

CASE REPORT



Fusion in primary maxillary incisors: A case report

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Abstract

Developmental anomalies of the dental hard tissue are frequently encountered in the clinical practice. Tooth fusion, an unusual anomaly in the shape of the tooth, results of union of two separate tooth germs. This paper describes the management of 4-year-old child presenting with a carious fusion of tooth 51 and 52.

Keywords: Developmental anomalies, fusion, gemination, primary incisors**Introduction**

Developmental anomalies of the dental hard tissue are frequently encountered in the clinical practice. Tooth fusion is an unusual anomaly in the shape of the tooth that is the result of union of two separate tooth germs. Tooth gemination, on the other hand, refers to the division or separation of a single tooth germ.^[1] The diagnosis of the case is confounding as we need to differentiate between fusion and gemination. As a rule when the affected tooth is regarded as one, if there is one toothless in the arch than the normal count it is called fusion, while when the normal number of teeth is present, it is termed gemination.^[2]

The etiology of fusion or gemination remains unknown. Although the condition is reported in both the deciduous and permanent dentition,^[3] it is seen with greater frequency in the deciduous dentition and in certain races (Mongoloid than Caucasians).^[4] It is also more frequently observed in the maxilla than in the mandible^[5] with a predilection for the anterior region.^[6] It may occur unilaterally or in some rare cases bilaterally.^[7]

In the anterior region, the condition causes esthetic impairment rendering the patient to seek dental care. In some cases, the presence of a deep groove may lead to caries, impaired periodontal health, or pulpal involvement necessitating endodontic intervention.^[8] This paper describes the management of 4-year-old child presenting with a carious primary double tooth 51 and 52.

Case Report

A 4-year-old child patient presented at the outpatient comprehensive care clinics of our institution with a chief complaint of unesthetic large front teeth [Figure 1]. The patient was healthy and the medical history was noncontributory. There was no family history of dental anomalies. Dental history revealed that the child performed restorative treatment in 51 and 52 that they were previously one large tooth with a fissure between them that became carious. There was a previous restoration that was lost approximately 60 days ago. No other dental treatment was performed on the child.

No abnormality was detected on extraoral examination. Height and weight were within normal limits for age. Intraoral examination showed extensive decay and destruction of the coronal tooth structure of what appeared to be fusion of central and lateral incisors. The soft tissue was normal. The eruption and occlusion of dentition was within normal range for age. Carious lesions were observed on the facial surfaces of teeth 72, 73, 82, and 83 and occlusal surfaces of 74 and 84. No other anomalies were found.

Radiographic examination revealed that primary right central incisor was fused completely with lateral incisor with the presence of one pulp chamber [Figures 2 and 3]. It was interesting to note that tooth 11 and 12 suffered from the same dental anomaly which was evident radiographically. No hereditary history of existing condition was found. The parents expressed their desire to save the tooth.

Management

The child exhibited negative behavior and was anxious. Behavior management techniques mainly tell show do were used to alleviate anxiety. Treatment was carried out painlessly under local anesthesia lignocaine hydrochloride 2% (Octacaine 100 Novocol Pharmaceutical, Canada) after topical anesthesia to minimize the pain of needle insertion. All caries were removed and pulpectomy was carried out cleaning the pulp chamber and both the canals. Obturation was done using non-setting calcium hydroxide



Figure 1a and b: Intraoral photographs showing child chief complaint when presented to the dental office

