

EVALUATION OF OCCURRENCE OF HYPERDONTIA IN NON-SYNDROMIC POPULATION FROM BIHAR REGION

Dr. Minti Kumari¹, Dr. Madhuri Kumari², Dr Anurag Rai³, Dr. Navin Kumar⁴

¹Reader, Department of Public Health Dentistry, Patna Dental College and Hospital, Patna, Bihar, India.

²Senior Lecturer, Dr. B.R Ambedkar Dental College, Patna Bihar, India.

³Professor and HOD, Department of Orthodontics, Patna Dental College and Hospital, Bihar India.

⁴Tutor, Community Dentistry, Patna Dental College and Hospital, Patna, India.

Article Info: Received 06 October 2019; Accepted 28 October 2019

DOI: <https://doi.org/10.32553/ijmbs.v3i10.740>

Corresponding author: Dr Minti Kumari

Conflict of interest: No conflict of interest.

Abstract:

It is evident that hyperdontia is more common in the permanent dentition than in the primary. There is a considerable difference between males and females in the prevalence of these teeth in permanent dentition; hyperdontia is twice as common in males as in females. However, this approximation varies in terms of location, other associating syndromes that may be present, and the ethnicity of the individual. In terms of ethnicity, it can be seen that hyperdontia is in fact less common in Caucasian than in Asian populations. There is evidence to show that an individual is more likely to have hyperdontia if other members of their family also have the condition. Hence the present study was planned for evaluation of occurrence of hyperdontia in non-syndromic population from Bihar Region.

The present study was planned in Public Health Dentistry, Patna Dental College and Hospital, Patna, Bihar. Total 195 patients referred to Department of Dentistry were evaluated in the present study. Panoramic radiographs and clinical records of patients above the age of 18 years and without any syndromic features were selected for the study. All the radiographs were examined for the presence of supernumerary teeth, their location, morphology, and number. Morphologically, teeth were classified as conical, tuberculate, supplemental, and odontoma.

Early diagnosis of dental anomalies can prevent some esthetic, orthodontic, and periodontal problems, and knowledge of the prevalence and distribution of the anomalies may help clinicians to the detection of these anomalies at early stages. Our study evaluated the prevalence of selected dental anomalies; future studies should investigate the prevalence of dental anomalies of all types.

Keywords: Hyperdontia, non-syndromic, panoramic radiograph, supernumerary teeth, etc.

Introduction

Hyperdontia refers to a condition where a person develops more than the normal amount of teeth, which are twenty primary (baby) teeth and thirty-two permanent (adult) teeth. Usually, primary teeth start to erupt (grow) around six months and have all fall out by twelve years. These primary teeth are then usually replaced by the permanent teeth. However, hyperdontia is a disorder which results in extra teeth (supernumerary teeth) which can occur in any part of the dental arch. Most often, supernumerary teeth are permanent teeth incisors in the maxillary (upper) arch or the mandibular (lower) arch, or they may also be present in the premolar or molar region (either erupted or impacted).

This condition is quite rare and usually only results in one extra tooth. However multiple supernumerary teeth are possible too. This disorder usually occurs in combination with other disorders or syndromes, such as a cleft palate, Gardner's Syndrome, or cleidocranial dysplasia. Hyperdontia can cause numerous problems, such as teeth blockage, crowding or displacement.

Hyperdontia is the condition of having supernumerary teeth, or teeth that appear in addition to the regular number of teeth. They can appear in any area of the dental arch and can affect any dental organ. The opposite of hyperdontia is hypodontia, where there is a congenital lack of teeth, a condition which is seen more commonly than

hyperdontia.[1] The scientific definition of hyperdontia is "any tooth or odontogenic structure that is formed from tooth germ in excess of usual number for any given region of the dental arch." [2] The additional teeth, which may be few or many, can occur on any place in the dental arch. Their arrangement may be symmetrical or non-symmetrical.

The presence of a supernumerary tooth, particularly when seen in young children, is associated with a disturbance of the maxillary incisor region. This commonly results in the impaction of the incisors during the mixed dentition stage. The study debating this also considered many other factors such as: the patient's age, number, morphology, growth orientation and position of the supernumerary tooth. Alongside this issue, the presence of an extra tooth can impede the eruption of adjacent additional or normal teeth. Therefore, the presence of a supernumerary tooth when found must be approached with the appropriate treatment plan, incorporating the likelihood of incisal crowding.[3] In some individuals, the additional teeth can erupt far from the dental arch, within the maxillary sinus. The extra teeth may also migrate to a different location after development.[1] In some cases, supernumerary teeth can lead to the formation of cysts. Crowding is also frequently seen in people with hyperdontia.[2]

There is evidence of hereditary factors along with some evidence of environmental factors leading to this condition. While a single excess tooth is relatively common, multiple hyperdontia is rare in people with no other associated diseases or syndromes.[4] Many supernumerary teeth never erupt, but they may delay eruption of nearby teeth or cause other dental or orthodontic problems.[5][6] Molar-type extra teeth are the rarest form. Dental X-rays are often used to diagnose hyperdontia.

