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Parasymphyseal fracture associated with fracture of a maxillary primary molar in a child: case report

CASE REPORT

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Abstract – Bone and posterior tooth fractures can be serious injuries that are difficult to diagnose, particularly in emergencies. The aim of this study was to report a case of a parasymphyseal fracture associated with the fracture of a maxillary primary molar in a child.

Traumatic facial injuries can result in bone fractures, and the jaw is the bone most frequently affected (72.9%). Usually, such traumas are related to automobile accidents (30%) and falls (20.35%) (1–3). In about 89% of the mandibular fractures, males are affected, considering individuals between 3 and 73 years of age (3).

Fractures in the mandibular region can be detected through palpation, or by observing functional alterations (occlusion, extent and symmetry of the jaw movements) (4–7). Bruises and swellings in the soft tissue region also can indicate the presence of a fracture (8). The diagnosis should be confirmed by panoramic radiographs, by posteroanterior mandible radiographs and by localized radiographs of the affected region (4, 5, 8).

According to Andreasen (9), fractures of jaws or condyles can be associated with fractures of posterior teeth. Van Waes (8) reports that this occurs as a consequence of an indirect trauma to those teeth at the moment of impact on the chin. In such cases, the fracture of restored or anatomically abnormal teeth is more usual (9).

Trauma to primary teeth mainly affects the teeth in the anterior region; however, the incidence of crown and crown-root fractures in primary molars has been reported to be only 0.8% (10).

The purpose of this study was to report a case of a parasymphyseal fracture of the mandible associated with the fracture of a maxillary primary molar in a child and the treatment given.

Case report

A healthy 5-year-old Afro-descendent girl patient came to the pediatric dentistry clinic of a public university with her mother, with the chief complaint of constant pain during 3 days after falling off a cart.

According to her mother, immediately after the fall, she took the child to the nearest public hospital. The emergency treatment given by a doctor consisted of a suture in the chin. The mother reported that radiographs were taken, although she did not have them. The patient stayed in hospital for one night under observation and received intravenous hydration. The mother did not know if the child took any medication during the emergency treatment, other than the antitetanus vaccine prescribed. The patient was discharged the next day and

Fig. 1. Edema and excoriations 3 days after the trauma.

the mother reported that there were no problems in her bones or teeth.

Because of the child's constant facial pain, and after the mother noticed the fracture of a maxillary posterior tooth, the mother felt it would be better to take the child directly to the pediatric dentistry clinic at the Federal University. The patient showed spontaneous pain, which intensified when touched, in the left chin and in the masseteric and right articular region. The patient had difficulties to open her mouth, masticate and speak. The extra-oral examination showed a local edema, grazes in the lower lip, nose and front regions, as well as a suture in the mentonian region (Fig. 1). There was no disc crepitation when the temporomandibular joint was examined.

In the intra-oral examination, although there was very limited movement for opening of the mouth because of the presence of trismus, it was noted that the child had a completely healthy primary dentition, with a great deal of plaque accumulation on all her teeth, a bruise on the inner part of the lower lip and in the corresponding vestibular region, and some mobility of teeth 81, 71, 72 and 73. Furthermore, the crown fracture of tooth 55, involving enamel and dentine on the distal aspect was confirmed (Fig. 2). The fragment was removed, as it was hindering occlusion and upsetting the patient.

During the same appointment, panoramic and periapical radiographs were taken of the mandibular anterior region in order to investigate possible bone fractures. This examination, analyzed together with a maxillofacial surgeon, exhibited a simple unilateral parasymphyseal

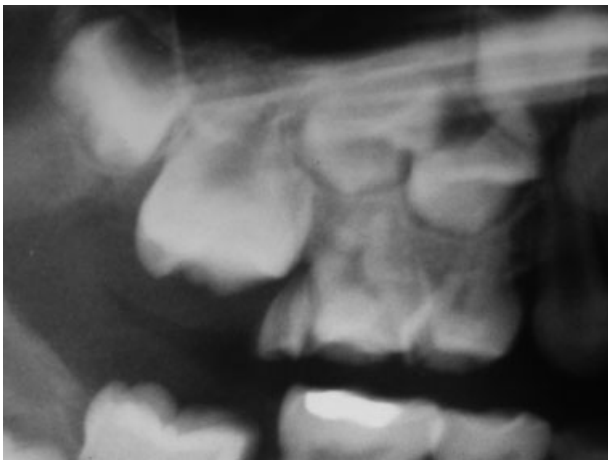

Fig. 2. Periapical radiograph: crown fracture at distal aspect of tooth 55.

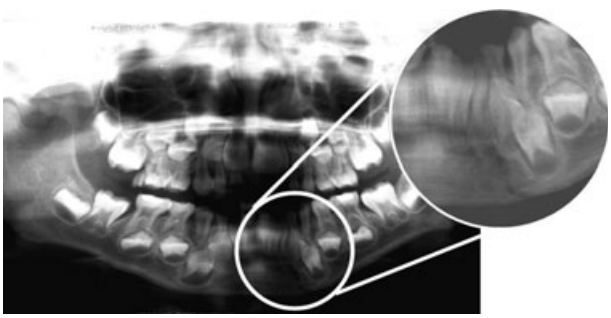

Fig. 3. Panoramic radiograph and magnified detail. Fracture of the left parasymphyseal region.

fracture on the left side (Fig. 3). No dislocation of the mandibular fracture fragments was observed. There were no intra-oral wounds, which would indicate a complicated (open) fracture. Therefore, no antibiotics were prescribed.

