

Case Report

Familial Occurrence of Nonsyndromal Multiple Supernumerary Teeth

A Rare Condition

Ayşe Işıl Orhan^a; Levent Özer^b; Kaan Orhan^c

Abstract: The occurrence of multiple supernumerary teeth is a rare phenomenon and is often found in association with syndromes such as cleidocranial dysplasia, Gardners syndrome, or cleft lip and palate. Only a few examples of nonsyndromal multiple supernumerary teeth have been reported in the literature. There is a predilection for the mandible and in the premolar area followed by the molar and anterior regions. This article reports the presence of nonsyndromal multiple supernumerary teeth involving both jaws in children and in their mothers. The clinical and radiographic appearance of the anomalies and treatment modalities are discussed.

Key Words: Multiple supernumerary teeth; Premolars; Inheritance; Radiography; Case report; Nonsyndrome

INTRODUCTION

Supernumerary teeth may be defined as any teeth or tooth substance in excess of the usual configuration of 20 deciduous and 32 permanent teeth.¹ Supernumerary teeth may occur singly, multiply, unilaterally, or bilaterally and in one or both jaws.²⁻⁸ They occur more frequently in males. Rajab and Hamdan⁷ reported in their study that males were more affected than were females, the sex ratio being 2.2:1. Mitchell⁹ reported a 2:1 ratio in favor of males. Hongstrum and Anderson¹⁰ and Brook¹¹ also reported a 2:1 ratio of sex distribution, whereas Luten¹² found a sex distribution of 1.3:1.

The most common supernumerary teeth, listed in order of frequency, are the maxilla midline supernumeraries, maxillary fourth molars, maxillary paramolars, mandibular premolars, maxillary lateral incisors, mandibular fourth molars, and maxillary premolars.¹³ Over 20 syndromes and developmental conditions have

been found to be associated with single supernumerary teeth and multiple supernumerary teeth developing as part of systemic conditions such as cleidocranial dysplasia, Gardners syndrome, and cleft lip and palate.^{7,14-17}

The occurrence of multiple supernumerary teeth without any associated systemic conditions or syndromes, however, is a rare phenomenon. Single supernumeraries occur in 76–86% of cases, double supernumeraries in 12–23% of cases, and multiple supernumeraries in less than 1% of cases.^{6,7,14,18,19} Although multiple supernumerary teeth without associated syndromes are rare, their occurrence can create a variety of clinical problems such as crowding, delayed eruption, diastema, rotations, cystic lesions, and resorption of the adjacent teeth. Hence, suitable treatment after proper clinical and radiographic evaluation is essential.^{3,20,21}

The aim of this report is to document two rare cases of familial occurrence of multiple supernumerary teeth occurring as an isolated nonsyndromic trait and to discuss the treatment modalities.

CASE REPORTS

Case 1

An 11-year 3-month-old Caucasian boy was referred to the Department of Pediatric Dentistry Clinic regarding delayed tooth eruption. The family's medical history was noncontributory, but the dental history indicated impacted supernumerary teeth in his mother. General physical and extraoral examination did not

^a Graduate Student, Department of Pediatric Dentistry, Faculty of Dentistry, University of Ankara, Ankara, Turkey.

^b Associate Professor, Department of Pediatric Dentistry, Faculty of Dentistry, University of Ankara, Ankara, Turkey.

^c Resident, Department of Oral Diagnosis and Radiology, Faculty of Dentistry, University of Ankara, Ankara, Turkey.

Corresponding author: Dr. Kaan Orhan, Department of Oral Diagnosis and Radiology, Faculty of Dentistry, University of Ankara, 06500 Beşevler, Ankara, Turkey (e-mail: call53@yahoo.com)

Accepted: October 2005. Submitted: August 2005.

© 2006 by The EH Angle Education and Research Foundation, Inc.

