
Gender predilection of congenitally missing teeth

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Abstract: Hypodontia or tooth agenesis is the most prevalent craniofacial malformation in humans. A tooth is considered to be congenitally missing when it remains invisible in radiographs and fails to erupt into the oral cavity. A thorough knowledge on tooth agenesis and its associated syndromes is essential as these are commonly encountered clinical scenarios. The aim of this study is to assess the current prevalence of dental agenesis in the permanent dentition among the patients visiting Saveetha Dental College. We reviewed 86000 patient records between February 2019 to February 2020 and arrived at the data of 24. Cross verification of data is done by photographic and radiographic verification. Internal and external validity of the study were verified. Patients' details such as name, age, gender, missing teeth and treatment done were tabulated and transferred to SPSS software version 26 by IBM. The data is verified by 2 reviewers. The results of the study observed a male predilection for dental agenesis. And the most common missing teeth is maxillary lateral incisors.

Keywords: Congenital missing teeth ; Tooth agenesis ; Gender predilection .

INTRODUCTION

Congenital missing teeth, congenital absence of teeth, dental agenesis or congenital dental aplasia is one of the most common dental anomalies¹⁻⁴. A tooth is considered to be congenitally missing when it remains invisible in radiographs and fails to erupt into the oral cavity⁵. Developmental dental anomalies are the important category of dental morphology variations⁶. Possible etiological factors for dental anomalies can be inherited or mutation of genes in prenatal or postnatal period. Developmental disturbances refers to an abnormality where the pathology starts in the embryonic stage of human life, before the formation of the dentition. This can be associated with genetic changes or can also be due to environmental effects⁷. Ankyloglossia or tongue-tie is a congenital anomaly of tongue, characterised by thick and short lingual frenum can be easily treated using frenotomy/frenuloplasty/frenectomy based on the severity of lingual attachment followed by speech therapy⁸. Oligodontia of third molar may occur as an isolated nonsyndromic condition or as a syndrome like Down syndrome, Ectodermal dysplasia and Rieger syndrome. A thorough knowledge on tooth agenesis and its associated syndromes is essential as these are commonly encountered clinical scenarios. Dental photography and radiography plays an important role in diagnosis and cross verification of data⁹. Esthetics is an important factor and its problems might affect the person's self esteem, quality of life, communication behaviour^{10,11,12}. Esthetics and function are the two most affected regions because of dental agenesis^{13,14,15}. Third molars are the teeth that are mostly associated with impaction and as the result of evolution the number of cases with missing third molars is increasing¹⁶. Third molar agenesis is common in females and is more common in mandibular teeth¹⁷. In addition to this dental agenesis can cause other conditions such as delayed eruption, tooth size, retained permanent teeth, ectopic canine eruption²³. It can also cause abnormal dental morphologies such as taurodontism or peg shaped maxillary lateral incisors^{15,18,19,20}. Premature loss of deciduous teeth can also affect the development of the successor permanent teeth and is commonly seen in male children and is usually mandibular teeth²¹. Premature loss of deciduous teeth may result in severe iron deficiency and nutritional disorders due to chewing and eating difficulties²². People with congenital missing of permanent teeth may suffer from malocclusion, periodontal damage, lack of alveolar bone growth, reduced chewing ability, inarticulate pronunciation, unfavourable appearance or changes in skeletal relationships^{23,24}. One of the key factors for successful treatment is the early intervention, treatment planning and achieving stable occlusion²⁵. If a dental anomaly is not identified and treated in the early stages, it can lead to other complications and interfere with other dental procedures and orthodontic treatment²⁶.

Previously our team had conducted numerous clinical trials^{17,27-32} and the lab animal studies^{9,33-36} and in-vitro students^{8,37,38} over the past 5 years. Now we are focussing on retrospective studies.

Absence of anterior teeth or absence of more than two teeth in the same quadrant may be an indication for the existence of the need for orthodontic treatment^{39,40}. Therefore investigating the prevalence of hypodontia is important for early diagnosis and appropriate / effective treatment planning¹³. This is essential for preventing complications of hypodontia such as periodontal damage, lack of alveolar bone growth^{20,40,41}.

Third molar agenesis is more common in indian population when compared to malaysian population and maxillary right third molar is the most commonly missing teeth among indian and mandibular right third molar is common in malaysian population⁴². The differences in frequencies of missing teeth can be explained by variety of samples in respect to measuring methods-radiographic, clinical, age, gender, geographic or demographic profiles and ethnic background^{22,39,340}. Our team has rich experience in research and we have collaborated with numerous authors over various topics in the past decade⁴³⁻⁶⁶.

MATERIALS AND METHODS

The retrospective cross sectional study was done by reviewing patient records and analysed the data of 86000 patients between February 2019 to February 2020 and we arrived at the data of 24. Photographic and radiographic verification were done for cross verification. Clear history was taken, all available data were included and no sorting process was done in order to minimise the sampling bias errors. Internal and external validity of the sample was verified by 2 external reviewers. Patient details such as name, age, sex, ethnicity, gender, missing teeth and treatment done were tabulated in excel sheet.

