

Prevalence of supernumerary teeth among outpatients attending a tertiary care center in Bhopal (Central India)

¹Shikha Singh, Reader, Department of Oral Medicine and Radiology, Maharana Pratap College of Dentistry and Research Center and Jiwaji University, Gwalior (M.P) and India.

²Guru Prasad Ramamurthy, H.O.D, Department of Oral Medicine and Radiology, Government Dental College and H.P University, Shimla and India.

Corresponding Author: Shikha Singh, Reader, Department of Oral Medicine and Radiology, Maharana Pratap College of Dentistry and Research Center and Jiwaji University, Gwalior (M.P) and India.

Citation of this Article: Shikha Singh, Guru Prasad Ramamurthy, “Prevalence of supernumerary teeth among outpatients attending a tertiary care center in Bhopal (Central India)”, IJDSIR- August - 2021, Vol. – 4, Issue - 4, P. No. 375 – 382.

Copyright: © 2021, Shikha Singh, et al. This is an open access journal and article distributed under the terms of the creative commons attribution noncommercial License. Which allows others to remix, tweak, and build upon the work non commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: This study makes an attempt to infer, inter-alia, the prevalence, type and distribution of supernumerary teeth in a small cluster of population attending the outpatients department of Peoples College of Dental Sciences And Research Center, Bhopal (Madhya Pradesh) India.

Method: The patients belonging to the age group of 06 years to 25 years who passed through the hospital during December 2010 to June 2012 were clinically examined. Panoramic, Intraoral periapical radiograph or Occlusal radiograph were carried out in those patients where there was some skeptical of supernumerary teeth.

Result: The total 93 patients were found with 116 supernumerary teeth.

Conclusion: Our observations conclude that although supernumerary tooth is an unusual anomaly, it is not as rare as previously reported. The identification of this anomaly thus could provide a hint towards the possibility

of complications, other dental anomalies, syndromes and familial association.

Keywords: dentition, etiology, prevalence, supernumerary, tooth.

Summary

The aim of the study was to evaluate the presence of supernumerary teeth and their characteristics such as age, gender, number, position, eruption status, morphology, location, dentition, complications amongst the outpatients who visited the Department of Peoples College of Dental Sciences And Research Center, Bhopal (Madhya Pradesh) India, from December 2010 to June 2012(1.5years). Patients having age from 06 to 25 years were included in the study. Supernumerary teeth were detected clinically. Further, radiographic examination was carried out in the patients who were suspected to have supernumerary teeth. Among 30,293 patients were analyzed, 93 patients had 113 supernumerary teeth with male predominance (0.44%). Supernumerary teeth were most common in the

group aged 16-20 years (41.94%); 77 patients had one supernumerary teeth, 12 patients had double, and the remaining 4 patients (7.19%) had three or more supernumeraries. The average number of supernumerary teeth was 1.25 per person (minimum 1 and maximum 5). The rate of single and two or more supernumerary teeth were higher in males than females. There was statistically significant difference [$p < 0.05$ ($p = 0.0149$) for a t-test] for gender according to number of supernumerary teeth. Most of the supernumerary teeth were conical (65%), mesiodens (68.3%) and found clinically erupted (78.3%). The most frequent location of supernumerary teeth was found in the maxilla (94.9%); while 40.8% were positioned within the arch and 84.5% were in permanent dentition. Malocclusion (28.3%) was the most frequent complication caused by supernumerary teeth. Rare anomalies like fusion of ST with adjacent tooth (0.8%) were observed in two patients and root dilacerations of ST (1.7%), mesiodens fused with dens invaginatus (0.8%) was seen in one patient.

Introduction

A supernumerary tooth (ST) is one which is defined as a tooth that is additional to the normal series and can be found in any region of dental arch.¹ Several theories have been suggested to explain the aetiology of supernumerary teeth. The most accepted theory is the "Dental lamina hyperactivity theory". This involves localized, independent, conditioned hyperactivity of dental lamina. According to this theory, a eumorphic form would develop from lingual extension of an accessory tooth bud, whereas rudimentary form would develop from proliferation of epithelial remnants of the dental lamina.² Literature suggests that the prevalence of supernumerary teeth in the permanent dentition ranges from 0.1% to 3.8% and from 0.3% to 0.6% in the deciduous dentition. Its prevalence was found more in males than females in

permanent dentition. But this sexual dimorphism is not observed in the deciduous dentition. The Asian populations are more affected with supernumeraries than others.

