

## **Prevalence of Mesiodens in Patients Reporting for Orthodontic Treatment**

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### **ABSTRACT:**

Mesiodens are the supernumerary teeth present in the midline of the maxillary teeth between the two central incisors. These mesiodens are the most common type of supernumerary teeth and are usually responsible for eruption disturbance or delay. The present study seeks to investigate the prevalence of mesiodens among patients visiting dental hospitals for orthodontic treatment. The study was a retrospective collection of data to evaluate the prevalence of mesiodens among 2396 patients, whose ages ranged between fourteen to thirty years. According to the results the prevalence of mesiodens was found to be 0.67%. The results showed that males were affected more than females. Most of the mesiodens were conical in shape. The age, sex distribution and presence of mesiodens per patient are presented in this study. The present study gives an insight into the prevalence of mesiodens among patients visiting dental hospitals.

**Keywords:** innovative study; prevalence; mesiodens; orthodontic treatment ;supernumerary teeth.

## **INTRODUCTION:**

The term mesiodens refers to supernumerary teeth located in the premaxilla region, precisely between the maxillary central incisors. Mesiodens is one of the most common types of supernumerary teeth (1,2). The prevalence of mesiodens according to various studies are 0.15 to 7.8%, with greater prevalence among males than females (3–10). Although it has not been established, its reason for prevalence seems to be related to genetic factors, given the records of family recurrence (11–13).

The mesiodens are unique (14) and are similar in size and shape, but may differ in morphology from a small conical shape (15) to complex forms with several tubercles. It does not erupt spontaneously most of the time, (16) but in certain cases in which the mesiodens face the oral cavity spontaneous eruption is present. Most of the time, the mesiodens are inverted in nature, with the crown directed towards the nasal cavity and the root apex directed towards the oral cavity. The incidence of mesiodens can lead to various local irregularities such as delayed eruption or impaction of adjacent teeth, displacement or rotation of adjacent teeth, development of cysts, resorption of adjacent roots, crowding, midline diastema or root dilaceration.

Many Studies have shown a genetic and hereditary background as etiology of dental anomalies in number, size and position. Such evidence comes from investigations that were carried out with families, monozygotic twins and the observation of associations in the occurrence of certain anomalies (17,18). Tooth agenesis is often associated with all other dental anomalies, like microdontia, anodontia etc (19).

Two previous studies verified the relationship between all the supernumerary teeth and all other dental anomalies such as tooth agenesis, microdontia and macrodontia. The findings in various studies revealed that the frequency of supernumerary teeth was not higher in patients with other dental anomalies. However, no previous study has investigated the association of mesiodens with any dental anomalies.

Thus, the aim of the present study was to determine the prevalence of mesiodens in patients visiting dental hospitals for orthodontic treatment. Our team has extensive knowledge and research experience that has translate into high quality publications (20-25)

## **MATERIAL AND METHOD:**

### **Study designs and Study setting**

The present study was conducted in a university setting (Saveetha dental college and hospitals, Chennai, India). The study was designed as a retrospective cross clinical study analysing all the patients undergoing orthodontic treatment. Ethical clearance to conduct this study was obtained from the Scientific Review Board of the hospital.

### **Sampling**

The data of 2396 patient records were reviewed and analysed between June 2019 and March 2021 from which 14 patients had mesiodens. Only relevant data was included to minimize sampling bias. Simple random sampling method was followed. Cross verification of data for error was done by presence of additional reviewers and by photographic evaluation. Incomplete data were excluded from the study.

### **Data Collection**

A single calibrated examiner evaluated the digital case records of patients who reported to Saveetha Dental College from June 2019 to March 2020. The records with Incomplete medical documentation, replication of results in different time periods with improper clinical photographs or diagnosis were excluded from the study. Patient details like age, gender, type of tobacco used were recorded. All obtained data were tabulated into Microsoft excel documents.

### **Statistical analysis**

The collected data was tabulated and analysed with Statistical Package for Social Sciences for Windows, version 20.0 (SPSS Inc., Vancouver style) and results were obtained. Categorical variables were expressed in frequency and percentage. Chi square test was used to test association between categorical variables. Chi square tests were carried out using age, gender as independent variables and salivary gland disorders as dependent variables. The statistical analysis was done by Pearson chi square test. P value < 0.05 was considered statistically significant.

