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Research Article

**STUDY TO DETERMINE THE DENTAL ANOMALIES
PREVALENCE AMONG ORTHODONTIC PATIENTS IN
NISHTAR HOSPITAL MULTAN****Dr Ghazala Arshad^{*}, Dr Ayesha Afzal^{*}, Dr Gul Rawish Tahir^{*}, Dr Mohsin Majeed^{*},
Dr Nouman Mustafa^{*}, Dr Sara Izhar^{*}**
^{*}Nishtar Institute of Dentistry, Multan**Abstract:**

Objective: To investigate the prevalence of common dental anomalies in orthodontic patients during routine oral clinical examination and diagnosis.

Place and Duration: In the department of prosthodontics, periodontology and OPD of Nishtar Hospital for one year duration from June 2018 to June 2019.

Methods: Total 345 patients (male: female 148: 197 ratio), number (hyperdontia / hypodontia), size (macrodontia microdontia, fusion, germination), shape (dens evaginatus, taurodontism) and enamel (amelogenesis in general imperfecta) and structure of enamel (amelogenesis imperfecta) & dentine (dentinogenesis imperfecta). The 9 to 44 years was the age (Mean age 26.4). The selected patients had no systemic disorder or syndrome.

Results: Overall, 18.8% of the patients examined showed dental anomalies. Males (total 78.3) had more dental anomalies than women with 23.7. Among the wide anomalies found, hypodontia represented the highest prevalent tooth anomaly (mean value 57.8), followed by upper teeth (mean value 12.4) and supernumerary (mean value 7.2). The distribution of hyperdontia by sex was higher in males than in females (mean value 77.4) (mean value 23.7), whereas microdontia, hypodontia and amelogenesis imperfecta had a higher prevalence in women. In addition, women had more supernumerary paramolars (mean value 84.7) than men (mean value 15.3), and mesiodens were more common in men (mean value 87.6) than women (mean value 87.6). 4.12). Women showed greater affinity for missing teeth, particularly mandibular premolar (mean value 88.4) and upper lateral incisors (mean value 65.4).

Conclusion: A wide variety of dental anomalies have been found that cause localized malocclusion, loss of orthodontic area, and dental aesthetic problems. These anomalies require a team of orthodontics, restorations and periodontics for proper aesthetic and functional restoration of dentists. Therefore, proper identification and diagnosis of dental anomalies should be routinely performed during clinical and radiographic evaluation.

Keywords: Hyperdontia, tooth anomalies, orthodontics, hypodontia.

Corresponding author:**Dr. Ghazala Arshad,**

Nishtar Institute of Dentistry, Multan

QR code



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INTRODUCTION:

Dental anomalies are routinely found in general dentistry and are associated with defects in the development of teeth caused by hereditary, systemic, traumatic or local factors¹⁻³. Orthodontic treatment planning, restoration procedures and prosthesis make prosthesis replacement difficult⁴. Dental anomalies are left untreated, both aesthetically and functionally, and the long-term prognosis of some anomalies is suspected⁶. Early intervention and treatment is necessary to restore the dental prosthesis and provide a reasonable aesthetic as soon as it is detected. In the past, numerous authors have conducted large population studies on the prevalence of anomalies by race, sex, and geographical distribution⁷. Common anomalies such as hyperdontia, hypodontia and enamel defects require a multidisciplinary approach consisting of orthodontics, restorative, periodontal and oral surgical treatments. Several Pakistani authors have investigated the frequency of anomalies in the local population⁸. In the following article, we examine the prevalence of dental anomalies in orthodontic patients.

MATERIALS AND METHODS:

A total of 345 patients (male: female 148: 197 ratio) were examined orally and radiographically to detect existing dental anomalies. Radiographic examination revealed OPG (orthopantomogram) for each patient. Periapical radiographs were performed to confirm or recheck certain abnormalities. Intraoral clinical examination tools included a simple dental oral mirror and a dental probe. The study was conducted in the orthodontic department and was coordinated with the departments of prosthesis, periodontology and outpatient clinics for one year duration from June 2018 to June 2019. The 9-44 years was the age range of the patients (mean age 26.4 years). A wide variety of anomalies divided into the following groups were found:

1. Abnormalities in the number of teeth

The change in the number of teeth results from problems during the beginning or phase of the dental laminae.