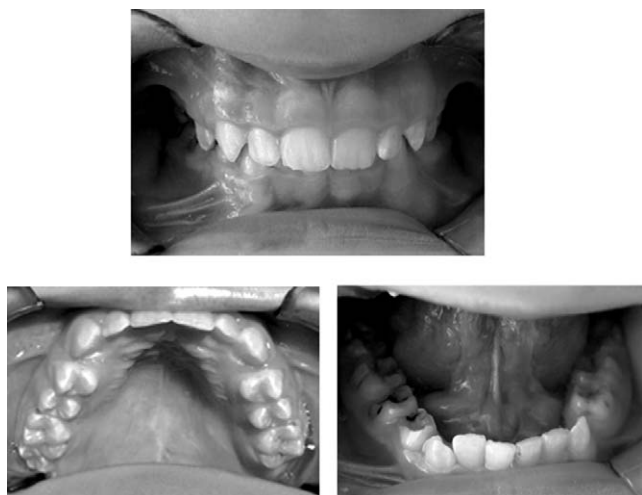


Figure 1. Intraoral photograph of case 1 showing mixed dentition.

show any abnormality. An intraoral examination showed a Class I molar relationship and an anterior deep bite. Also revealed was a mixed dentition with the following erupted teeth (Figure 1):

17, 16, 15*, 14, 13, 12, 11	21, 22, 23, 24, 25, 26
47, 46, 43, 42, 41	31, 32, 33, 36, 37

*Partially erupted

The maxillary left second molar tooth and mandibular premolars were unerupted and hence could be detected in the dentition. Clinical examination also revealed retained deciduous teeth 75, 84, and 85.

The panoramic radiograph revealed the presence of eight impacted multiple supernumeraries in all four quadrants. Three were present in each mandibular premolar region, one in the maxillary right premolar

region, and one in the maxillary left molar region (Figure 2). Radiographic examination also confirmed the presence of all four mandibular premolars, the maxillary left second molar, and all four third molars. It was noted that the maxillary left second molar tooth and mandibular premolars were unerupted because of multiple supernumerary teeth.

The treatment of the patient began with the extraction of mandibular right primary first and second molars and left primary second molar. Impacted supernumerary teeth in each mandibular quadrant and in the maxillary left molar region were surgically removed under local anesthesia. The one in the maxillary right premolar region was left in situ because of its close proximity to the roots of the maxillary right first premolar.

Most authors recommend that supernumerary premolars should be left in situ until further development allows for uncomplicated surgery with less damage to roots and adjacent structures.^{7,22-24} Moreover, it was stated that unerupted supernumerary teeth that are asymptomatic do not appear to affect the dentition in any way and those that are found by chance are sometimes best left in place and kept under observation.⁷ Therefore, it was decided to observe and to review the supernumerary tooth with unerupted mandibular premolars and maxillary left second molar.

The patient was sent also to the Orthodontic Department to be examined for adequate space for the permanent teeth to erupt and for an anterior deep bite. It was seen that the left second premolar teeth are displaced and cannot erupt correctly; thus the orthodontic treatment was planned. Six months later, a panoramic radiograph was obtained, and this radiograph

