Case Report

Clinical Course and Treatment of a Triplication Defect: A Case Report

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Abstract

Fusion is an anomaly manifested in both deciduous and permanent dentitions. Fusion of dental tissues in the primary dentition is of clinical significance owing to the challenges in treatment of the affected teeth and aberrations encountered in development and eruption of their successors. Triple tooth refers to the union of three separate tooth entities. It can occur by fusion, germination, concrescence or a combination of both fusion and germination. Triplication is rarely encountered in the deciduous dentition. The case presented herein describes triplication of deciduous incisors and a supernumerary tooth. The diagnosis was confirmed with the help of radiographs, computed tomography (CT) imaging and histological examination. Retention of the triple tooth had led to crossbite. Extraction was performed for the triple tooth and crossbite was corrected using a composite inclined plane.

Key Words: Tooth; Supernumerary; Deciduous

Journal of Dentistry, Tehran University of Medical Sciences, Tehran, Iran (2015; Vol. 12, No. 5)

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Received: 7 December 2014
Accepted: 26 March 2015

INTRODUCTION

Dental anomalies such as fusion, gemination, supernumerary teeth and concrescence are not rare. Conjoined, double or triple teeth are other terms used to designate such abnormalities [1]. Gemination occurs when a single tooth bud divides into two separate entities. Fusion is defined as the embryological union of two or more separate developing teeth and depending upon the degree of fusion, it can be complete or incomplete [2]. However, the clinical appearance resulting from gemination and fusion of a normal or supernumerary tooth is identical [3]. The differentiation between a fused or geminated tooth is on the basis of dental formula [4]. Clinically, fusion leads to a congenitally missing tooth, while in gemination the number of teeth in the affected arch is normal when the geminated tooth is counted as one [3].

The fusion of three teeth is termed triplication defect. The prevalence of triplication in the deciduous dentition has been reported to be 0.02% [5,6].

The maxillary arch is more frequently involved than the mandibular arch and the condition is more prevalent in males [7].

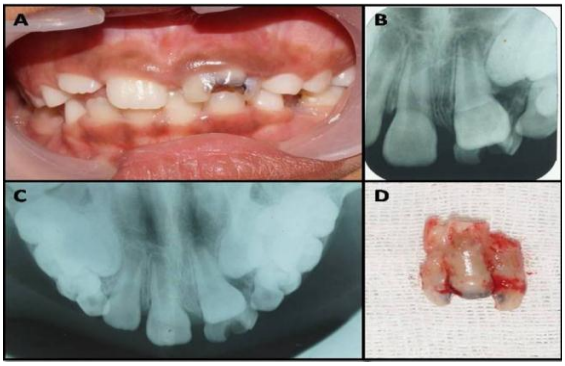

Fig. 1. A. Preoperative photograph shows carious triple tooth in the anterior maxillary region. B & C. Preoperative periapical and occlusal radiographs. D. Extracted specimen showing union of three discrete teeth.

Fig. 2. A. Intraoral photograph after extraction of triple teeth showing tooth #21 in crossbite. B & C. Post-extraction periapical and occlusal radiographs. D. Bonded composite inclined plane in place. E. Postoperative view after correction of the crossbite.

In the deciduous dentition triple teeth can result in dental caries, space related problems, esthetic problems, periodontal problems and delayed exfoliation. It can also affect the developmental course of permanent tooth successor [8,9].

Shilpa and Nuvvula have classified teeth into two types: Type I fusion with three pulp chambers and three root canals; Type Ia – fusion of two normal teeth with a supernumerary tooth and Type Ib – fusion of three normal teeth; Type II fusion with two pulp chambers and two root canals which can be Type IIa, a combination of one geminated tooth and a supernumerary tooth; or Type IIb – one geminated tooth and a normal tooth [7]. There is a paucity of reports using CT as a diagnostic tool for these anomalies. Herein, we present a case of a triple tooth along with its clinical and radiographic features illustrated with CT imaging; along with the management of the crossbite caused.

CASE REPORT

A 9-year-old male patient was reported to the Department of Pedodontics and Preventive Dentistry with a chief complaint of decayed teeth in the anterior maxillary region. There was no history of pain or sensitivity.

