

Double Teeth In Primary Dentition Showing Schmuziger Type 2 Anomaly: A Case Report With One Year Follow-Up

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ABSTRACT

Abnormalities of tooth morphology arise from developmental disturbances as a result of which the dental hard tissues are normal in structure, but altered in shape. They are due to factors acting at an early stage in tooth development. The terms double teeth, double formation, conjoined teeth, geminifusion, vicinifusion and dental twinning are often used to describe fusion and gemination. Case of fusion in the deciduous dentition is presented to demonstrate the diagnostic differences but also more importantly to draw attention to the potential impact of double teeth on the developing secondary dentition and its future management. This report presents a case of primary double tooth in a 6-year-old girl involving maxillary left central incisor and a supernumerary tooth. Double teeth are associated with clinical problems such as poor esthetics, spacing problems and caries susceptibility; which should be treated as conservatively as possible.

Keywords: Dental anomalies .Double teeth .Permanent dentition .Primary teeth. Supernumerary teeth. CBCT Scan.

INTRODUCTION

Fusion and gemination are uncommon developmental disturbances that give rise to variation in crown and root morphology.¹ These specific dental anomalies more frequently affect the primary dentition but can also occur in the permanent dentition.² Fusion is defined as the union between the dentine or enamel, or both, of two or more separate developing teeth, whereas gemination is the partial development of two teeth from a single tooth bud following incomplete division.³ It is difficult, however, to distinguish between fusion and gemination, as fusion may occur between a normal tooth and a supernumerary. Gemination may also occur in a tooth germ adjacent to a congenitally absent tooth, and this would be indistinguishable clinically from fusion. The term 'double tooth' is therefore more commonly used as it does not imply any specific aetiology, and it includes both fusion and gemination. Tannenbaum and Alling⁴ described the classification of double formations shown in Fig. 1 which was also adopted by Pindborg⁵. Schmuziger described different types of fused or geminated teeth depending on whether the union was total or partial and where the pulp showed varying degrees of extension (Fig.2). Supernumerary tooth formation, or hyperdontia, is not as common as hypodontia: the prevalence in the primary dentition is 0.2% to 0.8% and in the permanent dentition, 0.5% to 5.3%, with geographic variations.⁶ Dichotomy theory suggests that extra teeth form due to splitting of the successional dental lamina. Hyperproliferation of dental lamina or unresolved dental lamina fragments, as well as hyperinductive mesenchyme, are other possible causes of the supernumerary tooth formation.⁶ Double teeth are more frequently detected in primary dentition; ranging from 0.5% to 4.5% than in permanent dentition ranging from 0.1% to 0.3% with no gender predilection.⁷ The anomalous teeth are often asymptomatic, and may be discovered during clinical and radiographic examination of the oral cavity. The typical problems associated include poor esthetics, malocclusion, changes in the dental arch length, hyper/hypodontia of the successional tooth, anomalies in the eruption of the permanent successor, periodontal disease or dental caries.⁸ The purpose of this case report is to describe nonsurgical endodontic treatment and esthetic rehabilitation of a primary anterior double tooth along with a CBCT scan to assess the status of the successor tooth.

CASE REPORT

A 6 year-old girl reported to the Department of Paediatric and Preventive Dentistry with a complaint of spontaneous throbbing pain in her lower right first primary molar. Her medical history was unremarkable and there was no family history of supernumerary, congenitally missing teeth or double teeth. The clinical extra oral examination did not show any different alteration. The clinical intra oral examination revealed the presence of double teeth (crowns 61 and a supernumerary tooth which could be conical shaped) and deep lesion with 84 and multiple small carious lesions.(Fig 1a-c) The other oral structures showed normal pattern. Her mother stated that the family had never noticed that she had double teeth. Radiographic examination revealed that teeth 61 and supernumerary tooth had their pulp chambers and root canals individualized with normal size.(Fig 2a) The therapeutic conduct was restricted to the orientation of the mother about the preservation of the primary teeth by endodontic treatment and esthetic rehabilitation. A CBCT Scan was advised to detect whether any abnormality was seen in the successor tooth. However it revealed no abnormalities in regards to shape or size.(Fig 2b-c) After administration of local anesthetic agent, direct access was gained to the root apices and shaping and cleaning of the canals was performed using endodontic K-files and H-files (MANI, INC. Utsunomiya, Tochigi, Japan). Irrigation of the root canals at every step was done with 2.5% sodium hypochlorite and normal saline alternatively. The root canals were filled using Zinc oxide eugenol. Access cavity was sealed primarily with cavit (3M ESPE AG, Seefeld, Germany) and by Glass Ionomer Cement (GC Corporation) in the next appointment. Esthetic rehabilitation was done by firstly etching the teeth for 30 seconds with 37% phosphoric acid and rinsing for 10 seconds with water. After removal of the excess water by gentle air drying , dentin bonding agent (Adper™ Single bond 2, adhesive; 3M ESPE AG, Seefeld ,Germany) was applied for 15 seconds with a brush and then air thinned. The bonding agent was light cured as per manufacturer's instructions and teeth were built up with the composite resin material (Filtek Z250 Shade A1; 3M ESPE AG, Seefeld, Germany) in an incremental manner. Final finishing and polishing of the composite was done using finishing burs and composite finishing kit (SHOFU, SHANK CA, PN 0306, Shofu Dental Corporation, USA). Even though the symmetry of centrals could not be maintained due to the presence of supernumerary tooth, reasonably good esthetics were delivered to the patient. Endodontic treatment of 84 was completed followed by Stainless Steel Crown and the carious lesions involving 75, 85, 65, 55, 54 were restored.(Fig 3a-d) Further preventive treatment like topical fluoride application was provided. At the 6 month follow up patient was asymptomatic and showed no abnormalities on the intraoral periapical radiograph. At one year follow up period, fusion with 61 and supernumerary tooth showed delayed resorption whereas 51 exfoliated and 11 was erupting which can be appreciated on the intraoral periapical radiograph. (Fig 4a, b)



