial injuries may lead to overlooking dental injuries. Many studies have investigated knowledge of emergency department staff on management of orofacial injuries and found it to be grossly lacking; however, none of these studies included questions on soft tissue injuries (4-6). In one study, only half of respondents would ask the child about a fractured tooth fragment (4). The present report indicates that the emergency staff department did not perform intraoral

examination or thorough soft tissue inspection during the acute phase of management of orofacial trauma in this patient, leading to overlooking the tooth fragment, and subsequent scar formation.

The incorporation of foreign bodies during wound healing increases the risk of infection and triggers foreign body reaction and formation of fibrous scar tissue. A chronic foreign body reaction will lead to fibrosis that encapsulates the foreign body by a concentration of macrophages or giant cells (2). In this case report, fibrous tissue had formed around the foreign body, which led to a scar. This fibrous tissue was excised upon removal of the tooth fragment and the scar tissue left needed revisiting by a plastic surgeon.

Reattachment of the coronal fragment is one of the options of managing fractured incisors, and although lip tissue is an unusual medium to preserve tooth fragments, one study reported reattachment of a coronal fragment embedded in the lip for 36 h (7). In the present case report, the coronal fragment was left in the lip for 18 months; however, the condition and colour of the coronal fragment precluded using it in the above manner.

Inadequate emergency care of orofacial injuries has been cited as one of the factors that contribute to the increased cost of treatment of such injuries (8); it is therefore important to educate primary health care providers on the proper emergency management of these injuries to reduce the economical as well as the psychological burden of such injuries.

Conclusion

This case report highlights the importance of soft tissue inspection even in cases that present late for dental trauma management. It also emphasizes how inadequate handling of orofacial injuries at the acute phase can complicate future management, stressing the need to educate emergency room staff and primary health care providers of proper emergency management of orofacial injuries.

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