

PREVALENCE OF MISSING, IMPACTED AND SUPERNUMERARY TEETH IN PATIENTS UNDER ORTHODONTIC TREATMENT IN A TEACHING HOSPITAL OF KARACHI, PAKISTAN

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ABSTRACT:

Dental Irregularities are frequently related with orthodontic problems. It may include variations in the number of teeth, size of teeth (Macro and Micro Dontia) or pattern of eruption. Such anomalies may lead to disturbances in the arch length of maxilla and mandible as well as occlusion. Sometimes they are associated with different syndromes. The prevalence of such abnormalities is diverse in different societies and races of the world. In fact, there was a significant change amongst genders of the same society. In Pakistan, the prevalence of hypodontia, hyperdontia and impactions are found to be 3.38%, 0.95% and 8.57 respectively.

Key words: Prevalence, Hypodontia, Supernumery, Impaction. Missing, Orthodontic Patients, Pakistan



INTRODUCTION:

Dental Anomalies are commonly associated with orthodontic problems. It may include variation in number of teeth that is Hyperdontia or Hypodontia, size of teeth (Macro and Micro Dontia) or pattern of eruption. Such anomalies may

lead to disturbances in the arch length of maxilla and mandible as well as in occlusion.

Hypodontia explains the developmental absence of one or more teeth, either in primary or permanent dentition.^[1] It is considered to be one of the most

commonly encountered oral variations.^[2] It is a multi-factorial dental irregularity.^[3] And is generally associated with syndromes and other precise congenital facial dysplasias such as cleft lip and palate.^[4] Population studies have revealed that the prevalence of hypodontia differs with regards to the permanent and primary dentitions, tooth type, and racial groups. The prevalence of hypodontia varies from 0.03 to 10.1 % in various populations.^[5]

Impacted teeth are those with a late eruption time or teeth that are prevented from eruption into their normal functional positions because of malpositioning, deficiency of space or various other obstacles and are not estimated to erupt entirely as established on clinical and radiographic assessment.^[11] Rate of impaction of 3rd molars is highest.^[12, 13, 14] Many researches show the prevalence of Maxillary Canine as the most impacted tooth other than 3rd Molars.^[15,14] Prevalence of impaction amongst different populations varies between 9.83% to 35.8%.^[16,17]

The current study was performed to find out the prevalence of missing, impacted and supernumerary teeth in the Pakistani population who had undergone orthodontic treatment. We can compare this study with other studies which were conducted in different countries on different races. So the data will give an idea to other researches worldwide.

Hyperdontia (Supernumerary teeth) is also a developmental disorder. Hyperdontia or supernumerary teeth is defined as an increased number of teeth in a given person ,i.e., more than 20 teeth in deciduous dentition or 32 in

permanent dentition.^[6] Multiple supernumerary teeth are exceptional in individuals with no other linked diseases or syndromes.^[7] The crowns of supernumerary teeth may demonstrate either a normal appearance or different atypical shapes and their roots may be completely or incompletely developed.^[8] Numerous theories have been suggested to illuminate the etiology of supernumerary teeth. The available data proposes a pattern of multifactorial inheritance that gives rise to hyperactivity of the dental lamina.^[9] The prevalence of supernumerary teeth in different studies ranges from 0.1 to 3.8 per cent.^[10]

MATERIAL AND METHODS:

This cross sectional, retrospective, observational and descriptive study was conducted in the Department of Orthodontics, Dr Ishrat Ul Ebad Khan Institute of Oral Health Sciences which is a public sector teaching hospital and runs under Dow University of Health Sciences, Karachi, Pakistan. Consent forms were signed by the patients before the start of their orthodontic treatment.

250 Patients were randomly selected and their history form was evaluated. Patients with history of trauma to the maxilla and mandible, metabolic disorders, syndromes affecting bone metabolism, previous extraction or tooth loss due to dental caries and periodontal disease were excluded; cleft lip and palate were excluded. Pretreatment casts of the patients after exclusion were obtained from the department and studied by a dental surgeon and was rechecked by a senior dental surgeon. Orthopentographs and lateral cephalographs were observed on an x-

ray illuminator by the same team. Casts and radiographs that were damaged or were not of good quality were also excluded.

Age and Gender were obtained from the history form. Casts and radiographs were evaluated for hypodontia. Panoramic radiographs in analysis of hypodontia has been verified to be trustworthy in the earlier reports.^{18,19,20.}

All the models and radiographs were studied to find out hypodontia/missing teeth, hyperdontia/supernumerary teeth and impacted teeth. A tooth was diagnosed as congenitally missing when it could not be identified or discerned radio-graphically on the basis of calcification and there was no evidence of extraction. If an accurate diagnosis of hypodontia could not be made the file was excluded.