Past medical and dental histories were noncontributory. No history of trauma was mentioned. Intraoral examination revealed the crowns of three carious deciduous anterior teeth conjoined with grooves along the line of fusion. Tooth #21 was palatally erupted and was in crossbite (Fig. 1. A).

Dental caries was also observed in teeth #54, 64, 75 and 85. Tooth #22 was unerupted and space deficiency was evident.

Intraoral periapical (IOPA) and occlusal radiographs were taken; radiographic interpretation suggested the fusion of three separate tooth entities (Fig. 1. B & C).

A decision was made to extract the triple tooth because the permanent successor in the region had already erupted and was leading to malocclusion. Extraction of the triple tooth was done under local anesthesia and postoperative radiographs were taken to ensure its complete removal (Fig. 2 B & C).

The extracted specimen was clinically analyzed from various aspects. Macroscopically, the form of conjoined crowns could not be established exactly due to carious crowns and advanced root resorption (Fig. 1. D). However, the mesial and distal teeth appeared to be central and lateral incisors.

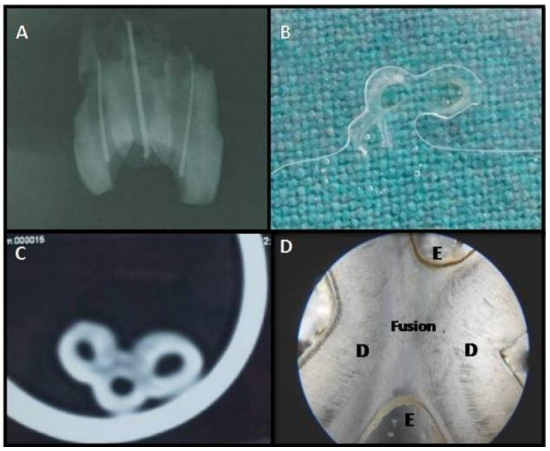

Fig. 3. A. Radiograph of the specimen with gutta percha points in the three canals. B. Ground section showing fusion of three teeth with separate root canals. C & D. CT images and histopathological image confirming the dentinal fusion and three isolated pulp chambers, respectively.

The central component of triple tooth seemed to be a supernumerary tooth. Access was obtained to the pulp chambers of the tooth and a radiograph was taken with gutta percha points in the root canals.

The radiograph confirmed the presence of three separate pulp chambers and root canals (Fig. 3. A). The specimen was immersed in 10% formalin and sent for histopathological examination. Histopathological examination (under 40× magnification) and ground section (observed under 10× magnification) revealed fusion of the three tooth entities (Fig. 3. B & D). The specimen was also subjected to CT; horizontal CT images at the cervical level showed fusion of three teeth with separate root canals (Fig. 3. C). The permanent successor tooth #21 was in crossbite in relation to teeth #31 and 32 (Fig. 2. A). To alleviate the malocclusion, a composite inclined plane was made on teeth #31, 32 and 73 four days after the extraction (Fig. 2 D). When crossbite was relieved after 10 days, the inclined plane was removed (Fig. 2 E).

DISCUSSION

Although the etiology of fusion is still unclear, it is believed that physical force or trauma results in the contact of developing tooth germs, producing necrosis of the epithelial tissue that separates them and leads to fusion [10].

Other possible causes include viral infection during pregnancy and the use of thalidomide [11]. Dominant autosomal heredity has also been proposed as one of the etiologic factors [11]. The extent of fusion is determined by the stage of development when the union occurred.

Differential diagnosis of the conjoined teeth in this case can be compound odontoma, which consists of discrete small tooth-like structures [12]; whereas in our case fusion of teeth was observed. Even when the union occurs in compound odontomas, it is in the form of concrescence and not dentinal fusion [12], thus precluding the possibility of erupted compound odontoma.