It is suggested that supernumerary teeth develop from a third tooth bud arising from the dental lamina near the regular tooth bud or possibly from splitting the regular tooth bud itself. Supernumerary teeth in deciduous (baby) teeth are less common than in permanent teeth. Hyperdontia may be seen in a multitude of syndromic conditions such as: Cleft lip/palate, Craniofacial Dysplasia, Gardner Syndrome and Sturge-Weber Syndrome.[7]

Although these teeth are usually asymptomatic and pose no threat to the individual, they are often extracted for aesthetic reasons, to allow the eruption

of other teeth, orthodontic reasons and/or suspected pathology. This is done particularly if the mesiodens is positioned in the maxillary central incisor region. The traditional method of removal is done by using bone chisels, although a more advanced technique has been found to be more beneficial, especially if surgery is required. Through the use of piezoelectricity, piezoelectric ultrasonic bone surgery may be more time consuming than the traditional method but it seems to reduce the post-operative bleeding and associated complications quite significantly. [8]

It is evident that hyperdontia is more common in the permanent dentition than in the primary. There is a considerable difference between males and females in the prevalence of these teeth in permanent dentition; hyperdontia is twice as common in males as in females. However, this approximation varies in terms of location, other associating syndromes that may be present, and the ethnicity of the individual. In terms of ethnicity, it can be seen that hyperdontia is in fact less common in Caucasian than in Asian populations. There is evidence to show that an individual is more likely to have hyperdontia if other members of their family also have the condition. Hence the present study was planned for evaluation of occurrence of hyperdontia in non-syndromic population from Bihar Region.

Methodology:

The present study was planned in Public Health Dentistry, Patna Dental College and Hospital, Patna, Bihar. Total 195 patients referred to Department of Dentistry were evaluated in the present study. Panoramic radiographs and clinical records of patients above the age of 18 years and without any syndromic features were selected for the study. All the radiographs were examined for the presence of supernumerary teeth, their location, morphology, and number. Morphologically, teeth were classified as conical, tuberculate, supplemental, and odontoma.

The aim and the objective of the present study were conveyed to them. Approval of the institutional ethical committee was taken prior to conduct of this study.

Following was the inclusion and exclusion criteria for the present study.

Inclusion Criteria: Cases of hyperdontia.

Exclusion Criteria: Patients with the history of tooth loss due to trauma, extraction, or cleft lip, and palate or missing due to syndromes.

Results & Discussion:

Hypodontia is the most common developmental anomaly observed in the permanent dentition. Early diagnosis and prompt intervention play an important role in the prevention of its serious esthetic, physiological, functional, and emotional complications. [9] Determination of the congenitally missing teeth by clinical examination alone may lead to underestimation as they may be visible on radiographs. Hence, OPGs were used for the study rather than clinical examinations and dental history. The calcification of crowns of all permanent teeth except the third molars is not complete until 6 years of age.

Environmental factors, including maternal influences such as hypothyroidism, diabetes, hypertension, and smoking may affect the teeth. Irradiation and drugs such as thalidomide during pregnancy have been reported to be the major environmental factors associated with anomalies of tooth number and size. Similarly, dental defects may also be caused by complications of pregnancy such as traumatic delivery, cesarean section, birth asphyxia, and cerebral injuries.

Anomalies of teeth may be due to defects caused by genetic disturbances or environmental factors during tooth morphogenesis. The favoured hypothesis is the excessive growth of the dental lamina or hyperactivity of the dental lamina, which can be proposed as being responsible for the formation of additional tooth germs [10]. According to this theory, the lingual extension of an additional tooth bud leads to a eumorphic tooth, while the rudimentary form arises from proliferation of epithelial remnants of the dental lamina induced by the pressure of the complete dentition. [11] However, combinations of genetic and environmental factors were shown to be responsible factors for the occurrence of ST. ST may erupt or remain unerupted. Due to their shape and volume they often hinder eruption and development of the permanent tooth related to them, causing crowding, displacement, diastema, retention, radicular resorption. [12] If the supernumerary teeth are related to local disorders (diastema, delayed eruption or displacement) or if there is associated pathology, they should be extracted whenever the problem would be detected. [13]

