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Multiple crown-root fractures in primary molars and a suspected subcondylar fracture following trauma: a report of a case

CASE REPORT

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Abstract – Dental trauma is common and often more than one injury is found. Injuries to the primary dentition are usually luxations and mandibular fractures rarely occur. With trauma sustained to the chin, the posterior primary teeth are at increased risk of trauma and mandibular fractures can occur. The case discussed is of a 4-year-old female who presented 2 weeks following dental trauma with multiple primary molar fractures and a possible subcondylar fracture. The need for a detailed examination is emphasized and the management of the case under general anaesthesia is described.

Dental trauma in children has a peak incidence at 2–4, and 8–10 years (1). Injuries to the primary teeth tend to affect the tooth-supporting tissues resulting in luxations and avulsions. Contrastingly, the majority of injuries to the permanent teeth result in crown fractures (1, 2). This pattern of trauma in the primary dentition is probably linked to the fact that young children have more resilient alveolar bone which means luxations are more probable than fractures. In terms of site, trauma to the primary maxillary incisors is far more common than the primary molars (2). When dental trauma does occur, often there is more than one injury, for example an avulsion injury combined with a soft tissue insult.

Crown and crown-root fractures in primary molars are rare. The incidence is 0.8% of all injured primary teeth (2). Such fractures in the posterior region usually occur as a result of indirect trauma when the mandibular teeth are forced up against the maxillary teeth due to an impact applied to the chin – an example being a fall (1, 3). Case reports by Suher and Fixott (4), Marechaux (5), Needleman and Wolfman (6), Sasaki et al. (7) and Morisaki et al. (3) have all reported multiple primary tooth fractures in children who had fallen on their chins.

As well as injuries to the primary molar teeth, the indirect trauma described can also result in mandibular fractures. These are less common in children than in adults and if they do occur, the most common site is the condyle (8–10). Signs and symptoms may include restricted and painful mandibular movements, swelling and tenderness over the temporomandibular joint(s), and the occlusion may be deranged (11). In practice, however, trauma to the temporomandibular regions in children often occurs with little pain and few clinical signs resulting in many undiagnosed condylar fractures (8).

A thorough clinical history and examination is fundamental therefore to ensure a diagnosis irrespective of how mild the symptoms are; a normal occlusion does not rule out a condylar fracture (8). Condylar fractures in children may result in facial growth disturbances on the injured side (8, 11, 12), facial asymmetry, temporomandibular joint disorders and ankylosis (12). Management of condylar fractures in children is usually conservative and studies have shown that non-surgical treatment produces satisfactory long-term results (11, 12).

A case of a young girl who suffered trauma to her chin, resulting in multiple crown-root fractures of her primary molar teeth and a suspected subcondylar fracture, is described.

Case report

A 4-year-old girl presented to the casualty clinic in the Department of Paediatric Dentistry at the Eastman Dental Hospital with her mother. The patient was referred by the Community Dental Service.

The history of the presenting condition was that the patient had slipped 2 weeks previously whilst climbing down a bunk bed ladder and hit her chin, resulting in a laceration. At the time she had been seen in an Accident and Emergency department where the chin laceration had been sutured. No dental treatment was carried out and the patient was subsequently discharged home.

Since that time the patient had experienced continuous pain from her posterior teeth. This was exacerbated by eating and drinking and sleep was disturbed. Regular analgesia gave some relief. The patient's general medical practitioner had prescribed antibiotics, which were of no benefit.

Medically, the patient was fit and well apart from a history of meningitis C at the age of 3 months. The patient had not seen a general dental practitioner in the past.

Extra-oral examination showed a healing laceration on the chin. Opening was normal and there was no pain on examination of the temporomandibular joints. Intra-oral examination was difficult as the patient was very anxious due to a lack of dental experience and the obvious sensitivity of the teeth. Oral hygiene was poor with abundant plaque deposits – especially on the posterior teeth. All primary teeth were present and there was caries present in the distal aspect of the ULD. The LLD, URE, LRD and LRE all had oblique or vertical crown-root fractures involving the pulp and LLE had a fracture into the dentine (Fig. 1a–c).

