

Prevalence and Type of Mesiodens among 3–14-Year-Old Children in West Bengal: An Institutional Study

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Abstract

Introduction: Mesiodens is a supernumerary tooth which is most commonly located in between or palatal to the two maxillary central incisors. It is a developmental anomaly and can be single or multiple in number. The overall prevalence is reported between 0.09% and 2.05%. **Materials and Methods:** This is a longitudinal prospective study which was conducted in the Department of Pedodontics and Preventive Dentistry of Dr. R Ahmed Dental College and Hospital of West Bengal among 6332 children between 3 and 14 years age group. Clinical and radiographic evaluation was done regarding position, morphology, malocclusion, and eruption status. **Results:** About 0.69% of prevalence was noted. Nearly 70.45% were found in mixed dentition, 27.27% were in permanent dentition, and 2.27% were in primary dentition. Regarding shape, 68.18% were conical, 25% were tuberculate, and 6.81% were supplemental. Regarding position, 52.27% mesiodens were found to be present palatal to maxillary dental arch, 38.63% were found on the arch, and 9.09% were found buccal to the maxillary dental arch. Malocclusion was also evaluated. Moreover, a male predominance regarding the occurrence of mesiodens was also noted. **Conclusion:** The present study not only depicts the prevalence of mesiodens among 3–14-year-old children in West Bengal but also it aimed to give an insight regarding their form, number, position, and axis of orientation. It also aimed to evaluate the presence of malocclusion due to mesiodens if any so that planning of treatment can be done accordingly and more effectively.

Keywords: Eruption status, harmful dental effects, mesiodens, morphology, pediatric population, prevalence

INTRODUCTION

A developmental anomaly involving tooth may result in either increase or decrease in tooth number or a change in tooth morphology. Supernumerary tooth is a developmental anomaly which can be defined as any tooth in excess of normal number^[1] and clinical evaluation of 44 mesiodens cases along with their characteristics and complications. Supernumerary tooth may be of different varieties, which includes mesiodens, distomolar, paramolar, and others. Mesiodens is the most common form of supernumerary tooth, with prevalence varying between 0.3% and 3.8% as indicated by Liu.^[2] Mesiodens occurs between two central incisors in the premaxillary region. It may be erupted or unerupted and may be single or multiple in number. Mesiodentes is the term which denotes the presence of multiple mesiodense.^[3]

Supernumerary tooth may be due to hyperactivity of dental lamina or various genetic and environmental factors which result in the dichotomy of the tooth bud.^[2,4,5]

Supernumerary tooth may be found in both primary and permanent dentition; however, it mostly involves permanent dentition than the primary dentition with a predilection ratio of 5:1.^[4] While supernumerary tooth may be present in any region of the maxillary or mandibular dental arch, literature reports that 80% among them are mesiodens which occur in the maxillary anterior region between two central incisors.^[6]

The presence of mesiodens may produce certain complications such as uneruption or delayed eruption of the adjacent tooth, displacement or axial rotation of adjacent tooth, midline diastema, midline shift, upper anterior crossbite, or adjacent root resorption.^[4-6] Here is a radiographic.

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How to cite this article: Pal S, Galui S, Biswas R, Saha S, Sarkar S. Prevalence and type of mesiodens among 3–14-year-old children in West Bengal: An institutional study. *Int J Pedod Rehabil* 2019;4:9-12.

Access this article online

Quick Response Code:



Website:
www.ijpedor.org

DOI:
10.4103/ijpr.ijpr_33_18

MATERIALS AND METHODS

This is a longitudinal prospective study which was conducted in the Department of Pedodontics and Preventive Dentistry of Dr. R Ahmed Dental College and Hospital of West Bengal. This study was conducted among 6332 (3451 males, 2881 females) children between the age group of 3 and 14 years who visited the department for the treatment of dental caries, malocclusion, periodontal disease, and traumatic dental injuries. Syndromic patients and patients with cleft lip and cleft palate were excluded from this study. The clinical examinations and radiographic evaluation of mesiodens were done. The sex distribution, mesiodens morphology, eruption status, the position of the mesiodens, and its effect on occlusion were evaluated.

RESULTS

Forty-four patients were diagnosed with mesiodens among 6332 samples. The prevalence rate was 0.69%. Among the 44 patients, 29 were male and 15 were female [Table 1 and Figure 1] with none of them having more than one mesiodens. Regarding the eruption status, it was found that 36 out of 44 mesiodens (81.81%) were erupted, whereas rests of them were found unerupted [Figure 2].