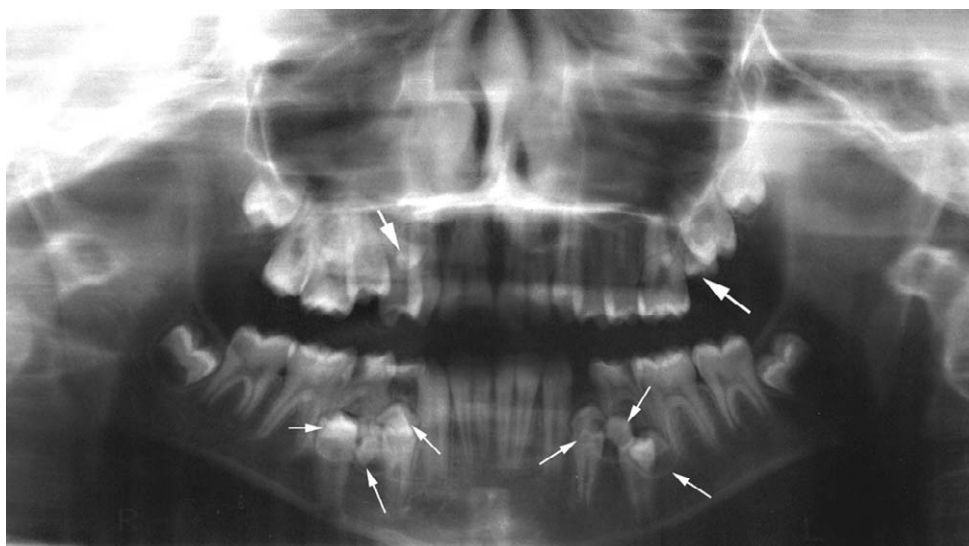


Figure 2. Case 1. Panoramic view of nonsyndromic multiple supernumerary teeth: three in each mandibular premolar region, one in maxillary right premolar region, one in maxillary left molar region.

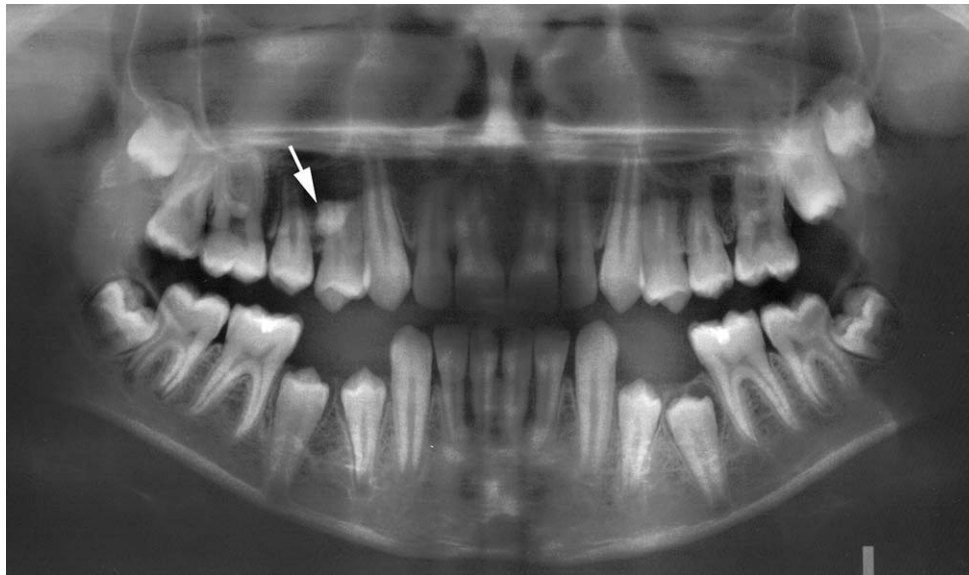


Figure 3. Follow-up radiograph of case 1 showing further eruption of impacted mandibular premolars.

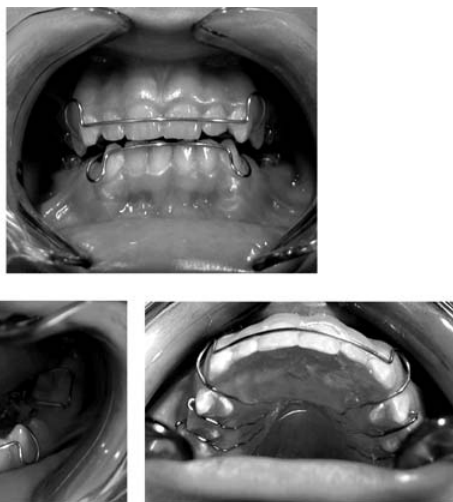


Figure 4. Orthodontic treatment begins: to provide adequate space for tooth eruption and correction of deep bite.

showed further eruption of impacted mandibular premolars (Figure 3), and deep bite in the anterior was treated initially (Figure 4).