A radiographic examination was carried out (Fig. 2-a,b). The dental panoramic tomograph showed a possible left subcondylar fracture; however, the postero-anterior mandible did not have a similar appearance. The dental panoramic tomograph confirmed fractures of multiple deciduous teeth as mentioned above as well as caries.

There were no obvious clinical signs of a subcondylar fracture. An opinion was sought from a colleague in the Department of Maxillofacial Surgery who felt that a fracture could not be definitively diagnosed.

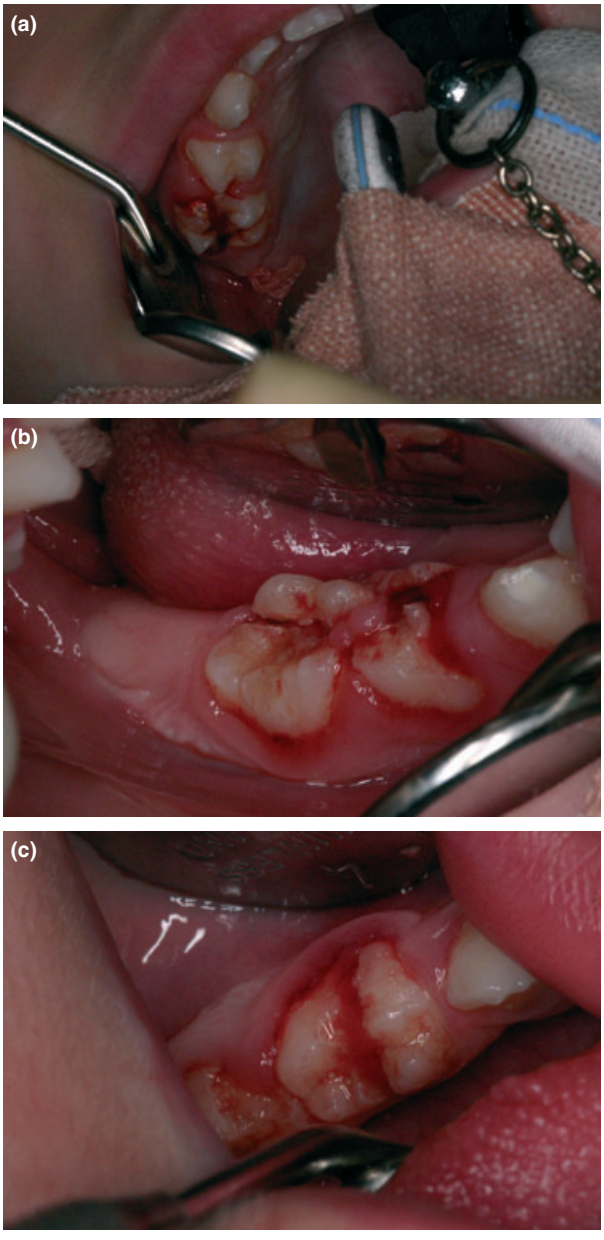

Fig. 1. Crown-root fracture of (a) URE (b) LRD and LRE and (c) LLD.

