

Content available at: <https://www.ipinnovative.com/open-access-journals>

The Journal of Dental Panacea

Journal homepage: <https://www.jdentalpanacea.org/>

## Original Research Article

## Prevalence of Mesiodens among Nepalese children

Manisha Upadhyay<sup>1\*</sup>, Ankita Agrawal<sup>1</sup>, Jyoti Sharma<sup>2</sup><sup>1</sup>Dept. of Pedodontics & Preventive Dentistry, Universal College of Medical Sciences and Teaching Hospital (UCMS), Bhairahawa, Nepal<sup>2</sup>Dept. of Pedodontics & Preventive Dentistry, K D Dental College, Mathura, Uttar Pradesh, India

## ARTICLE INFO

## Article history:

Received 10-05-2024

Accepted 27-05-2024

Available online 11-06-2024

## Keywords:

Mesiodens

Mesiodentes<sup>\*</sup>

Supernumerary tooth

Ectopic eruption

Impaction

Malocclusion

Children

## ABSTRACT

**Background:** Mesiodens are considered as one of the most common supernumerary teeth which results in various problems in the oral cavity. However, there have been no studies conducted for establishing the prevalence of same in pediatric population, in Bhairahawa, Nepal.**Aim:** The main objective of the study was to determine the prevalence rate of mesiodens in children between the age group of 4-12 years.**Materials and Methods:** Clinical examination and radio videographs of 1240 patients were investigated. A total of 32 patients were found to have mesiodens/mesiodentes<sup>\*</sup>.**Results:** The study shows a prevalence rate of 2.58% with sex ratio of 15:1 favouring males.**Conclusion:** Mesiodens is commonly seen supernumerary tooth in children which leads to various problems leading to malocclusion in oral cavity. Early detection and treatment can be helpful in resolution of future problems.This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/), which allows others to remix, and build upon the work. The licensor cannot revoke these freedoms as long as you follow the license terms.For reprints contact: [reprint@ipinnovative.com](mailto:reprint@ipinnovative.com)

## 1. Introduction

Mesiodens are the most common type of supernumerary teeth which is generally present in between the two central incisors in maxillary arch. It can be seen as single, multiple, unilateral or bilateral.<sup>1</sup> When multiple supernumerary teeth is present, it is called 'mesiodentes'.<sup>2</sup> It is commonly seen in mixed dentition and permanent dentition but it is believed to be rare in deciduous dentition.<sup>3</sup> It is very rarely seen in mandibular anterior region.<sup>4</sup> The prevalence of supernumerary teeth in permanent dentition for the general population has been reported between 0.1 and 3.8%,<sup>5</sup> gender difference reported a sex ratio of around 2:1 to a higher ratio of 6.5:1.<sup>6,7</sup>

Mesiodens usually erupts normally on the arch like the teeth but they can also be found as inverted, impacted or

ectopically erupted. Impaction may lead to delayed eruption of the permanent teeth resulting in malocclusion.<sup>5-7</sup> Morphologically, conical or peg shaped, tuberculate and supplemental tooth like shapes are the common types, out of which the conical form is the most common. Usually they erupts normally on the arch, but sometimes they remain impacted or in inverted position. Some cases of ectopic eruption has also been reported in the literature.<sup>5,6,8,9</sup> Supernumerary teeth can be seen associated with cysts like dentigerous cysts, or as odontomes or multilobed mesiodens with palatal talon cusp.

Treatment options may vary from normal extraction to surgical extraction depending upon the position of the mesiodens.<sup>10</sup> In order to ensure eruption and proper alignment of the erupting permanent teeth, surgical exposure and orthodontic treatment is indicated in case of delayed eruption of the permanent tooth following the extraction of mesiodens.<sup>11</sup> Fixed orthodontic therapy can

\* Corresponding author.

E-mail address: [drmanishaupadhyay09@gmail.com](mailto:drmanishaupadhyay09@gmail.com) (M. Upadhyay).

create sufficient arch space and alignment before eruption of the permanent tooth.<sup>12</sup> Therefore, an early diagnosis allows the most appropriate treatment, often reducing the extent of surgery, orthodontic treatment and possible complications

2. Materials and Methods

A longitudinal observational study was conducted on 1240 pediatric patients aged 4-12 years coming to department of pedodontics and preventive dentistry, Universal College of Medical Sciences, College of Dental Surgery, Bhairahawa, Nepal, after taking ethical clearance by institutional review board, for a period of 10 months (July 2023 to April 2024). Demographic data, the presence of mesiodens, their morphological charecteristics like type, position etc and associated complications were recorded. All obtained data were statistically analyzed with SPSS software by using descriptive statistics and cross tabulations.