Supernumerary teeth may occur in any region of the dental arch, in the maxilla or in the mandible, singly or in multiples, unilaterally or bilaterally, erupted or unerupted.³ About 75% of ST remain impacted and asymptomatic and most are diagnosed coincidentally during routine radiographic examination.⁴ Approximately 90-98% of all supernumeraries occur in maxilla with a particular predilection (90%) for premaxilla.⁵ Morphology, supernumerary teeth may have heterogeneous forms namely, conical (present with conical or triangular-shaped crowns and complete root formation), tuberculate (barrel-shaped appearance and a crown consisting of multiple tubercles) and supplemental (supernumerary teeth resemble their respective normal teeth).³ The development of such teeth may precipitate a variety of complications such as crowding, rotations, diastema, impaction and delay of eruption of permanent teeth, deviation of teeth from their normal position, longitudinal development and direction of eruption of the antagonist teeth, thus leading to significant impediments in the occlusion and mastication. In addition to these it can also cause cystic formation or erupt into nasal cavity or into maxillary sinus. Tooth bud displacement also impedes oral hygiene through the formation of sites with a predilection for carious defects and marginal periodontitis. Therefore early diagnosis, proper evaluation and appropriate treatment are essential.⁵⁻⁸

Supernumerary teeth may be associated with many of the genetic disorders & syndromes like Gardner's syndrome, cleft lip & palate, cleidocranial dysostosis, Apert Syndrome, Cleido-cranial dysplasia, Down's syndrome, Ehler-Danlos syndrome, Nance-Horan syndrome,

Crouzan Syndrome, Tricho-rhino-phalangeal syndrome etc.^{7,8} Detection of the multiple supernumerary teeth could indicate towards the possibility of these syndromes. As these teeth result from the mutated genes, therefore there is a greater frequency of maxillofacial anomalies in the patients of supernumerary teeth. The identification of the supernumerary teeth thus necessitates the need to look for and rule out any other dental anomalies.

Materials And Methods

The study population consists of patients belonging to the age group of 06 years to 25 years attending the Department of Oral Medicine and Radiology at People's College of Dental sciences & Research Centre (PCDS&RC), Bhopal (India) during December 2010 to June 2012 were subjected to clinical examination. Patients were divided into four age-groups:

- Group A- 06 to 10 yrs
- Group B –11 to 15 yrs
- Group C –16 to 20 yrs
- Group D- 21 to 25 yrs

If clinical examination divulged some suspicion regarding the presence of supernumerary teeth, those patients were subjected to radiographic examination (by orthopantomogram, intraoral periapical or occlusal radiograph). At the outset, the dental examination was carried out using mouth mirror and probe, under artificial light in a Dental chair. The diagnostic study models were also prepared, when required. The findings were recorded in a duly designed Proforma so as to capture relevant variables adequately. In addition to this, photographs were also made for patients with supernumerary teeth. The clearance from the appropriate ethical committee was obtained from the institute. Further, the consents of patients were also obtained who underwent radiographic examination.

Results

Age, gender distribution and number of ST : Out of 30,293 patients 116 supernumerary teeth were observed in 93 patients representing overall prevalence proportion of 0.30%, with 0.44% in males and 0.14% in females respectively. The average number of supernumerary teeth in the 93 patients was 1.25. The average number differ significantly by sex; 1.30 in males and 1.05 in females; under two sample t-test assuming unequal variances [$p < 0.05$ ($p = 0.0149$) for a two tailed test]. This finding of; higher prevalence of supernumerary teeth in Indian males; is remarkable given the sample size and period of study

Arch and eruption status: Most of the ST were present in the maxilla (94.9%), (4.3%) in mandible and only (0.8%) was located in both the jaws. (Table 2). Of total, (78.3%) supernumerary teeth were clinically erupted, 19.2% impacted and only 2.5% were partly erupted. (Table 4)

Morphology and anomalies: The majority of teeth were conical (65%) followed by supplemental (16.7%) and tuberculate (5.8%). One patient had root anomaly like root dilacerations of ST (1.7%), mesiodens fused with dens invaginatus (0.8%) and two were observed having fusion of ST with adjacent tooth (0.8%).