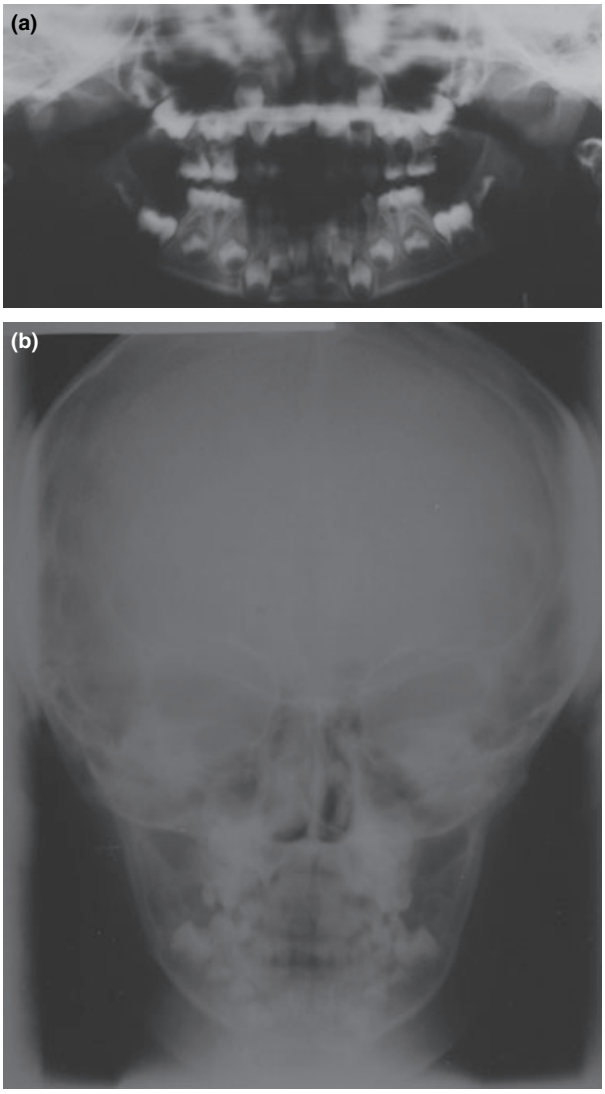

Fig. 2. Preoperative radiographs
(a) Dental panoramic tomograph.
(b) Postero anterior mandible radiograph.

