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Management of crown root fracture in primary 'double tooth': a case report

CASE REPORT

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Abstract – The term 'double tooth' is used to describe two developmental dental anomalies of shape: gemination and fusion. Traumatic episodes involving a fused or geminated primary tooth are rare. This report describes an unusual case of crown root fracture in a primary double tooth.

Primary tooth trauma most commonly affects the maxillary incisors of children 1–3 years of age, with a worldwide prevalence ranging 11–30% (1–3). The treatment of such traumatic injuries generally focuses on pain management and the prevention of possible damage to the developing tooth germ (2, 4).

The term 'double tooth' has been used to describe two developmental dental anomalies of shape: gemination and fusion (5–7). Gemination is an attempt at division of a single tooth germ, while fusion arises through the union of two normally separated tooth germs (4). The situation is more confusing when fusion occurs between a supernumerary and a normal tooth germ. The incidence of dental fusion, though more common in primary dentition, strongly varies with race. The incidence is $<1\%$ in Caucasians, about 2.8% in Japanese, and only 0.14% in Indians (5).

A traumatic episode involving a fused or geminated primary tooth is a rare occurrence, and to our knowledge has not been reported in the literature. This report describes a rare case of crown root fracture in a primary double tooth.

Case report

A 3 year old boy was brought to the outpatient department after a traumatic episode to his upper front teeth. The trauma was reported to occur 4 days ago due to a fall from a tricycle. Initially, his parents did not consult a dentist and gave the child pain killers. However, the patient developed mobility of the affected tooth and was unable to eat properly. Medical history was non contributory though the mother recalled an antenatal trauma in the third month of gestation. She had slipped on the stairs and rolled down seven steps. She was admitted to the hospital for a week. There were no later complications in the pregnancy.

Extra-oral examination revealed an elevated scar (birth mark) at the junction of the philtrum and right half of the upper lip extending from the vermillion border to the right nostril (Fig. 1). No swelling or lacerations were seen in the lips or oral mucosa. Intra-oral examination revealed a 'double tooth' in place of-51. All other primary teeth, including- 52 and 61, were normal. The 'double tooth' had a larger mesio-distal diameter and a midline invagination dividing it in two unequal parts. This central groove also had a carious lesion (Figs 2 and 3).

Inflamed pulp tissue was present on the labio-coronal fracture line in the middle third of the mesial part of the traumatized 'double tooth' (Figs 2 and 3). The fractured mesial part was also mobile and tender on palpation, while the distal portion was firm.

Radiographic examination

Intra-oral periapical radiograph revealed a crown root fracture in the mesial portion of the double tooth, with the fracture line extending obliquely in a mesio-distal direction from the middle third of the crown to the cervical third of the root (Fig. 4). The radiograph also indicated that the crowns of two parts of the double

Fig. 1. Showing a scar mark at the junction of philtrum and right half of the upper lip.

Fig. 2. Showing fractured 'double tooth'.

Fig. 3. Mirror image of maxillary arch showing fractured double tooth with normal crown morphology in 52 & 61.

tooth were separated by a deep invagination extending to the cervical third. It also had two separate pulp chambers and root canals: possibly due to the gemination of 51 or the fusion of 51 with a supernumerary tooth. The morphologies of 52 and 61 were normal (Fig. 4).

Fig. 4. Intra-oral periapical radiograph showing crown root fracture in the mesial part of the 'double tooth'.

Treatment

The extent of crown root fracture, complicated by the anomalous shape of 51, warranted its extraction and a long-term follow up. The fractured double tooth was extracted after administration of local anesthesia and the patient was put on periodic recall. The extracted double tooth was visually evaluated, and the fractured fragments were fixed using a light-cured composite resin (Filtek Z250; 3M ESPE Dental Products, St. Paul, MN, USA). An access cavity was prepared in both the mesial and distal parts of the double tooth. After debridement, irrigation and drying of the root canals, a radio-opaque dye was filled till their apex. Access cavities and the apices were sealed using composite. Later radiographs were taken and evaluated. (Fig. 5) After a recall of

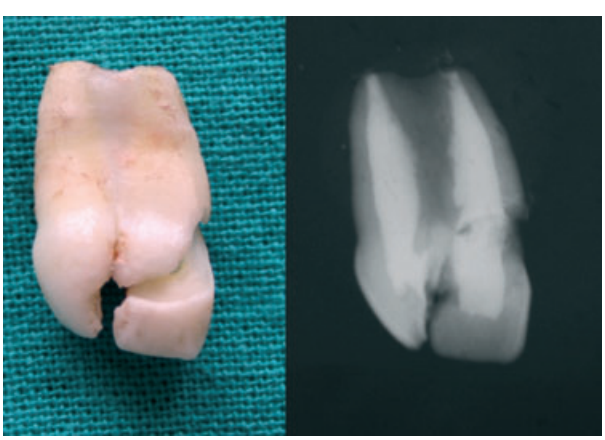

Fig. 5. Showing extracted 'double tooth' with the fracture line and its peri-apical radiograph with radioopaque dye, showing two separate pulp chambers and root canals.

Fig. 6. Showing erupted 11, 12, 21 & 22 at the age of 13 years.

10 years, the patient exhibited normally erupted 11, 12, 21, and 22 (Fig. 6).

Discussion

A 'double tooth' in the primary or permanent dentition represents a diagnostic dilemma, especially when the total number of teeth present in the arch remains unchanged (5–7). The present case too, qualifies as both gemination of 51 and fusion of 51 with a supernumerary tooth. The possibility of a type-IV fusion, given the conical shape of the distal portion of the double tooth and the presence of separate pulp chambers and root canals, is higher (5, 7). Although ante-natal trauma in the third month of pregnancy may have caused the scar in the upper lip and the double tooth, the hereditary nature of this anomaly cannot be ruled out (5).

Flores emphasized that the primary tooth trauma is a common yet largely neglected entity (2). The International Association of Dental Traumatology Guidelines for the treatment of crown root fractures in the primary teeth recommends extraction of the fractured tooth, with care taken to prevent trauma to the subjacent permanent tooth bud (4). This type of injury can also be managed by removal of the loose fragment, if the fracture line is limited only to the crown, followed by pulp therapy and aesthetic restoration. When the fracture line extends deep into the alveolus, extraction is the treatment of choice to prevent infection and possible damage to the succedaneous tooth bud (2, 8). A crown root fracture associated with a primary double tooth must be managed in the same way. The presence of a deep central groove in cases of gemination or type III and IV fusion makes them more susceptible to dental caries, which further weakens the crown structure. Fusion of primary teeth is also associated with hypodontia in succedaneous dentition (7).

Although the present case did not show any sequelae in the permanent dentition, a traumatized double tooth requires careful clinical and radiographic examination and regular long-term follow-ups to rule out the consequences of the double tooth and/or the traumatic episode. It is obligatory to evaluate the extent of fusion or gemination, its morphology, fractured portion, fracture line and presence of anomalies in the permanent teeth.

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