Associated complications : The main complications were malocclusion ST (28.3%) followed by gingival inflammation (10.8%), impaction of permanent teeth (2.5%), periodontitis (1.7%), dentigerous cyst (1.7%), swelling (1.7%), irritation to soft tissue (0.9%), missing tooth (0.9%), ectopic eruption (0.9%) while remaining were asymptomatic. (Table 6)

Discussion

In the present study, an attempt was made to assess the characteristics of ST, with an analysis of the associated clinical-eruptive complications. After having clinically examined 30,293 subjects in the age range of 06 to 25

years, 116 supernumerary teeth were found in 93 patients. The prevalence of Supernumerary teeth in this study was 0.30%. The other studies done by various authors showed more prevalence rate compared to this study.⁹⁻¹² The variation in the prevalence rates can be attributed to the different methods of investigation, lack of representative samples, timing of the initial dental examination and the study design employed.⁹ Heredity is believed to be an important etiologic factor in the occurrence of ST. However, we did not come across any hereditary pattern.¹ ST were more in males, which is in accordance with other studies.^{9,12-16} But, the studies on Brazilian^{10,17} and Turkey¹⁸ population who observed ST to be more in females than males. The variations in the gender can be attributed to racial variation and to possible sampling difference.⁹ The mean patient age in our series was 18.8 years, which was not coincidence with the findings of other author¹⁴ who report 3rd decade to be the most common period of supernumerary presentation. (Table 1) While few studies^{15,16} showed more frequency in first decade of life.

Further, in the present study, ST were more prevalent in the maxilla than the mandible which was in agreement with the studies.^{8,14,15,17,19} But it differs from other studies.^{4,10} Most of the patients in this study had permanent dentition at the time of diagnosis which was coinciding with studies^{14,16,20} while it differed from few other studies.^{9,12,15} This finding suggests that the occurrence of ST in the different dentitions is probably a reflection of the time of diagnosis rather than a real difference in the time of their development.⁹ The findings of this study was in concurrence with various studies^{12,15,16} which reported that single ST is the most commonly found variety ST followed by double and multiple whereas few other studies^{11,17} did not observed any multiple supernumerary teeth at all. We observed four

non-syndromic multiple hyperdontia cases.(Table 3) In the present study, a strong preference of ST was within the arch followed by palatally, buccally, lingually, labially placed supernumerary teeth. **A single case of ST was found in the mandibular anterior region which is very rare and prevalence is only of 0.01% of ST.²¹ (Figure 1)**

Mevlut et al. described one more supernumerary morphology i.e. mixed (CTS- conical-tubercular-supplementals). The commonest variety in this study was conical, followed by supplemental and tuberculate, this coincided with the rest of the studies^{13,14} except studies¹⁶ who documented conical, followed tuberculate and supplemental. Odontome is considered under ST in various studies.^{9,10,15} while few study did not consider odontome as supernumerary teeth.¹² Another interesting cases of fusion of mesiodens with adjacent tooth, dens invaginatus fused with supplemental maxillary incisor and mesiodens with dilacerated root. This was comparable with Goekel study.²²

In the present study, half of ST were asymptomatic, while remaining were associated with various complications. Malocclusion was recorded as a most common complication in this study which was coinciding with other studies.^{9,11,15,16} Another uncommon finding of dentigerous cyst(DC) associated with ST resulting from inverted impacted tooth was reported in two subjects. Very few studies have documented DC.¹⁵ Dentigerous cysts around ST; accounts for about 5% of all DC, mostly developing around a mesiodens in the anterior maxilla.²³

It is very unnatural and rare for a tooth to be present in nasal cavity. Approximately 49 cases of nasal tooth have been reported so far in the literature.²⁴ One interesting case of ectopic eruption of intranasal tooth was noted. The ectopic tooth eruption in nasal cavity was only 0.1 to 1% of general population.²⁵

This study was clinically based on selection of ST, majority of patients we had found clinically erupted ST followed by impacted and partially erupted ST. We had also included few patients in whom incidentally ST was found on their radiographs. It differs from other published studies.^{10,12,13} This difference may be because various studies had based on review of radiographic data (various panoramic or periapical or occlusal). However, various studies did not comment on impacted ST as they were field surveys on school going children. In most of the cases, it was observed that ST was not almost always associated with complications. So, on the basis of these findings, this study had peculiar variation and was unique in nature as various ST studies were based either on clinically eruption or radiographically impacted ST.

