

The prevalence of mesiodens in orthodontic patients in western region of Nepal



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ABSTRACT

Background: Mesiodens are supernumerary teeth present in the midline of the maxilla. **Aims and Objective:** The present study was conducted to know the prevalence of mesiodens among children aged 5 to 14 years in Pokhara, Nepal. **Materials and Methods:** Data was collected from 1194 orthodontic patients coming to the department of Dentistry, in Manipal Teaching Hospital from 2009 till 2019. The files were reviewed to know the prevalence, demography and the complications associated with the presence of mesiodens. **Results:** Our results showed that the prevalence of mesiodens was 2.84% in our population. The prevalence was significantly more among males. Children aged 10-14 years presented more than the children aged 5-10 years. Though, there were complications associated with the presence of mesiodens, none of them were symptomatic. **Conclusions:** Mesiodens is the most common form of supernumerary teeth in the pediatric patients which occurs as a result of genetic and environmental factors. Their early diagnosis can reduce the treatment required and therefore prevent development of associated problems in the future.

Key words: Mesiodens; Nepal; Prevalence

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INTRODUCTION

Mesiodens are supernumerary tooth present in the palatal midline between the two maxillary central incisors. These supernumerary tooth are developmental anomaly where there is the presence of an extra tooth to the normal dentition of the maxilla.^{1,2} They are typically present in the midline of the premaxilla, where embryogenesis differs from the other facial bones, thus the possible deviations in the premaxillary region. These deviations can lead to the development of additional teeth and other abnormalities. Though the etiology of mesiodens tooth is not clearly known; there are few theories to explain their occurrence.³ Some authors relate them to genetic and environmental factors,^{4,5} whereas some suggests that the tooth bud is split to create two teeth, one of which is the mesiodens.⁶ But the most widely supported theory explains it as the hyperactivity of the dental lamina.⁷ According to this

theory, remnants of the dental lamina or palatal offshoots of the active dental lamina are induced to develop into an extra tooth bud, which results in a supernumerary tooth. It has also been associated with some syndromes like Gardner's syndrome, Cleft lip and palate and Cleidocranial dysplasia.⁸

The prevalence of mesiodens varies between 0.15 and 3.8% of the population,^{1,9} whereas other studies reported them to be between 0.09 and 2.05%.¹⁰⁻¹² Mesiodens have been reported to be more common in males than in females.¹³ Some literatures reports that 80 to 90% of all supernumerary teeth occurs in the maxilla, out of which half are found in the anterior region.^{14,15}

Mesiodens can be classified depending on their number, position and morphology. Among the various types of mesiodens the most common type is supernumerary

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tooth.³ Based on the morphology, they can be classified as supplemental, conical and tuberculate type.^{7,9} The complications associated with a Mesiodens may include crowding, impaction, diastema, delayed and or ectopic eruption of adjacent teeth, axial rotation and displacement, dentigerous cyst and radicular resorption of adjacent teeth.^{7,10-14} This study was conducted to determine the prevalence rate of mesiodens in orthodontic patients in western region of Nepal.

MATERIALS AND METHODS

Data for the study was collected retrospectively through out-patient registers, recording clinical evaluation of children visiting the out-patient department (OPD) of Manipal Teaching Hospital, Pokhara, Nepal. The records of clinical examination of the patients who attended the OPD from the year 2009 to 2019 were evaluated. Consent to evaluate the file records was obtained from the Ethical Board of the Hospital. The records indicating the clinical presence of mesiodens was noted. The patients were divided into two groups- Junior (5 to 10 years) and Senior (11 to 14 years). The patient's data was collected for gender, the number of mesiodens, erupted or unerupted, position and any associated complications due to the presence of the mesiodens. Data analysis was performed using SPSS (IBM, Chicago, IL). Frequency distributions were produced. Pearson's chi square test with Cramer's V was used as a test of association. P value less than 0.05 was considered significant.