The treatment suggested for the patient was to monitor the consolidation of the fractured area. Furthermore, the family was given guidance on the need to brush the child's teeth properly, and instructed to give liquid or soft food and avoid sporting activities for 10 days. At the next appointment 1 week later, no joint discomfort was reported, the edema had regressed and the jaw movements had returned to normal. A further intra-oral examination diagnosed the presence of another complete longitudinal crown fracture in a mesiodistal direction in tooth 55 (Fig.4) that had not been observed at the first appointment. The proposed treatment was to extract tooth 55 and prepare and incorporate a distal shoe (Fig. 5a and b).

The follow-up visits were scheduled for every 6 months. At the follow up after 3 years, a new panoramic radiograph (Fig. 6) was taken. It revealed normal healing with the union of the bony structures of the fractured mandible. The patient is still being monitored clinically and radiographically and has been advised to return for periodical visits.

Fig. 4. Clinical view of longitudinal fracture of tooth 55.

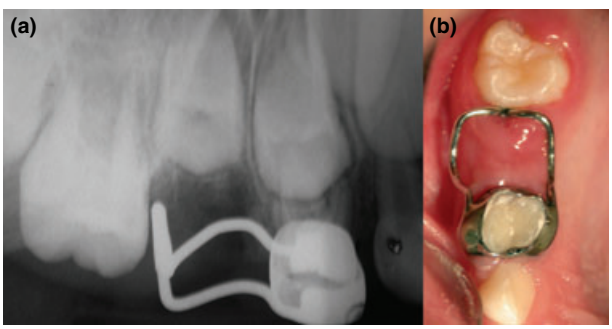

Fig. 5. (a) Periapical radiograph. Confirmation of the correct position of the distal shoe; (b) Intra-oral view of the distal shoe.

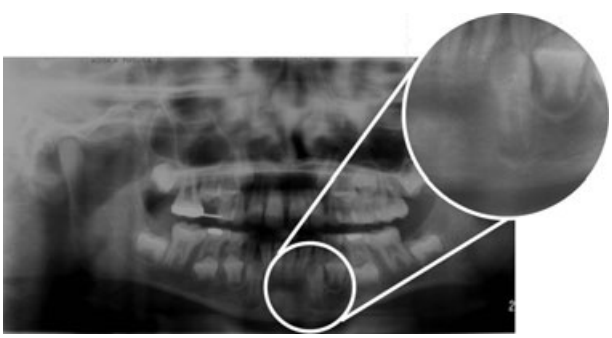

Fig. 6. Panoramic radiograph and magnified detail. Situation 36 months after the trauma. Bony healing in formerly fractured region.

Discussion

Falls are one of the main causes of mandibular fractures in children (1, 2). The need to diagnose and classify the type of fracture in children is extremely important, mainly because these patients are in a phase of bone growth and any injury may give rise to problems such as ankylosis, temporomandibular joint interference in the growth process, inflammation of joints, among others (4, 5, 8). The mandibular injury of the patient in this case was classified as a simple unilateral parasymphyseal fracture. Antibiotics were not prescribed because there were no signs of infections or hints towards complicated (open) fractures (9). Because of the absence of exposed bone and dislocation of fragments, associated with the integrity of the tissues surrounding the fractured area, a favorable prognosis could be made for this case (4, 5, 8).

The therapeutic options for mandibular fractures range from clinical and radiographic monitoring to the need for surgery (4, 5). In this case, with a simple fracture without any dislocation, the treatment consisted of clinical and radiographic monitoring of the healing phase.

Fractured molars are uncommon, particularly when associated with a mandibular fracture (9). Klein & Bimstein (11) described a case of crown fractures of all primary molars, except one, associated with a bilateral condylar fracture. In this case, it was supposed that as a result of the direct impact on the chin, some strong indirect impact had caused the fracture of the healthy primary molar, as suggested by Oikarinen (10), Hargreaves et al. (12) and Van Waes (8).

Dental injuries resulting from an indirect impact can lead to the extraction or hemisection of the tooth, if the vertical fracture line reaches the root (12). As it is impossible to use conservative treatments in such types of tooth fractures (13), it was decided to extract tooth 55 and prepare an appropriate space maintainer, as recommended by Kennedy (13).

According to Sovieiro et al. (14), posterior tooth fractures may not be detected in the emergency examination after the accident but only be diagnosed later, when the patient begins to complain about pain when masticating. The presented case confirms this observation, as the major tooth fracture was not diagnosed in the first clinical examinations, probably because of the presence of trismus. It is worth pointing out that the immediate attendance given in an emergency service failed to diagnose the bone and tooth injuries. It is important, that a careful diagnosis must be made during the first attendance, to avoid undesirable future consequences. The case described in this article shows that a strong impact on the mentonian region can lead to mandibular fractures, as well as to fractures of healthy posterior teeth by an indirect force. An interdisciplinary team should attend such cases and the examinations should be very thorough to arrive at a correct diagnosis and favorable prognosis.

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