Panoramic examination of the patient's mother revealed impacted supernumeraries; two in the mandibular right premolar region and one in the mandibular left premolar region (Figure 5). Because the impacted supernumeraries were not associated with any cyst formation or resorption of the adjacent teeth, it was decided to observe the teeth and to radiographically review the patient in 1 year along with orthodontic treatment.

Case 2

An 11-year 1-month-old Caucasian boy was referred to the Department of Pediatric Dentistry Clinic with a

chief complaint of crowding. He had no relevant medical history, but there was a family dental history of supernumeraries. His mother's radiographic examination showed impacted supernumerary teeth. General physical and extraoral examination of the child did not show any abnormality. Intraoral examination revealed a Class I molar relationship; right posterior crossbite, anterior edge-to-edge bite, maxillary right lateral incisor in crossbite, and 4 mm of crowding in the maxillary arch (Figure 6).

Furthermore, a retained carious mandibular primary left second molar and gross caries in both mandibular first molars were detected. The panoramic radiograph revealed eight impacted multiple supernumeraries: two in each mandibular premolar region, two in the maxillary anterior region, and one in each maxillary premolar region. The radiographic examination also showed full resorption of the mandibular primary left second molar root and an unerupted second premolar impacted mesioangularly (Figure 7).

The supernumeraries located in the mandibular left premolar and maxillary anterior region were surgically removed, and the overretained mandibular primary left second molar was extracted. The carious lesions in each mandibular first molar were treated. Because the supernumerary teeth in the mandibular right premolar and maxillary premolar regions presented initial crypt formation, these teeth were left in situ, and more definitive treatment will be considered in the future. Because of crowding and the crossbite, the orthodontic treatment was planned before the surgical procedures. However, the patient's parents refused any treatment because they lived in another city and were not able to come to the appointments regularly. A panoramic



Figure 5. Case 1. Panoramic radiograph of the mother showing multiple supernumerary teeth.



Figure 6. Intraoral photograph of case 2 showing anterior edge-to-edge bite, maxillary right lateral incisor in crossbite, and 4-mm crowding in maxillary arch.

radiograph taken 11 months later showed further eruption of the teeth and further development of multiple supernumerary teeth (Figure 8).

The panoramic examination of the patient's mother revealed two impacted supernumeraries in the mandibular right canine region (Figure 9). She also had a dental history of extraction of the permanent right mandibular canine, two unerupted extra teeth in the mandibular left canine/premolar region, and one in the maxillary left premolar region. The existing supernumerary teeth caused mild pain and could be palpable from the vestibular mucosa. Therefore, it was decided to extract them.

DISCUSSION

The etiology of supernumerary teeth remains unclear, but several theories have been suggested for

their occurrence. The localized and independent hyperactivity of the dental lamina is the most accepted cause for the development of supernumerary teeth. Some proposed that supernumerary teeth are formed as a result of local, independent, conditioned hyperactivity of the dental lamina.^{2,24,25} The supernumerary teeth are more likely to be present in patients whose relatives possessed supernumeraries, although the inheritance of these teeth does not follow a simple Mendelian pattern.^{7,11,20,22,24,26} It also seems that Asian populations are more affected with supernumeraries than others.^{14,18,23}

Supernumerary teeth may erupt normally or remain impacted, but in either case their presence may lead to clinical problems. Most problems associated with supernumeraries are because of their potential to interfere with normal occlusal development or with orthodontic mechanics such as crowding, separation, impaction, or delayed eruption of permanent teeth, malocclusion, rotations, retained deciduous teeth, palatally displaced permanent canines, abnormal eruption sequence, and compromised space closure. In addition to these, supernumerary teeth can also cause cystic formation or they can erupt into the nasal cavity or in the maxillary sinus.^{7,10,16,22,24,27,28} In our cases supernumeraries caused delayed eruption of permanent teeth and malocclusion as described above.

