

Geminated Tooth with Succedaneous Supernumerary Tooth: Case Report in Jeddah, Saudi ArabiaAlostaz M.A.¹, AlFadhl H.A.², Damanhoury W.H.³, Attar M.H.⁴¹Intern Dental Student, Batterjee Medical College for Science and Technology, Faculty of Dentistry, Jeddah, Saudi Arabia.² BDS, MSC in Pediatric Dentistry, Batterjee Medical College for Science and Technology, Faculty of Dentistry, Jeddah, Saudi Arabia.³ BDS, MSC, ABPD in Pediatric Dentistry, King Fahad Hospital, Head of Pediatric Dental Unit, Jeddah, Saudi Arabia.⁴BDS, MSC, DScD, ABPD in Pediatric Dentistry, Faculty of Dentistry, King Abdulaziz University, Jeddah, Saudi Arabia and Batterjee Medical College for Science and Technology, Faculty of Dentistry, Jeddah, Saudi Arabia.
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Abstract: Dental anomalies can occur either in the size, shape, number or composition of the teeth. They are caused by disturbance during any stage of teeth development, but the exact etiology is unknown. They are more frequent in children with clefts especially supernumerary teeth and the double teeth. **The aim:** of this report is to document a case that represents geminated primary upper incisor with the presence of supernumerary tooth in primary dentition. **Methods:** A four years, six months old male presented in dental clinic in Batterjee Medical College of Science and Technology in Jeddah, Saudi Arabia.. His Chief complain was pain and pus in his anterior teeth. Two bitewing radiographs were taken which revealed a double tooth (geminate) with one root and one radicular pulp (pulp chamber) with supernumerary tooth apical to the double tooth. The double tooth was extracted (tooth number # 61), along with the supernumerary tooth (#62). **Conclusion:** Although the case of geminated tooth was associated with supernumerary tooth, no other anomalies like clefts was reported.

[Alostaz M. A., AlFadhl H.A., Damanhoury W.H., Attar M.H. **Geminated Tooth with Succedaneous Supernumerary Tooth: Case Report in Jeddah, Saudi Arabia.** *Life Sci J* 2016;13(2):17-21]. ISSN: 1097-8135 (Print) / ISSN: 2372-613X (Online). <http://www.lifesciencesite.com>. 3. doi:[10.7537/marslsj13021603](https://doi.org/10.7537/marslsj13021603).

Key words: geminate tooth, supernumerary tooth, dental anomalies in children.

Introduction:

Dental anomalies can occur either in the size, shape, number or composition of the teeth. Some of these anomalies can be associated with either morphology or number of teeth in primary or permanent teeth^{1,2}. They are caused by disturbance during any stage of teeth development, but the exact etiology is unknown. They are more frequent in children with clefts especially supernumerary teeth and the double teeth³. In addition, Caceda *et al.*, 1994, published a case report of unilateral primary molars fusion with presence of bicuspid supernumerary tooth succedaneous to the first permanent molar⁴. Also Tomizawa *et al.*, 2002, published a case report of bilateral maxillary fused primary incisors with succedaneous supernumerary teeth⁵.

Tannenbaum *et al.*, 1963 defined fusion as union of two separate tooth buds at some stage in their developments. Depending on the stage, the tooth might have one pulp chamber as in germination or two pulp chambers as in fusion with union occurs in dentine. The same authors defined gemination as formation of two equivalent teeth from one follicle with evidence of an attempt for the teeth to be completely separate and can be seen clinically by depression in the clinical crown⁶. Germination and

fusion are very similar to each other in term of shape which might give a dentist a hard time to differentiate between them⁷. Yuen *et al.*, 1987, studied a radiographic relationship between double primary teeth and their permanent successors. Based on the results of their study, fusion and germination are better to be described as inseparable teeth mass and it is more appropriate to be called as double teeth. Also, due to close relationship between double teeth and succedaneous permanent teeth, radiographic examination is justified to confirm the number and the order of the permanent teeth to develop an appropriate treatment plan⁸. The result of Whittington *et al.*, 1996 study, confirmed that whenever there is hypodontia, hyperdontia, gemination or fusion, there is a likelihood of anomalies in the permanent successor⁹.

Although double teeth anomalies have been underestimated due to its low prevalence⁽¹⁰⁻¹²⁾, they can affect their successors significantly^(8,10,11). Salem 1989, studied a sample of 2393 dental records of age between 4 to 12 years old for selected dental anomalies in Saudi Arabia, Gizan region. 0.5% of his sample had supernumerary teeth and 0.08% had geminated teeth¹³. Moreover, Osuji *et al.*, 2002, conducted a study in Saudi Arabia in Tabuk to determine the prevalence of selected dental anomalies

for his study. The prevalence of supernumerary primary teeth was 14.6% and fused primary teeth was 3.7% out of 188 dental anomalies¹⁴.