Conclusion

This study had made a small attempt to cover a cluster of Bhopal (India) population. However, the detailed comprehensive study might have revealed more number of supernumerary teeth among these populations. This preliminarily data may be helpful for conducting further research on this aspect. However, more comprehensive studies involving large sample size may be required to substantiate the findings obtained in this study.

References

1. Garvey MT, Blake M. Supernumerary Teeth -An Overview of Classification, Diagnosis and Management. J Can Dent Assoc 1999;65:612-6.
2. Amarlal D, Muthu MS. Supernumerary teeth: Review of literature and decision support system. Indian J Dent Res 2013;24:117-22. doi: 10.4103/0970-9290.114911
3. Nayak G, Shetty S, Singh I, Pitalia D. Paramolar – A supernumerary molar: A case report and an overview. Dent Res J (Isfahan) 2012Nov-Dec;9(6):797–803.
4. Acikgoz A, Acikgoz G, Tunga U, Otan F. Characteristics and prevalence of non-syndrome multiple supernumerary teeth: a retrospective study. Dentomaxillofac Radiol 2006;35:185–190. doi: 10.1259/dmfr/21956432
5. Primosch Robert E. Anterior supernumerary teeth assessment and surgical intervention in children. Pediatric Dent 1981;3(2):204-215.
6. Meighani G, Pakdaman A. Diagnosis and Management of Supernumerary Mesiodens: A review of the literature J Dent (Tehran)2010;7(1):41-9.
7. Gill Daljit S, Tredwin Christopher, Naini Farhad B. Diagnosis and Management of Supernumerary Teeth. Dent Update 2008;35:510-520.
8. Kumar DK, Gopal KS. An epidemiological study on supernumerary teeth: a survey on 5,000 people. J Clin Diagn Res.2013 Jul7(7):1504-7. doi: 10.7860/JCDR/2013/4373.3174.
9. Anthonappa Robert P, Omer Rashied S.M, King Nigel M, Characteristics of 283 supernumerary teeth in southern Chinese children. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2008 Jun;105(6):e48-e54. doi: 10.1016/j.tripleo.2008.01.035.
10. Soares AB, Ferreira Filho UG, Marzola C, Toledo Filho JL, Barbosa JL, Haagsma IB. Supernumerary teeth prevalence and your dental arch positions in the Curitiba District, Parana, Brazil-Literature Review And 3000 panoramic radiographic research.
11. Mevlut C, Kamak H, Oktay H. Prevalence and characteristics of supernumerary teeth in a non-syndrome Turkish population: Associated pathologies and proposed treatment. Med Oral Patol Oral Cir Bucal 2010 Jul;15(4):e575-8. doi: 10.4317/medoral.15.e575.
12. Anegundi RT et al. Prevalence and characteristics of supernumerary teeth in a non syndromic South Indian