The apparently morphologically normal finding of multiple supernumerary teeth in the absence of an associated systemic condition or syndrome is an uncommon phenomenon. Yusuf⁴ reviewed most of the published cases in the English language literature and found that when nonsyndromal multiple supernumerary teeth are present (>5), the most common site affected is the mandibular premolar region, followed by the molar and the anterior regions, respectively. So-

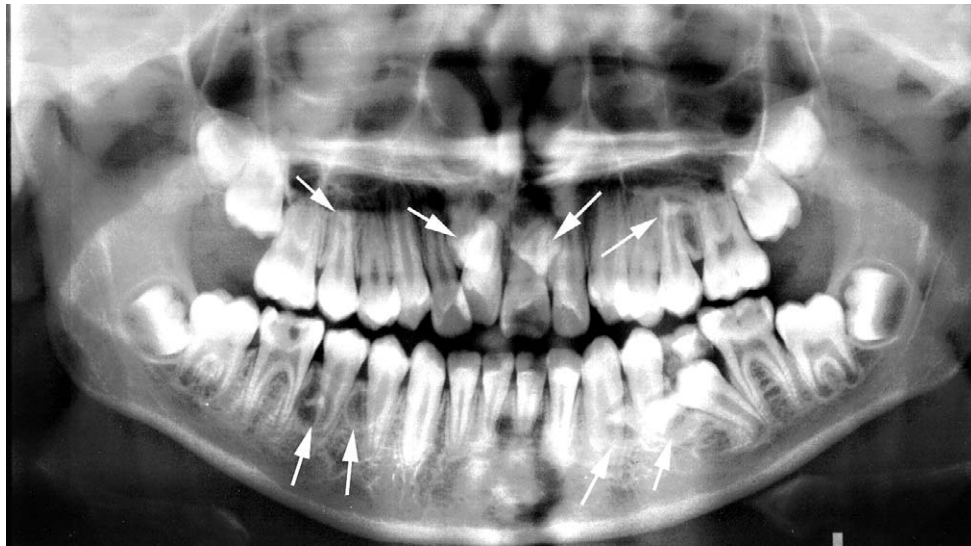


Figure 7. Case 2. Panoramic view of nonsyndrome multiple supernumerary teeth: two in each mandibular premolar region, two in maxillary anterior region, and one in each maxillary premolar region.