It can also be fusion of teeth #61 and 62 with a supernumerary tooth or fusion of #61 with geminated #62 or vice versa. Clinical and radiographic examinations fail to determine the true anomalous nature of a triplicated tooth. Thus, histological examination and CT images are used to determine the internal anatomy. Transverse ground section and histopathological examination revealed the dentinal fusion between the three involved teeth. This finding was further confirmed by the horizontal CT images at the cervical level. Due to resorption of the roots, CT images at the middle and apical levels were inconclusive. According to the classification proposed by Shilpa and Nuvvula [7], the case presented here exhibited type 1a morphology i.e. fusion of two normal teeth with a supernumerary tooth having three pulp chambers and three root canals. As there was no missing tooth in the affected region, it was considered to be a result of hyperactivity of the dental lamina developing into a supernumerary tooth. When the tooth fails to develop as a separate tooth it remains joined to the adjacent teeth [13]. Apart from being unaesthetic, clinical problems such as dental caries, abscesses, and fistulae can complicate restorative and endodontic procedures [3]. Delayed exfoliation and anomalies in the permanent dentition such

as ectopic eruption, impaction of the successors, supernumerary teeth, aplasia of teeth, root deviation and root resorption of adjacent teeth have been reported [3,4]. Thus, early identification of dental conjoining anomalies has been recommended [10]. In our case, delayed exfoliation of triple tooth resulted in eruption of #21 in crossbite to the mandibular antagonist teeth. Since, there is universal agreement that crossbites, whether anterior or posterior, functional or anatomical, should be treated as soon as noticed [14], a composite inclined plane was bonded on the opposing mandibular teeth to correct it.

CONCLUSION

Once triplication of a tooth is diagnosed, careful monitoring is required since problems with exfoliation can occur along with caries formation in the grooves of the incompletely fused teeth. Although primary triple teeth themselves may be regarded as harmless anomalies, their presence can cause space problems, occlusal disturbances, esthetic concerns and delayed or ectopic eruption of the permanent successors.

REFERENCES

1- Killian CM, Croll TP. Dental twinning anomalies: the nomenclature enigma. Quintessence Int. 1990 Jul;21(7):571-6.

2- Prabhakar AR, Marwah N, Raju OS. Triple teeth: Case report of an unusual fusion of three teeth. J Dent Child (Chic). 2004 Sep-Dec; 71(3):206-8.

3- Schultz-Weidner N, Ansari F, Mueller-Lessmann V, Wetzel WE. Bilateral triplicated primary central incisors: Clinical course and therapy. Quintessence Int. 2007 May;38 (5): 395-9.

4- Mohapatra A, Prabhakar AR, Raju OS. An unusual triplication of primary teeth - A rare case report. Quintessence Int. 2010 Nov-Dec; 41(10):815-20.

5- Ravn JJ. Aplasia, supernumerary teeth and fused teeth in the primary dentition. An epidemiologic study. Scand J Dent Res. 1971; 79:1-6.

6- Erdem GB, Uzamis M, Olmez S, Sargon MF. Primary incisor triplication defect. ASDC J Dent Child. 2001 Sep-Dec;68(5-6):322-5, 301.

7- Shilpa G, Nuvvula S. Triple tooth in primary dentition: A proposed classification. Contemp Clin Dent. 2013 Apr;4(2):263-7.

8- Sharma U, GulatiA, Gill NC. Concrescent triplets involving primary anterior teeth. Contemp Clin Dent. 2013 Jan;4(1):94-6.

9- Yadav S, Tyagi S, Kumar P, Sharma D. Triplication of deciduous teeth: a rare dental anomaly. Niger J Surg. 2013 Jul;19(2):85-7.

10- Riesenberger RE, Killian CM. Triplication and twinning in one dental arch: Report of a case. Quintessence Int. 1990 Aug;21(8):621-3.

11- Şekerci AE, Şisman Y, Ertas ET, Gümüş H, Ertaş H. Clinical and radiographic evaluation and comparison of six cases of fusion involving the primary dentition. J Dent Child (Chic). 2012 Jan-Apr;79(1):34-9.

12- White SC, Pharoah MJ. Benign tumors of the jaws. In: Oral radiology, principles and interpretation. Mosby, St. Louis, Misssouri 2004. p. 425-27.

13- Aguilo L, Catala M, Peydro A. Primary triple teeth: Histological and CT morphological study of two case reports. J Clin Pediatr Dent. 2001 Fall;26(1):87-92.

14- Sari S, Gokalp H, Aras S. Correction of anterior dental crossbite with composite as an inclined plane. Int J Paediatr Dent. 2001 May; 11(3):201-8.