Fig 1a. Maxillary arch: pre-operative

Fig 1b: Mandibular arch: pre-operative

Fig 1c: Frontal view in occlusion

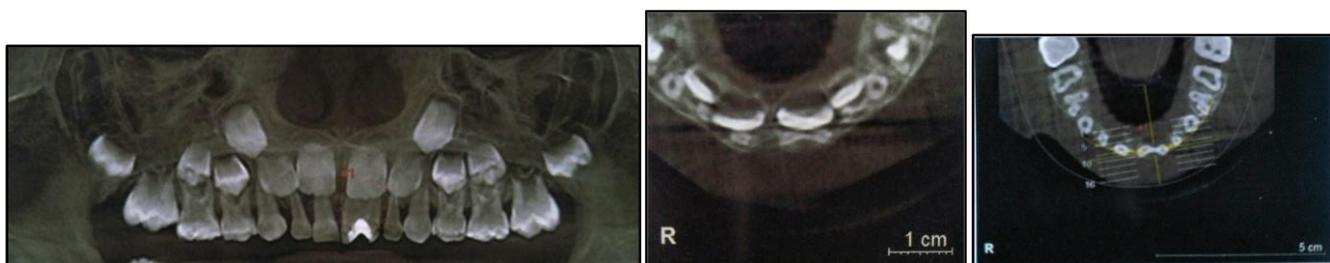


Fig 2a: OPG showing status of succedaneous teeth

Fig 2b:CBCT of 21

Fig 2c: CBCT of fused teeth



Fig 3a: Post operative view of Fused teeth Fig 3b: Post operative view of Mandibular arch Fig 3c: Post operative frontal view

Fused teeth

Mandibular arch



Fig 3d: Radiograph showing obturation of fused teeth



Fig 4a: Radiograph showing continued physiologic resorption with fused teeth Also 11 is erupting with 21 showing delayed eruption (one year follow up)



Fig 4b: One year follow up: 11 is erupting with 21 showing delayed eruption

DISCUSSION

In this case report there was a diagnostic dilemma due to presence of double teeth between a central incisor and a supernumerary tooth. However it seems to be of little clinical significance to differentiate between fusion or gemination, the main focus should be on preservation of the involved primary teeth and the permanent successor. The correlation of primary double tooth with anomalies in the permanent successors has been widely studied. Subsequent anomalies of the permanent dentition in the corresponding regions have been reported in more than 50% of subjects with primary double tooth. However no such anomalies were detected radiographically. Double teeth are the most common type of dental anomalies in the primary dentition.⁹ Both gemination and fusion are prevalent in primary dentition, with incisors being more affected.^{10,11} Treatment options may include splitting, reduction in size or extraction, depending on the degree of fusion, the size of the tooth and its location. Hashim 2004 suggest the orthodontic treatment to a case of a fused and rotated central incisor followed by a complementary esthetic treatment, to preserve the health and restore esthetic. Aguiló et al. showed that double teeth were mostly unilateral, involving two adjacent teeth, and no difference was found in the proportion of double teeth in either the maxilla or mandible, or on the left or right side.² The clinical interest for the appearance of double teeth in the primary dentition is the clinical problems associated with them, including caries, delayed exfoliation and anomalies in the permanent dentition such as impaction of the successors, supernumerary teeth, permanent double teeth or aplasia of teeth^{2,7,9}. Seddon et al reported that the presence of supernumerary teeth might cause delayed eruption in 26-52% of the cases and displacement or rotation of adjacent teeth in 28% to 63% of the cases.¹³ He also reported other complications such as resorption of the adjacent roots, crowding, development of dentigerous cysts, diastema, dilaceration, and ectopic eruption of permanent teeth into the nasal cavity.¹³ Therefore, early diagnosis of the anomaly has a considerable importance and it should be followed by careful clinical and radiographic observations that will allow surgical intervention at appropriate time^{7,11,14}. The presence of double primary tooth can also cause delayed resorption of root due to greater root mass and increased area of root surface relative to the size of the permanent successor crown.⁷ This may lead to delayed or ectopic