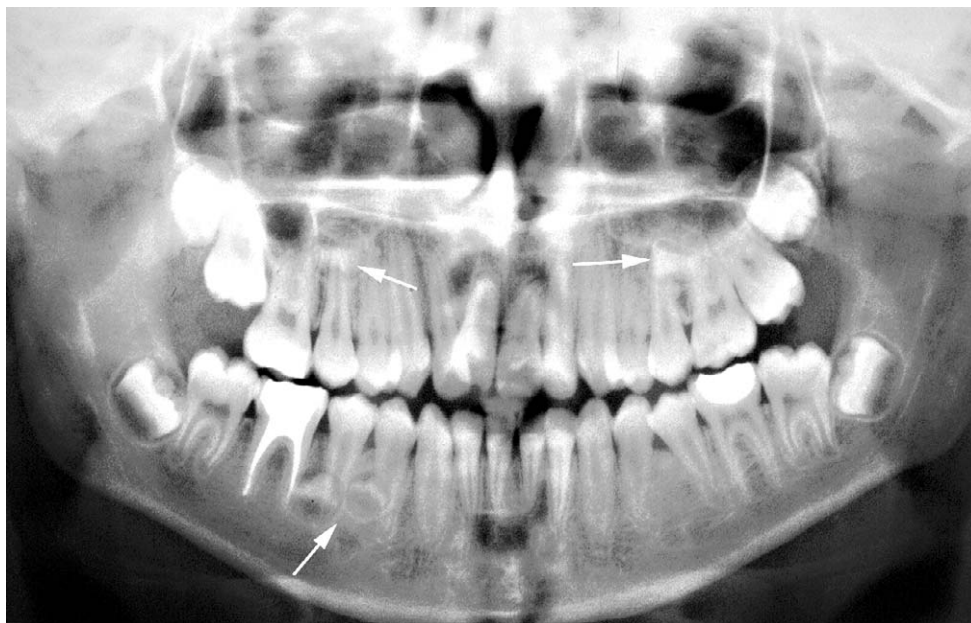


Figure 8. Eleven month follow-up radiograph: note supernumerary buds of lower right premolar and of both upper premolars.

lares and Romero²⁴ found that 74% of supernumerary teeth are located in the mandibular premolar region. Recent case reports of multiple supernumerary teeth confirm this finding.^{6,7,21-23,29-36} In some of the other recent reports, multiple supernumeraries were also discovered in the maxillary anterior and premolar region or elsewhere in the jaws.^{18,20-22,25,31,32}

In our cases, a total 16 impacted supernumerary teeth were diagnosed. Of these, 10 impacted supernumerary teeth were localized in the mandibular premolar region. This finding is in accordance with previous reports. What is important is that this paper re-

ports two cases of familial occurrence of rare nonsyndrome multiple supernumerary teeth.

In reviewing the literature, only six cases of familial occurrence of multiple supernumerary teeth were found without any associated syndromes or systemic disorders.^{5,20,26,36-38} Umweni and Osunbor⁵ reported a case of supernumerary teeth in two brothers and a daughter to the one of the affected brothers. Desai and Shah²⁰ described another case of multiple supernumerary teeth in two brothers. Marya and Kumar²⁶ noted two cases of mesiodentes among siblings. Another case of supernumerary premolars at age 12 years,

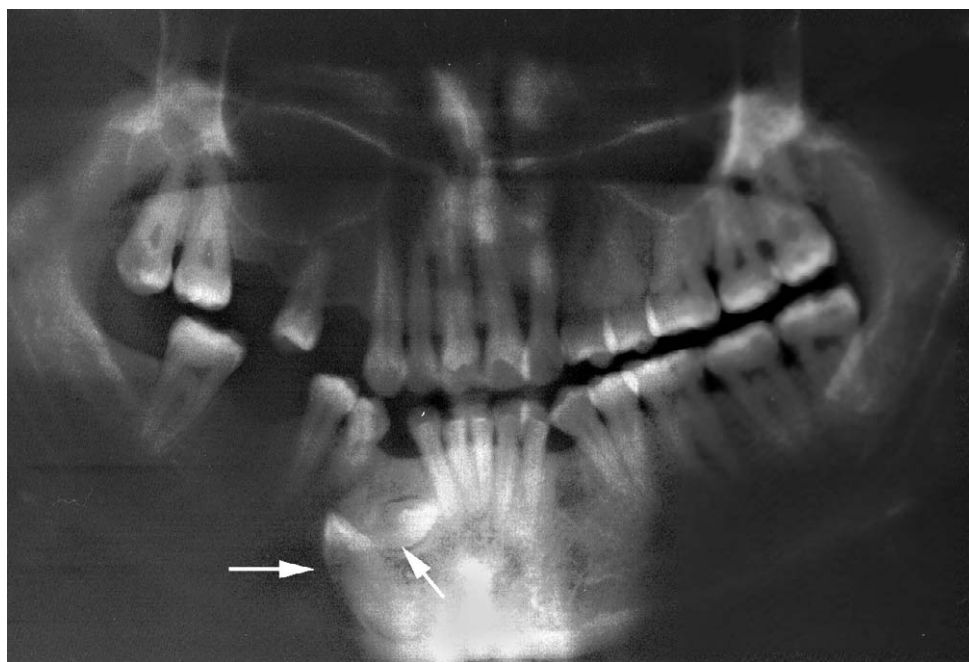


Figure 9. Case 2. Panoramic radiograph of the mother showing impacted supernumerary teeth.

with a previous history of mesiodens at an earlier age, was reported to have a female cousin with a similar intervention at age 7 years.³⁷ Mercuri and O'Neill³⁸ reported a case of supernumerary premolar teeth among siblings with a family history including a grandparent and the father.