The results of our study were in synchrony with the study by Vibhute *et al.*, [14] in which the prevalence was 3.1% and contrasting to the study by Shetty *et al.* [15] and Karadas *et al.*, [16] in which prevalence was 0.24% and 0.96%. The most common supernumerary tooth was premolar in both the above-mentioned studies. Kazanci *et al.* [17] and Rajab and Hamdan [18] reported that the prevalence of hyperdontia was higher in males than females, which is consistent with our results. Mesiodens may cause delayed or ectopic eruption of the permanent incisor or may alter the occlusion and appearance of the individual. Early diagnosis is therefore needed for appropriate treatment which might reduce the invasiveness of surgery, orthodontic treatment, and possible future complications. [19]

Table 1: Distribution of Supernumerary Teeth

Supernumerary Teeth	No. of Cases
1	4
2	2
3	2
4	1
Total	9

Table 2: Location of Supernumerary Teeth

Location	No. of Cases
Max Anterior	1
Max Posterior	5
Mand Anterior	0
Mand Posterior	3
Total	9

Table 3: Morphology

Morphology	No. of Cases
Odontoma	1
Supplemental	6
Tuberculate	2
Total	9

Table 4: Formation Type

Formation Type	No. of Cases
Crown Under formation	2
Developed Crown	2
Root Under formation	2
Fully Developed	3
Total	9

Non-syndrome associated multiple supernumerary teeth are a rare occurrence. There are only a few published cases of nonsyndromic association of multiple supernumerary teeth. A single

supernumerary tooth occurs in 76%–86% of cases; double supernumeraries occur in 12%–23% of cases and multiple supernumerary teeth in <1% of cases.[7] Rajab and Hamdan further report that the percentage of cases having 5 or more supernumerary teeth is <1%. [20] The first case reported here falls in this 1% cases. The other two cases are not unusual as they are having <5 extra teeth except that they are present in the patient's siblings. The authors could find only two cases of nonsyndromic multiple supernumerary teeth in siblings. [21-22] The cases reported by Desai and Shah had multiple supernumerary teeth in two brothers. [21] Another case reported by Inchingolo *et al.* reported the presence of multiple supernumerary teeth in three siblings. This was similar to our cases.[10] Yusof and Açıkğöz *et al.* [23] reported that mandibular premolar region is the most common site for supernumerary teeth, especially in nonsyndromic association. [24]

The presence of supernumerary teeth in the alveolar bone may cause disturbances to the developing teeth or to the eruption of teeth into the oral cavity leading to functional and esthetic problems. A mesiodens is the presence of a supernumerary tooth between the maxillary central incisors, a paramolar occurs between the permanent second and third molars and a distomolar is a fourth molar, usually placed distal to third molar.

Supernumerary teeth may erupt in the oral cavity, or remain impacted. Supernumerary teeth, impacted or erupted may remain in position for years together, without causing any disturbances and clinical manifestations. However, in some cases, they may cause complications like impaction of permanent teeth, delayed or ectopic eruption of adjacent teeth, malocclusions like midline diastema or crowding and formation of cysts with bone destruction and root resorption of adjacent teeth. [20] These can cause potential harm to the developing occlusion in a child patient, which can be difficult to intervene or may require aggressive treatment at a later stage. If more than one supernumerary tooth is present, then one of them may be erupted, while the other impacted.

Conclusion:

Early diagnosis of dental anomalies can prevent some esthetic, orthodontic, and periodontal problems, and knowledge of the prevalence and distribution of the anomalies may help clinicians to the detection of these anomalies at early stages. Our study evaluated the prevalence of selected dental anomalies; future

studies should investigate the prevalence of dental anomalies of all types.

References:

1. Pathology of the Hard Dental Tissues
2. R. S. Omer, R. P. Anthonappa, and N. M. King, "Determination of the optimum time for surgical removal of unerupted anterior supernumerary teeth," *Pediatric Dentistry*, vol. 32, no. 1, pp. 14–20, 2010.
3. He, Dongmei; Mei, Li; Wang, Yan; Li, Jialing; Li, Huang (2017). "Association between maxillary anterior supernumerary teeth and impacted incisors in mixed dentition". *The Journal of the American Dental Association*. 148 (8): 595–603. doi:10.1016/j.adaj.2017.05.017. PMID 28754185.
4. Pereira, Marilia Nalon; De Almeida, Luiz Eduardo; Martins, Marcelo Tarcísio; Da Silva Campos, Marcio José; Fraga, Marcelo Reis; Vitral, Robert Willer Farinazzo (2011). "Multiple hyperdontia: Report of an unusual case". *American Journal of Orthodontics and Dentofacial Orthopedics*. 140 (4): 580–4. doi:10.1016/j.ajodo.2010.02.038. PMID 21967947.
5. Vahid-Dastjerdi, Elaheh; Borzabadi-Farahani, Ali; Mahdian, Mina; Amini, Nazila (2010). "Supernumerary teeth amongst Iranian orthodontic patients. A retrospective radiographic and clinical survey". *Acta Odontologica Scandinavica*. 69 (2): 125–8. doi:10.3109/00016357.2010.539979. PMID 21142585.
6. Fleming, P. S; Xavier, G. M; Dibiasse, A. T; Cobourne, M. T (2010). "Revisiting the supernumerary: The epidemiological and molecular basis of extra teeth". *BDJ*. 208 (1): 25–30. doi:10.1038/sj.bdj.2009.1177. PMID 20057458.
7. Pocketbook Of Oral Disease.
8. Gao, Yongbo; Lin, Zhenyan; Rodella, Luigi Fabrizio; Buffoli, Barbara; Wu, Xifeng; Zhou, Yanmin (2014). "Piezoelectric ultrasonic bone surgery system in the extraction surgery of supernumerary teeth". *Journal of Cranio-Maxillofacial Surgery*. 42 (8): 1577–82. doi:10.1016/j.jcms.2014.04.007. PMID 24942094.
9. Hedayati Z, Dashlibrun YN. The prevalence and distribution pattern of hypodontia among orthodontic patients in Southern Iran. *Eur J Dent* 2013;7:578-82.
10. Dhull KS, Acharya S, Ray P, Yadav S, Prabhakaran SD. Bilateral maxillary paramolars: a case report. *J Dent Child (Chic)*. 2012;79(2):84-7.
11. Richardson A, Deussen FF. Facial and dental anomalies in cleidocranial dysplasia: A study of 17 cases. *Int J Paediatr Dent*. 1994;4(4):225-31.
12. Ferrés-Padró E, Prats-Armengol 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;14(3):E146-52.

13. Liu DG, Zhang WL, Zhang ZY, Wu YT, Ma XC. Threedimensional evaluations of supernumerary teeth using cone-beam computed tomography for 487 cases. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2007;103 (3):403-11.
14. Vibhute AH, Vibhute NA, Daule R. Prevalence of dental anomalies in pretreatment orthodontic patients in Western Maharashtra, India: An epidemiological study. *J Orthod Res* 2013;1:66-9.
15. Shetty P, Adyanthaya A, Adyanthaya S, Sreelatha SV. The prevalence of hypodontia and supernumerary teeth in 2469 school children of the Indian population: An epidemiological study. *Indian J Stomatol* 2012;3:150-2.
16. Karadas M, Celikoglu M, Akdag MS. Evaluation of tooth number anomalies in a subpopulation of the North-East of Turkey. *Eur J Dent* 2014;8:337-41.
17. Kazanci F, Celikoglu M, Miloglu O, Ceylan I, Kamak H. Frequency and distribution of developmental anomalies in the permanent teeth of a Turkish orthodontic patient population. *J Dent Sci* 2011; 6:82-9.
18. Rajab LD, Hamdan MA. Supernumerary teeth: Review of the literature and a survey of 152 cases. *Int J Paediatr Dent* 2002;12:244-54.
19. Russell KA, Folwarczna MA. Mesiodens – Diagnosis and management of a common supernumerary tooth. *J Can Dent Assoc* 2003;69:362-6.
20. Rajab LD, Hamdan MA. Supernumerary teeth: Review of the literature and a survey of 152 cases. *Int J Paediatr Dent* 2002;12:244-54
21. Desai RS, Shah NP. Multiple supernumerary teeth in two brothers: A case report. *J Oral Pathol Med* 1998;27:411-3.
22. Inchingolo F, Tatullo M, Abenavoli FM, Marrelli M, Inchingolo AD, Gentile M, et al. Non-syndromic multiple supernumerary teeth in a family unit with a normal karyotype: Case report. *Int J Med Sci* 2010;7:378-84.
23. Açıkgöz A, Açıkgöz G, Tunga U, Otan F. Characteristics and prevalence of non-syndrome multiple supernumerary teeth: A retrospective study. *Dentomaxillofac Radiol* 2006;35:185-90.
24. Yusof WZ. Non-syndrome multiple supernumerary teeth: Literature review. *J Can Dent Assoc* 1990; 56:147-9.