- Hyperdontia (supernumerary or extra-teeth) is seen in primary / permanent teeth.

- Hypodontia or congenital tooth deficiency represents a deficiency in the number of teeth and occurs in both the mandible and maxilla.

2. Abnormalities in tooth size.

- Microdontia: (small primitive, malformed or reduced teeth).

- Macrodontia: teeth larger than normal, ie. The teeth are germinated and fused.

2. Tooth-shaped abnormalities

- Dens evaginatus: It is usually an extra cusp in the central grooves or crest of the posterior teeth and in the central / lateral incisor cingulum area.

- Dens in dente: Enamel that makes the tooth appear inside the tooth is caused by the invagination of the inner epithelium.

- Taurodontism: It is characterized by large long pulp chambers with short and atrophic roots, as the Hertwig's epithelial root sheath cannot provide the appropriate level of horizontal invagination. Abnormalities in enamel and dentin structure

- Amelogenesis imperfecta: a hereditary enamel defect. The main categories; hypoplastic, hypomaturation and hypocalcification.

- Environmental hypoplasia: enamel hypoplasia that is environmentally induced for systemic or local reasons.

- Dentinogenesis imperfecta: (hereditary opalescent dentin) indicates a defect of the predentin matrix that causes amorphous atubular circumpulpal dentin.

SPSS 18.0 (Statistical Package for Social Sciences) statistical evaluation program was used to obtain the mean values.

RESULTS:

In general, 18.8% of the patients examined clinically and radiographically showed tooth anomalies affecting the number, size, shape and defect of the enamel. As noted, tooth anomalies were more common in maxillary teeth compared to mandibular teeth (Figure 1).

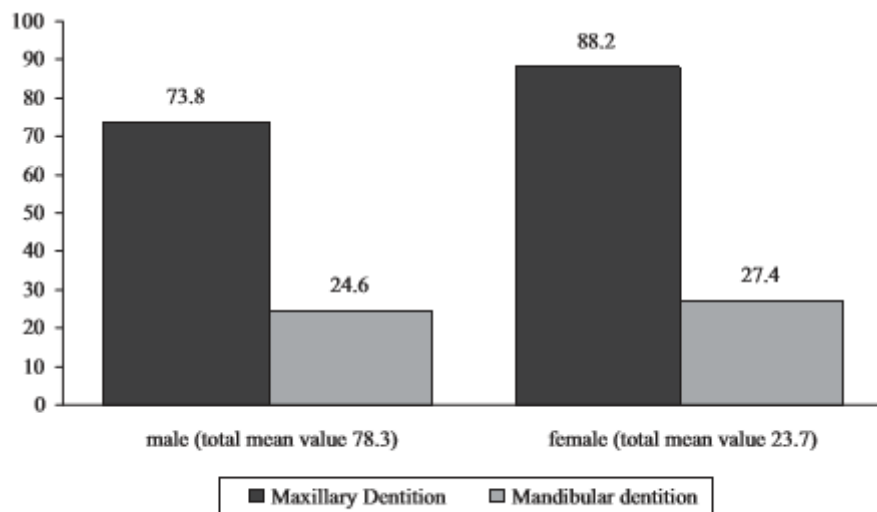


Fig. 1: Dental Anomalies Distribution in Maxilla & Mandible

In the dental anomalies group, males (total mean value 78.3) were more frequent than females (total mean value 23.7).

1. Abnormalities in the number of teeth: Among the prevalence anomalies found, hypodontia or lack of teeth represented the highest primary tooth anomaly, followed by hyperdontia or supernumerary teeth with a mean value of 12.4 and odontomes (mean value 5.1).