Of the 44 mesiodens, 70.45% were found in mixed dentition, 27.27% were in permanent dentition, and 2.27% were in primary dentition [Figure 3]. Regarding shape, 30 mesiodens were conical (68.18%), 11 were tuberculate (25%), and 3 were supplemental (6.81%) [Figure 4]. Regarding position, 52.27% mesiodens were found to be present palatal to maxillary dental arch, 38.63% were found on the arch, and 9.09% were

found buccal to the maxillary dental arch [Figure 5]. On the evaluation of the axis of mesiodens, it was found that 37 out of 44 were in normal axis, whereas 7 were inverted [Figure 6]. Harmful dental effects caused by the mesiodens were also evaluated and it was found that proclination of upper anteriors occurred in 47.72% cases followed by rotation of upper anteriors (18.18%) [Table 2].

DISCUSSION

In this study, 0.69% prevalence was observed which is in accordance with the prevalence of 0.09%–2.05% reported in different studies^[7] and it is also in close approximation with the prevalence of 0.8% which was reported by Mukhopadhyay in a study on mesiodens in West Bengal.^[8] Although it has been reported that mesiodens is the most common in permanent dentition than primary dentition, here it was found that 70.45% of cases are in mixed dentition period. This is may be due to the age group which was selected for this study. The present study also showed that mesiodens were more frequent in males than that of females and the ratio is 1.93:1 which is also favoring the sex ratio of different studies in literature.^[9,10]

Mesiodens can be classified according to its morphology into conical, tuberculate, and supplemental. The conical form of mesiodens is usually peg-shaped, whereas tuberculate form is multicusped and the supplemental form resembles central incisor. In this study, it was found that the conical form of mesiodens is more prevalent than other two, with the percentage being 68.18. This finding is very much similar to those described by Mukhopadhyay^[8] and Kim and Lee.^[11]

Regarding eruption status, a mesiodens may be erupted or impacted. It may have a normal axis orientation or may be inverted. It has also been found in different studies that an inverted mesiodens is more likely to be impacted.^[12] In this study, 81.81% of cases were erupted and 18.19% of cases were unerupted and 84.1% of all mesiodens were normally oriented and rest of the mesiodens were inverted. This finding of orientation around axis also supports the result found by Liu^[2]

Table 1: Distribution of mesiodens by sex

Sex	Number of patients (%)
Male	29 (65.9)
Female	15 (34.1)
Total	44 (100)

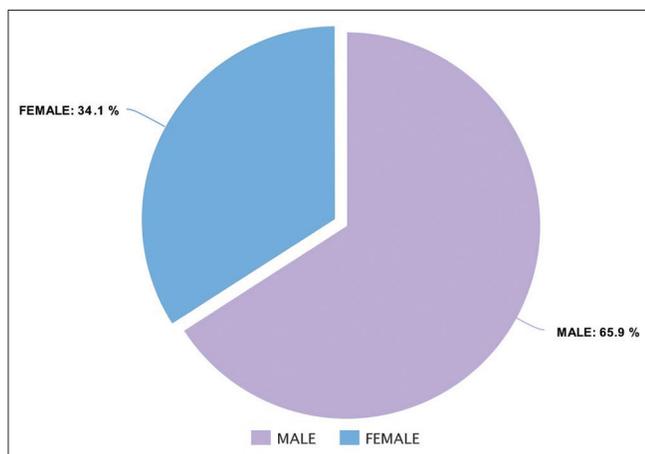


Figure 1: Sex-wise distribution of mesiodens.

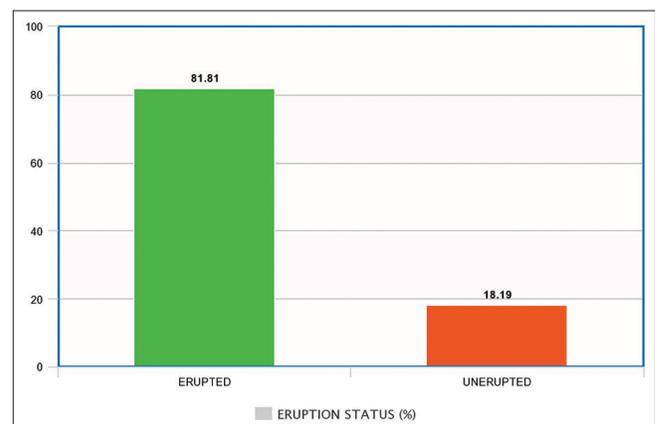


Figure 2: Eruption status of mesiodens.