RESULTS

There were a total of 1194 children aged between 5 to 14 years who presented to our hospital for orthodontic treatment from 2009 to 2019. There were 324 females (27.13%) and 870 males (72.87%). There were more children in the senior group (n=682, 57.11%) than the junior group (n=512, 42.89%) in our study (Table 1). The overall prevalence of mesiodens was 2.84% (n=34). Age was significantly associated with the presence of mesiodens ($\chi^2(1) = 4.737, p=0.03$) with higher number in the seniors (n=21, 1.75%) as compared to the juniors (n=13, 1.08%). Similarly, gender was significantly associated with presence of mesiodens ($\chi^2(1) = 4.445, p=0.035$) where higher number of males (n=24, 2.01%) presented with mesiodens than females (n= 10, 0.83%). However, in both the analysis, the association was weak ($\phi_c = 0.037$ and $\phi_c = 0.036$, respectively). The number of single mesiodens (n=26, 76.47%) was more than double mesiodens (n=8, 23.53%) in our study. Similarly, the number of erupted mesiodens (n=26, 76.47%) was more than unerupted mesiodens (n=8, 23.53%) in our study. The initial position of mesiodens at

the time of diagnosis was mostly seen in between the two upper central incisors (n=22), followed by impacted in between the roots of central incisors (n=7), palatally (n=4) and labially (n=1). Based on the shape of the mesiodens, conical mesiodens (n=19, 55.88%) was commoner in our study as compared to tubular (n=15, 44.12%).

Though there were complications associated with the presence of mesiodens, none of the children was symptomatic i.e there was no pain or swelling at the site of mesiodens. Among the complications associated with the presence of mesiodens, diastema was the commonest (n=19, 55.90%). Others include mesial tipping of erupted permanent incisors (n=6, 17.64%), rotations (n=6, 17.64%), root anomaly (dilaceration) (n=2, 5.88%) and root resorption of teeth adjacent to mesiodens (n=1, 2.94%) (Table 2).

DISCUSSION

Similar to other studies, the prevalence of mesiodens was higher among males than females.^{9,15-17} Unlike the study by Narayan,¹⁶ where junior age group were found to have higher reported occurrence of mesiodens, our studies had

Table 1: Demographic of patients with mesiodens

Variables	Number of patients	Percentage
Total patient	34 of 1194	2.84%
Sex		
Male	870	72.87%
Female	324	27.13%
Age		
Junior (5-10 years)	512	42.89%
Senior (10-14 years)	682	57.11%
Number of mesiodens		
Single	26	76.47%
Double	8	23.53%
Eruption status		
Erupted	26	76.47%
Unerupted	8	23.53%
Initial position		
between the two upper central incisors	22	64.70%
between the roots of central incisors	7	20.6%
palatally	4	11.76%
labially	1	2.94%

Table 2: Complications associated with mesiodens

Complications	Number of patients	Percentage
Diastema	19	55.90%
mesial tipping of erupted permanent incisors	6	17.64%
rotations	6	17.64%
root anomaly (dilaceration)	2	5.88%
root resorption of teeth adjacent to mesiodens	1	2.94%

more cases of mesiodens in the senior group. Our study reports 2.84 % of children aged between 5 to 14 to have mesiodens which was comparable to other studies where prevalence ranged from 0.6% to 3.18%.¹⁶⁻¹⁸ In 80-90% of the patients the mesiodens occurs in the maxilla with majority in the anterior region.^{12,15}

In our study majority of mesiodens (57.11 %) was found in senior age group of 10-14 years. This finding was similar to other studies.^{14,19-21} Unlike the study by Mukhopadhyay, where they found the incidence of unerupted mesiodens to be higher (53.9%), our study had more erupted mesiodens (76.47%). Similar to other studies, the most common complications associated with mesiodens in our study was diastema.^{9,16}

CONCLUSIONS

Mesiodens is the most common form of supernumerary teeth in the pediatric patients which occurs as a result of genetic and environmental factors. Mesiodens are common among male children aged between 10 to 14 years. Their early diagnosis can reduce the treatment required and therefore prevent development of associated problems in the future.

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Authors Contribution:

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