Batra et al³⁶ recently reported the occurrence of multiple supernumerary teeth in a girl, her elder brother and her father occurring as a nonsyndromic trait. In our cases, two boys and their mothers were showing multiple supernumerary teeth, whereas the dental formula for the rest of the family members was normal.

Whenever supernumerary teeth are diagnosed, single or multiple, a decision regarding the appropriate management should be made carefully. Surgical removal of the teeth may cause damage to adjacent structures.^{7,22–24,39} In our opinion, the clinical management of multiple supernumerary teeth poses a great challenge to clinicians. Therefore, it is important to initiate appropriate consultation and an interdisciplinary approach for the treatment.

CONCLUSIONS

- Supernumerary traits have a strongly hereditary component without following a simple Mendelian pattern.
- Surgical removal of the supernumerary teeth is indicated if eruption of the adjacent tooth has been delayed, altered eruption, displacement of the adjacent tooth is evident or pathologies such as cystic

lesion and resorption of the adjacent tooth have occurred.

- If the risks of surgery outweigh the benefits of removal, the teeth may be left in situ, as in our cases, and a regular clinical and radiographic monitoring should be made even after the removal of supernumerary teeth to determine whether further teeth are forming.

REFERENCES

1. Schulze C. Developmental abnormalities of the teeth and jaws. In: Gorlin RJ, Goldman HM, eds. *Thoma's Oral Pathology*. 6th ed. Vol. I. St Louis, Mo: CV Mosby; 1970:112–122.
2. Primosch R. Anterior supernumerary teeth—assessment and surgical intervention in children. *Pediatr Dent*. 1981;3:204–215.
3. Nazif MM, Ruffalo RC, Zullo T. Impacted supernumerary teeth: a survey of 50 cases. *J Am Dent Assoc*. 1983;106:201–204.
4. Yusof WZ. Non-syndromal multiple supernumerary teeth: literature review. *J Can Dent Assoc*. 1990;56:147–149.
5. Umweni AA, Osunbor GE. Non-syndromic multiple supernumerary teeth in Nigerians. *Odontostomatol Trop*. 2002;25:43–48.
6. Scheiner MA, Sampson WJ. Supernumerary teeth: a review of the literature and four case reports. *Aust Dent J*. 1997;42:160–165.
7. Rajab LD, Hamdan MA. Supernumerary teeth: review of the literature and a survey of 152 cases. *Int J Paediatr Dent*. 2002;12:244–254.
8. Gibson N. A late developing mandibular premolar supernumerary tooth. *Aust Dent J*. 2001;46:51–52.