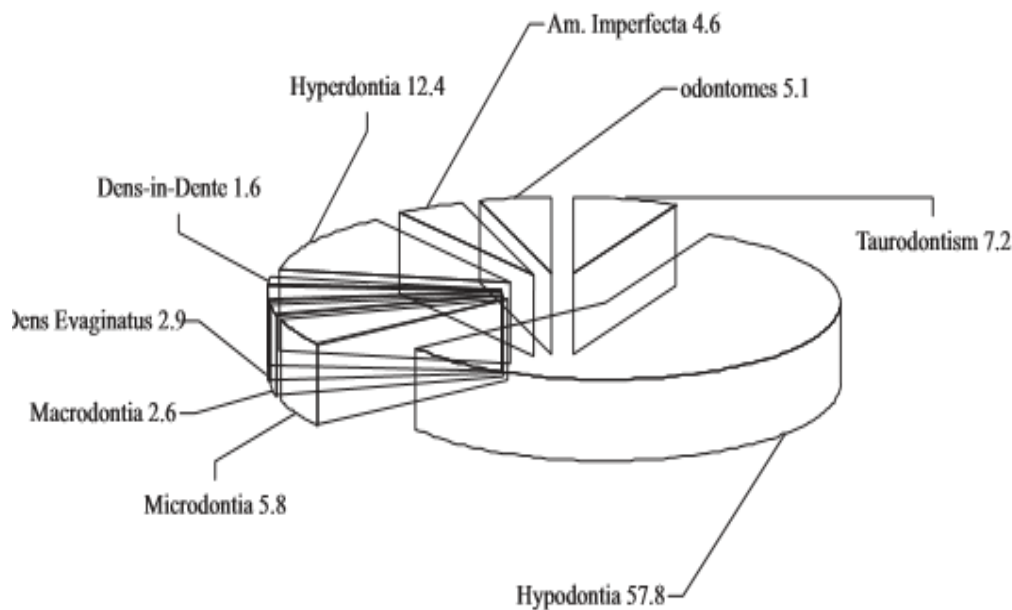


Fig. 2: Mean Distribution Values of Dental Anomalies

The mean maxillary value of 74.33 showed a greater supernumerary tendency than mandibular dentistry (mean value 25.71). According to the distribution by sex (Figure 3), males had more affinity to mesiodens (mean value 87.6) and then distomolars (mean value 68.4), while the prevalence of paramolar to females was higher (value mean 84.7) and odontomes (mean value 67.4).

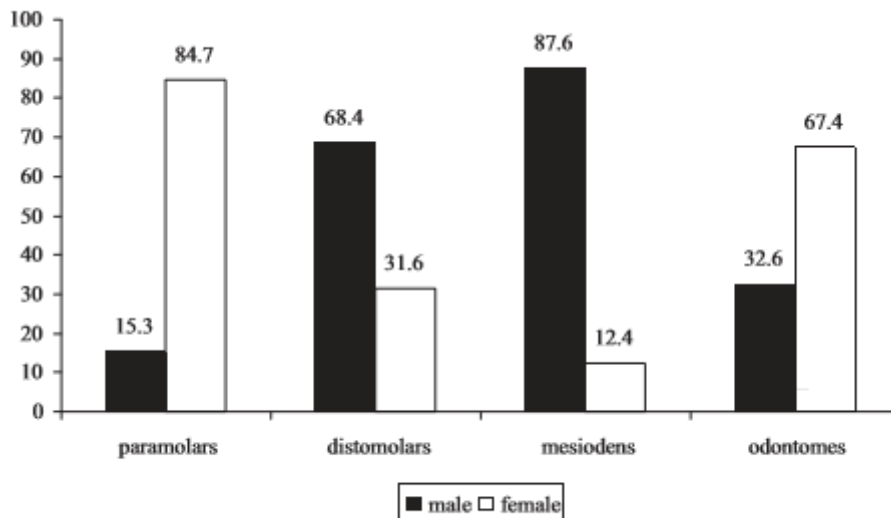


Fig. 3: Mean Prevalence Values of Supernumerary Teeth in Males/Females

Female subjects showed a greater tendency for tooth deficiency (Figure 5) with the second mandibular premolar (mean value 77.21) followed by the second maxillary premolar (mean value 76.5) with a permanent lateral maxillary incisor (65.4) and mandibular incisors (mean value 12.4).