Data was entered and analyzed by Statistical Package for Social Science Version 16.

RESULT:

Data was observed of 210 patients. Mean age calculated was 18.11 years. Maximum age was 37 years and minimum age 12. There were 59 male cases and 151 cases of female.(Fig 1) Male to Female ratio 1:2.55. (Table 1), 45 patients were found with missing teeth which accounts for 21.4 %. (Table 2)

11 males were with missing teeth out of 59, (18.64 %) Total number of female cases were 151 in which missing teeth was found in 34 females (22.5%).Missing teeth are more common in females as compared to males.

Out of 210, All 3rd molars were missing in 7 cases. 7 cases were found having both the lower 3rd molars missing. Overall in 20 patients Left Mandibular 3rd Molar was missing alone or with another tooth/teeth, in 20 patients Right Mandibular 3rd Molar was missing unaccompanied or with another tooth/teeth. 21 patients were having missing Right Max 3rd Molar only or with alternative tooth/teeth and 20 cases were found in which left Max 3rd Molar was missing alone or with another tooth/teeth.

Excluding 3rd Molars prevalence of hypodontia in males is 3.38% and 2.63 % in females.Excluding 3rd Molars there were only 6 cases in which different teeth were missing. Prevalence is 2.85%.

Left Max Lateral Incisor is the most commonest missing tooth absent which is absent in 4 cases, Prevalence 1.90% of the total number of cases which were 210 followed by Right Maxillary lateral Incisor which was missing in 3 cases , prevalence 1.42 % . 1 case of missing of both Maxillary Canines and Mandibular Lateral incisors were also documented.

Total 3 cases were observed where both upper lateral incisors were missing as compared to the lower lateral incisor where only 1 case is seen.

In maxilla more teeth were missing than mandible if we exclude the 3rd Molars. Numbers of teeth missing in maxilla were 11 in 6 patients as compared to mandible where only 2 teeth were missing.

Out of 210 patients impaction was found in 52 cases. Current study reveals the prevalence of Impaction in orthodontics patient is 24.8%. (Table 3)Total number of males were 59 and impaction was

present in 12 males, which accounts for 20.33% of male population with impaction. 40 female patients were having Impaction out of 151. Percentage of impaction in females is found to be 26.49%. (Fig 5&6)

Impaction is more common in females as compared to males including 3rd molars. One case was found in which 5 teeth, which were all 3rd molars and Maxillary 2nd Premolar, were impacted.

Out of 210, All 3rd molars Impaction was present in 8 cases. 13 cases were found having lower 3rd molars were impacted. Overall in 28 patients Left Mandibular 3rd Molar was impacted, in 27 patients Right Mandibular 3rd Molar was impacted. 13 patients were having impacted Right Max 3rd Molar and 12 cases were found in which left Max 3rd Molar was impacted. Impaction is more common in mandible as compared to maxilla and mandibular left 3rd molar is the most impacted tooth. Excluding 3rd molars we have seen 18 cases of Impaction. Prevalence is 8.57 %.

Among 59 males 6 cases of impaction were present and which account for 10.16 % prevalence In 151 females total number of impaction was seen in 12 cases and prevalence is 7.94%. Impaction is more common in males as compared to females excluding third molars.

Other than 3rd molars the most common impacted tooth were Right Maxillary canine and Right mandibular 2nd premolar which were impacted in 6 patients. 4 Patients of left Maxillary canine Impaction were found. 2 cases of Left Mandibular 1st Premolar, Left Mandibular lateral incisor, Right Mandibular 2nd Premolar and Left Mandibular 2nd molar were found. Single

cases of Right Maxillary Central Incisor, left maxillary 2nd premolar, right mandibular central incisor and right mandibular 2nd molar were diagnosed.

There were 12 cases where impaction and missing teeth both was seen. In 5 cases 2 teeth were missing as well as impacted. In 3 cases upper 3rd molars were missing with the impaction of lower 3rd molars.

Prevalence of supernumerary teeth is 0.96 %. Only 2 cases in 210 samples were having supernumerary teeth. 1 male and 1 Female . As the number of males was 59 so it is recorded that prevalence of Hyperdontia in males is more than females.

One case of mesiodense and one case of an extra tooth in between lower premolars has noticed. Not a single case of multiple supernumerary teeth found.