## RESULTS :

This study aims to find the incidence of mesiodens in patients undergoing orthodontic treatment. The age group of patients who had undergone orthodontic treatment is more in 24-33 years (55.26%). The prevalence of mesiodens was found to be 0.67% (n=16). The age group with more prevalence of mesiodens was found to be 24-33 years (0.29%) which was not statistically significant (p=0.642). The gender with more prevalence of mesiodens was found to be males (0.54%) which was found to be statistically significant (p=0.008).

## DISCUSSION:

Mesiodens is the most prevalent form of supernumerary teeth in permanent dentition that occurs as a result of genetic and environmental factors and hyperactivity of dental lamina. Early diagnosis of a mesiodens reduces the treatment required and prevents development of associated problems.

The age group of patients who had undergone orthodontic treatment is more in 24-33 years (55.26%). The prevalence of mesiodens was found to be 0.67% (n=16). Similarly incidence of mesiodens was found to be 0.2% (n=2) in a study done by Archana Ravi (40). Also according to a study done by Shubhabrata pal, 0.69% of prevalence of mesiodens was found (26). On the contrary, in a study done by Sruthi, the prevalence rate was found to be 3.5% (27).

The age group with more prevalence of mesiodens was found to be 24-33 years (0.29%) which was not statistically significant (p=0.642). The gender with more prevalence of mesiodens was found to be males (0.54%) which was found to be statistically significant (p=0.008). Similarly in a study done by Prabhu NT, male population is more prone to be affected as compared to the female population (2:1) (28). Also in a study done by Francisco, prevalence in male was 0.9% and among females it was 0.8% (29).

Diagnosis of mesiodens can be done by clinical and radiographic examination and extraction of mesiodens in the early mixed dentition helps spontaneous alignment of the adjacent teeth. The limitations of the present study are, it is single centered study, it does not represent ethnic groups and patient satisfaction is not recorded. In future, this research can be done on a larger population.

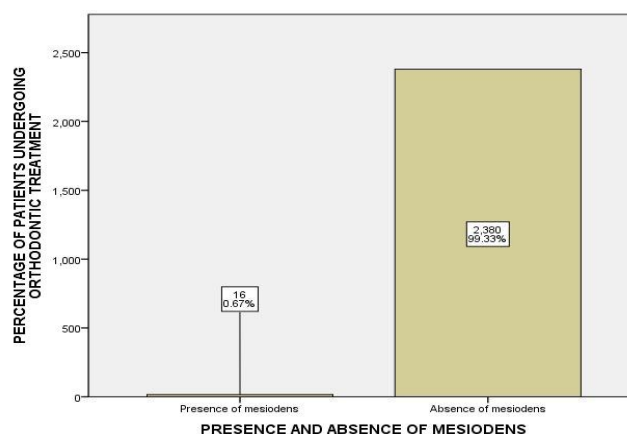


Figure 1: depicts the prevalence of mesiodens in patients undergoing . The X axis depicts the prevalence of mesiodens in patients undergoing and Y axis as the percentage of patients undergoing orthodontic treatment. Prevalence of mesiodens was found to be 0.67% (n=16).

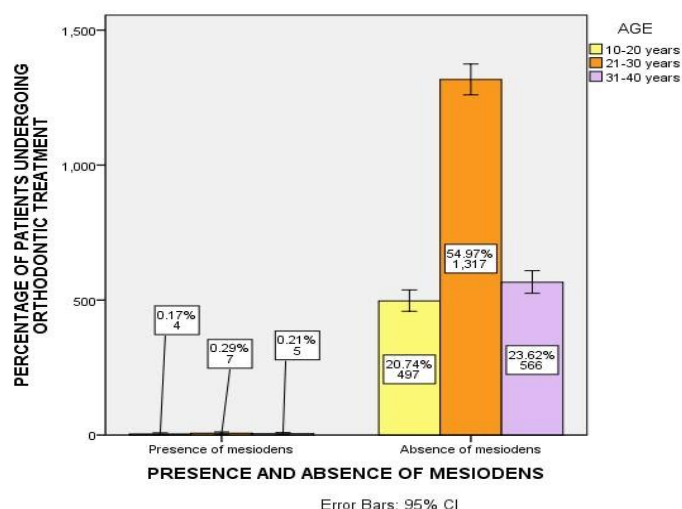


Figure 2: shows the association between age and prevalence of mesiodens in patients undergoing . The X axis represents the prevalence of mesiodens among patients undergoing orthodontic treatment and Y axis the percentage of patients undergoing orthodontic treatment . Yellow bar denotes 10-20 years, orange denotes 21-30 years and pink denotes 31-40 years. Prevalence of mesiodens in patients undergoing orthodontic treatment was more in patients of age group 21-30 years (0.29%). However, there was no significant difference in the habits between the different age groups. Pearson Chi square test,  $p=0.642$  ( $p>0.05$ , statistically not significant).