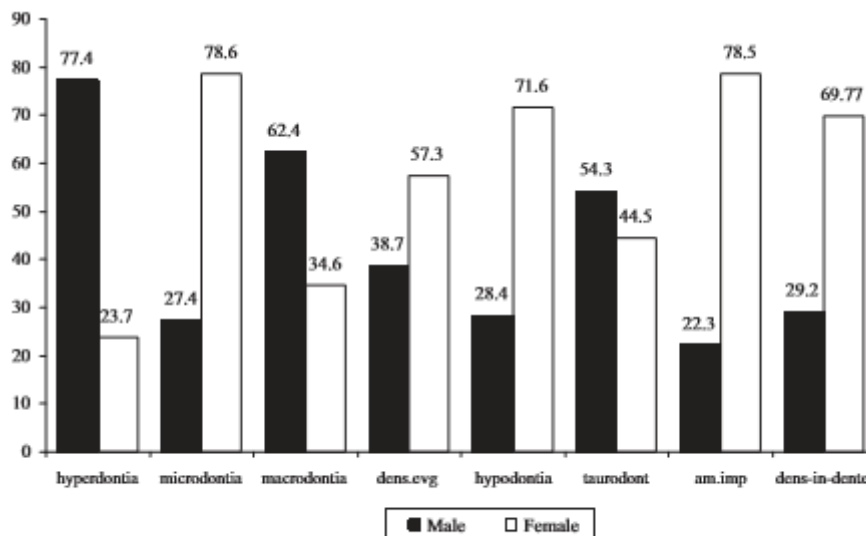


Fig. 4: Mean Prevalence Values of Dental Anomalies in Males/Females

2. Abnormalities in size

Among the dental anomalies observed, permanent maxillary lateral incisors (mean value 75.83) and mandibular premolar seconds (mean value 13.64) microdontia (total mean value 5.83) were observed in our patient specimens (Figure 2) and 3rd permanent maxillary molar (mean value 10.32) is frequently affected. Males showed a higher affinity (mean value 62.11) than females (mean value 37.34) and maxillary dentistry was affected more than mandibular dentistry (mean value 18.20) (mean value 81.67). Macrodon teeth were fused and found between tooth anomalies as female teeth (total mean value 2.6) (Figure 2). Upper permanent lateral incisors had the highest prevalence (mean value 63.22), and permanent mandibular lateral incisors (mean value 20.45) and second mandibular premolar (mean value 16.44). In addition, male subjects showed an average macrodontia value greater than 62.45 compared to female subjects (mean value 34.62).

3. Abnormalities in Shape

According to shape anomalies (Figure 2), taurodontism showed the highest prevalence, 7.24, followed by dens evaginatus (total mean value 2.90) and dens-in-dente (total mean value 1.61). Men showed a higher affinity for taurodontism (Figure 4), and women showed a higher prevalence of dens evaginatus (mean value 57.3) and dens-in-dente (mean 69.77) than men. In addition, anomalies were affected by maxillary dentistry (mean value 8.3.), Compared to mandibular dentistry (mean value 8.3.6), with taurodontism more often affecting permanent

mandibular molar teeth 1 and 2 (mean value 88.65) and permanent incisors and premolars (mean value 98.4) affecting. The most commonly affected teeth in patients with dens evaginatus were upper permanent lateral incisors and upper second premolar (mean value 92.78).

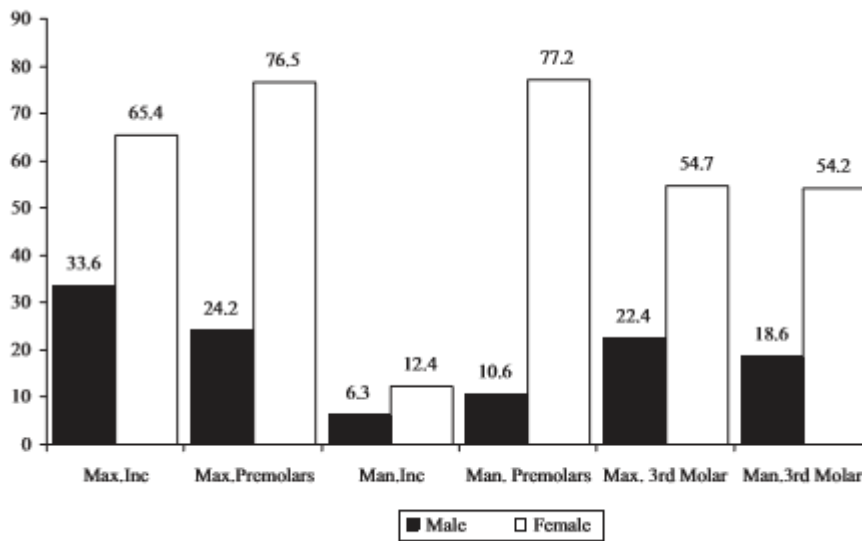


Fig. 5: Mean Prevalence Values of Hypodontia in Males/Females

4. Abnormalities in enamel and dentine structure

In this category, in our patient sample (Figure 2), only amelogenesis imperfecta was observed (total mean value 4.66). According to the distribution by gender (Figure 4), women showed more defective enamel presence (mean value 78.54) than male subjects (mean value 22.3). No dentine abnormalities of any sex were observed in our patient sample.