DISCUSSION:

Number of males in current study is far less than the females. In earlier studies done on orthodontic patients, higher female to male ratio have been observed [21]. Because females are more concerned about their beauty and esthetics and in many societies esthetics of girls are given importance. In current study the prevalence of hypodontia excluding 3rd molars was found to be 2.85 %, current study result comes in the range of previous studies. The wide range of prevalence values (1.6–9.6 percent) observed in population studies has indicated geographic differences. [22, 23, 24, 25] Prevalence of hypodontia was found to be 2.8 % in Malaysia. [26] and in Turkey hypodontia was reported in 2.6 % of the population. [27]

In current study excluding 3rd Molars prevalence of hypodontia in males is 3.38% and 2.63 % in females. The prevalence of hypodontia (excluding 3rd molar) reported in a study was 7.1% in Southern Jordan, 2.10% were males and 5.01% were females. [28] In most studies, females show a higher prevalence of hypodontia. [29,30,31]. Current study shows the same statistics of hypodontia including the 3rd Molars (Males 18.6% , Females 22.5 %) and confirms the finding.

The most common missing tooth in current study is Left Maxillary Lateral Incisor followed by Right Max Lateral Incisor. In multiple previous studies conducted on different populations, the most common missing teeth are Maxillary Lateral Incisors [28,32-37]. In current study, prevalence of hypodontia in maxilla is higher as compared to mandible. Other studies showed the same results. [38-40] Few studies reveal that hypodontia is predominating in mandible [41, 42]

Result of current study indicates the prevalence of supernumerary teeth is 0.95%. The prevalence of supernumerary teeth in different studies ranges from 0.1 to 3.8 per cent. [10] current study comes in the range of previous reports.

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Multiple supernumerary teeth are exceptional in individuals with no other linked diseases or syndromes. [7] We haven't found any case of multiple supernumerary teeth

CONCLUSION:

It has been established by this study that Prevalence of Hypodontia is 3.38% excluding third molars and is more common in males. Hypodontia is much more observed in Maxilla as compared to Mandible. Most common missing tooth is Left Max Lateral Incisor followed by Right Maxillary lateral Incisor. Among 3rd molars Right Max 3rd Molar is the commonly missing tooth in the whole dentition. Prevalence of missing 3rd molar is more in females as compared to males. Prevalence of Impaction, Excluding 3rd Molars is 8.57% and most common missing teeth are Right Maxillary canine and Right mandibular 2nd premolar .Impaction rate is higher in males as compared to females. Supernumery teeth prevalence is 0.95% and males are predominant.

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TABLES:

Table 1

Gender		Frequency	Percent
Valid	Male	59	28.1
	Female	151	71.9
	Total	210	100.0

Table 2

Missing Teeth	Frequency	Percent
Yes	45	21.4
No	165	78.6
Total	210	100.0

Table 3

Impaction	Frequency	Percent
YES	52	24.8
NO	158	75.2
Total	210	100.0

FIGURES:

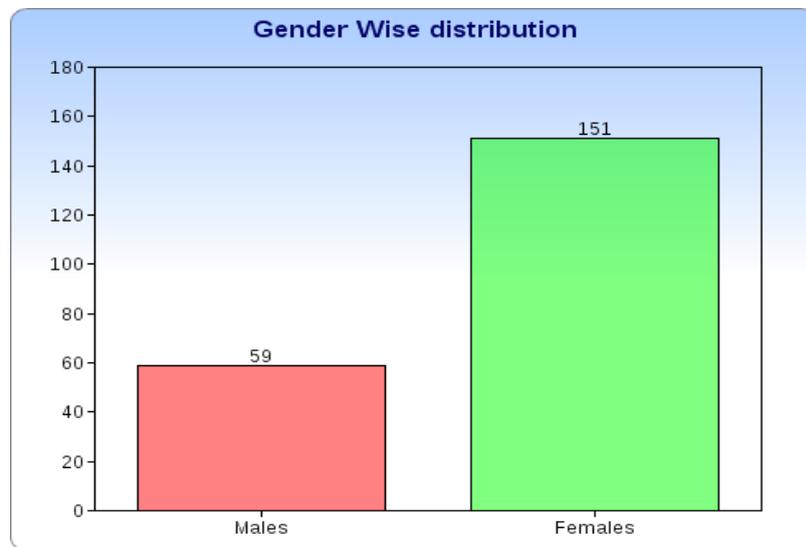


Fig.1: Gender Wise distribution