- pediatric population. *J Indian Soc Pedod Prev Dent.* Jan-Mar 2014;32(1)9-12. doi: 10.4103/0970-4388.127041.
13. Padro Ferrés E, Armengol Prats J, Ferrés-Amat E. A descriptive study of 113 unerupted supernumerary teeth in 79 pediatric patients in Barcelona. *Med Oral Patol Oral Cir Bucal.* 2009, Mar1;14(3):E146-52.
14. Chou ST et al. Characteristics of supernumerary teeth among nonsyndromic dental patients. *J Dent Sci* 2015;10:133-138.
<https://doi.org/10.1016/j.jds.2013.12.004>
15. Syriac G, Joseph E, Rupesh S, Philip J, Cherian SA, Mathew J. Prevalence, Characteristics and Complications of Supernumerary teeth in a Non syndromic Paediatric Population of South India: A Clinical and Radiographic Study. *J Pharm Bioall Sci* 2017;9:S231-6. doi: 10.4103/jpbs.JPBS_154_17
16. Senchhema L, Dikshit P, Gupta S. Mesiodens: A Hospital based study. *J Nepal Health Res Counc* 2017;15(36):164-168. doi: 10.3126/jnhrc.v15i2.18207
17. Kuchler EC, Costa AGD, Costa MDC, Vieira AR, Granjeiroet JM. Supernumerary teeth vary depending on gender. *Braz Oral Res* 2011,Jan-Feb;25(1):76-9. doi: 10.1590/s1806-83242011000100013.
18. Demiriz L, Durmuşlar MC, Mısıır AF. Prevalence and characteristics of supernumerary teeth: A survey on 7348 people. *J Int Soc Prev Community Dent.* 2015May;5(Suppl 1):S39–S43. doi: 10.4103/2231-0762.156151
19. Osuji OO, Hardiet J, Dental anomalies in a population of Saudi Arabian children in Tabuk population. *Saud Dental Journal.* 2002,Jan-April;14(1):11-14.
20. Arikan V, Ozgul BM, Firdevs TOZ. Prevalence and characteristics of supernumerary teeth in a child population from Central Anatolia – Turkey. *Oral Health Dent Manag* 2013 Dec;12(4):269-72.
21. Palanisamy V, Arathi Rao, Ravikiran Ongole, Varghese Chacko. Mandibular mesiodens—A rare case report. *J Oral Maxillofac Surg Med Pathol* 2017;29(2):163-165.
<http://dx.doi.org/10.1016/j.ajoms.2016.08.002>
22. Goksel S, Agirgol E, Karabas HC, Ozcan I. Evaluation of Prevalence and Positions of Mesiodens Using Cone-Beam Computed Tomography. *J Oral Maxillofac Res* 2018;9(4):e1. doi: 10.5037/jomr.2018.9401
23. White Stuart C, Pharoh Michael J. *Oral Radiology.* 5th ed. New Delhi: Elsevier;2006.p.388.
24. Gupta YK, Shah N. Intranasal tooth as a complication of cleft lip & alveolus in 4 yr child: case report & review literature. *Int J Paediatr Dent.* 2008;11(3):221-224. doi: 10.1046/j.1365-263x.2001.00251.x
25. Prasad GR, Nair PP, Gharote H, Hegade K, Agarwal K, Jain A. Intranasal Tooth: An Ectopic Eruption of Mesiodens in Nasal Cavity—A Case Report and Review. *J Indian Acad Oral Med Radiol.* 2011 July-September;23(3):252-255. doi: 10.5005/jp-journals-10011-1140.

Legend Tables

Table 1. Distribution of patients with supernumerary teeth by age

Age Group	Frequency	Percent (%)
06-10	12	12.90
11-15	11	11.83
16-20	39	41.94
21-25	31	33.33
Total	93	100

Table 2. Distribution of supernumerary teeth by position in Jaw

Jaw	Frequency	Percent (%)
Maxilla	110	94.9
Mandible	1	0.8
Both	5	4.3
Total	116	100

Table 3: Distribution of patients with supernumerary teeth by sex and number of teeth

Number of supernumerary teeth										P-value ^a (two tailed)
	One	Two	Three	Four	Five	Mean	SD	t-stat	df	
Male	59	11	2	1	1	1.30	0.72	2.4836341	87	0.0149*
Female	18	1	0	0	0	1.05	0.23			
Total	77	12	2	1	1	1.25	0.65			

P-value *<0.05 statistically significant at 5% level

^a Independent t-test

Table 4. Distribution of Supernumerary teeth according to Eruption status

Side	Frequency	Percent
Clinically erupted	91	78.3%
Impacted	22	19.2%
Partially erupted	3	2.5%

Table 5. Distribution of Supernumerary teeth by type

Type	Frequency	Percent (%)
Mesiodens	79	68.3
ParaPre-molar	16	14.1
Para-molar	15	13.3
Disto-molar	3	2.5
Supplemental Canine	1	0.9
Supplemental Lateral Incisor	1	0.9
Total	116	100

Table 6. Distribution of number of ST causing complications

Complications	Frequency	Percent(%)
Malocclusion	33	28.3
Gingival inflammation	13	10.8
Impaction of permanent teeth	3	2.5
Periodontitis	2	1.7
Dentigerous cyst	2	1.7
Swelling	2	1.7
Irritate the soft tissue (tongue)	1	0.9
Missing tooth	1	0.9
Ectopic eruption	1	0.9
No complications	59	50.6
Total	116	100



Figure 1: Mandibular mesiodens is present.



Figure 2: Inverted impacted mesiodens present palatally between 11 and 21 in occlusal radiograph.