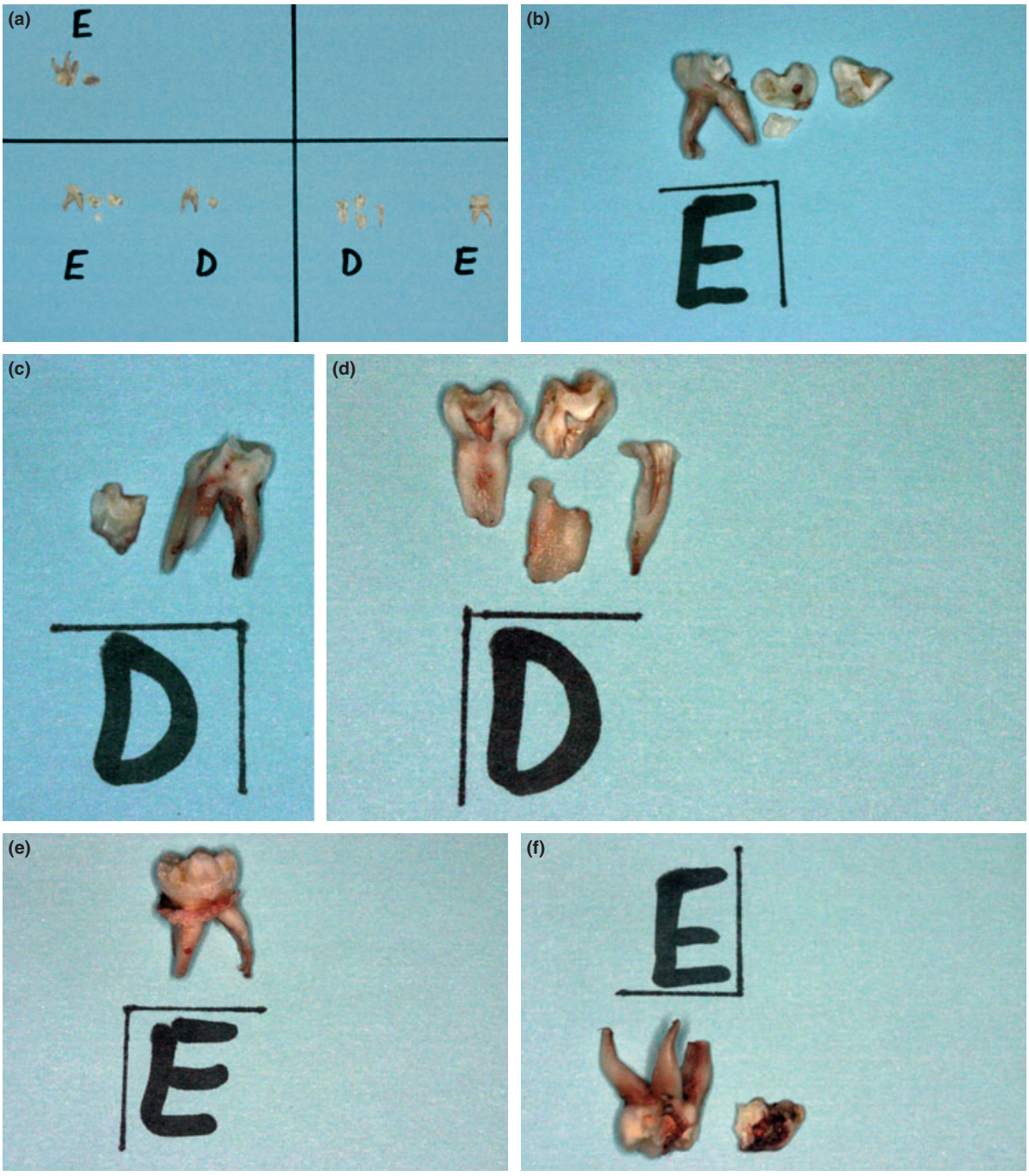

Fig. 3. Crown-root fractures of (a) URE, LRD, LRE, LLD, LLE, (b) LRE, (c) LRD, (d) LLD, (e) LLE and (f) URE.

A diagnosis was made of complicated crown-root fractures of multiple posterior primary teeth, dental caries and a possible left-sided subcondylar fracture in an anxious child.

The patient was prescribed analgesics and chlorhexidine to aid in plaque control. Conservative management with regard to the suspected subcondylar fracture was implemented including a soft diet, limited mouth opening and care regarding prevention of further trauma.

Due to the patient's anxiety and difficulty in cooperation, and number of teeth involved, a thorough examination and treatment were carried out under a general anaesthetic. The fractured teeth were extracted rather than restored as their dentine and pulps had had prolonged exposure to the oral cavity resulting in poor prognosis of these teeth. The carious ULD was also extracted and balanced with the URD. Mouth props were used very carefully so as not to exacerbate the possible subcondylar fracture. The teeth extracted were

URE, URD, ULD, LLD, LLE, LRD and LRE (Fig. 3a–f).

The patient made a good recovery. She is on regular review with the Department of Maxillofacial Surgery to monitor the possible left subcondylar fracture. Acclimatization to dental treatment and prevention of further dental disease has also been carried out in the Department of Paediatric Dentistry.

Discussion

Crown-root fractures in primary molars are extremely rare and usually occur as a result of trauma to the chin which occurred in this case (1–3). This form of indirect trauma in children can also result in condylar fractures and one was suspected in this case (8–10). As previously mentioned, the condylar fractures are often undiagnosed. However, fractures of the posterior primary teeth are also often overlooked (5, 6), as in this particular case where the fractured teeth were not detected in Accident and Emergency at the time of injury and there was a subsequent 2-week delay. Although anterior teeth are more prone to trauma than the posterior teeth (2), it is essential that the posterior teeth are also carefully examined to ensure an accurate diagnosis, especially when there has been an injury to the chin (4, 6, 13–15). Common symptoms include pain on mastication or pain as a result of thermal or chemical stimuli.

On visual and radiographic examination, fracture lines are often difficult to detect and patient anxiety may make it even more difficult to obtain an accurate diagnosis. To make it easier for the clinician, techniques such as transillumination or staining of the teeth with disclosing solution can be used to help identify fracture lines. Lateral pressure on the cusps will also often show a fracture line or stimulate pain (16). Fractures will commonly occur along the fissures (6).

Treatment of the fractured tooth or teeth depends on the severity and position of the fracture line as well as the length of time that has passed between the accident and treatment. Treatment may also depend on the ability of the child to cooperate with the treatment and number of teeth involved. There have been reports of fractured primary molars being successfully treated by carrying out pulp therapy and restoration with preformed metal crowns (5, 17), but in many cases extractions will be the necessary treatment (6).

Conclusion

This case highlights the need for a thorough history and examination in all cases of dental trauma. The possibility of more than one injury must be explored. Where the chin has been involved, particular attention should be paid to the mandible, particularly the condyles, and the posterior primary teeth.

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