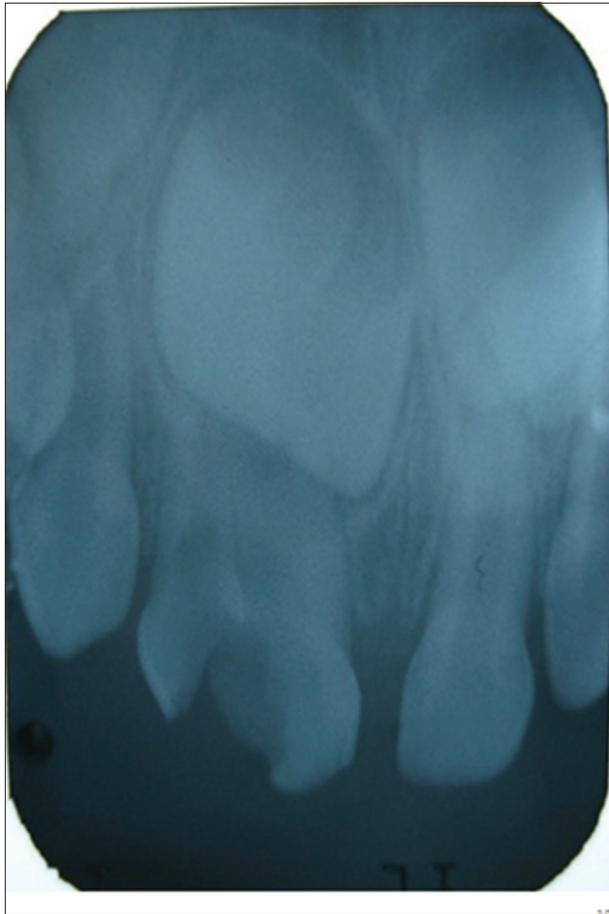


Figure 2: Intraoral periapical radiograph revealing fusion of the primary as well as permanent lateral and central incisors of both primary and permanent dentition

(Metapex, Meta Biomed Co. Ltd., Korea) [Figure 4] and core was build up by light cure glass ionomer cement (Chemfil Rock, Dentsply Caulk, USA). The crown was restored using composite resin Filtek Z250 (3MESPE, USA). The separation of the clinical crowns of 51 and 52 would have been ideal and allow restoring the normal anatomy of the teeth. However, the tooth fusion at



Figure 3: Panorama was performed to exclude other anomalies



Figure 4: Intraoral periapical radiograph showing treatment performed in the fused teeth

all levels prevented us from achieving this, and hence, they were restored as a single unit with an indentation on the facial surface for esthetic reasons [Figure 5].

The patient was recalled for follow-up after 7 and 30 days. The tooth was asymptomatic and both the patient and parent expressed appreciation and satisfaction with the treatment performed.

Discussion

The study presented a case of fusion between the maxillary primary central incisors and primary lateral incisors which was accompanied by fused permanent successors. This case demonstrates the frequent confusion of recognition between fusion and gemination.

In the present study, the term fusion is used, in consistence with the definition used by Levitas who stated that “by appearance it would seem that there is a missing tooth and probably two root canals.”^[9] Fusion is the union of two normally separated tooth germs. This developmental hard tissue anomaly originates from morphodifferentiation phase of the development of tooth. Fusion needs to be distinguished from gemination which is an attempted division of a single tooth germ by invagination, leading to incomplete formation of two teeth.^[10]

The prevalence of tooth fusion is higher in primary than in permanent dentition, with approximately 0.5–2.5% in the primary dentition and 0.1–1.5% in the permanent dentition.^[11] However, primary teeth anomalies can affect the permanent successors significantly which has been clearly demonstrated in this particular case.

Fused primary teeth present multiple challenges to the clinician. These include unesthetic appearance, increased susceptibility to caries and malocclusion.^[12] Furthermore, Ahmet *et al.*^[13] reported delay in root resorption due to increased root surface area relative to the size of permanent successor crown. This may lead to delayed or ectopic eruption of the permanent successor. Fusion of primary teeth may also be associated with developmental anomalies such as microdontia and delayed tooth formation. However, the fusion of the primary lateral incisor and canine may result in early loss of the canine with potential reduction in arch length or midline shift. To avoid this complication, preservation of arch form and arch perimeter should be planned. In our case, there is unilateral fusion of central incisor with lateral incisor that will result in unilateral early exfoliation of contralateral side, but space loss is unlikely.

Management of fused teeth in child patient should take into consideration multiple factors such as combinations of fused primary teeth, level of fusion, and cooperation level of the child patient. If extraction of fused primary teeth is planned, the presence of permanent tooth buds should be confirmed. If the fused teeth are carious, they should be restored and if they are free from caries, they may be retained and appropriate oral hygiene instructions are reinforced. If the tooth is pulpally involved, appropriate endodontic therapy is recommended. In our case,



Figure 5: Child after dental treatment provided

pulpal involvement necessitated pulpectomy with non-setting calcium hydroxide which resorbs with nearly similar rate with primary root.^[14] Periodic long-term follow-up is recommended in all such cases. In the present case, fused primary tooth was retained as such, as they were restorable and the patient was 4 years of age.

In the present case, restoration of 51 and 52 was done with composite restoration and fused primary teeth were retained. Preventive care was planned that included application of topical fluoride, enforcements of oral hygiene instructions, and periodic follow-up visits.

Conclusion

Dental fusion and germination although asymptomatic may require management to avoid esthetic and periodontal health. The chances for aplasia or malformation of the permanent successors are common making a case for routine radiographic screening of all such cases. Knowledge regarding this anomaly will allow early recognition of these conditions ensuring early and appropriate clinical interventions, leading to treatment with predictable clinical outcomes.

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