resorption of the permanent successor. According to Mader some confusion appears to exist over the classification of dental fusion and gemination.¹⁵ A diagnostic consideration would be that supernumerary teeth are often slightly aberrant or cone shaped, thus fusion between a normal anomalies of supernumerary teeth will show differences in two halves of the joined crown. However, in gemination the two halves of the joined crown are mirror images also, there is a buccolingual groove that extends to the incisal edge.¹⁵ Double formations in the primary dentition do not usually cause serious problems unless they are followed by similar anomalies in the permanent dentition, although caries and space problems may occur. Hence it is very important to prevent the possible damage choosing the right conduct of investigation like a 3D imaging of the successor tooth and also the Endo Scan of the anomalous tooth. The patients' expectations and degree of compliance must also be accurately assessed when determining suitable management. The uniqueness of this case was the presence of double teeth with a supernumerary tooth in the maxillary anterior region and unaffected permanent successors whereas the literature shows higher prevalence of this anomaly in mandibular anterior region and repetition of supernumerary tooth in permanent dentition due to SOX 2 gene.^{2,3,16-19}

CONCLUSION

Diagnosis and management of double teeth has always been challenging for the clinicians. Recognizing the condition clinically and employing recent advances of imaging techniques will facilitate the establishment of a right treatment with multidisciplinary view.

REFERENCES

1. Mitchell L, Mitchell Da, Nattress B. *Oxford Handbook of Clinical Dentistry* 3rd edn. Oxford: Oxford University Press, 1999: 72.
2. Aguilo L, Gandia JL, Cibrian R, Catala M. Primary double teeth. A retrospective clinical study of their morphological characteristics and associated anomalies. *Int J Paediatr Dent* 1999; 9:175-183.
3. Whittington BR, Durward CS. Survey of anomalies in primary teeth and their correlation with the permanent dentition. *N Z Dent J*. 1996; 92:4-8.
4. Tannenbaum, KA and Alling, E.E. Anomalous tooth development. *Oral Surg* 1963; 16: 883-887.
5. Pindborg, J.J. Pathology of the dental hard tissues. Munksgaard, Copenhagen, 1970: 46
6. Wang XP, Fan J. Molecular genetics of supernumerary tooth formation. *Genesis* 2011; 49(4):261-277.
7. Brook AH, Jernvall J, Smith RN, Hughes TE, Townsend GC. The dentition: the outcomes of morphogenesis leading to variations of tooth number, size and shape. *Aust Dent J* 2014; 59 Suppl 1:131-142.
8. Knežević A, Travan S, Tarle Z, Šutalo J, Janković B, Ciglar I. Double tooth. *Coll Antropol* 2002;26:667-72.
9. Nik-Hussein NN, Abdul Majid Z. Dental anomalies in the primary dentition: distribution and correlation with the permanent dentition. *J Clin Pediatr Dent*. 1996 Fall; 21(1):15-9.
10. Saap JP, Eversole L, Wysocki GP. Contemporary oral and maxillofacial pathology. St. Louis: Mosby; 1997.
11. Hernandez-Guisado JM, Torres-Lagares D, Infante-Cossio P, Gutierrez-Perez JL. Dental gemination: report of case. *Med Oral*. 2002 May-Jun;7(3):231-6.
12. Hashim HA. Orthodontic treatment of fused and geminated central incisors: a case report. *J Contemp Dent Pract*. 2004 Feb 15;5(1):136-44.
13. Seddon RP, Johnstone SC, Smith PB. Mesiodentes in twins: a case report and a review of the literature. *Int J Paediatr Dent* 1997 Sep;7(3):177-84.
14. Olivan-Rosas G, López-Jiménez J, Giménez-Prats MJ, Piqueras-Hernández M. Considerations and differences in the treatment of a fused tooth. *Med Oral*. 2004 May-Jul;9(3):224-8.
15. Mader CL. Fusion of teeth. *J Am Dent Assoc* 1979; 98: 62-4.
16. Chen YH, Cheng NC, Wang YB, Yang CY (2010) Prevalence of congenital dental anomalies in the primary dentition in Taiwan. *Pediatr Dent* 32:525-529.
17. Wu CW, Lin YT, Lin YT. Double primary teeth in children under 17 years old and their correlation with permanent successors. *Chang Gung Med J* 2010; 33:188-193
18. Hamasha AA, Al-Khateeb T. Prevalence of fused and geminated teeth in Jordanian adults. *Quintessence Int* 2004; 35:556-559
19. E. Juuri1 and A. Balic. The Biology Underlying Abnormalities of Tooth Number in Humans. *Journal of Dental Research* 2000: 1-9