Bruce *et al.*, 1994, did a radiographic survey of dental anomalies in African American pediatric patients in 1994; the sample consisted of 2267 children records. As a result of his survey, 1.49% had supernumerary teeth (which were reported higher than Caucasian population), 0.12% had fused teeth and 0.22% had geminated teeth¹⁵. Whittington *et al.*, 1996, surveyed anomalies in primary teeth and their correlation with permanent dentition in sample of 1680 children in Taranaki. They detected the anomalies of primary dentition in 23 children, 3 children had supernumerary teeth and 14 children had double teeth⁹.

Knezevic *et al.*, in 2002 examined 3517 plaster model to seek the prevalence of double teeth among the persons tested, as to gender, distribution in the maxilla and mandible, and whether the anomaly occur bilaterally or unilaterally, the prevalence was 0.2% double teeth out of 3517 plaster model¹⁶. Hamasha *et al.*, 2004, studied a sample of 1660 dental records of adult patient in Jordan. The prevalence of the study were 0.19% and 0.22% for fusion and gemination, respectively¹⁷. Ezoddini *et al.*, 2007 did a retrospective study to determine the prevalence of dental anomalies in Iran. The sample consisted of a radiograph of 480 patients and the prevalence of fusion was less than 0.2%¹⁸.

Wu *et al.*, 2010 investigated the double teeth prevalence in Taiwanese children under 17 years old. The sample consisted of 7868 qualified dental records of children. The prevalence of double teeth was 0.72% and most of the double teeth were in the mandibular lateral incisor and canine (63.2% of the sample). Also, he reported a higher prevalence (0.12%) double teeth bilaterally in primary dentition than the previous reports¹⁰. Sekerci *et al.*, 2011 surveyed a sample of 4619 dental records of ages between 2 to 12 years old in Turkey which conducted from 2005 to 2010. 0.38% of sample experienced double teeth, 45.4% were detected in mandibular lateral incisor and canine, at a percentage of 81.8% had dental anomalies in the permanent successors. Hypodontia was the most common problem in the permanent successors. In this study, they collected the prevalence of double teeth from 1940 to 2003 and it ranged from 0.3% in Great Britain to 1.6% in China¹¹. The frequency of double teeth is about 2.5% in primary dentition with the bilateral presentation being rare, ranged from 0.01% to 0.04% in primary dentition and 0.05% in permanent dentition¹⁹. Wangsrimongkol *et al.*, 2013, investigated dental anomalies in Thai non syndromic oral cleft patients conducting cross-sectional study using dental records. It consisted of panoramic radiographs, intra-

oral radiographs, dental casts, and orthodontic clinical charts. The prevalence of double teeth (fusion or germination) was less than 0.4 %²⁰.

This case report exhibits a double tooth, most likely a geminated primary tooth, with succedaneous supernumerary tooth in non syndromic patient. **The aim of** this report is to document a case that represents geminated primary upper incisor with the presence of supernumerary tooth in primary dentition.

Case Report:

A four years, six months old Caucasian male patient presented in dental clinic center in Batterjee Medical College of Science and Technology in Jeddah, Saudi Arabia. He was presented with his mother. Chief complain as the mother reported "he has pain in his anterior teeth and there is pus from them".

Medical history: The patient medical history is insignificant (classified as ASA 1) with no known drug allergy. The height and weight are normal to his age.

Dental history: This is the first dental visit for the patient.

Diagnostic assessment: The extra-oral examination was normal. The intraoral examination revealed normal soft tissues, whereas the hard tissue showed necrotic double tooth (#61). The upper anterior teeth # 51, 52, 53, 62 and 63 have proximal caries (Fig.1). Teeth number # 55, 54, 64, 65, 74, 75, 84 and 85 have occlusal caries (Dental numbering system is The Primary Federation Dentaire International Numbering System (FDI)). Caries risk assessment reveals a high risk index.

Radiographic examination: Two bitewing radiographs and an occlusal radiograph were taken. The interpretation revealed the presence of double tooth with one root and one radicular pulp and supernumerary tooth apical to the double tooth (Fig.2).

Patient behaviour according to Frankle Assessment is positive.

Treatment plan was formulated to include:

- 1- Phase one: extraction of the double tooth (tooth number # 61), and extraction of the supernumerary tooth (tooth number # 62),
- 2- Phase two: Oral hygiene measures.

The treatment was explained to the parents and they signed a consent form.

Surgical procedure: Topical anesthesia, Articane 4% with 1:100,000 epinephrine, was given as infiltration labially and palatally to the double tooth. Maximum recommended dose = $(7 \times 35) / 36 = 6$ carpoles. Extraction of geminated tooth was carried out. Extraction of tooth # 62 was done to locate and facilitate removal of supernumerary tooth. (figure 3 and 4). The gingivae was sutured with chromic cat-gut suture.

Post-operative instructions were given not to drink hot water, rinse his mouth and spit and to drink cold drinks and eat cold food and eat soft food. Follow up was scheduled every 3 months.

Preventive measures were given to the parents. Prophylaxis and fluoride application were performed.