DISCUSSION:

Previous studies investigating dental anomalies found a prevalence of 15-20% among patient dental specimens. In our study, 22.8% of the patients examined clinically and radiographically showed dental abnormalities affecting the number, size, shape and defect of enamel. In addition, Thongudomporn and Freer observed larger anomalies in maxillary teeth compared to mandibular teeth. In our patient sample, more anomalies were detected in maxillary teeth compared to mandibular teeth (Figure 1). The gender distribution of our patient sample was higher than that of males (total mean value 78.3), compared to females (total mean value 23.7). In this study, we classify the upper classes according to the regional distribution in the oral cavity. Mesiodens, paramolar, distomolar and odontomas⁹⁻¹⁰. The mean maxillary value of 74.33 showed a greater supernumerary tendency than mandibular dentistry (mean value 25.71). According to the distribution by sex (Figure 3), males showed greater affinity for mesiodens¹¹. Tyrologou *et al.* Conducted further investigations of extreme abnormalities in female subjects compared to male subjects. Our study has concluded that 80% of dental anomalies are concentrated in the maxillary anterior segment with the latest studies of Goursand *et al.* Primosch found a supernumerary prevalence of 90-98% in the upper

jaw that affected men twice compared to women. As noted earlier, our patients did not have systemic disorders or syndromes. However, many researchers

associate hyperdontia with cleft lip and cleft palate and with syndromes such as cleft dysrangia, Gardner syndrome and golden-face digital syndrome.

In this study, hypodontia or tooth deficiency represented the most common tooth anomaly in our patient sample, with an average value of 57.8 (Figure 2). Maklin *et al* previously reported a prevalence of up to 10%, excluding the third molars. According to Grahanen and Granath, there is a 30% relationship between the absence of primary teeth and the absence of permanent teeth. Our findings are consistent with evidence from Worsaae *N et.al* and Albashaireh¹². He also reported hypodontia as the most common anomaly. Some authors associate hypodontia with ectodermal dysplasia, Down syndrome, Hurler syndrome and cleft palate. Our subjects with hypodontia did not have systemic abnormalities or associated syndromes. However, recent population studies of tooth anomalies have shown more taurodontism and hyperdontia in patient samples than in hypodontia¹³. In our study, teeth with congenital insufficiency were found to be higher in females than males. Localized microdontia affecting only a few teeth, generally permanent upper lateral incisors (mean value 75.83), 2nd lower

premolar (value 13, 64 mean) and permanent maxillary 3rd molar (mean 10.32). In males, a smaller tooth finding (mean value 62.11) was affected (37.34 mean value), and in the upper teeth in general (mean value 81.67) comparison with mandibular teeth (mean value 18.20). In males, there was a greater tendency towards taurodontism (mean value of 54.3) (Figure 4), whereas in female subjects, ascending (mean value of 57.3) and Dense-dente (mean value 69, 77) were compared with male subjects¹⁴. Recently, Hamasha and Alomari found that men are more often associated with taurodontism than women¹⁵. These anomalies in the form have affected maxillary dentistry larger than the mandibular dentistry (mean value 8.31) (mean value 91.65), taurodontism, more frequently permanent mandibular molar 1 and 2 (mean value 88, 65), and affects the most common mandibular teeth, permanent maxillary and premolar incisors (mean value 98.4).

CONCLUSION:

Hypodontia and hyperdontia were common in our cases. These anomalies require a thorough understanding and treatment planning. A multidisciplinary approach to orthodontics, restorative dentistry, periodontology and oral surgery is required to restore the aesthetics and function of the teeth. Our study mainly focused on the number, size and shape of dental anomalies. However, more detailed investigations of dentine anomalies, cement and tooth color should be included in studies with large examples.

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