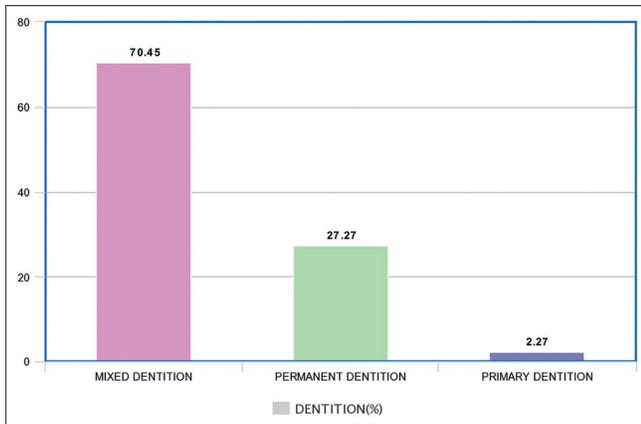


Figure 3: Dentition-wise distribution of mesiodens.

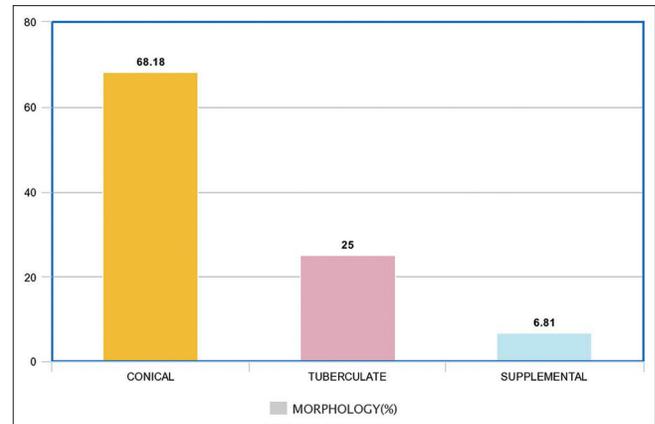


Figure 4: Morphological distribution of mesiodens.

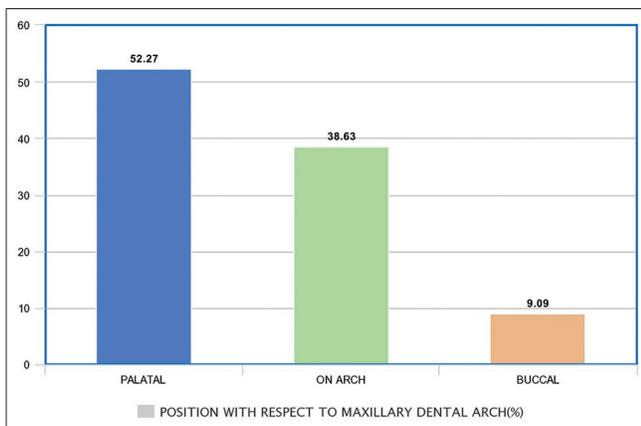


Figure 5: Position of mesiodens in maxillary dental arch.

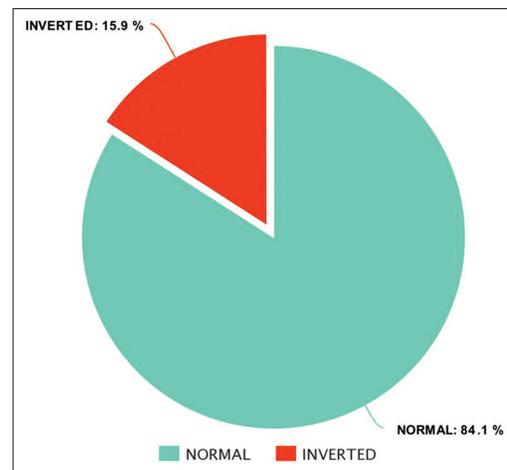


Figure 6: Axis of orientation of mesiodens.

Table 2: Harmful dental effects caused by mesiodens

Type of effects	Number of patients (%)
Proclination of upper anteriors	21 (47.72)
Rotation of upper anteriors	8 (18.18)
Midline shift	2 (4.54)
Midline spacing	2 (4.54)
Crossbite	4 (9.09)
No malocclusion	5 (11.36)
Uneruption of upper anterior	2 (4.54)

and Mukhopadhyay^[8] where majority of the mesiodens were found oriented normally.

