

## Original Research

### Prevalence of congenitally missing teeth in orthodontic patients in Kashmiri population

<sup>1</sup>Monika Chib, <sup>2</sup>Mohammad Mushtaq

<sup>1</sup>MDS, <sup>2</sup>Head of the Department, Department of Orthodontics & Dentofacial Orthopedics, Government Dental College & Hospital, Srinagar, Jammu & Kashmir, India

#### ABSTRACT:

**Introduction:** Hypodontia or congenitally missing teeth is among dental anomalies with different prevalence in each region. The aim of this study was to evaluate the prevalence of congenitally missing permanent teeth in Kashmiri population. **Materials and Methods:** A descriptive, retrospective and cross-sectional study was done. Panoramic radiographs of 250 Kashmiri patients (106 males and 144 females), were collected. The radiographs were studied for evidence of congenitally missing teeth. Data were analysed and statistical variance, correlation and multiple correlation tests were conducted ( $p < 0.05$ ). **Results:** Among the 250 panoramic radiographs, a total of 58 showed evidence of CMT (23.2%), 31 of the missing teeth were third molars (representing 53.4%), followed by maxillary lateral incisor (19; 32.7%), and mandibular central incisor (6; 10.3%) and 55% of the missing teeth were maxillary and 44.8% mandibular. **Conclusion:** The prevalence of CMT in permanent dentition affects third molars most often, followed by maxillary lateral incisors, and then mandibular second premolars with no significant difference between males and females.

**Key Words:** Congenital missing teeth, hypodontia, panoramic, prevalence

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**Corresponding author:** Monika Chib, MDS, Department of Orthodontics & Dentofacial Orthopedics, Government Dental College & Hospital, Srinagar, Jammu & Kashmir, India

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#### INTRODUCTION

The most common developmental and congenital dental anomaly is tooth agenesis, congenitally missing teeth (CMT), congenital absence of teeth or congenital dental aplasia. Congenitally missing teeth (CMT) refers to teeth whose germ did not develop sufficiently to allow the differentiation of the dental tissues.<sup>1</sup> It is defined as missing of one or more teeth.<sup>2</sup> It can be seen sporadic or in hereditary syndromes. It might negatively affect both the esthetics and function.<sup>3</sup> Congenitally missing teeth (CMT) is an anomaly that may result in dental malpositioning, periodontal damage, lack of development of maxillary and mandibular bone height, and has significant aesthetic and functional consequences.

This anomaly occurs in three categories:

1. Hypodontia (Agenesis of less than 6 teeth, occurred without syndrome)<sup>4-7</sup>
2. Oligodontia (six or more teeth are missed).<sup>8,9</sup>
3. Anodontia: (absence of all of the teeth, usually seen with ectodermal dysplasia).<sup>10</sup>

Etiology of tooth agenesis is not clear but some probable factors are: Heredity (mutations of the genes PAX9 and MSX1)<sup>7,11</sup> In previous investigations, the prevalence of CMT varies in different populations from 0.3% to 34.3%. Moyers, et al.<sup>1</sup> and Uner, et al.<sup>12</sup> reported prevalence of CMT 4%. It was reported 10% by Mc Donald.<sup>10</sup>

The aim of this study was to assess the prevalence of congenitally missing teeth in the Kashmiri population.

#### MATERIAL AND METHODS

In this retrospective study, quota sampling was used. A total of 250 panoramic radiographs were selected from the archives of Department of Orthodontics & Dentofacial Orthopedics, Government Dental College & Hospital, Srinagar. Inclusion criteria were: Having no specific syndrome Ectodermal dysplasia, Down, no lip/palate cleft, age more than 7 years old. Exclusion criteria were: History of tooth extraction or tooth loss due to trauma, caries, periodontal disease or orthodontic extraction, not enough radiographic quality to accurately diagnose the CMT.

Data were collected and entered into the SPSS software (version 14.0 for Windows XP). Data were analysed and statistical variance, correlation and multiple correlation tests were conducted, in order to assess differences in CMT between males and females, and to assess the similarity in occurrence of hypodontia between maxillary and mandibular teeth. ( $p < 0.05$ )

## RESULTS

Among the 250 panoramic radiographs, a total of 58 showed evidence of CMT (23.2%), 31 of the missing teeth were third molars (representing 53.4%), followed by maxillary lateral incisor (19; 32.7%), and mandibular central incisor (6; 10.3%) and 55% of the missing teeth were maxillary and 44.8% mandibular.

**Table 1**

Panoramic Radiographs	Male	Female	Total
Selected	106	144	250
With congenitally missing teeth	24	34	58
Statistical significance	>0.05		

**Table 2**

Arch	No. of congenitally missing teeth	Statistical significance
Maxillary	32	<0.01
Mandibular	26	

**Table 3**

Tooth type	No. of missing teeth
Third molars	31 (53.4%)
Maxillary lateral incisor	19 (32.7%)
Mandibular central incisor	6 (10.3%)
Mandibular second premolar	2 (3.4%)

## DISCUSSION

CMT is the most common developmental abnormality of teeth.<sup>1</sup> Several factors are proposed as etiology of CMT 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; however the main cause is still unknown.<sup>1,2,6</sup> CMT is a result of disturbances during the early stages of development<sup>13</sup> and is suggested as a mild dysplastic expression of the ectoderm.<sup>14-17</sup> When a primary tooth is congenitally absent, its permanent counterpart might also be missing.<sup>16</sup> Genetics plays a crucial role in congenital dental aplasia,<sup>6</sup> as confirmed by studies on monozygotic twins.<sup>16</sup>

In this study, the prevalence of congenitally missing teeth is 22.6% in males and 23.6% in females with no significant difference. Silva, et al.<sup>2</sup> in Mexico, Chung, et al.<sup>18</sup> in Korea and Behr, et al.<sup>19</sup> in Germany concluded that CMT in females and males are almost equal. In all of these studies differences of genders were not significant. Only Polder et al.<sup>20</sup> concluded that CMT in females are 1.3 times more probable than males with significant differences.

In our study, 55% of CMT were in maxilla and 44.8% in mandible, therefore prevalence in maxilla is more than mandible significantly. Our findings were similar to the results of many previous studies.<sup>2,16,21</sup> While Backman, et al.<sup>6</sup> in Sweden reported the prevalence of CMT in mandible more than maxilla. Polder, et

al.,<sup>20</sup> reported that the prevalence of CMT in both jaws is almost equal.

In the present study, the prevalence of missing third molars is 53.4% followed by maxillary lateral incisors (32.7%) and mandibular central incisors (10.3%). After third molars as the most prevalent missing teeth in all of the studies, there are some differences between the prevalence of other teeth. In most of the studies which evaluated orthodontic patients, the most common CMT was maxillary lateral incisors, followed by mandibular and maxillary second premolars.<sup>2,16,21,22</sup> However, in few studies, the most common missing tooth after third molars is mandibular second premolar.<sup>19,20</sup>

## CONCLUSION

Results of this study confirmed that the prevalence of CMT in permanent dentition affects third molars most often, followed by maxillary lateral incisors, and then mandibular second premolars with no significant difference between males and females. However, the prevalence was significantly higher in maxillary arch than the mandibular arch.

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