Statistical analysis

Statistical test done is the chi square test. Statistical software used is SPSS version 26 by IBM. independent variables are age, gender and ethnicity. Dependent variables are congenital missing teeth. Type of analysis used is correlation and association.

RESULTS AND DISCUSSION

Total number of patients in the study were 24, out of which 14(58%) were males and 10(42%) were females. The results showed that males were more susceptible to congenital missing of teeth. All the values collected were tabulated (p value >0.05 insignificant). Sextant 2 is more prevalent to missing teeth when compared to other sextants. Most of the study population has not undergone any treatment for congenital missing teeth.

Congenital missing teeth is the most common developmental abnormality of teeth¹. Etiology of congenital missing teeth can have various factors such as radiation, chemotherapy, some syndromes such as Down syndrome, etc), infection and local inflammation, specific pattern of innervations, some systemic diseases, the changes resulting from human developmental and genetic factors, etc.,². Our institution is passionate about high quality evidence based research and has excelled in various fields (^{32,48,67-71}The main cause of congenital missing teeth is still not known. Although congenital missing teeth occurs in many syndromes, the incidence of non-syndromic and familial form is more⁵.

According to Sajad, the prevalence of congenitally missing teeth is 10.9% in males and 10.8% in females. Although in many studies, the average prevalence of congenital missing teeth in females are more than males and according to Behr et al., prevalence of congenital missing teeth among males and females are almost the same. According to a study, most commonly missing teeth are maxillary lateral incisors(sextant 2)⁷². According to a study most commonly missing teeth are mandibular premolar¹

Limitations of the study have a lesser sample size and it is a single centered study. It does not represent all ethnic groups or populations.A further study with larger sample size can yield more definitive results to be used as baseline data for the South Indian population.

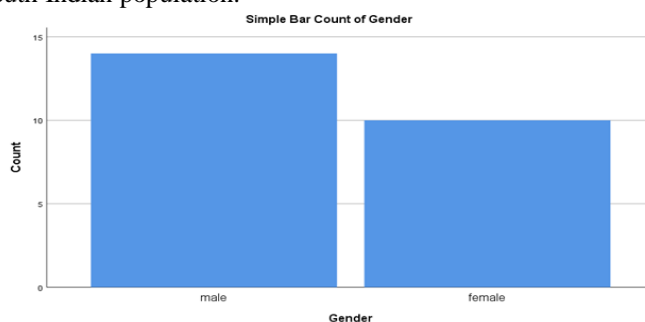


Fig.1: Bar graph represents the gender predilection of missing teeth where the gender of the patient was mentioned in X axis and number of patients on Y axis. It was found that males were more susceptible to congenitally missing teeth than females.

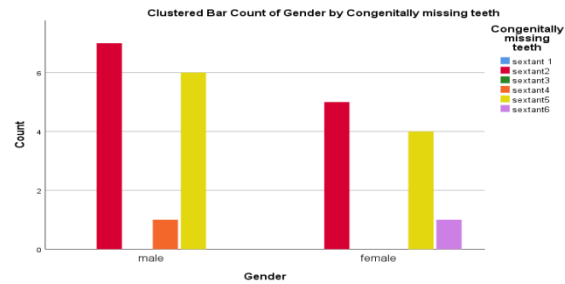


Fig.2: Shows the graph of gender association with prevalence of missing teeth among various sextants where the gender of the patient and missing teeth was mentioned in X axis and Y axis respectively. It was found that males had more missing teeth than females and sextant 2 (red) had more missing teeth when compared to sextant 1(blue) , sextant 3(green), sextant 4(orange), sextant 5(yellow) and sextant 6(purple). However, there is no significant difference between sextant 2 and other sextants (chi square test-2.126 ,p value 0.547).

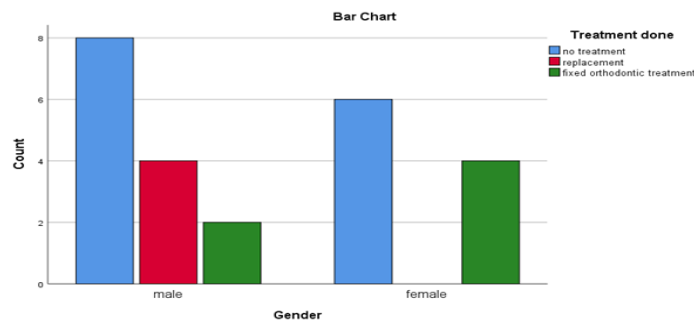


Fig.3: Shows the graph of gender association with treatment undergone by patients for congenital missing teeth where the gender and treatment undergone by the patients were mentioned in X axis and Y axis respectively. It was found that no treatment (blue) is more prevalent than replacement(red) or fixed orthodontic treatment (green).However, there is no significant correlation for gender associated with treatment (chi square test- 4.408,p value 0.110)

CONCLUSION

Within the limitations of the study there is gender prevalence in congenital missing teeth (males are more prevalent). The most commonly missing teeth were maxillary lateral incisors. And most of the study population has not undergone any treatment for congenital missing teeth.

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