3. Results

Out of 1240 samples under the age group 4-12 years, a total of 32 patients were diagnosed as having mesiodens. The prevalence rate was found to be 2.58% (Table 1). The majority of the cases were detected between 9-12 years of age out of all the age groups (Table 2). Out of the 32 patients diagnosed to have mesiodens, 30 were boys and 02 were girls showing a sex ratio of 15:1, favouring boys.

Regarding the position of the mesiodens, the majority of them were palatally placed (Table 3), most common types out of all was seen to be the conical type (Table 4) and most commonly caused complications were axial rotation or displacement of permanent incisors (Table 5).

Table 1: General characteristics and prevalence of mesiodens

Total number of patients	1240
Male	679
Female	561
Number of patients with mesiodens	32
Male: Female with mesiodens	15:1
Prevalence of mesiodens	2.58

Table 2: Prevalence of mesiodens in relation to age group

Age group	Number of patients	Percentage
4-5 years	6	18.75
6-8 years	10	31.25
9-12 years	16	50

4. Discussion

Although mesiodens are believed to have an unknown etiology however, it is also seen to be syndrome associated. Gardner’s syndrome, cleft lip and palate and cleidocranial dysostosis are few to be named. Heredity is also considered

Table 3: Position of mesiodens

Position	Number of teeth	Percentage
Impacted	5	12.5
Palatal	23	57.5
Labial	2	5
On the arch	10	25

Table 4: Type of mesiodens

Type	Number of teeth	Percentage
Conical	33	82.5
Supplemental	5	12.5
Tuberculate	2	5

Table 5: Complications of mesiodens

Teeth	Number of percentage	Percentage
Rotation of permanent	18	56.25
Midline diastema	10	31.25
Non eruption	1	3.12
Crowding	3	9.37

to be an etiologic factor for supernumerary teeth it is more common in family members however, it does not follow a simple Mendelian pattern but it has been suggested that environmental factors might have influence on genetic susceptibility.<sup>3</sup>

Few theories are also suggested, one of them is the Atavistic theory which states that mesiodens shows a phylogenetic relic of extinct ancestors who exhibited three central incisors; other suggests that the dichotomy of the tooth bud is the reason behind supernumerary tooth.<sup>13–16</sup> The most acceptable etiological factor is the hyperactivity theory, which states the restricted increase in the local independent controlled hyperactivity of dental lamina results in the development of mesiodens.<sup>17–19</sup>

The prevalence of mesiodens in this study was 2.58%, which is much greater than studies done by Stafne (0.41%), Thilander (1.2%), Faizal (0.71%) and Clayton 0.89%), but lower in comparison to that of Tay 5.8%) and Khandelwal V 3.8%).<sup>3</sup>

Mesiodens occurs more frequently in boys than in girls.<sup>5,6</sup> In the present study, a male:female ratio of 15:1 was observed, which in accordance with previous studies on gender difference showing a sex ratio of around 2:1 to a higher ratio of 6.5:1.<sup>6,7</sup>

Impaction, crowding, diestema, root resorptions of adjacent tooth, ectopic eruption and displacement of permanent teeth are the commonest problems associated with mesiodens. Sometimes impacted mesiodens results in dentigerous cyst formation, sometimes even inside the nasal cavity.<sup>20</sup> Palatally placed tuberculate mesiodens causes delayed eruption due to its position.<sup>21–23</sup> Clinical and radiological examination dictates management of

mesiodens,<sup>18</sup> as 63% of patients with unerupted incisors had hyperdontia.<sup>19</sup> Early stages of mixed dentition is the best time for the treatment of mesiodens, as behaviour management will be easier at a younger age. Extraction should be planned as early as possible to avoid future complications of complex surgical and orthodontic treatment.<sup>24</sup> In case of surgical extraction the impacted mesiodens, the type, position, the space available and root development may influence the time of eruption.<sup>25,26</sup>

## 5. Conclusion

Routine check up during the primary dentition and mixed dentition stages helps for early detection of mesiodens and other anomalies. Early diagnosis and treatment helps in minimising future complications and prognosis are better. In case of any alteration in the eruption path of the central incisors or even asymmetric eruption, the clinician must evaluate the possibility of an extra tooth.

## 6. Source of Funding

None.

## 7. Conflict of Interest

None.