The presence of mesiodens may produce certain dental complications which include delayed or noneruption of permanent incisors, displacement or rotation of adjacent teeth, midline shift, midline spacing, upper anterior crossbite, and upper anterior proclination. The most commonly occurring complication is delayed eruption or impaction of the maxillary permanent central incisor which resolves after the extraction of mesiodens.^[3] Although most authors suggested that delay in eruption or impaction of the maxillary central incisor and displacement or rotation of adjacent teeth are the most common findings with the presence of mesiodens,^[4,13] our study result

contradict this. In this study, proclination of upper anteriors was most commonly observed with a percentage of 47.72%. Rotation of adjacent teeth was found in 18.18% of cases, whereas noneruption was a complication of only 4.54% of cases. There are some other complications reported in literature like the formation of dentigerous cyst, displacement of the tooth into the nasal cavity and antrum,^[14,15] but such kind of complications are very rare and no such complications were found in the present study.

Regarding treatment, prompt clinical and radiographic evaluation, followed by extraction of mesiodens is the first choice.^[16] Early removal of mesiodens in early mixed dentition period also facilitates the eruption of impacted central incisor and reduces the orthodontic treatment need.^[17] Periodic clinical and radiographic evaluation of unerupted tooth is recommended as it can take 6–36 months to erupt after mesiodens extraction depending on the stage of its root development, space available in dental arch, and various other factors.^[18]

CONCLUSION

Management of mesiodens is an integral part of preventive dentistry, which can reduce the necessity of complex

orthodontic treatment. Early diagnosis and removal of mesiodens also reduces surgical complications and helps in the alignment of the upper permanent central incisors. There are also some symptomless cases that are difficult to diagnose clinically and left untreated until complication arise. For a successful management of mesiodens, its prevalence, commonly occurring position, axis of orientation and complications should be well known. Thus, the aim of the present study was not only evaluation of the prevalence of mesiodens but also it helped to specify the position and axis of orientation of mesiodens. It also evaluated the type of malocclusion present with mesiodens which might be helpful for proper treatment planning.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Khandelwal V, Nayak AU, Naveen RB, Ninawe N, Nayak PA, Sai Prasad SV. Prevalence of mesiodens among six- to seventeen-year-old school going children of indore. *J Indian Soc Pedod Prev Dent* 2011;29:288-93.
2. Liu JF. Characteristics of premaxillary supernumerary teeth: A survey of 112 cases. *ASDC J Dent Child* 1995;62:262-5.
3. Gallas MM, Garcia A. Retention of permanent incisors by mesiodens: A family affair. *Br Dent J* 2000;188:63-4.
4. Russell KA, Folwarczna MA. Mesiodens – Diagnosis and management of a common supernumerary tooth. *J Can Dent Assoc* 2003;69:362-6.
5. Garvey MT, Barry HJ, Blake M. Supernumerary teeth – An overview of classification, diagnosis and management. *J Can Dent Assoc* 1999;65:612-6.
6. 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:E146-52.
7. Meighani G, Pakdaman A. Diagnosis and management of supernumerary (mesiodens): A review of the literature. *J Dent (Tehran)* 2010;7:41-9.
8. Mukhopadhyay S. Mesiodens: A clinical and radiographic study in children. *J Indian Soc Pedod Prev Dent* 2011;29:34-8.
9. Fernández Montenegro P, Valmaseda Castellón E, Berini Aytés L, Gay Escoda C. Retrospective study of 145 supernumerary teeth. *Med Oral Patol Oral Cir Bucal* 2006;11:E339-44.
10. Huang WH, Tsai TP, Su HL. Mesiodens in the primary dentition stage: A radiographic study. *ASDC J Dent Child* 1992;59:186-9.
11. Kim SG, Lee SH. Mesiodens: A clinical and radiographic study. *J Dent Child (Chic)* 2003;70:58-60.
12. Roychoudhury A, Gupta Y, Parkash H. Mesiodens: A retrospective study of fifty teeth. *J Indian Soc Pedod Prev Dent* 2000;18:144-6.
13. Primosch RE. Anterior supernumerary teeth – Assessment and surgical intervention in children. *Pediatr Dent* 1981;3:204-15.
14. Hattab FN, Yassin OM, Rawashdeh MA. Supernumerary teeth: Report of three cases and review of the literature. *ASDC J Dent Child* 1994;61:382-93.
15. Erkmén N, Olmez S, Onerci M. Supernumerary tooth in the maxillary sinus: Case report. *Aust Dent J* 1998;43:385-6.
16. Yagüe-García J, Berini-Aytés L, Gay-Escoda C. Multiple supernumerary teeth not associated with complex syndromes: A retrospective study. *Med Oral Patol Oral Cir Bucal* 2009;14:E331-6.
17. Solares R. The complications of late diagnosis of anterior supernumerary teeth: Case report. *ASDC J Dent Child* 1990;57:209-11.
18. Munns D. Unerupted incisors. *Br J Orthod* 1981;8:39-42.