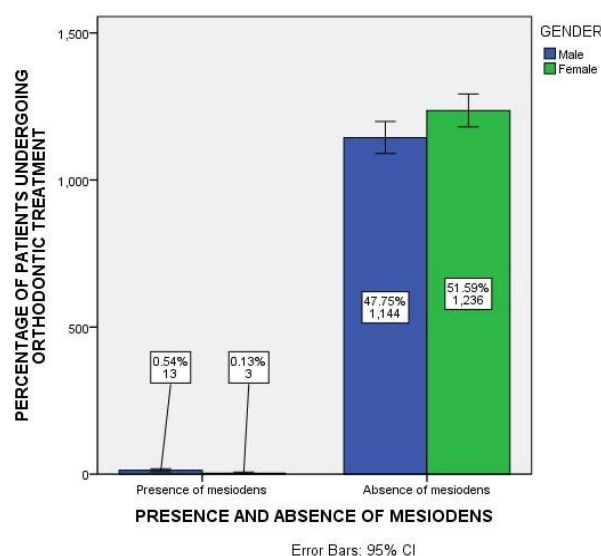


Figure 3: shows the association between age and prevalence of mesiodens in patients undergoing orthodontic treatment . The X axis represents the prevalence of mesiodens in patients undergoing orthodontic treatment and Y axis the percentage of patients undergoing orthodontic treatment . Blue bar denotes male, green denotes female. Prevalence of mesiodens was found more in males than in females. However, there was a significant difference in the prevalence of mesiodens among different genders . Pearson Chi square test,  $p=0.008$  ( $p>0.05$ , statistically significant).

## CONCLUSION:

The problem mesiodens is rarely observed, but leads to severe orthodontic deviations, which require long orthodontic treatment. When we diagnose it in later age the problems are way more complicated. Mesiodens changes the development of the upper frontal segment and leads to poor aesthetics which is a greater concern among patients . By Knowing the

clinical manifestation of that problem we can expect it when we observe: delayed eruption or impaction of the maxillary incisors, diastema with significant dimensions and severe crowding in the upper frontal segment. Therefore it is necessary to have a prophylactic check-up for children in the early mixed dentition with X-ray by their general physician .

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#### **Conflict Of Interest:**

There was no potential conflict of interest.

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#### **REFERENCE:**

1. Fernández Montenegro P, Valmaseda Castellón E, Berini Aytés L, Gay Escoda C. Retrospective study of 145 supernumerary teeth. *Medicina Oral, Patología Oral y Cirugía Bucal*, 2006, vol 11, num 4, p 339-344 [Internet]. 2006; Available from: <http://diposit.ub.edu/dspace/handle/2445/48495>
2. Stafne, E. C. Supernumerary teeth. *Dental Cosmos*. 1932;74:653–9.
3. Asaumi JI, Shibata Y, Yanagi Y, Hisatomi M, Matsuzaki H, Konouchi H, et al. Radiographic examination of mesiodens and their associated complications. *Dentomaxillofac Radiol*. 2004 Mar;33(2):125–7.
4. Kocatas Ersin N, Candan U, Riza Alpoz A, Akay C. Mesiodens in primary, mixed and permanent dentitions: a clinical and radiographic study. *J Clin Pediatr Dent*. 2004 Jul 1;28(4):295–8.
5. Huang WH, Tsai TP, Su HL. Mesiodens in the primary dentition stage: a radiographic study. *ASDC J Dent Child*. 1992 May;59(3):186–9.
6. Kaler LC. Prevalence of mesiodens in a pediatric Hispanic population. *ASDC J Dent Child*. 1988 Mar;55(2):137–8.
7. Kim S-G, Lee S-H. Mesiodens: a clinical and radiographic study. *J Dent Child* . 2003 Jan;70(1):58–60.
8. Roychoudhary A, Gupta Y, Parkash H. Mesiodens: a retrospective study of fifty teeth. *Journal-Indian Society Of Pedodontics And Preventive Dentistry*. 2000;18(4):144–6.
9. Tyrologou S, Koch G, Kurol J. Location, complications and treatment of mesiodentes--a retrospective study in children. *Swed Dent J*. 2005;29(1):1–9.
10. von Arx T. Anterior maxillary supernumerary teeth: a clinical and radiographic study. *Aust Dent J*. 1992 Jun;37(3):189–95.
11. Gallas MM, García A. Retention of permanent incisors by mesiodens: a family affair. *Br Dent J*. 2000 Jan 22;188(2):63–4.
12. Marya CM, Kumar BR. Familial occurrence of mesiodentes with unusual findings. *Quintessence Int* [Internet]. 1998;29(1). Available from: <http://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=00336572&AN=37469894&h=DFLRS6JbTbefBpUDkluTaRSB%2FbOSDq4MkUcMJB0rkjFC8y0JfnAd7mezEYx4%2B>