9. Mitchell L. Supernumerary teeth. *Dent Update*. 1989;16:65–69.
10. Hongstrum A, Andersson L. Complications related to surgical removal of anterior supernumerary teeth in children. *ASDC J Dent Child*. 1987;54:341–343.
11. Brook AH. Dental anomalies of number, form and size: their prevalence in British school children. *J Int Assoc Dent Child*. 1974;5:37–53.
12. Luten JR. The prevalence of supernumerary teeth in primary and mixed dentition. *ASDC J Dent Child*. 1967;34:346–353.
13. Stafne EC. Supernumerary teeth. *Dental Cosmos*. 1932;74:653–659.
14. Zhu JF, Marcushamer M, King LD, Henry JR. Supernumerary and congenitally absent teeth: a literature review. *J Clin Pediatr Dent*. 1996;20:87–95.
15. Bohn A. Dental anomalies in harelip and cleft palate. *Acta Odontol Scand*. 1963;21:1–114.
16. Kantor ML, Bailey CS, Burkes EJ. Duplication of the premolar dentition. *Oral Surg Oral Med Oral Pathol*. 1988;66:62–64.
17. Hibbert S. A previously unreported association between Nance-Horan syndrome and spontaneous dental abscesses. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 2005;99:207–211.
18. So LLY. Unusual supernumerary teeth. *Angle Orthod*. 1990;60:289–292.
19. Rosenzweig KA, Garbarski O. Numerical aberrations in the permanent teeth of grade school children in Jerusalem. *Am J Phys Anthropol*. 1965;23:277–284.
20. Desai RS, Shah NP. Multiple supernumerary teeth in two brothers: a case report. *J Oral Pathol Med*. 1998;27:411–413.
21. Ng'ang'a PM, Guthua SW, Ng'ang'a RN. Multiple supernumerary teeth in association with malocclusion: report of two cases. *East Afr Med J*. 2002;79:221–223.
22. Mason C, Rule DC, Hopper C. Multiple supernumeraries: the importance of clinical and radiographic follow-up. *Dentomaxillofac Radiol*. 1996;25:109–113.
23. Moore SR, Wilson DF, Kibble J. Sequential development of multiple supernumerary teeth in the mandibular premolar region—a radiographic case report. *Int J Paediatr Dent*. 2002;12:143–145.
24. Solares R, Romero MI. Supernumerary premolars: a literature review. *Pediatr Dent*. 2004;26:450–458.
25. Liu JF. Characteristics of premaxillary supernumerary teeth: a survey of 112 cases. *ASDC J Dent Child*. 1995;62:262–265.
26. Marya CM, Kumar BR. Familial occurrence of mesiodentes with unusual findings: case reports. *Quintessence Int*. 1998;29:49–51.
27. Pracy JP, Williams HO, Montgomery PQ. Nasal teeth. *J Laryngol Otol*. 1992;106:366–367.
28. Erkmén N, Olmez S, Onerci M. Supernumerary tooth in the maxillary sinus: case report. *Aust Dent J*. 1998;43:385–386.
29. King NM, Lee AM, Wan PK. Multiple supernumerary premolars: their occurrence in three patients. *Aust Dent J*. 1993;38:11–16.
30. Hegde SV, Munshi AK. Late development of supernumerary teeth in the premolar region: a case report. *Quintessence Int*. 1996;27:479–481.
31. Sharma A. A rare non-syndrome case of concomitant multiple supernumerary teeth and partial anodontia. *J Clin Pediatr Dent*. 2001;25:167–169.
32. Hopcraft M. Multiple supernumerary teeth: case report. *Aust Dent J*. 1998;43:17–19.
33. Manrique Mora MC, Bolanos Carmona MV, Briones Lujan MT. Molarization and development of multiple supernumerary teeth in the premolar region. *J Dent Child (Chic)*. 2004;71:171–174.
34. Kalra N, Chaudhary S, Sanghi S. Non-syndrome multiple supplemental supernumerary teeth. *J Indian Soc Pedod Prev Dent*. 2005;23:46–48.
35. Arathi R, Ashwini R. Supernumerary teeth: a case report. *J Indian Soc Pedod Prev Dent*. 2005;23:103–105.
36. Batra P, Duggal R, Parkash H. Non-syndromic multiple supernumerary teeth transmitted as an autosomal dominant trait. *J Oral Pathol Med*. 2005;34:621–625.
37. Becker A, Bimstein E, Shteyer A. Interdisciplinary treatment of multiple unerupted supernumerary teeth; report of a case. *Am J Orthod*. 1982;81:417–422.
38. Mercuri LG, O'Neill R. Multiple impacted and supernumerary teeth in sisters. *Oral Surg Oral Med Oral Pathol*. 1980;50:293.
39. Panetta G, Favaretti F, Cerulli Mariani G, Gatto R. Multiple and relapsing supernumerary teeth associated to dens invaginatus. Review of the literature and case report. *Minerva Stomatol*. 2005;54:321–332.