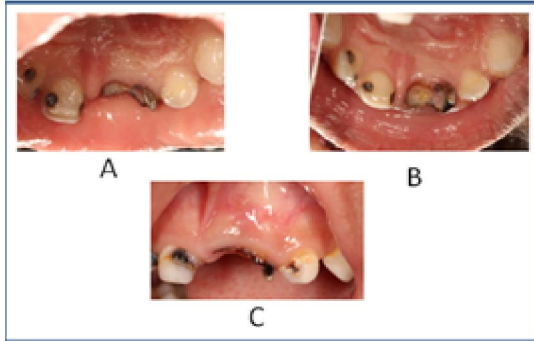


Figure 1. A,B and C intra-oral photographs that show the geminated tooth from a palatal view, occlusal view and labial view, respectively.

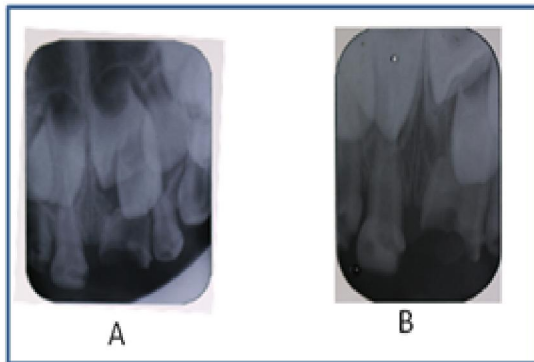


Figure 2. A, an occlusal radiograph that shows the geminated tooth, supernumerary tooth and permanent central incisor. B, a periapical radiograph with mesial shift.

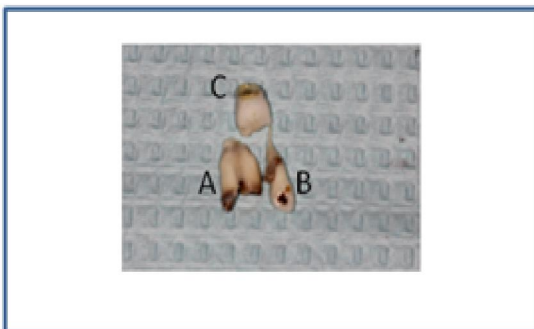


Figure 3. This picture explain how the supernumerary tooth was present between the roots of tooth number # 61(A) and tooth number # 62 (B)

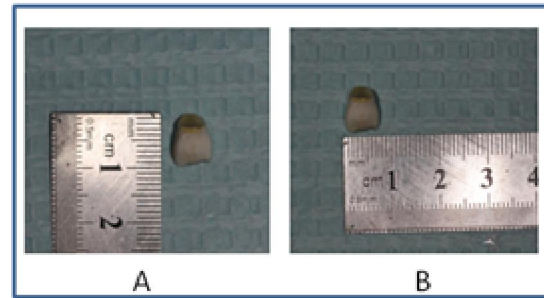


Figure 4. A shows the height of the supernumerary tooth of 1 CM, and B shows the width of the supernumerary tooth of 7 to 7.5 MM

4. Discussion:

Gemination and fusion can be a diagnostic dilemma for the dentist. To differentiate between them, sometimes even counting the teeth can lead to misdiagnosis. For example, a geminated tooth will be counted as one, so the number of teeth will remain the same, whereas fused teeth will be less by one. But this is not the case every time. Sometimes the fusion occurs between a tooth and a supernumerary tooth and the teeth count will remain the same as in the gemination^(7, 21-23). So, taking a radiograph can be a helpful diagnostic tool⁷. The diagnosis in this case is most likely gemination as the teeth count is normal and it was verified by a radiograph showing one radicular pulp. The treatment of supernumerary tooth is extraction because of its potential complications like interference with eruption and position of the adjacent teeth²⁴. In 2010 American Association of Pediatric Dentistry released a Guideline on Pediatric Oral Surgery that stated that the extraction of supernumerary tooth should be in the mixed dentition so the eruptive force can bring the permanent tooth to the oral cavity²⁵.

Gemination is a large tooth that can cause esthetic problem, can be highly susceptible to caries, and can cause crowding of the teeth. The presence of a groove can be a cause of a periodontal problem if it extends subgingivally, as it can be an area of food debris and bacteria accumulation that will lead eventually to periodontal inflammation²⁶.

Management of the gemination varies from mesial-distal reduction of the tooth, odontomy, simple restoration, endodontic treatment with simple restoration, fixed prosthesis or extraction^(27,28,29). In the current case, extraction was the treatment of choice as the geminated tooth was badly destructed. Also, the presence of the supernumerary tooth would cause a delay in the eruption of the permanent central incisor. The geminated tooth was simply extracted, extraction of tooth # 62 was done to locate and facilitate removal

of supernumerary tooth as well as to prevent another procedure in the future. The same path of treatment is in accordance with Meadors *et al.*,³ and Tomizawa *et al.*,⁵.

Conclusion:

Although the case of geminated tooth was associated with supernumerary tooth, no other anomalies like clefts was reported.

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