h4uNSYicbfR44GRbJG%2FgJ7jnA%3D%3D&crl=c

13. Sedano HO, Gorlin RJ. Familial occurrence of mesiodens. *Oral Surg Oral Med Oral Pathol.* 1969 Mar;27(3):360–1.
14. Gündüz K, Celenk P, Zengin Z, Sümer P. Mesiodens: a radiographic study in children. *J Oral Sci.* 2008 Sep;50(3):287–91.
15. Salcido-García JF, Ledesma-Montes C, Hernández-Flores F, Pérez D, Garcés-Ortíz M. Frequency of supernumerary teeth in Mexican population. *Med Oral Patol Oral Cir Bucal.* 2004 Nov;9(5):407–9; 403–6.
16. Hurlen B, Humerfelt D. Characteristics of premaxillary hyperodontia. A radiographic study. *Acta Odontol Scand.* 1985 May;43(2):75–81.
17. Garib DG, Peck S, Gomes SC. Increased occurrence of dental anomalies associated with second-premolar agenesis. *Angle Orthod.* 2009 May;79(3):436–41.
18. Peck S. Dental Anomaly Patterns (DAP). A new way to look at malocclusion. *Angle Orthod.* 2009 Sep;79(5):1015–6.
19. Baccetti T. A controlled study of associated dental anomalies. *Angle Orthod.* 1998 Jun;68(3):267–74.
20. Felicita AS. Orthodontic extrusion of Ellis Class VIII fracture of maxillary lateral incisor - The sling shot method. *Saudi Dent J.* 2018 Jul;30(3):265–9.
21. Chandrasekar R, Chandrasekhar S, Sundari KKS, Ravi P. Development and validation of a formula for objective assessment of cervical vertebral bone age. *Prog Orthod.* 2020 Oct 12;21(1):38.
22. Arvind P TR, Jain RK. Skeletally anchored forsus fatigue resistant device for correction of Class II malocclusions- A systematic review and meta-analysis. *Orthod Craniofac Res.* 2021 Feb;24(1):52–61.
23. Varghese RM, Subramanian AK, Sreenivasagan S, Others. Comparison of dentoskeletal changes in skeletal class II cases using two different fixed functional appliances: Forsus fatigue resistant device and powerscope class II corrector—A clinical study. *Journal of International Oral Health.* 2021;13(3):234.
24. Preethi KA, Auxzilia Preethi K, Sekar D. Dietary microRNAs: Current status and perspective in food science [Internet]. Vol. 45, *Journal of Food Biochemistry.* 2021. Available from: <http://dx.doi.org/10.1111/jfbc.13827>
25. Rani A, Pankaj AK, Diwan RK, Verma RK, Rani A, Gupta JP. Prevalence of supernumerary teeth in north Indian population: A radiological study. *Int J Anat Res.* 2017;5(2.2):3861–5.
26. 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. *International Journal of Pedodontic Rehabilitation.* 2019 Jan 1;4(1):9.
27. Sruthi S, Vignesh R, Jeevanandan G, Subramanian EM. Prevalence of mesiodens in Chennai population. *Drug invention today.* 2019;11(4):949–51.
28. Prabhu NT, Rebecca J, Munshi AK. Mesiodens in the primary dentition--a case report. *J Indian Soc Pedod Prev Dent.* 1998 Sep;16(3):93–5.
29. Simões F, Crusoé-Rebello I, Neves FS, Oliveira-Santos C, Ciamponi AL, da Silva Filho OG. Prevalence of supernumerary teeth in orthodontic patients from Southwestern Brazil. *International journal of odontostomatology.* 2011;5(2):199–202.