## References

1. Zhu JF, Marcushamer M, King DL, Henry RJ. Supernumerary and congenitally absent teeth: a literature review. *J Clin Pediatr Dent.* 1996;20(2):87–95.
2. Meighani G, Pakdaman A. Diagnosis and Management of Supernumerary Mesiodens: A Review of the Literature. *J Dent (Tehran).* 2010;7(1):41–9.
3. Peedikayil FC, Kottayi S, Jose D, Sreenivasan P, Babu A, Hashim A, et al. Prevalence of mesiodens among 6-14 year old school children. *J Res Dent.* 2014;2(3):243–50.
4. Berrocal MIL, Morales JFM, González JMM. An observational study of the frequency of supernumerary teeth in a population of 2000 patients. *Med Oral Patol Oral Cir Bucal.* 2007;12(2):134–8.
5. Luten JR. The Prevalence of supernumerary teeth in primary and mixed dentition. *J Dent Child.* 1967;34(5):346–53.
6. Rajab LD, Hamdan MA. Supernumerary teeth: review of the literature and a survey of 152 cases. *Int J Paediatr Dent.* 2002;12(4):244–54.
7. Davis PJ. Hypodontia and hyperdontia of permanent teeth in Hong Kong schoolchildren. *Community Dent Oral Epidemiol.* 1987;15(4):218–20.
8. Hurlen B, Humerfelt D. Characteristics of pre maxillary hyperodontia. A radiographic study. *Acta Odontol Scand.* 1985;43(2):75–81.
9. Ersin NK, Candan U, Alpoz AR, Akay C. Mesiodens in primary, mixed and permanent dentitions: a clinical and radiographic study. *J Clin Pediatr Dent.* 2004;28(4):295–8.
10. Russell KA, Folwarczna MA. Mesiodens diagnosis and management of a common supernumerary tooth. *J Can Dent Assoc.* 2003;69(6):362–6.
11. Primosc RE. Anterior supernumerary teeth assessment and surgical intervention in children. *Pediatr Dent.* 1981;3(2):204–15.
12. Kupietzky A, Rotstein I, Kischinovsky D. A multidisciplinary approach to the treatment of an intruded maxillary permanent incisor complicated by the presence of two mesiodentes. *Pediatr Dent.* 2000;22(6):499–503.
13. Tashima AY, Alencar CJF, Fonoff RN, Wanderley MT, Haddad AE. Correlation between the prevalence of supernumerary teeth and its consequences for the development of the occlusion. *J Appl Oral Sci.* 2007;15:34.
14. 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(7):331–6.
15. Jasmin JR, Jonesco-Benaiche N, Muller-Giamarchi M. Supernumerary teeth in twins. *Oral Surg Oral Med Oral Pathol.* 1993;76(2):258–9.
16. Sedano HO, Gorlin RJ. Familial occurrence of mesiodens. *Oral Surg Oral Med Oral Pathol.* 1969;27(3):360–2.
17. Gorlin RJ, Cohen MM, Hennekam RC. Syndromes of the head and neck. 4th edn. Oxford: Oxford University Press; 2001. p. 1108.
18. Bartolo A, Camilleri A, Camilleri S. Unerupted incisors characteristic features and associated anomalies. *Eur J Orthod.* 2010;32(3):297–301.
19. Khandelwal V, Nayak AU, Naveen RB, Ninawe N, Nayak PA, Prasad SS, et al. Prevalence of mesiodens among six- to seventeen-year-old school going children of Indore. *J Indian Soc Pedod Prev Dent.* 2011;29(4):288–93.
20. Gábris K, Fábián G, Kaán M, Rózsa N, Tarján I. Prevalence of hypodontia and hyperdontia in paedodontic and orthodontic patients in Budapest. *Community Dent Health.* 2006;23(2):80–2.
21. Chandra S, Chawla TN. Incidence of fracture of anterior teeth and their correlation with malocclusion in children. *J Indian Dent Assoc.* 1976;12:1919.
22. Garvey MT, Barry HJ, Blake M. Supernumerary teeth an overview of classification, diagnosis and management. *J Can Dent Assoc.* 1999;65(11):612–6.
23. Henry RJ, Post AC. A labially positioned mesiodens: case report. *Pediatr Dent.* 1989;11(1):59–63.
24. Scheiner MA, Sampson WJ. Supernumerary teeth: a review of the literature and four case reports. *Aust Dent J.* 1997;42(3):160–5.
25. Gündüz K, Celenk P, Zengin Z, Sümer P. Mesiodens: A radiographic study in children. *J Oral Sci.* 2008;50(3):287–91.
26. Leyland L, Batra P, Wong F, Llewelyn R. A retrospective evaluation of the eruption of impacted permanent incisors after extraction of supernumerary teeth. *J Clin Pediatr Dent.* 2006;30(3):225–31.

## Author biography

**Manisha Upadhyay**, Lecturer  <https://orcid.org/0000-0001-9392-5130>

**Ankita Agrawal**, Lecturer

**Jyoti Sharma**, Reader

**Cite this article:** Upadhyay M, Agrawal A, Sharma J. Prevalence of Mesiodens among Nepalese children. *J Dent Panacea* 2024;6(2):107-109.